

наричани по-долу ПОТЕНЦИАЛНИ ИЗПЪЛНИТЕЛИ, от друга страна,

и на основание чл. 81, ал.1 от ЗОП във връзка с проведена открита процедура за сключване на рамково споразумение за възлагане изпълнението на обществена поръчка с предмет „Доставка, инсталиране, въвеждане в експлоатация и гаранционен сервиз на информационно-компютърна техника“, Решение на РС № 13/09.05.2018г. и Решение № 29/14.05.2018г. на Възложителя за определяне на потенциални Изпълнители се сключи настоящото рамково споразумение за следното:

I. ПРЕДМЕТ И СРОК

Чл. 1.(1) Възложителят възлага, а потенциалните Изпълнители приемат да извършват доставка, инсталиране, въвеждане в експлоатация и гаранционен сервиз на информационно – компютърна техника посочена в техническото предложение или друго такова от същия производител и вид, но с осъвременени технически параметри (по-надолу наричано „оборудване“).

(2) Рамковото споразумение се сключва между Възложителя и класираните на първите пет места за всяка обособена позиция потенциални Изпълнители.

(3) Предметът и начинът на осъществяване на отделните поръчки за извършване на доставки ще бъдат определени в съответния договор, сключен въз основа на настоящото рамково споразумение.

Чл. 2.(1) Сроктът на настоящото рамково споразумение е една година, считано от датата на сключването му или до достигане на максимално допустимата стойност на договора по чл. 3, в зависимост от това кое от двете събития настъпи по-рано.

(2) Времетраенето и крайния срок на изпълнение на отделните поръчки за извършване на доставките е съгласно срока посочен в офертата на избория за изпълнител на всеки конкретен договор.

II. ЦЕНИ И НАЧИН НА ПЛАЩАНЕ

Чл. 3. (1) Максималната стойност на рамковото споразумение е **500 000,00** (петстотин хиляди лева и 00ст) лв. **без ДДС** за срока на договора.

(2) Възложителят заплаща цена за доставеното количество оборудване на единични цени не по-високи от посочените в ценовото предложение на избраните за Изпълнители, намалени с предложената отстъпка за количество.

(3) Цената на всеки конкретен договор сключен въз основа на настоящето споразумение е окончателна.

(4) Изпълнителят предоставя гаранцията за изпълнение на всеки конкретен договор при подписването му в размер на 5% (пет процента) от стойността му. Гаранцията се предоставя под формата на парична сума, внесена по банковата сметка на Възложителя, банкова гаранция или застраховка, която обезпечава изпълнението чрез покритие на отговорността на Изпълнителя и е със срок на валидност 30 дни след изтичане на последния по продължителност гаранционен срок. Изпълнителят избира сам формата на гаранцията за изпълнение. Разходите по обслужване на гаранцията са за сметка на Изпълнителя. Възложителят освобождава гаранцията за изпълнение, както следва:

а). 4% (четири процента) - в срок от 30 (тридесет) календарни дни, след подписване на приемо-предавателен протокол съответно протокол за инсталация при необходимост и подадена молба от Изпълнителя.

б). 1% (един процент) - в срок от 30 (тридесет) дни, след изтичане на последния по продължителност гаранционен срок.

Чл. 4. След окончателното завършване на доставките ще се изготвя приемо-предавателен протокол, а след завършване на инсталацията (ако е необходима) протокол за инсталация.

Чл. 5. Изпълнените договори се заплащат, както следва:

(1) При необходима инсталация:

1. 95% след окончателното завършване на доставката на оборудването в срок до 30 дни след представена фактура и приемо-предавателен протокол с платежно нареждане по банковата сметка на Изпълнителя;
2. 5% след окончателното завършване на инсталацията и въвеждането в експлоатация на доставеното оборудване в срок до 30 дни след представена фактура и протокол за инсталация с платежно нареждане по банковата сметка на Изпълнителя;

(2) Без инсталация, след окончателното завършване на доставката на оборудването в срок до 30 дни след представена фактура и приемо-предавателен протокол с платежно нареждане по банковата сметка на Изпълнителя.

III. ПРАВА И ЗАДЪЛЖЕНИЯ НА ИЗПЪЛНИТЕЛЯ

Чл. 6. (1) Изпълнителят се задължава:

1. да достави оборудването, предмет на този договор в параметрите и с технически данни описани в техническата част на предложението на Изпълнителя;
2. да достави заедно с оборудването и съответната техническа и експлоатационна документация, съпътстваща монтажа и функционирането на техническите средства;
3. да инсталира и въведе в експлоатация доставеното оборудване след заявка на Възложителя;
4. да осигури за своя сметка доставката на оборудването в склада на Възложителя, в уговорения срок;
5. да прехвърли правото на собственост върху доставеното на Възложителя оборудване, предмет на този договор, след заплащане на дължимата цена;
6. ако по време на гаранционния срок, се установи еднороден дефект на компоненти и това е установено на не по - малко от 20% от обекта на поръчката за съответната обособена позиция, Изпълнителят е длъжен да подмени дефектния компонент и на другите обекти на поръчката, които не са проявили още дефекта.

(2) Изпълнителят сключва договори за подизпълнение с лицата, които е посочил предварително в офертата си и е представил доказателства за поетите от тях задължения.

1. Изпълнителят се задължава в срок от 3 /три/ дни от сключването на договор за подизпълнение или на допълнително споразумение за замяна на подизпълнител, да изпрати копие на договора или споразумението на Възложителя, заедно с доказателства за изпълнение на условията по критериите за подбор или съответно на условията по т.4, ал.2, чл.6 от този договор.
2. Независимо от ползването на подизпълнители, отговорността за изпълнение на договора е на Изпълнителя.
3. След сключване на договора и най-късно преди започване на изпълнението му, Изпълнителят уведомява Възложителя за името, данните за контакт и представителите на подизпълнителите, посочени в офертата. Изпълнителят уведомява Възложителя и за всякакви промени в предоставената информация в хода на изпълнението на договора.

4. Замяна или включване на подизпълнител по време на изпълнение на договор за обществена поръчка се допуска по изключение, когато възникне необходимост, ако са изпълнени едновременно следните условия:

а.) за новия подизпълнител не са налице основанията за отстраняване в процедурата;

б.) новият подизпълнител отговаря на критериите за подбор, на които е отговарял предишния подизпълнител, включително по отношение на дела и вида на дейностите, които ще изпълнява, коригирани съобразно изпълнените до момента дейности.

5. При замяна или включване на подизпълнител Изпълнителят представя на Възложителя всички документи, които доказват изпълнението на условията по т.4, ал.2.

6. Приемането на работи от Възложителя, за които е сключен договор за подизпълнение се извършва в присъствието на Изпълнителя и подизпълнителя.

(3) Когато частта от поръчката, която се изпълнява от подизпълнител, може да бъде предадена като отделен обект на Изпълнителя или на Възложителя, Възложителят заплаща възнаграждение за тази част директно на подизпълнителя.

(4) Разплащанията по ал. 3 се осъществяват въз основа на искане, отправено от подизпълнителя до Възложителя чрез Изпълнителя, който е длъжен да го предостави на Възложителя в 15-дневен срок от получаването му.

(5) Към искането по ал. 4 Изпълнителят предоставя становище, от което да е видно дали оспорва плащанията или част от тях като недължими.

(6) Възложителят има право да откаже плащане по ал. 3, когато искането за плащане е оспорено, до момента на отстраняване на причината за отказа.

Чл. 7. (1) Изпълнителят гарантира, че доставеното оборудване съответства на изискванията на Възложителя и спецификацията на офертата.

(2) В случай, че доставеното оборудване или част от него не съответства на техническата спецификация в срок 10 дни, Изпълнителят е длъжен да замени оборудването с такова отговарящо на уговорените изисквания.

Чл. 8. Изпълнителят има право при точно изпълнение на задълженията си по този договор да получи уговорената цена в установения срок.

Чл. 9. Страните си оказват взаимно сътрудничество при изпълнение на поетите задължения.

IV. ПРАВА И ЗАДЪЛЖЕНИЯ НА ВЪЗЛОЖИТЕЛЯ

Чл. 10. (1) Възложителят е длъжен да заплати на Изпълнителя договорената цена в уговорените срокове и съобразно условията на договора.

(2) В рамките на гаранционния срок, Възложителят се задължава:

1. да информира незабавно Изпълнителя за настъпили повреди и дефекти. Начинът на уведомяване на сервизната организация при възникнала неизправност е чрез писмо, факс или имейл. Заявката се подава от упълномощено от Възложителя длъжностно лице.

2. да не допуска ползване или техническо обслужване на оборудването от трета страна без писмено съгласие на Изпълнителя в рамките на гаранционния срок.

3. при наличие на повреда в доставеното оборудване да осигури достъп на специалистите на Изпълнителя.

Чл. 11. Възложителят има право:

1. да получи правото на собственост върху оборудването предмет на договора, след заплащане на договорената цена и подписването на приемателно - предавателен протокол.

2. да уведоми Изпълнителя в срок до 30 дни след доставката за забелязани недостатъци или несъответствия с оферираните технически спецификации и да иска тази техника да бъде заменена със съответстваща на договореното;
3. да рекламира техниката пред Изпълнителя в срок от 10 дни от установяването на дефекти правещи я негодна за ползване.
4. ако по време на гаранционния срок се установи еднороден дефект на компоненти и това е установено на не по - малко от 20% от обекта на поръчката за съответната обособена позиция, да поиска от Изпълнителя да подмени дефектния компонент и на другите обекти на поръчката, които не са проявили още дефекта.

V. ПРИЕМАНЕ НА РАБОТАТА

Чл. 12. Доставката и въвеждането в експлоатация (при необходимост) на оборудването ще бъдат приети от определени от Възложителя длъжностни лица.

Чл. 13. Приемането на стоката се извършва според условията за изпълнение на поръчката на адреса на УНСС с приемателно - предавателен протокол, подписан от страните по договора.

Чл. 14. При приемането на оборудването, представител на Възложителя проверява количеството, външния вид и техническите характеристики на стоката в присъствие на упълномощен представител на Изпълнителя.

Чл. 15. При подписването на протокола се издава гаранционна карта за всяко едно оборудване. В гаранционната карта се описват серийните номера на оборудването. В нея се посочват и данни за контакт.

Чл. 16. (1) Възложителят или негов представител има правото на свои разноски да инспектира оборудването, предмет на договора при получаването му, за да потвърди неговото съответствие с договора, за което се съставят съответните протоколи за тестване.

(2) Ако инспектираното оборудване не съответства на договора, Възложителят може да откаже приемането му частично или изцяло, а Изпълнителят заменя отказаното оборудване или извършва необходимите промени, за да съответстват на техническите изисквания. Възложителят не дължи на Изпълнителя плащане на замененото оборудване.

(3) Разпоредбата на ал. 1 и 2 не освобождава по никакъв начин Изпълнителят от гаранционни или други задължения по договора.

Чл. 17. Рискът от погиване или повреждане на стоката, предмет на този договор, преминава върху Възложителя от момента на предаването на определеното в договора място на доставката, инсталацията и въвеждане в експлоатация на оборудването, установено с подписването на приемателно-предавателния протокол.

VI. ГАРАНЦИОННО ОБСЛУЖВАНЕ

Чл. 18. (1) Гаранционният срок на оборудването е съобразно техническото предложение на Изпълнителя.

(2) Срокът за реакция (регистрация на повредата) след уведомяване от страна на Възложителя е 2 часа (за всички обособени позиции), в рамките на работното време на Възложителя от 8.00 до 16,45 ч. и до 4 часа в извънработно време на Възложителя за обособена позиция 1.

(3) Срокът за отстраняване на проблема е, както следва:

1. за обособена позиция 1 - до 1 (един) работен ден от датата на получаване на уведомлението от Възложителя;
2. за обособени позиции 2, 3 , 4, 5 и 6 – до 14 (четирнадесет) работни дни от датата на получаване на уведомлението от Възложителя;

(4) При невъзможност в рамките на срока по ал. 3, т. 1, за отстраняване на проблем в дефектирало оборудване от обособена позиция 1, в срок до един работен ден същото се заменя от Изпълнителя с работоспособно от същия или по-висок клас в срок до 5 работни дни.

(5) При невъзможност в рамките на срока по ал. 3, т. 2, за отстраняване на проблема в дефектирало оборудване от обособени позиции 2, 3, 4, 5 и 6, същото се заменя от Изпълнителя с работоспособно от същия или по-висок клас в срок до 5 работни дни.

Чл. 19. (1) Изпълнителят поема гаранция за качеството на стоката и за годността и за употреба за сроковете посочени в чл. 18, ал. 1 и се задължава:

1. да осигури гаранционно обслужване и сервиз.
2. да извършва качествено сервизно техническо поддържане и ремонт на доставеното оборудване в съответствие с действащите стандарти.
3. да отстранява възникналите при нормалната експлоатация повреди.
4. да отстрани безвъзмездно всички повреди и отклонения от изискванията за качество, които са възникнали в рамките на посочения гаранционен срок.

(2) Изпълнителят не носи отговорност в следните случаи:

1. за повреди и отклонения от качеството на стоката, възникнали вследствие на нейната неправилна употреба, експлоатация, неспазване на указанията в съпровождащата документация или неправилно съхранение от страна на Възложителя.
2. поражения при стихийни бедствия: пожар, земетресение, наводнение, големи колебания в електрическата мрежа, посегателства и др.

(3) Отстраняването на повреди, предизвикани от някои от обстоятелствата по ал. 2 ще се извършват от Изпълнителя при наличие на техническа възможност и срещу допълнително заплащане от страна на Възложителя.

Чл. 20. В случай, че Изпълнителят не предприеме действия по отстраняване на повредите или замяна на дефектиралото оборудване в срок, Възложителят може да отстрани повредата за сметка на Изпълнителя. Ако повредата е такава, че не може да бъде отстранена, Възложителя има право да получи цената на повреденото оборудване.

Чл. 21. Всички разходи по поправката или замяната са за сметка на Изпълнителя и се удържат от гаранцията за добро изпълнение.

Чл. 22. Гаранционното сервизно обслужване се извършва на мястото на използване на оборудването, а ако това е невъзможно се извършва в сервиз и включва разходите за труд, резервни части и транспорт.

VII. НЕИЗПЪЛНЕНИЕ И ОТГОВОРНОСТ

Чл. 23. (1) При забава изпълнението на договора, Изпълнителят дължи неустойка в размер на 1% (един процент) от общата стойност на договора, за всеки просрочен ден, но не повече от 20% (двадесет процента) общо.

(2) При забава на Възложителя за изпълнение на задълженията му за плащане по договора, същият заплаща на Изпълнителя неустойка в размер на 1% (един процент) от дължимата сума за всеки просрочен ден, но не повече от 20% (двадесет процента) от размера на забавеното плащане.

(3) Плащането на неустойки не лишава изправната страна по договора от правото ѝ да търси обезщетение за претърпени вреди и пропуснати ползи над размера на неустойката.

VIII. РЕД ЗА СКЛЮЧВАНЕ НА КОНКРЕТНИТЕ ДОГОВОРИ И МЕТОДИКА ЗА ОПРЕДЕЛЯНЕ НА ИЗПЪЛНИТЕЛЯ

Чл. 24. (1) Настоящото рамково споразумение е споразумение, при което не са определени всички условия съгласно чл. 82, ал.3 от ЗОП.

(2) За всеки договор, който предстои да бъде сключен Възложителят провежда вътрешен конкурентен избор по реда на чл. 82, ал.4 от ЗОП.

(3) На основание чл. 82, ал.4, т.1 от ЗОП Възложителят отправя писмена покана до страните по рамковото споразумение за съответната обособена позиция, за представяне на оферта, като определя условията за изпълнение на договора и документите, които следва да се представят от страна на потенциалния Изпълнител, както и подходящ срок за представяне на оферти от потенциалните Изпълнители, който не може да бъде по-кратък от десет дни.

(4) Офертите на потенциалните Изпълнители се изготвят в съответствие с рамковото споразумение и съдържат срок за изпълнение на поръчката, предлагана цена и техническо предложение за изпълнение на поръчката. Потенциалните изпълнители се задължават в офертата си да декларират, дали ще използват /няма да ползват/ подизпълнители, като в случай че предвиждат ползването на такива, да посочат кои са те, вида и дела им на участие и да представят за тях документите, съгласно разпоредбите на ЗОП.

(5) Възложителят назначава комисия, която разглежда предоставените оферти относно тяхното съответствие с поканата и настоящото рамково споразумение и класира представените оферти съгласно критерия по чл. 25 от рамковото споразумение.

(6) Възложителят определя Изпълнител по реда на чл. 108 и сключва договор по реда на чл. 109 от ЗОП.

Чл. 25. Критерият за оценка при избор на Изпълнител е икономически най-изгодна оферта, при следните показатели:

1. Предлагана цена с отстъпката (Кц) - максимум 100 точки при тежест в комплексната оценка – 95 % (оценка от 0 до 100);
2. Срок за доставка (Кд) – максимум 100 точки при тежест в комплексната оценка – 5 % (оценка от 0 до 100);

или

$$K = Kц \times 0,95 + Kд \times 0,05$$

Критериите за оценка на офертите и тяхната тежест в комплексната оценка се определят в коефициентите.

Показателят „Кц“ е за най-ниска предложена цена за конкретната поръчка и се получава по следния начин:

$$Kц = Ц_{мин} / Ц_{участник} \times 100$$

където:

“Ц_{мин}” е най-ниската предложена цена от участник;

“Ц_{участник}” е предложената цена от съответния участник.

Показателят „Кд“ е за срока за доставка и се получава по следния начин:

1. Участник/ци предложил срок за доставка 10 дни или по-малко получава/т - 100 точки
2. Участник/ци предложил срок за доставка от 11 до 20 дни получава/т– 75 точки;
3. Участник/ци предложил срок за доставка от 21 до 30 дни получава/т– 50 точки;
4. Участник/ци предложил срок за доставка 31 дни или повече получава/т– 25 точки.

IX. ПРЕКРАТЯВАНЕ НА РАМКОВОТО СПОРАЗУМЕНИЕ

Чл. 26. Рамковото споразумение се прекратява:

- а) с изтичане на срока, за който е сключено или изчерпване на финансовия ресурс ;
- б) с отпадане на необходимостта от доставките за Възложителя;

в) при настъпване на невъзможност на някоя от страните да изпълнява задълженията си по него след сключването му. В този случай насрепнатата страна може да иска обезщетение за нанесени вреди.

Х. ПРЕКРАТЯВАНЕ НА ДОГОВОРИТЕ

Чл. 27. Съответните договори могат да бъдат развалени при условията и по реда на Закона за задълженията и договорите.

Чл. 28. В случай на непредвидени обстоятелства по смисъла на параграф 2, т. 27 от допълнителните разпоредби на Закона за обществените поръчки, ако изпълнението на договорните задължения се окаже невъзможно, то всяка страна има право да прекрати договора.

Чл. 29. Договорът се прекратява:

1. с изпълнение на задълженията;
2. по взаимно съгласие на страните изразено в писмена форма;
3. едностранно от изправната страна при съществено нарушение на клаузите на договора с предизвестие от две седмици, считано от датата на получаването.
4. едностранно от Възложителят при неизпълнение на задължение от страна на Изпълнителя по чл. 6, ал.2 от договора с предизвестие от пет дни считано от датата на получаването.

Чл. 30. Възложителят може да прекрати договора едностранно:

1. ако в резултат на обстоятелства възникнали след сключването му не е в състояние да изпълни своите задължения;
2. при закъснение по вина на Изпълнителя с повече от 10 дни от крайния срок за изпълнение на цялата или на част от доставката;
3. ако не бъде извършена подмяна на оборудването, което не съответства на предложеното техническо предложение на Изпълнителя.

ХІ. ДОПЪЛНИТЕЛНИ УСЛОВИЯ

Чл. 34. Страните по това споразумение сключват договори, като спазват всички условия в него.

Чл. 35. Условията на договорите, неопределени в настоящото споразумение се уреждат при подписване на всеки от тях.

Чл. 36. Всяко изменение по настоящото Рамково споразумение се смята за действително, ако е изготвено в писмена форма, подписано е от двете страни и е допустимо съгласно чл. 116 от ЗОП.

Чл. 37. За неуредените в настоящото рамково споразумение въпроси се прилагат разпоредбите на действащото българско законодателство.

Чл. 38. Всички спорове, възникнали между страните ще се решават по споразумение, а при непостигане на съгласие ще се отнасят за решаване от компетентния съд в Република България.

Рамковото споразумение се състави в четири еднообразни екземпляра – два за Възложителя и по един за всеки потенциален Изпълнител.

ПРИЛОЖЕНИЯ:

1. Техническо предложение на потенциалния изпълнител за обособена позиция 1;
2. Ценово предложение на потенциалния изпълнител за обособена позиция 1;
3. Технически предложения на потенциалните изпълнители за обособена позиция 2;
4. Ценови предложения на потенциалните изпълнители за обособена позиция 2;

5. Техническо предложение на потенциалния изпълнител за обособена позиция 3;
6. Ценово предложение на потенциалния изпълнител за обособена позиция 3;
7. Техническо предложение на потенциалния изпълнител за обособена позиция 4;
8. Ценово предложение на потенциалния изпълнител за обособена позиция 4;
9. Техническо предложение на потенциалния изпълнител за обособена позиция 5;
10. Ценово предложение на потенциалния изпълнител за обособена позиция 5;
11. Техническо предложение на потенциалния изпълнител за обособена позиция 6;
12. Ценово предложение на потенциалния изпълнител за обособена позиция 6.

ВЪЗЛОЖИТЕЛ:

ПОТЕНЦИАЛНИ ИЗПЪЛНИТЕЛИ:

УНСС

1. „ПАРАФЛОУ КОМУНИКЕЙШЪНС“ ООД

ПОМОЩНИК-РЕКТОР:

УПРАВИТЕЛ:

ДИРЕКТОР ДИРЕКЦИЯ „ФИНАНСИ“

2. „СТЕМО“ ООД

За УПРАВИТЕЛ:
ПЪЛНОМОЩНИК:



Съгласувал:

Началник отдел „ОП и Т“: *[Signature]*

Директор дирекция „ИТ“:

Валери Димитров

Директор дирекция „ПО и ОП“:

[Signature]

Началник сектор „ВВК“:

[Signature]

Изготвил:

Ръководител сектор „ПО“:

[Signature]



ДО
Университет за национално и световно стопанство
Студентски град, ул. "8ми Декември"
София 1700

Приложение 1

ТЕХНИЧЕСКО ПРЕДЛОЖЕНИЕ

за участие в открита процедура за сключване на
рамково споразумение с предмет:

“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО-КОМПЮТЪРНА ТЕХНИКА”

*За обособена позиция 1: Сървъри, сториджи, мрежово и комуникационно
оборудване*

От: ПАРАФЛОУ КОМУНИКЕЙШЪНС ООД
Адрес: София 1700, бул. "Никола Габровски" 79
Лице за контакт: Искра Берова
тел.: + 359 2 960 42 00, факс: + 359 2 960 42 18
e-mail: office@paraflow.bg
www.paraflow.bg

ТЕХНИЧЕСКО ПРЕДЛОЖЕНИЕ ЗА ИЗПЪЛНЕНИЕ НА ПОРЪЧКАТА

от Парафлоу Комуникейшънс ООД
(наименование на участника)

и подписано от

ЕГН
(трите имена и ЕГН)

в качеството ѝ на Експерт обществени поръчк и упълномощено лице
(на длъжност)

с ЕИК:

УВАЖАЕМИ ДАМИ И ГОСПОДА,

1. След запознаване с всички документи и образци от документацията за участие в процедурата, получаването, на които потвърждаваме с настоящото, ние удостоверяваме и потвърждаваме, че представляваният от нас участник отговаря на изискванията и условията посочени в документацията за участие в процедура с предмет: **“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА”** за обособена позиция № 1

2. Декларираме, че сме получили посредством „Профила на купувача” документация за участие и сме запознати с указанията и условията за участие в обявената от Вас процедура. Съгласни сме с поставените от Вас условия и ги приемаме без възражения.

3. Декларираме, че сме запознати със всички условия за изпълнение на поръчката за обособената позиция

4. Декларираме, че ще изпълним дейностите по обществената поръчка в сроковете регламентирани от Възложителя в документацията за участие и Техническата спецификация, а именно:

Срок за изпълнение 12 месеца.

5. Декларираме, че предлаганата предлаганата техника е сертифицирана от Microsoft /за позиция 1 това изискване не се отнася за комуникационното оборудване/. За доказателство за сертифициране от Microsoft на техниката прилагам разпечатка на Windows Logo Verification Report. Линк, чрез който може да се провери истинността на горепосоченото

HPE ProLiant ML110 G9 Server

<https://www.windowsservercatalog.com/item.aspx?idItem=69012eda-0ce3-4a3b-7835-bb7f483a6fc6&bCatID=1282>

000001

~~HPE ProLiant ML150 G9 Server~~

~~<https://www.windowsservercatalog.com/item.aspx?idItem=31d7b11d-84d6-a2e9-704c-025caa4ffd44&bCatID=1282>~~

~~HPE ProLiant DL20 G9 Server~~

~~<https://www.windowsservercatalog.com/item.aspx?idItem=ef4bdd70-9bfb-620e-5549-16894dcf461d&bCatID=1282>~~

~~HPE ProLiant DL180 G9 Server~~

~~<https://www.windowsservercatalog.com/item.aspx?idItem=f4e2785c-4feb-a012-0867-9bbda1dcf5e6&bCatID=1282>~~

~~HPE ProLiant DL160 G9 Server~~

~~<https://www.windowsservercatalog.com/item.aspx?idItem=e5c3857d-3407-0c5d-8e32-638667d7da7f&bCatID=1282>~~

~~HPE ProLiant BL460c G9 Blade Server~~

~~<https://www.windowsservercatalog.com/item.aspx?idItem=c2326d1b-59af-23da-27e6-c90ff8189821&bCatID=1282>~~

~~HPE MSA 1040 Storage~~

~~<https://www.windowsservercatalog.com/item.aspx?idItem=ec927750-e876-7456-6c75-a1efa237d59a&bCatID=1282>~~

~~HPE MSA 2040 Storage~~

~~<https://www.windowsservercatalog.com/item.aspx?idItem=5e6d2662-b22a-803e-a3d9-5ac14f846742&bCatID=1282>~~

Това изискване се прилага само за техниката, за която се изисква това в техническото задание (Образец № 11).

6. Декларираме, че предлаганата техника е нова, неупотребявана, нерициклирана и в производствената листа на производителя към момента на подаване на офертата, Линк, чрез който може да се провери истинността на горепосоченото

<https://www.hpe.com/uk/en/home.html>

https://www.cisco.com/c/bg_bg/index.html

7. Декларираме, че имаме оторизация от производителя и/или от официалния представител на производителя с права да извършваме продажба и сервиз на предлаганото оборудване.

8. За изпълнение предмета на поръчката прилагаме:

8.1. документ за упълномощаване, когато лицето, което подава офертата, не е законният представител на участника – **оригинал или нотариално заверено копие;**

8.2. предложение за изпълнение на поръчката в съответствие с техническите спецификации и изискванията на възложителя за обособената позиция и да е съобразено с критериите за възлагане – свободна редакция;

8.3. разпечатка на Windows Logo Verification Report;

8.4. оторизация от производителя /с/ права за извършване продажба и сервиз на предлаганото оборудване;

8.5. декларация за сервизно обслужване и наличие на сервизна база, оторизирана от производителите и на предлаганата техника за осъществяване на сервизните услуги при условията на възложителя;

8.6. декларация за съгласие с клаузите на приложения проект на договор - попълва се Образец № 4.2.;

8.7. декларация за съгласие с клаузите на приложения проект на рамково споразумение - попълва се Образец № 4.1.;

8.8. декларация за срока на валидност на офертата - попълва се Образец № 5.;

Дата: 12.03.2018 г.

ПОДПИС И ПЕЧАТ:

Искра Беровѝ

[име и фамилия]

Упълномощено лице

[качество на представляващия участника]



ПЪЛНОМОЩНО

Долуподписаният

В,

притежаващ лична карта No. _____, издадена на _____ г. от _____, ЕГН _____, с адрес в гр. София, ул. Митрополит Кирил Видински 8, ет. 8, представляващ, и в качеството си на Управител на "Парафлоу Комуникейшънс" ООД, регистрирано по ф.д. 9778/1995 г. по описа на СГС, БУЛСТАТ/ЕИК 831913775, с адрес по регистрация гр. София 1700, бул. "Никола Габровски" 79

У П Ъ Л Н О М О Щ А В А М

Искра Николаева Берова, притежаваща лична карта номер _____, издадена на _____ г. от МВР - _____, ЕГН: _____, да представлява **Парафлоу Комуникейшънс ООД** пред всички възложители на обществени поръчки по смисъла на чл. 5, чл. 6, чл. 7, чл. 8 и чл. 9 от Закона за Обществени Поръчки (ЗОП) във връзка с провеждането на процедури за възлагане на обекти на обществените поръчки по смисъла на чл. 3, ч. 8 и чл. 9 от ЗОП, както и във всички тръжни процедури, финансирани от фондовете на Европейския Съюз, международни тръжни процедури, финансирани от Световната Банка, USAID, UNDP и други източници на финансиране, както и във фирмени конкурси и процедури, със следните права:

- Да води преговори от името на Парафлоу Комуникейшънс ООД с представители на Възложителите;
- Да получава, подава и подписва от името на Парафлоу Комуникейшънс ООД предложения, оферти, писма, молби, декларации, заявления, искания, копия на документи, и др. подобни документи от/към възложителите;
- Да представлява Парафлоу Комуникейшънс ООД пред Възложителите при предаване или получаване на предложения, оферти и допълнителни документи - писма, банкови гаранции, договори и т.н. в случай на поискването им от Възложителите;
- Да парафира и подписва от името на Парафлоу Комуникейшънс ООД, текстовете на договори и споразумения с Възложителите;
- Да представлява Парафлоу Комуникейшънс ООД пред Комисиите, като присъства при отваряне, разглеждане и оценяване на предложенията на Парафлоу Комуникейшънс ООД, да чете и взема становище по протоколите на Комисиите, както и да представя и подписва допълнителни документи или писма в случай на поискването им от Възложителите.

Настоящото Пълномощно е в сила до 30.4.2018 г.

гр. София, 19.10.2017 г.

УПЪЛНОМОЩИТЕЛ:

000004



ТЕХНИЧЕСКО ПРЕДЛОЖЕНИЕ

Минимални технически параметри		Предложение на Парафлюу Комуникайънс ООД
Обособена позиция №1 СЪРВЪРИ, СТОРИДЖИ, МРЕЖОВО И КОМУНИКАЦИОННО ОБОРУДВАНЕ		
Tower сървър 1		HPE ProLiant ML110 Gen9 Server
Процесор:	1 Processor - minimum Six-core Intel Xeon или повече, минимум 10 MB cache или повече.	HPE ML110 Gen9 Intel Xeon E5-2603v4 1.7Ghz, 15MB 6-core 85W
Чипсет	Intel® C621 или по-нов	Intel® C621
Памет:	Минимум 16GB DDR4 Registered	16GB DDR4 Registered HPE SmartMemory and Standard Memory
Памет, слотове:	Up to 256GB (min 8 DIMM slots)	256GB 8DIMM slots
Дисков контролер:	SAS/SATA RAID контролер, с поддръжка на минимум RAID 0, 1, 10, 5, 50, 6, 60 с минимум 2GB енерго-независима памет (тип Flash).	HPE Smart Array P408i-p SR Gen10 (8 Internal Lanes/2GB Cache) 12G SAS PCIe Plug-in Controller, HPE 96W Smart Storage Battery (up to 20 Devices) with 260mm Cable Kit. Моддържа RAID 0, 1, 10, 5, 50, 6, 60
Дисково пространство:	Мин. 3 x 300GB SAS 12Gbps 10k HD Hot Plug. Възможност за разширяване до 16 броя твърди дискове 2.5" или до 8 броя диска 3.5".	3 x HPE 300GB SAS 12G Enterprise 15K LFF (3.5in) LPC 3yr Wty Digitally Signed Firmware HDD. Възможност за разширяване до 16 броя твърди дискове 2.5" или до 8 броя диска 3.5".
Оптично устройство:	DVD-RW устройство	HPE 9.5mm SATA DVD-RW JackBlack G9 Optical Drive
Ethernet адаптер:	Минимум два гигабитови Ethernet порта	Embedded 2-Port 1GbE HPE Ethernet 1Gb 2-port 332i Adapter
Модул за надеждна платформа	Да поддържа TPM, UEFI, APCI 2.0 и пароли на поне 2 нива	Поддържа TPM, UEFI, APCI 2.0 и пароли на 2 нива
Управление:	Вграден чип с отделен обособен RJ-45 порт за отдалечено управление и софтуер с графична конзола към него	Вграден чип HPE iLO (Firmware HPE iLO4 2.0 or later) with NAND с отделен обособен RJ-45 порт за отдалечено управление и софтуер с графична конзола към него
Разширителен порт:	Не по-малко от 5 PCIe 3.0 слота - 2-x4, 2-x8 и 1-x16	5 PCIe 3.0 слота - 2-x4, 2-x8 и 1-x16
Захранване:	Минимум 350W захранване. Платформата да поддържа захранване с опция резервираност и HotPlug в зависимост от комплектацията на системата	350W захранване. Платформата поддържа захранване с опция резервираност и HotPlug в зависимост от комплектацията на системата
Кутия	Кутия тип Tower (4,5U) с възможност за монтаж в рак чрез допълнителни релси.	Кутия тип Tower (4,5U) с възможност за монтаж в рак чрез допълнителни релси.
Поддръжка	Минимум 3 години на място, с реакция на следващия работен ден	3 години на място, с реакция на следващия работен ден
Други	Моделът да бъде сертифициран за Microsoft Windows Server	Сертифициран за работа и със следните ОС: Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) VMware ClearOS
Tower сървър 2		HPE ProLiant ML150 Generation9 (Gen9)
Процесор:	1 Processor - minimum Six-core Intel Xeon или повече, ;минимум 10 MB cache или повече. Възможност за добавяне на втори процесор.	HPE ML150 Gen9 Intel Xeon E5-2603v4 (1.7GHz/6-core/15MB/85W) Processor Възможност за добавяне на втори процесор.
Чипсет	Intel® C610 или по-нов	Intel® C610 Series Chipset
Памет:	Минимум 16GB DDR4 Registered	16GB DDR4 Registered HPE SmartMemory
Памет, слотове:	Не по-малко от 512GB (min 16 DIMM slots)	512GB (min 16 DIMM slots)
Дисков контролер:	SAS/SATA RAID контролер, с поддръжка на минимум RAID 0,1,10, 5, 50 с минимум 1GB енерго-независима памет (тип Flash). Да поддържа надграждане до RAID 6	HP Smart Array P440/4GB FBWC 12Gb 1-port Int SAS Controller с поддръжка на RAID 0,1,10, 5, 50, 6 с4GB енерго-независима памет (тип Flash)
Дисково пространство:	3 x 300GB SAS 6Gbps 15k HD Hot Plug. Възможност за разширяване до 8 броя 3,5 твърди дискове или до 16 броя 2,5" инча дискове	3 x HPE 300GB SAS 12G Enterprise 15K LFF (3.5in) LPC 3yr Wty Digitally Signed Firmware HDD. Възможност за разширяване до 16 броя твърди дискове 2.5" или до 8 броя диска 3.5".
Оптично устройство:	DVD-RW устройство	SATA 9.5mm DVD RW Optical Drive
Ethernet адаптер:	Минимум два гигабитови Ethernet порта	Broadcom 5717 Dual-port 1Gb
Модул за надеждна платформа	Да поддържа TPM, UEFI, APCI 2.0 и пароли на поне 2 нива	Поддържа TPM, UEFI, APCI 2.0 и пароли на 2 нива

000005

Управление:	Вграден чип с отделен обособен RJ-45 порт за отдалечено управление и софтуер с графична конзола към него	Вграден чип HPE iLO (Firmware HPE iLO4 2.0 or later) with NAND с отделен обособен RJ-45 порт за отдалечено управление и софтуер с графична конзола към него
Разширителен порт:	Не по-малко от 6 x PCIe 3.0 - 4 - x8; 2 - x16	6 x PCIe 3.0 - 4 - x8; 2 - x16
Захранване:	Не по-малко от 550W захранване с опция за резервианост	550W захранване с опция за резервианост
Кутия	Кутия тип Tower с възможност за конвертиране за монтаж в рак 5U чрез допълнителни релси.	Кутия тип Tower с възможност за конвертиране за монтаж в рак 5U чрез допълнителни релси.
Поддръжка	Минимум 3 години на място, с реакция на следващия работен ден	3 години на място, с реакция на следващия работен ден
Други	Моделът да бъде сертифициран за Microsoft Windows Server	Сертифициран за работа и със следните ОС Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) VMware ClearOS
	Rack-mount сървър 1	HPE ProLiant DL20-Generation9 (Gen9)
Размери:	1U rackmount	1U rackmount
Процесори:	1 x Intel Four Core 3.0GHz или повече, 8 MB cache или повече	HPE DL20 Gen9 Intel Xeon E3-1220v6 (3.0GHz/4-core/8MB/72W) Processor
Чипсет	Intel C232 Series Chipset или по-нов	Intel C232 Series Chipset
Памет:	Минимум 16GB DDR4 ECC, да поддържа надграждане до минимум 64GB (min 4 DIMM Slots)	16GB DDR4 ECC. Поддържа надграждане минимум 64GB (4 DIMM Slots)
Дисков контролер:	SAS/SATA RAID контролер, с поддръжка на минимум RAID (0/1)	HPE Dynamic Smart Array B140i Controller с поддръжка на RAID (0/1)
Дисково пространство:	Мин. 4 x 2TB SATA 7,2k HDD с възможност за подмяна без спиране на сървъра (hot-plug) Да поддържа минимум 2 диска 3.5инча или 4 диска 2.5 инча.	4 x HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC Hot Plug HDD Поддържа 2 диска 3.5 инча или 4 диска 2.5 инча.
Оптично устройство:	DVD-RW устройство	HPE 9.5mm SATA DVD-RW JackBlack G9 Optical Drive
Ethernet адаптер:	Мин.2бр. със скорост 1GbE на всеки порт.	HPE Ethernet 1Gb 2-port 332i network Adapter
PCI функционалност:	Минимум 2 вградени PCI-E 3.0 слота за разширение x8	2 вградени PCI-E 3.0 слота за разширение x8
Модул за надеждна платформа	Да поддържа TPM, UEFI, APCI 2.0 и пароли на поне 2 нива	Поддържа TPM, UEFI, APCI 2.0 и пароли на 2 нива
Вграден слот за ОС или виртуализационна платформа	Поне един microSD слот	Един microSD слот
Управление:	Вграден чип за отдалечено управление и софтуер с графична конзола към него	Вграден чип HPE iLO (Firmware HPE iLO4 2.3) 4GB NAND за отдалечено управление и софтуер с графична конзола към него
Комплект елементи за вграждане в 19" шкаф:	От производителя, с включени телескопични релси	От производителя, с включени телескопични релси
Вентилатори:	Резервирани вентилатори мин 3 броя	Резервирани вентилатори 3 броя
Захранване:	Резервирани захранвания минимум 900W	Резервирани захранвания 900W
Поддръжка	Минимум 6 години на място, с реакция на следващия работен ден	6 години на място, с реакция на следващия работен ден
Други	Моделът да бъде сертифициран за Microsoft Windows Server	Сертифициран за работа и със следните ОС Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) VMware ClearOS
	Rack-mount сървър 2	HPE ProLiant DL180-Generation9 (Gen9)
Размери:	2U rackmount	2U rackmount
Процесори:	1 x Intel Six Core 2.4GHz или повече, 15 MB cache или повече. Възможност за добавяне на втори процесор.	1 x E5-2620v3 2.4GHz 6 core 15MB 85W Възможност за добавяне на втори процесор.
Чипсет	Intel C610 Series Chipset или по-нов	Intel C610 Series Chipset

Памет:	Минимум 8GB DDR4 Registered, да поддържа надграждане до минимум 512GB (min 16 DIMM Slots)	8GB DDR4 Registered, поддържа надграждане до 512GB (16 DIMM Slots)
Дисков контролер:	SAS/SATA RAID контролер, с поддръжка на минимум RAID (0/1/1+0/5/5+0) с минимум 1GB енерго-независима памет (тип Flash). Да поддържа надграждане до RAID 6	HPE Smart Array P440/2GB FBWC 12Gb 1-port Int SAS Controller с поддръжка на RAID (0/1/1+0/5/5+0/6)
Дисково пространство:	2 x 450GB SAS 10k HDD с възможност за подмяна без спиране на сървъра (hot-plug) Да поддържа минимум 8 диска 2,5" с възможност за разширение до 16 диска Да поддържа SSD дискове	2 x HPE 450GB SAS 12G Enterprise 15K SFF (2.5in) SC HDD с възможност за подмяна без спиране на сървъра (hot-plug) Моддържа 8 диска 2,5" с възможност за разширение до 16 диска Поддържа SSD дискове
Оптично устройство:	DVD-RW устройство	HPE 9.5mm SATA DVD-RW JackBlack G9 Optical Drive
Ethernet адаптер:	Мин. 1бр. с два порта.Скорост 1GbE на всеки порт.	HPE Ethernet 1Gb 2-Port 361i Adapter
PCI функционалност:	Минимум 3 вградени PCI-E 3.0 слота за разширение x8. Възможност за добавяне на разширител за допълнителни слотове x8, x16, FlexLOM	3 вградени PCI-E 3.0 слота за разширение x8. Възможност за добавяне на разширител за допълнителни слотове - x8, x16, FlexLOM
Модул за надеждна платформа	Да поддържа TPM, UEFI, APCI 2.0 и пароли на поне 2 нива	Поддържа TPM, UEFI, APCI 2.0 и пароли на 2 нива
Вграден слот за ОС или виртуализационна платформа	Поне един microSD слот	Един microSD слот
Управление:	Вграден чип с отделен обособен RJ-45 порт за отдалечено управление и софтуер с графична конзола към него	Вграден чип HPE iLO (Firmware HPE iLO4 2.0 or later) 2GB NAND с отделен обособен RJ-45 порт за отдалечено управление и софтуер с графична конзола към него
Комплект елементи за вграждане в 19" шкаф:	От производителя, с включени телескопични релси	От производителя, с включени телескопични релси
Вентилатори:	Резервирани N+1 с възможност за подмяна без спиране на сървъра (hot-plug)	Резервирани 4 или 5 с възможност за подмяна без спиране на сървъра (hot-plug)
Захранване:	Резервирани захранвания, Gold-certified 80 Plus power efficiency или по-добри с възможност за подмяна без спиране на сървъра (hot-plug)	HPE 900W Redundant Power Supply Gold-certified 80 Plus power efficiency
Поддръжка	Минимум 3 години на място, с реакция на следващия работен ден	3 години на място, с реакция на следващия работен ден
Други	Моделът да бъде сертифициран за Microsoft Windows Server	Сертифициран за работа и със следните ОС Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) VMware ClearOS
	Rack-mount сървър 3	HPE ProLiant DL180 Generation9 (Gen9)
Размери:	2U rackmount	2U rackmount
Процесори:	2 x Intel Six Core 2.4GHz или повече, 15 MB cache или повече.	1 x E5-2620v3 2.4GHz 6 core 15MB 85W Възможност за добавяне на втори процесор.
Чипсет	Intel C610 Series Chipset или по-нов	Intel C610 Series Chipset
Памет:	Минимум 64GB, DDR4 Registered , да поддържа надграждане до минимум 512GB (min 16 DIMM Slots)	8GB DDR4 Registered, поддържа надграждане до 512GB (16 DIMM Slots)
Дисков контролер:	SAS/SATA RAID контролер, с поддръжка на минимум RAID (0/1/1+0/5/5+0) с минимум 1GB енерго-независима памет (тип Flash). Да поддържа надграждане до RAID 6	HPE Smart Array P440/2GB FBWC 12Gb 1-port Int SAS Controller с поддръжка на RAID (0/1/1+0/5/5+0/6)
Дисково пространство:	2 x 450GB SAS 10k HDD с възможност за подмяна без спиране на сървъра (hot-plug) Да поддържа минимум 8 диска 2,5" с възможност за разширение до 16 диска Да поддържа SSD дискове	2 x HPE 450GB SAS 12G Enterprise 15K SFF (2.5in) SC HDD с възможност за подмяна без спиране на сървъра (hot-plug) Моддържа 8 диска 2,5" с възможност за разширение до 16 диска Поддържа SSD дискове
Оптично устройство:	DVD-RW устройство	HPE 9.5mm SATA DVD-RW JackBlack G9 Optical Drive

0000007

Ethernet адаптер:	Минимум четири порта със скорост 1GbE на всеки порт и минимум 2 порта със скорост 10Gbps Base-T	HPE Ethernet 1Gb 2-Port 361i Adapter HPE Ethernet 1Gb 2-port 332T Adapter HPE Ethernet 10Gb 2-port 530T Adapter
HBA адаптер за връзка със SAN:	Минимум два еднопортови вградени 8 гигабитови Fiber Channel адаптери	2 x HPE 81E 8Gb 1-port PCIe Fibre Channel Host Bus Adapter
Модул за надеждна платформа	Да поддържа TPM, UEFI, APCI 2.0 и пароли на поне 2 нива	Поддържа TPM, UEFI, APCI 2.0 и пароли на 2 нива
PCI функционалност:	Минимум 3 вградени PCI-E 3.0 слота за разширение x8. Възможност за добавяне на разширител за допълнителни слотове - x8, x16, FlexLOM	3 вградени PCI-E 3.0 слота за разширение x8. Възможност за добавяне на разширител за допълнителни слотове - x8, x16, FlexLOM
Вграден слот за ОС или виртуализационна платформа	Поне един microSD слот	Един microSD слот
Управление:	Вграден чип с отделен обособен RJ-45 порт за отдалечено управление и софтуер с графична конзола към него	Вграден чип HPE iLO (Firmware HPE iLO4 2.0 or later) 2GB NAND с отделен обособен RJ-45 порт за отдалечено управление и софтуер с графична конзола към него
Комплект елементи за вграждане в 19" шкаф:	От производителя, с включени телескопични релси	От производителя, с включени телескопични релси
Вентилатори:	Резервирани N+1 с възможност за подмяна без спиране на сървъра (hot-plug)	Резервирани 4 или 5 с възможност за подмяна без спиране на сървъра (hot-plug)
Захранване:	Резервирани захранвания, Gold-certified 80 Plus power efficiency или по-добри с възможност за подмяна без спиране на сървъра (hot-plug)	HPE 900W Redundant Power Supply Gold-certified 80 Plus power efficiency
Поддръжка	Минимум 6 години на място, 24 x 7, с реакция до 4 часа и ремонт до 48 часа	6 години на място, 24 x 7, с реакция до 4 часа и ремонт до 48 часа
Други	Моделът да бъде сертифициран за Microsoft Windows Server	Сертифициран за работа и със следните ОС Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) VMware ClearOS
	Rack-mount сървър 4	HPE ProLiant DL160 Generation9 (Gen9)
Размери:	1U rackmount	1U rackmount
Процесори:	1 x Intel four core 2.4 GHz, 10 MB cache или повече. Възможност за добавяне на втори процесор	1 x Intel four core 2.4 GHz, 10 MB cache или повече. Възможност за добавяне на втори процесор
Чипсет	Intel C610 Series Chipset или по-нов	Intel C610 Series Chipset или по-нов
Памет:	Минимум 64GB, DDR4 Registered, да поддържа надграждане до минимум 512GB (min 16 DIMM Slots)	Минимум 64GB, DDR4 Registered, да поддържа надграждане до минимум 512GB (min 16 DIMM Slots)
Дисков контролер:	Вграден SAS/SATA RAID контролер, с поддръжка на минимум RAID (0/1/1+0/5/5+0) с минимум 1GB енерго-независима памет (тип Flash). Да поддържа надграждане до RAID 6	Вграден SAS/SATA RAID контролер, с поддръжка на минимум RAID (0/1/1+0/5/5+0) с минимум 1GB енерго-независима памет (тип Flash). Да поддържа надграждане до RAID 6
Дисково пространство:	2 x 450GB SAS 10k HDD с възможност за подмяна без спиране на сървъра (hot-plug) Да поддържа минимум 8 диска 2,5"	2 x 450GB SAS 10k HDD с възможност за подмяна без спиране на сървъра (hot-plug) Да поддържа минимум 8 диска 2,5"
Оптично устройство:	DVD-RW устройство	DVD-RW устройство
Модул за надеждна платформа	Да поддържа TPM, UEFI, APCI 2.0 и пароли на поне 2 нива	Да поддържа TPM, UEFI, APCI 2.0 и пароли на поне 2 нива
Ethernet адаптер:	Четири порта със скорост 1GbE на всеки порт и 2 порта със скорост 10Gbps Base-T	Четири порта със скорост 1GbE на всеки порт и 2 порта със скорост 10Gbps Base-T
PCI функционалност:	Минимум 2 вградени PCI-E 3.0 слота за разширение - 1-x8 и 1-x16	Минимум 2 вградени PCI-E 3.0 слота за разширение - 1-x8 и 1-x16
Управление:	Вграден чип с отделен обособен RJ-45 порт за отдалечено управление и софтуер с графична конзола към него	Вграден чип с отделен обособен RJ-45 порт за отдалечено управление и софтуер с графична конзола към него
Комплект елементи за вграждане в 19" шкаф:	От производителя, с включени телескопични релси	От производителя, с включени телескопични релси

Поддръжка	Минимум 3 години на място, 24 x 7, с реакция до 4 часа и ремонт до 48 часа	Минимум 3 години на място, 24 x 7, с реакция до 4 часа и ремонт до 48 часа
Други	Моделът да бъде сертифициран за Microsoft Windows Server	Моделът е сертифициран за Microsoft Windows Server
	Шаси за блейд сървъри	HPE BladeSystem c7000 Enclosure
Капацитет:	Да побира не по-малко от 16 сървъра, с възможност за поставяне на минимум 8 модули за комуникация	Побира до 16 сървъра, с възможност за поставяне на до 8 модули за комуникация
Размери:	Не повече от 10U	10U
Захранвания:	N+1 (при пълно със сървъри шаси) резервирани заменяеми по време на работа захранващи модули, където N е не по-малко от 5	N+1 (при пълно със сървъри шаси) резервирани заменяеми по време на работа захранващи модули, където N е 6
Охлаждане:	N+1 (при пълно със сървъри шаси) резервирани, заменяеми по време на работа вентилатори, способни да поемат охлаждането на шасито при пълно натоварване, където N е не по-малко от 8!	N+1 (при пълно със сървъри шаси) резервирани, заменяеми по време на работа вентилатори, способни да поемат охлаждането на шасито при пълно натоварване, където N е 10
Брой поддръжани архитектури:	Да поддържа поне 2 различни вида архитектура на блейд сървърите, които могат да се поставят в него	Поддържа повече от два различни вида архитектура на блейд сървърите, които могат да се поставят в него BL460, BL660, Blade Workstations и други
Ethernet свързаност:	Инсталирани минимум 2 модула за мрежова свързаност от тип Ethernet, работещи на 1Gbps на всички портове и/или 10Gbps Възможност за поставяне на поне 8 модула за мрежова свързаност от тип Ethernet, работещи на 1Gbps, и/или 10Gbps	Инсталирани 2 модула за мрежова свързаност от тип Ethernet HPE 6125G Ethernet Blade Switch работещи на 1Gbps на всички портове. Възможност за поставяне на до 8 модула за мрежова свързаност от тип Ethernet, работещи на 1Gbps, и/или 10Gbps
SAN свързаност:	Възможност за поставяне на модули за SAN свързаност от тип Fiber Channel, работещи на 8Gbps на всички портове. Модулите да имат вътрешни портове за свързаност със всеки един блейд сървър в шасито	Има възможност за поставяне на модули за SAN свързаност от тип Fiber Channel, работещи на 8Gbps на всички портове. Модулите имат вътрешни портове за свързаност със всеки един блейд сървър в шасито.
Converged Infrastructure свързаност:	Инсталирани минимум 2 модула за свързаност, поддържащи Fiber Channel, Fiber Channel over Ethernet и iSCSI протоколи за връзка на сървърите с външен SAN или дисков масив/и. Модулите да имат вътрешни портове за свързаност със всеки един блейд сървър в шасито	Инсталирани 2 модула HPE Virtual Connect FlexFabric-20/40 F8 Module for c-Class BladeSystem за свързаност, поддържащи Fiber Channel, Fiber Channel over Ethernet и iSCSI протоколи за връзка на сървърите с външен SAN или дисков масив/и. Модулите имат вътрешни портове за свързаност със всеки един блейд сървър в шасито
Управление:	Шасито да разполага резервирани модули за отдалечено управление и наблюдение на всички компоненти на шасито, сървърите и модулите за свързаност	Шасито разполага с резервирани модули за отдалечено управление и наблюдение на всички компоненти на шасито, сървърите и модулите за свързаност - BladeSystem Onboard Administrator
Диагностика:	Възможност за записване на генерирани грешки.	Има възможност за записване на генерирани грешки.
Резервираност:	Всички компоненти в шасито да са сменяеми по време на работа и максимално резервирани, за да се избегне съществуването на единична точка на отказ	Всички компоненти в шасито са сменяеми по време на работа и максимално резервирани, за да се избегне съществуването на единична точка на отказ
Поддръжка	Минимум 3 години на място, 24 x 7, с реакция до 4 часа и ремонт до 48 часа	3 години на място, 24 x 7, с реакция до 4 часа и ремонт до 48 часа
	Блейд сървър	HPE ProLiant BL460c Gen9 Server Blade
Размери:	Напълно съвместими с предлаганото блейд шаси	Напълно съвместими с предлаганото блейд шаси
Процесори:	Intel Six Core 2.4GHz или повече, 15 MB L3cache или повече	HPE BL460c Gen9 Intel® Xeon® E5-2620v3 (2.4GHz/6-core/15MB/85W)
Памет:	Минимум 32GB Registered DDR4, да поддържа надграждане до минимум 512GB (min 16 DIMM Slots)	32GB Registered DDR4, поддържа надграждане минимум 2TB (min 16 DIMM Slots)
Дисков контролер:	Вграден SAS/SATA RAID контролер, с поддръжка на минимум RAID 0,1,10	Вграден SAS/SATA RAID контролер, с поддръжка на RAID 0,1,10
Дисково пространство:	2 x 450GB SAS 10k HDD с възможност за подмяна без спиране на сървъра (hot-plug)	2 x HPE 450GB SAS 12G Enterprise 15K SFF (2.5in) SC HDD с възможност за подмяна без спиране на сървъра (hot-plug)
Converged адаптер:	Два двупортови converged (1/10GbE, 4/8Gbps FC, 1/10Gbps FCoE, 1/10Gbps iSCSI) адаптери	2 x 10Gb 2-port HPE FlexFabric FLB
Оптичен адаптер:	Възможност за инсталиране на двупортов Fiber Channel адаптер 8Gbps	Има възможност за инсталиране на двупортов Fiber Channel адаптер 8Gbps
Модул за надеждна платформа	Да поддържа TPM	Поддържа TPM

Управление:	Възможност за отдалечено управление/наблюдение	Има възможност за отдалечено управление/наблюдение
Диагностика:	Светлинна диагностика при възникване на проблем, софтуер за наблюдение, вградена диагностика, софтуер за събиране на сервизна информация	Светлинна диагностика при възникване на проблем, софтуер за наблюдение, вградена диагностика, софтуер за събиране на сервизна информация
Поддръжка	Минимум 3 години на място, 24 x 7, с реакция до 4 часа и ремонт до 48 часа	3 години на място, 24 x 7, с реакция до 4 часа и ремонт до 48 часа
Разширение на диковото пространство на съществуващи сървъри HP ProLiant		DAS P/N: AJ940A
Дисков масив тип DAS - тип1	<p>Сторидж, тип DAS P/N: AJ940A</p> <p>SAS Interface Two (2) integrated 12Gb SAS IO Modules</p> <p>Твърд диск, брой Supports up to 12x 3.5 inch SAS or SATA drives</p> <p>Maximum Disk Drives Up to eight (8) enclosures from a single controller port</p> <p>Контролер Supported: Smart Array P421, Smart Array P431, Smart Array P822, Smart Array P721m, Smart Array P731m, Smart Array P441, H221 Host Bus Adapter, H222 Host Bus Adapter, H241 Host Bus Adapter</p> <p>Захранване 460W Common Slot Power supply</p> <p>Maximum Raw Capacity Supports up to 12 (twelve) 6G LFF SAS drives for a maximum capacity of 7.2 TB with 6G 600GB SAS drives or 72 TB with 6/12G 6 TB SAS MDL or 6/12G 6TB SATA MDL drives.</p> <p>Форм-фактор 2U</p> <p>Гаранция 36 месеца</p>	<p>Сторидж, тип DAS P/N: AJ940A</p> <p>SAS Interface Two (2) integrated 12Gb SAS IO Modules</p> <p>Твърд диск, брой Supports up to 12x 3.5 inch SAS or SATA drives</p> <p>Maximum Disk Drives Up to eight (8) enclosures from a single controller port</p> <p>Контролер Supported: Smart Array P421, Smart Array P431, Smart Array P822, Smart Array P721m, Smart Array P731m, Smart Array P441, H221 Host Bus Adapter, H222 Host Bus Adapter, H241 Host Bus Adapter</p> <p>Захранване 460W Common Slot Power supply</p> <p>Maximum Raw Capacity Supports up to 12 (twelve) 6G LFF SAS drives for a maximum capacity of 7.2 TB with 6G 600GB SAS drives or 72 TB with 6/12G 6 TB SAS MDL or 6/12G 6TB SATA MDL drives</p> <p>Форм-фактор 2U</p> <p>Гаранция 36 месеца</p>
Разширение на диковото пространство на съществуващи сървъри HP ProLiant		DAS P/N: AJ941A
Дисков масив тип DAS - тип2	<p>Сторидж, тип DAS P/N: AJ941A</p> <p>SAS Interface Two (2) integrated 12Gb SAS IO Modules</p> <p>Твърд диск, брой Supports up to 25x 2.5 inch SAS or SATA drives</p> <p>Maximum Disk Drives Up to eight (8) enclosures from a single controller port</p> <p>Контролер Supported: Smart Array P421, Smart Array P431, Smart Array P822, Smart Array P721m, Smart Array P731m, Smart Array P441, H221 Host Bus Adapter, H222 Host Bus Adapter, H241 Host Bus Adapter</p> <p>Захранване 460W Common Slot Power supply</p> <p>Maximum Raw Capacity Supports up to 25 (twenty five) 6/12G SFF SAS drives for a maximum capacity of 30 TB with 6/12G 1.2 TB SAS drives or 50 TB with 2 TB 12G SAS MDL or 1 TB 6G SATA MDL drives. D3700 also supports 6/12G SAS and 6G SATA SSD.</p> <p>Форм-фактор 2U</p> <p>Гаранция 36 месеца</p>	<p>Сторидж, тип DAS P/N: AJ941A</p> <p>SAS Interface Two (2) integrated 12Gb SAS IO Modules</p> <p>Твърд диск, брой Supports up to 25x 2.5 inch SAS or SATA drives</p> <p>Maximum Disk Drives Up to eight (8) enclosures from a single controller port</p> <p>Контролер Supported: Smart Array P421, Smart Array P431, Smart Array P822, Smart Array P721m, Smart Array P731m, Smart Array P441, H221 Host Bus Adapter, H222 Host Bus Adapter, H241 Host Bus Adapter</p> <p>Захранване 460W Common Slot Power supply</p> <p>Maximum Raw Capacity Supports up to 25 (twenty five) 6/12G SFF SAS drives for a maximum capacity of 30 TB with 6/12G 1.2 TB SAS drives or 50 TB with 2 TB 12G SAS MDL or 1 TB 6G SATA MDL drives. D3700 also supports 6/12G SAS and 6G SATA SSD.</p> <p>Форм-фактор 2U</p> <p>Гаранция 36 месеца</p>

Разширение на диковото пространство на съществуващи сървъри HP ProLiant		DAS P/N: QQ696A
Дисков масив тип DAS - тип3	Сторидж, тип DAS P/N: QQ696A SAS Interface Two (2) integrated 6Gb SAS IO Modules Твърд диск, брой Supports up to 70x 3.5 inch SAS or SATA drives Да поддържа следните: Smart Array P421, Smart Array P431, Smart Array P822, Smart Array P721m, Smart Array P731m, Smart Array P441, H221 Host Bus Adapter, H222 Host Bus Adapter, H241 Host Bus Adapter Захранване 1200W Platinum Certified 80 Plus Power supply - ,epe,lr,dkf Maximum Raw Capacity Supports up to 70 6/12G SFF SAS drives for a maximum capacity of 560TB. Да се достави с 8 диска 8TB. Форм-фактор 5U rackmount form factor Гаранция 36 месеца	Сторидж, тип DAS P/N: QQ696A SAS Interface Two (2) integrated 6Gb SAS IO Modules Твърд диск, брой Supports up to 70x 3.5 inch SAS or SATA drives Да поддържа следните: Smart Array P421, Smart Array P431, Smart Array P822, Smart Array P721m, Smart Array P731m, Smart Array P441, H221 Host Bus Adapter, H222 Host Bus Adapter, H241 Host Bus Adapter Захранване 1200W Platinum Certified 80 Plus Power supply - ,epe,lr,dkf Maximum Raw Capacity Supports up to 70 6/12G SFF SAS drives for a maximum capacity of 560TB. Съдържа 8 диска 8TB. Форм-фактор 5U rackmount form factor Гаранция 36 месеца
Дисков масив тип 1		HPE MSA 1040 Storage
Производител / марка / модел	Да се посочат	HPE MSA 1040 Storage
Възможност за разширение	Да предоставя възможност за стъпково разширяване на дисковото пространство без спиране на работа	Предоставя възможност за стъпково разширяване на дисковото пространство без спиране на работа
Контролери – интерфейс за хостовите (Front End) на предложената конфигурация	Системата да разполага с минимум 4 бр. 1GB Ethernet порта за връзка към мрежата (SAN)	Системата разполага с 4 бр. 1GB Ethernet порта за връзка към мрежата (SAN)
Контролери – кеш памет на предложената конфигурация	Минимум 4 GB инсталирана кеш памет на всеки от контролерите, предназначена за операциите по четене и запис на дисковете	6 GB инсталирана кеш памет на всеки от контролерите, предназначена за операциите по четене и запис на дисковете
Защита на кеш паметта от прекъсване на захранването на предложената конфигурация	Кеш паметта да е с независимо енергийно обезпечаване с цел съхранение на данните в нея при прекъсване на захранването	Кеш паметта е с независимо енергийно обезпечаване с цел съхранение на данните в нея при прекъсване на захранването
RAID нива на защита на данните на предложената конфигурация	Минимум поддръжка на RAID 0, 1, 10, 50 и 6	Поддръжка на RAID 0, 1, 3, 5, 10, 50 и 6
Поддържани от предложената конфигурация видове дискове	Да поддържа едновременна работа на SFF и LFF SAS дискове в една система. Дисковете да са с възможност за подмяна по време на работа (hot swap).	Поддържа едновременна работа на SFF и LFF SAS дискове в една система. Дисковете са с възможност за подмяна по време на работа (hot swap).
Максимален брой дискове при инсталиран максимален брой разширителни шасита за дискове	Системата да има възможност за разширяване поне до 99 диска	Системата има възможност за разширяване до 99 диска SFF.
Инсталирани дискове	Инсталирани мин. 4 диска 2TB 7,2K rpm SAS	Инсталирани са 4 диска 2TB 7,2K rpm SAS
Капацитет на предложената конфигурация	Мин. 5500GB използваемо дисково пространство след RAID-5 Да се посочи предлаганият обем след RAID-6	5500GB използваемо дисково пространство след RAID-5 Предлаганият обем след RAID-6 е от порядъка на 4 TB
Кабели	Дисковият масив да е комплектуван с: · всички необходими кабели за резервирано свързване на всеки от контролерите на система в SAN средата; · всички необходими кабели за свързване към електрическо захранване	Дисковият масив е комплектуван с: · всички необходими кабели за резервирано свързване на всеки от контролерите на система в SAN средата; · всички необходими кабели за свързване към електрическо захранване
Поддържани операционни системи	Минимум: Microsoft Windows Server 2016 Microsoft Windows Server 2012 Microsoft Windows Server 2012R2 Microsoft Windows Server 2008 SP2 Microsoft Windows Server Hyper-V VMware Red Hat Linux SuSE SLES	Microsoft Windows Server 2016 Microsoft Windows Server 2012 Microsoft Windows Server 2012R2 Microsoft Windows Server 2008 SP2 Microsoft Windows Server Hyper-V VMware Red Hat Linux SuSE SLES

Формат на кутията	Дисковата система да бъде за вграждане в 19" шкаф, окомплектована с всички аксесоари за монтаж от производителя 2U	Дисковата система е пригодена за вграждане в 19" шкаф, окомплектована с всички аксесоари за монтаж от производителя 2U
Инсталация и конфигурация	Изпълнителят се задължава да инсталира оборудването, предмет на настоящата доставка, както и да извърши първоначална конфигурация на системата съгласно указанията и нуждите на Възложителя	Изпълнителят се задължава да инсталира оборудването, предмет на настоящата доставка, както и да извърши първоначална конфигурация на системата съгласно указанията и нуждите на Възложителя
Поддръжка	Да бъде осигурена поддръжка 24 часа 7 дни в седмицата с време за реакция 4 часа от производителя. Изпълнителят да разполага със собствен сервизен център обслужващ предложеното устройство	Ще бъде осигурена поддръжка 24 часа 7 дни в седмицата с време за реакция 4 часа от производителя. Изпълнителят разполага със собствен сервизен център обслужващ предложеното устройство
Гаранция	мин. три години	Три години с възможност за разширение
	Дисков масив тип 2	HPE MSA 2040 Storage
Производител / марка / модел	Да се посочат	HPE MSA 2040 Storage
Архитектура	Архитектура с дублиране на всички компоненти, без единична точка на отказ. Да позволява подмяна/надграждане на всеки един компонент без спиране на работата	Архитектура с дублиране на всички компоненти, без единична точка на отказ. Позволява подмяна/надграждане на всеки един компонент без спиране на работата
Възможност за разширение	Да предоставя възможност за стъпково разширяване на дисковото пространство без спиране на работа	Предоставя възможност за стъпково разширяване на дисковото пространство без спиране на работа
Контролери на предложената конфигурация	Напълно дублирана архитектура с автоматично балансиране на натоварването и динамично разпределение на входно-изходните заявки между компонентите на системата. Контролерите да са hot-plug.	Напълно дублирана архитектура с автоматично балансиране на натоварването и динамично разпределение на входно-изходните заявки между компонентите на системата. Контролерите са hot-plug.
Контролери – интерфейс за хостовете (Front End) на предложената конфигурация	Системата да разполага с минимум 4 бр. 1GB Ethernet порта за връзка към мрежата (SAN)	Системата разполага с 8 бр. 1GB Ethernet порта за връзка към мрежата (SAN)
Контролери – кеш памет на предложената конфигурация	Минимум 6 GB инсталирана кеш памет на всеки от контролерите, предназначена за операциите по четене и запис на дисковете	6 GB инсталирана кеш памет на всеки от контролерите, предназначена за операциите по четене и запис на дисковете
Защита на кеш паметта от прекъсване на захранването на предложената конфигурация	Кеш паметта да е с независимо енергийно обезпечаване с цел съхранение на данните в нея при прекъсване на захранването	Кеш паметта е с независимо енергийно обезпечаване с цел съхранение на данните в нея при прекъсване на захранването
RAID нива на защита на данните на предложената конфигурация	Минимум поддръжка на RAID 0, 1, 10, 50 и 6	Поддръжка на RAID 0, 1, 3, 5, 10, 50 и 6
Поддържани от предложената конфигурация видове дискове	Да поддържа едновременна работа на SFF и LFF SAS и Solid State дискове в една система. Дисковете да са с възможност за подмяна по време на работа (hot swap).	Поддържа едновременна работа на SFF и LFF SAS и Solid State дискове в една система. Дисковете са с възможност за подмяна по време на работа (hot swap).
Максимален брой дискове при инсталиран максимален брой разширителни шасита за дискове	Системата да има възможност за разширяване поне до 199 диска	Системата да има възможност за разширяване до 199 диска SFF
Инсталирани дискове	Инсталирани мин. 6 диска 4TB 7,2K rpm SAS	Инсталирани 6 диска 4TB 7,2K rpm SAS
Капацитет на предложената конфигурация	Мин. 18 500GB използваемо дисково пространство след RAID-5 Да се посочи предлаганият обем след RAID-6	Конфигурацията предоставя 18 500GB използваемо дисково пространство след RAID-5 Предлаганият обем след RAID-6 е от порядъка на 16TB
Максимален поддържан размер на едно логическо устройство (LUN-size)	мин. 128TB Да се посочи	128TB
Максимален брой поддържани логическо устройство (LUNs)	мин. 512 логически устройства (LUNs)	512 логически устройства (LUNs)
Кабели	Дисковият масив да е комплектуван с: · всички необходими кабели за резервирано свързване на всеки от контролерите на система в SAN средата; · всички необходими кабели за свързване към електрическо захранване	Дисковият масив е комплектуван с: · всички необходими кабели за резервирано свързване на всеки от контролерите на система в SAN средата; · всички необходими кабели за свързване към електрическо захранване

Поддържани операционни системи	Минимум:Microsoft Windows Server 2016 Microsoft Windows Server 2012 Microsoft Windows Server 2012R2 Microsoft Windows Server 2008 SP2 Microsoft Windows Server Hyper-V VMware Red Hat Linux SuSE SLES	Минимум:Microsoft Windows Server 2016 Microsoft Windows Server 2012 Microsoft Windows Server 2012R2 Microsoft Windows Server 2008 SP2 Microsoft Windows Server Hyper-V VMware Red Hat Linux SuSE SLES
Формат на кутията	Дисковата система да бъде за вграждане в 19" шкаф, окомплектована с всички аксесоари за монтаж от производителя 2U	Дисковата система е пригодена за вграждане в 19" шкаф, окомплектована с всички аксесоари за монтаж от производителя 2U
Инсталация и конфигурация	Изпълнителят се задължава да инсталира оборудването, предмет на настоящата доставка, както и да извърши първоначална конфигурация на системата съгласно указанията и нуждите на Възложителя	Изпълнителят се задължава да инсталира оборудването, предмет на настоящата доставка, както и да извърши първоначална конфигурация на системата съгласно указанията и нуждите на Възложителя
Поддръжка	Да бъде осигурена поддръжка 24 часа 7 дни в седмицата с време за реакция 4 часа от производителя. Изпълнителят да разполага със собствен сервизен център обслужващ предложеното устройство	Ще бъде осигурена поддръжка 24 часа 7 дни в седмицата с време за реакция 4 часа от производителя. Изпълнителят разполага със собствен сервизен център обслужващ предложеното устройство
Гаранция	Мин. три години	Три години с възможност за разширение
	Дисков масив тип 3	HPE MSA 2040 Storage
Производител / марка / модел	Да се посочат	HPE MSA 2040 Storage
Архитектура	Архитектура с дублиране на всички компоненти, без единична точка на отказ. Да позволява подмяна/надграждане на всеки един компонент без спиране на работата	Архитектура с дублиране на всички компоненти, без единична точка на отказ. Позволява подмяна/надграждане на всеки един компонент без спиране на работата
Възможност за разширение	Да предоставя възможност за стъпково разширяване на дисковото пространство без спиране на работа	Предоставя възможност за стъпково разширяване на дисковото пространство без спиране на работа
Контролери на предложената конфигурация	Напълно дублирана архитектура с автоматично балансиране на натоварването и динамично разпределение на входно-изходните заявки между компонентите на системата. Контролерите да са hot-plug.	Напълно дублирана архитектура с автоматично балансиране на натоварването и динамично разпределение на входно-изходните заявки между компонентите на системата. Контролерите са hot-plug.
Контролери – интерфейс за хостовете (Front End) на предложената конфигурация	Системата да разполага с минимум 4 бр. 1GB Ethernet порта за връзка към мрежата (SAN) с нужният брой прилежащи трансивери	Системата разполага с 8 бр. 1GB Ethernet порта за връзка към мрежата (SAN) с нужният брой прилежащи трансивери
Контролери – кеш памет на предложената конфигурация	Минимум 6 GB инсталирана кеш памет на всеки от контролерите, предназначена за операциите по четене и запис на дисковете. Да поддържа Automated Sub-Lun Tiering, SSD virtual disk group за запис и четене и SSD Read Cache функционалности.	6 GB инсталирана кеш памет на всеки от контролерите, предназначена за операциите по четене и запис на дисковете. Поддържа Automated Sub-Lun Tiering, SSD virtual disk group за запис и четене и SSD Read Cache функционалности.
Защита на кеш паметта от прекъсване на захранването на предложената конфигурация	Кеш паметта да е с независимо енергийно обезпечаване с цел съхранение на данните в нея при прекъсване на захранването	Кеш паметта е с независимо енергийно обезпечаване с цел съхранение на данните в нея при прекъсване на захранването
RAID нива на защита на данните на предложената конфигурация	Минимум поддръжка на RAID 0, 1, 5, 6 и 10	Поддръжка на RAID 0, 1, 3, 5, 10, 50 и 6
Поддържани от предложената конфигурация видове дискове	Да поддържа едновременна работа на SFF и LFF SAS и Solid State дискове в една система. Дисковете да са с възможност за подмяна по време на работа (hot swap).	Поддържа едновременна работа на SFF и LFF SAS и Solid State дискове в една система. Дисковете са с възможност за подмяна по време на работа (hot swap).
Максимален брой дискове при инсталиран максимален брой разширителни шасита за дискове	Системата да има възможност за разширяване поне до 199 диска	Системата да има възможност за разширяване до 199 диска SFF
Инсталирани дискове	Инсталирани мин. 15 диска 10TB 12Gbps 7,2K rpm SAS 512e	Инсталирани 15 диска 10TB 12Gbps 7,2K rpm SAS 512e
Максимален поддържан размер на едно логическо устройство (LUN-size)	Мин 140TB Да се посочи	140TB

330000

Максимален брой поддържани логическо устройство (LUNs)	мин. 512 логически устройства (LUNs)	512 логически устройства (LUNs)
Кабели	Дисковият масив да е комплектуван с: · всички необходими оптични кабели за резервирано свързване на всеки от контролерите на система в SAN средата; · всички необходими кабели за свързване към електрическо захранване	Дисковият масив е комплектуван с: · всички необходими кабели за резервирано свързване на всеки от контролерите на система в SAN средата; · всички необходими кабели за свързване към електрическо захранване
Поддържани операционни системи	Минимум: Microsoft Windows Server 2012 Microsoft Windows Server 2012R2 Microsoft Windows Server 2008 SP2 Microsoft Windows Server Hyper-V VMware Red Hat Linux SuSE SLES	Минимум: Microsoft Windows Server 2016 Microsoft Windows Server 2012 Microsoft Windows Server 2012R2 Microsoft Windows Server 2008 SP2 Microsoft Windows Server Hyper-V VMware Red Hat Linux SuSE SLES
Формат на кутията	Дисковата система да бъде за вграждане в 19" шкаф, окомплектована с всички аксесоари за монтаж от производителя 2U	Дисковата система е пригодена за вграждане в 19" шкаф, окомплектована с всички аксесоари за монтаж от производителя 2U
Инсталация и конфигурация	Изпълнителят се задължава да инсталира оборудването, предмет на настоящата доставка, както и да извърши първоначална конфигурация на системата съгласно указанията и нуждите на Възложителя	Изпълнителят се задължава да инсталира оборудването, предмет на настоящата доставка, както и да извърши първоначална конфигурация на системата съгласно указанията и нуждите на Възложителя
Поддръжка	Да бъде осигурена поддръжка 24 часа 7 дни в седмицата с време за реакция 4 часа от производителя. Изпълнителят да разполага със собствен сервизен център обслужващ предложеното устройство	Ще бъде осигурена поддръжка 24 часа 7 дни в седмицата с време за реакция 4 часа от производителя. Изпълнителят разполага със собствен сервизен център обслужващ предложеното устройство
Гаранция	Минимум шест години	Шест години с възможност за разширение
Сървърен шкаф 1		HPE G2 Advanced Series Rack
Височина:	42U	42U
Дълбочина:	Достатъчна за монтиране на предложените rackmount сървери, но не по-малка от дълбочина 1075 мм	Достатъчна за монтиране на предложените rackmount сървери с дълбочина 1075 мм
Охлаждане:	Да осигурява оптимално охлаждане при максимално запълване на шкафа с устройства, включително и многопроцесорни сървъри, отделящи повече топлина	Осигурява оптимално охлаждане при максимално запълване на шкафа с устройства, включително и многопроцесорни сървъри, отделящи повече топлина
Захранващи модули:	Минимум два захранващи модули (PDU). Всеки един от тях с минимум 28 броя ел. гнезда за захранване на оборудване	Два захранващи модули (PDU). Всеки един от тях с 28 броя ел. гнезда за захранване на оборудване
Поддръжка	Минимум 3 години на място, с реакция на следващия работен ден	3 години на място, с реакция на следващия работен ден
	Конзолен комутатор 16 порта с клавиатура и дисплей, оборудван с необходимите интерфейсни кабел	Конзолен комутатор 16 порта с клавиатура и дисплей, оборудван с необходимите интерфейсни кабел - HPE LCD8500 1U Rackmount Console Kit и HPE 0x2x16 G3 KVM Analog Console Switch
Сървърен шкаф 2		Сървърен шкаф 16U
Височина:	16U	16U
W x D мм:	600x600	600x600
Монтаж	свободно стоящ	свободно стоящ
Сървърен шкаф 3		HPE G2 Advanced Series Rack
Височина:	22U с дълбочина 1075 мм	22U с дълбочина 1075 мм
Дълбочина:	Достатъчна за монтиране на предложените rackmount сървери, но не по-малка от дълбочина 1075 мм	Достатъчна за монтиране на предложените rackmount сървери с дълбочина 1075 мм
Охлаждане:	Да осигурява оптимално охлаждане при максимално запълване на шкафа с устройства, включително и многопроцесорни сървъри, отделящи повече топлина	Осигурява оптимално охлаждане при максимално запълване на шкафа с устройства, включително и многопроцесорни сървъри, отделящи повече топлина

11111111

Захранващи модули:	Минимум два захранващи модули (PDU). Всеки един от тях с минимум 28 броя ел. гнезда за захранване на оборудване	Два захранващи модули (PDU). Всеки един от тях с 28 броя ел. гнезда за захранване на оборудване
	Конзолен комутатор 16 порта с клавиатура и дисплей, оборудван с необходимите интерфейсни кабели	Конзолен комутатор 16 порта с клавиатура и дисплей, оборудван с необходимите интерфейсни кабел - HPE LCD8500 1U Rackmount Console Kit и HPE 0x2x16 G3 KVM Analog Console Switch
Поддръжка	Минимум 3 години на място, с реакция на следващия работен ден	3 години на място, с реакция на следващия работен ден
МРЕЖОВО И КОМУНИКАЦИОННО ОБОРУДВАНЕ		
Защитна стена, притежаваща следните минимални технически характеристики:		
Защитната стена да притежава следните модули и интерфейси:		Защитна стена Cisco ASA5516-FPWR-K9 + L-ASA5516-TAMC
8 Gigabit Ethernet интерфейса;		Защитната стена притежава следните модули и интерфейси:
Софтуерен лиценз, позволяващ IPS		8 Gigabit Ethernet интерфейс;
Софтуерен лиценз, позволяващ филтриране на URL		Софтуерен лиценз, позволяващ IPS
Софтуерен лиценз, позволяващ проверка за наличие на Malware в изтеглените файлове, с възможност за ретроспективен анализ		Софтуерен лиценз, позволяващ филтриране на URL
Включени лицензи за система за управление на IPS функционалността, ако е необходима отделна система		Софтуерен лиценз, позволяващ проверка за наличие на Malware в изтеглените файлове, с възможност за ретроспективен анализ
		Включени лицензи за система за управление на IPS функционалността, с възможност за инсталация на самото устройство или на отделна система
Пропускателна способност в режим защитна стена от ново поколение: минимум 840 Mbps		Пропускателна способност в режим защитна стена от ново поколение: 850 Mbps
Мултипроколонна пропускателна способност в режим IPS: мин. 450 Mbps		Мултипроколонна пропускателна способност в режим IPS: 450 Mbps
VPN пропускателна способност: мин. 250 Mbps		VPN пропускателна способност: 250 Mbps
Брой IPSec VPN тунелни сесии: мин. 300		Брой IPSec VPN тунелни сесии: 300
Поддръжка на потребители: с лиценз за неограничен брой потребители		Поддръжка на потребители: с лиценз за неограничен брой потребители
Скорост за отваряне на нови сесии за секунда: мин. 18,000 нови сесии за секунда		Скорост за отваряне на нови сесии за секунда: 20,000 нови сесии за секунда
Брой едновременни сесии: мин. 250,000		Брой едновременни сесии: 250,000
Брой физически интерфейси: минимум 8 броя 10/100/1000 Mbit Ethernet		Брой физически интерфейси: 8 броя 10/100/1000 Mbit Ethernet
Отделен Ethernet-базиран 10/100/1000 интерфейс за управление		Отделен Ethernet-базиран 10/100/1000 интерфейс за управление
Брой виртуални интерфейси: мин. 100		Брой виртуални интерфейси: 100
Разделяне на устройството на виртуални подустройства (VRF, Context или подобни): минимум 2		Разделяне на устройството на виртуални подустройства (VRF, Context или подобни): 2
Допълнителни интерфейси: мин. USB 2.0 порт, сериен порт, слот за SSD памет.		Допълнителни интерфейси: USB 2.0 порт, сериен порт, слот за SSD памет.
SSD памет: мин. 100 GB		SSD памет: 100 GB
Защитната стена да разполага със следните ресурси: поне 8GB оперативна памет и 8GB флаш		Защитната стена разполага със следните ресурси: 8GB оперативна памет и 8GB флаш
Управление: Поддръжка на Telnet, SNMP, CLI за отдалечен достъп		Управление: Поддръжка на Telnet, SNMP, CLI за отдалечен достъп
Устройството да поддържа графичен интерфейс за управление		Устройството поддържа графичен интерфейс за управление
Анализ и динамична преконфигурация на политиката за достъп		Анализ и динамична преконфигурация на политиката за достъп
Автоматично прехвърляне на трафика към резервна защитна стена		Автоматично прехвърляне на трафика към резервна защитна стена
Размер: Да може да се монтира в 19" комуникационен шкаф, размер 1U, с включени елементи за монтиране в шкаф		Размер: Може да се монтира в 19" комуникационен шкаф, размер 1U, с включени елементи за монтиране в шкаф
Гаранция: 3 години със срок за отстраняване на проблем до следващ работен ден		Гаранция: 3 години със срок за отстраняване на проблем до следващ работен ден
Офертата да включва абонамент за 3 години за автоматично обновяване на IPS дефинициите		Офертата включва абонамент за 3 години за автоматично обновяване на IPS дефинициите
		http://www.cisco.com/c/en/us/products/collateral/security/asa-5500-series-next-generation-firewalls/datasheet-c78-733916.html
Комутатор тип 1 за връзка със сървъри, притежаващ следните минимални технически характеристики:		Комутатор Cisco WS-C3850-48T-S
Комутаторът да притежава следните интерфейси:		Комутаторът притежава следните интерфейси:
48 Етернет порта 10/100/1000Mbps с автоматично разпознаване на скоростта и дуплекса;		48 Етернет порта 10/100/1000Mbps с автоматично разпознаване на скоростта и дуплекса;
Слот за допълнителен разширителен модул;		Слот за допълнителен разширителен модул;

Модул с 4 x Small Form-Factor Pluggable (SFP) базирани порта;	Модул с 4 x Small Form-Factor Pluggable (SFP) базирани порта;
Възможност за включване на второ токозахранване за резервиране – вградено в комутатора, с възможност за подмяна без спиране на комутатора;	Възможност за включване на второ токозахранване за резервиране – вградено в комутатора, с възможност за подмяна без спиране на комутатора;
Възможност за подмяна на вентилаторен блок без спиране на комутатора;	Възможност за подмяна на вентилаторен блок без спиране на комутатора;
Възможност за включването на комутатора в стек;	Възможност за включването на комутатора в стек;
Възможност за споделяне на захранванията между членовете на стека.	Възможност за споделяне на захранванията между членовете на стека.
Комутаторът да притежава следната производителност и функционалност.	Комутаторът притежава следната производителност и функционалност.
Производителност (64 byte frames) – не по-лоша от 72 Mpps	Производителност (64 byte frames) – 130.95 Mpps
Скорост на комутиращата матрица – поне 96 Gbps неблокируема, за да осигури едновременна максимална двупосочна скорост на всички портове	Скорост на комутиращата матрица – 176 Gbps неблокируема, за да осигури едновременна максимална двупосочна скорост на всички портове
Поддръжка на Jumbo Frames (9216 Bytes) за всички портове	Поддръжка на Jumbo Frames (9216 Bytes) за всички портове
Да поддържа MAC таблица с минимум 32,000 MAC адреса;	Поддържа MAC таблица 32,000 MAC адреса;
Поддръжани протоколи и услуги	Поддръжани протоколи и услуги
802.3ad Link Aggregation Control Protocol (LACP)	802.3ad Link Aggregation Control Protocol (LACP)
IEEE 802.1w Rapid Spanning Tree Protocol	IEEE 802.1w Rapid Spanning Tree Protocol
IEEE 802.1d Spanning Tree Protocol – поддръжка на мин. 1500 Spanning Tree Instances	IEEE 802.1d Spanning Tree Protocol – Практически без ограничение
IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)	IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
Откриване на еднопосочни връзки	Откриване на еднопосочни връзки
Internet Group Management Protocol V3 (IGMP) Snooping	Internet Group Management Protocol V3 (IGMP) Snooping
Hardware-based storm control	Hardware-based storm control
Поддръжка на 4096 едновременно активни 802.1Q VLAN-а с възможност за задаване на идентификатори от 1 до 4096	Поддръжка на 4096 едновременно активни 802.1Q VLAN-а с възможност за задаване на идентификатори от 1 до 4096
802.1p CoS и DSCP класификация на трафика с възможност за маркиране и прекласифициране на база	802.1p CoS и DSCP класификация на трафика с възможност за
IEEE 802.1x автентикация и оторизация с прилагането на динамични VLAN и ACL в зависимост от профила на потребителя	IEEE 802.1x автентикация и оторизация с прилагането на динамични VLAN и ACL в зависимост от профила на потребителя
IEEE 802.1x автентикация и оторизация на устройства по MAC адреси	IEEE 802.1x автентикация и оторизация на устройства по MAC адреси
Възможност за асоциирането на потребители без 802.1x възможности в предварително определен VLAN	Възможност за асоциирането на потребители без 802.1x възможности в предварително определен VLAN
Листи за филтриране на трафика на база порт и на база VLAN.	Листи за филтриране на трафика на база порт и на база VLAN.
Поддръжка на SSHv2 и SNMPv3	Поддръжка на SSHv2 и SNMPv3
TACACS+ и RADIUS автентикация	TACACS+ и RADIUS автентикация
IEEE 802.1X MAC-Auth-Bypass	IEEE 802.1X MAC-Auth-Bypass
Trusted Boundary	Trusted Boundary
Spanning-Tree Root Guard	Spanning-Tree Root Guard
IGMP filtering	IGMP filtering
Управление: Поддръжка на SSHv2 и SNMPv3	Управление: Поддръжка на SSHv2 и SNMPv3
Монтаж в 19" шкаф	Монтаж в 19" шкаф
Гаранция: 3 години със срок за отстраняване на проблем до следващ работен ден	Гаранция: 3 години със срок за отстраняване на проблем до следващ работен ден
	http://www.cisco.com/c/en/us/products/collateral/switches/catalyst-3850-series-switches/data_sheet_c78-720918.html
Маршрутизатор Тип 1, притежаващ следните минимални технически характеристики	Маршрутизатор Cisco ISR4431-VSEC/K9
Маршрутизаторът да притежава следните модули и интерфейси:	Маршрутизаторът да притежава следните модули и интерфейси:
мин. 4 броя 10/100/1000Base-T интерфейса с възможност за ползване на меден или оптичен кабел (чрез SFP модул)	Притежава 4 броя 10/100/1000Base-T интерфейса с възможност за ползване на меден или оптичен кабел (чрез SFP модул)
1 порт E1 с поддръжка на мин. 30 гласови канала	1 порт E1 с поддръжка на 30 гласови канала
Специализиран хардуерен модул за IPSec VPN криптиране	Специализиран хардуерен модул за IPSec VPN криптиране
Специализиран хардуерен модул за гласова обработка за едновременна обработка на 64 гласови канала	Специализиран хардуерен модул за гласова обработка за едновременна обработка на 64 гласови канала

Да поддържа разширяване на производителността чрез софтуерен лиценз без необходимост от добавяне на хардуерни модули	Поддържа разширяване на производителността чрез софтуерен лиценз без необходимост от добавяне на хардуерни модули
Да притежава резервирано променливотоково захранване	Притежава резервирано променливотоково захранване
Да разполага с многоядрен процесор	Разполага с многоядрен процесор
Маршрутизаторът да може да балансира трафика през паралелни пътища с различна скорост и дължина, използвайки максимално капацитета на линиите	Маршрутизаторът може да балансира трафика през паралелни пътища с различна скорост и дължина, използвайки максимално капацитета на линиите
Маршрутизаторът да е модулен и да има поне 3 слота, поддържащи различни мрежови интерфейси, с възможност за добавяне/изваждане без рестартиране на маршрутизатора	Маршрутизаторът е модулен и има 3 слота, поддържащи различни мрежови интерфейси, с възможност за добавяне/изваждане без рестартиране на маршрутизатора
Да има минимум 8 GB флаш памет	Има 8 GB флаш памет
Да има минимум 4096 MB DRAM	Има 4096 MB DRAM
Да поддържа функционалност на резервна учреденска телефонна централа, управляваща до 1200 IP телефона по протокол SIP или аналогичен	Поддържа функционалност на резервна учреденска телефонна централа, управляваща до 1200 IP телефона по протокол SIP или аналогичен
Маршрутизаторът да може да поддържа захранване по стандарт на IEEE 802.3af	Маршрутизаторът може да поддържа захранване по стандарт на IEEE 802.3af
Да поддържа NAT	Поддържа NAT
Да има 2 USB слота за запазване на конфигурацията и криптиращи ключове	Има 2 USB слота за запазване на конфигурацията и криптиращи ключове
Да поддържа методи за аутентикация TACACS+ и RADIUS	Поддържа методи за аутентикация TACACS+ и RADIUS
Да има поддръжка на MLPPP	Има поддръжка на MLPPP
Да поддържат BGP v4 съгласно следните IETF стандарти RFC 1771, 1966, 1997, 2439, 2547, 2796	Поддържа BGP v4 съгласно следните IETF стандарти RFC 1771, 1966, 1997, 2439, 2547, 2796
Към маршрутизатора да може да се добавят следните модули: VoIP, ISDN BRI/PRI, Fast Ethernet, Gigabit Ethernet	Към маршрутизатора може да се добавят следните модули: VoIP, ISDN BRI/PRI, Fast Ethernet, Gigabit Ethernet
Да поддържа протокол за отказоустойчивост съгласно IETF RFC 2281	Поддържа протокол за отказоустойчивост съгласно IETF RFC 2281
Да поддържа Dial-backup, с автоматично преминаване от основната към резервната линия и обратно. Същата резервна линия да може да бъде използвана и като спомагателна, когато натоварването на основната надхвърли определен процент.	Поддържа Dial-backup, с автоматично преминаване от основната към резервната линия и обратно. Същата резервна линия да може да бъде използвана и като спомагателна, когато натоварването на основната надхвърли определен процент.
Да поддържа MPLS-VPN и следните стандарти и препоръки - RFC 2547, RFC 2283	Поддържа MPLS-VPN и следните стандарти и препоръки - RFC 2547, RFC 2283
Да поддържа MPLS-VPN в P и PE режим.	Поддържа MPLS-VPN в P и PE режим.
Да поддържа IPsec в транспортен и тунелен режим;	Поддържа IPsec в транспортен и тунелен режим;
Да поддържа различни алгоритми за криптиране и аутентификация, в т.ч. DES, 3DES, AES, MD5, SHA и др.	Поддържа различни алгоритми за криптиране и аутентификация, в т.ч. DES, 3DES, AES, MD5, SHA и др.
Да поддържа динамични схеми за обмен на ключове (IKE)	Поддържа динамични схеми за обмен на ключове (IKE)
Да поддържат следните стандарти и препоръки - IPsec - RFC 2401-2411, 2451	Поддържа следните стандарти и препоръки - IPsec - RFC 2401-2411, 2451
Да има вградени в операционната си система възможности за защитна стена и филтриране на трафика	Има вградени в операционната си система възможности за защитна стена и филтриране на трафика
Да поддържат следните технологии за гарантиране на качеството (QoS):	Поддържа следните технологии за гарантиране на качеството (QoS):
• IP Precedence	• IP Precedence
• IP RTP, cRTP	• IP RTP, cRTP
• Generic Traffic Shaping (GTS)	• Generic Traffic Shaping (GTS)
• Weighted Random Early Detection (WRED)	• Weighted Random Early Detection (WRED)
• Class Based Queueing (CBQ)	• Class Based Queueing (CBQ)
Гаранция: 3 години със срок за отстраняване на проблем до следващ работен ден	Гаранция: 3 години със срок за отстраняване на проблем до следващ работен ден
	http://www.cisco.com/c/en/us/products/collateral/routers/4000-series-integrated-services-routers-isr/datasheet-c78-732542.html

Маршрутизатор Тип 2, притежаващ следните минимални технически характеристики:		Маршрутизатор Cisco RV320-K9-G5
Общ брой портове	Four 10/100/1000 RJ-45 ports, one 10/100/1000 RJ-45 Internet port	6
VLAN	802.1Q VLAN, Minimum 4 VLAN supported	802.1Q VLAN, 7 VLAN supported
Routing	Static, Routing Information Protocol (RIP) v1, v2, and RIP for IPv6 (RIPng)	Static, Routing Information Protocol (RIP) v1, v2, and RIP for IPv6 (RIPng)
NAT	Port Address Translation (PAT), One-to-one NAT, NAT traversal	Port Address Translation (PAT), One-to-one NAT, NAT traversal
Firewall	SPI firewall, Denial of service (DoS), ping of death, SYN flood, land attack, IP spoofing, email alert for hacker attack	SPI firewall, Denial of service (DoS), ping of death, SYN flood, land attack, IP spoofing, email alert for hacker attack
IPsec VPN throughput	100 Mbps	100 Mbps
SSL VPN throughput	20 Mbps	20 Mbps
Гаранция	3 години	3 години
		http://www.cisco.com/c/en/us/products/collateral/routers/rv320-dual-gigabit-wan-vpn-router/datasheet-c78-726132.html
Комутатор Тип 2, притежаващ следните минимални технически характеристики:		Комутатор Cisco SF110D-08-EU
Тип	Fixed Port	Fixed Port
Общ брой портове	Min. 8	8
Основни портове, тип	Min. 8x10/100Base-TX	8x10/100Base-TX
Power Over Ethernet (PoE)	No	No
Uplink портове	No	No
Управление	No	No
Routing	No	No
Капацитет за превключване, Gbps	Min. 1.6 Gbps	1.6 Gbps
Пропускателна способност, Mpps	Min. 1.4 Mpps	1.4 Mpps
Гаранция	3 години	3 години
		http://www.cisco.com/c/en/us/products/collateral/switches/110-series-unmanaged-switches/datasheet-c78-734450.html
Комутатор Тип 3, притежаващ следните минимални технически характеристики:		Комутатор Cisco SG550XG-8F8T-K9-EU
Тип	Fixed Port	Fixed Port
Общ брой портове	Min. 16	8x10/100/1000Base-T/10GBase-T and 8xSFP+
Основни портове, тип	10/100/1000Base-T/10GBase-T and SFP+	8x10/100/1000Base-T/10GBase-T and 8xSFP+
Power Over Ethernet (PoE)	No	No
Uplink портове	Min. 4xSFP+	8xSFP+
Управление	Web user interface	Web user interface
Routing	No	No
Капацитет за маршрутизиране/превключване, Gbps	Min. 300 Gbps	320 Gbps
Пропускателна способност, Mpps	Min. 200 Mpps	238 Mpps
MAC адреси	Min. 8000 MAC address table size	64000 MAC address table size
VLAN (брой, стандарти)	Support for up to 4096 VLANs simultaneously; Port-based and 802.1Q tag-based VLANs; MAC-based VLAN; Management VLAN; Private VLAN	Support for 4096 VLANs simultaneously; Port-based and 802.1Q tag-based VLANs; MAC-based VLAN; Management VLAN; Private VLAN
QoS	Priority levels: 8 hardware queues; Scheduling: Strict priority and weighted round-robin (WRR). Queue assignment based on DSCP and class of service (802.1p/CoS); Class of service: Port based; 802.1p VLAN priority based	Priority levels: 8 hardware queues; Scheduling: Strict priority and weighted round-robin (WRR). Queue assignment based on DSCP and class of service (802.1p/CoS); Class of service: Port based; 802.1p VLAN priority based
L2 мрежови стандарти	IEEE 802.3, IEEE 802.3u, IEEE 802.3z, IEEE 802.1D, IEEE 802.1Q, IEEE 802.3ab, IEEE 802.1p, IEEE 802.3x, IEEE 802.3ad (LACP), IEEE 802.1w, IEEE 802.1x, IEEE 802.1s	IEEE 802.3, IEEE 802.3u, IEEE 802.3z, IEEE 802.1D, IEEE 802.1Q, IEEE 802.3ab, IEEE 802.1p, IEEE 802.3x, IEEE 802.3ad (LACP), IEEE 802.1w, IEEE 802.1x, IEEE 802.1s

Сигурност	Secure Shell (SSH) Protocol; Secure Sockets Layer (SSL); IEEE 802.1X (Authenticator role); STP Bridge Protocol Data Unit (BPDU) Guard; Secure Core Technology (SCT); RADIUS/TACACS+; Storm control; ACLs	Secure Shell (SSH) Protocol; Secure Sockets Layer (SSL); IEEE 802.1X (Authenticator role); STP Bridge Protocol Data Unit (BPDU) Guard; Secure Core Technology (SCT); RADIUS/TACACS+; Storm control; ACLs
Гаранция	3 години	3 години
		http://www.cisco.com/c/en/us/products/collateral/switches/550x-series-stackable-managed-switches/datasheet-c78-735874.html?cachemode=refresh
Комутатор Тип 4; притежаващ следните минимални технически характеристики		Комутатор Cisco SRW224G4-K9-EU
Тип	Fixed Port	Fixed Port
Общ брой портове	Min.24	24
Основни портове, тип	24x10/100Base-TX	24x10/100Base-TX
Power Over Ethernet (PoE)	No	No
Uplink портове	Min. 2x10/100/1000Base-T, 2xSFP	2x10/100/1000Base and 2xCombo Ports (2x10/100/1000Base or 2xSFP)
Управление	Web user interface	Web user interface
Routing	Layer 3 Lite	Layer 3 Lite
Капацитет за маршрутизиране/превключване, Gbps	Min. 12.8 Gbps	12.8 Gbps
Пропускателна способност, Mpps	Min. 9.52 Mpps	9.52 Mpps
MAC адреси	Min. 8000 MAC address table size	16000 MAC address table size
VLAN (брой, стандарти)	Support for up to 4096 VLANs simultaneously; Port-based and 802.1Q tag-based VLANs; MAC-based VLAN; Management VLAN; Private VLAN Edge (PVE), also known as protected ports, with multiple uplinks	Support for 4096 VLANs simultaneously; Port-based and 802.1Q tag-based VLANs; MAC-based VLAN; Management VLAN; Private VLAN Edge (PVE), also known as protected ports, with multiple uplinks
QoS	Priority levels: 4 hardware queues; Scheduling: Strict priority and weighted round-robin (WRR). Queue assignment based on DSCP and class of service (802.1p/CoS); Class of service: Port based; 802.1p VLAN priority based	Priority levels: 4 hardware queues; Scheduling: Strict priority and weighted round-robin (WRR). Queue assignment based on DSCP and class of service (802.1p/CoS); Class of service: Port based; 802.1p VLAN priority based
L2 мреживи стандарти	IEEE 802.3, IEEE 802.3u, IEEE 802.3z, IEEE 802.1D, IEEE 802.1Q, IEEE 802.3ab, IEEE 802.1p, IEEE 802.3x, IEEE 802.3ad (LACP), IEEE 802.1w, IEEE 802.1x, IEEE 802.1s	IEEE 802.3, IEEE 802.3u, IEEE 802.3z, IEEE 802.1D, IEEE 802.1Q, IEEE 802.3ab, IEEE 802.1p, IEEE 802.3x, IEEE 802.3ad (LACP), IEEE 802.1w, IEEE 802.1x, IEEE 802.1s
L3 мреживи стандарти	Wirespeed routing of IPv4 packets; Up to 32 static routes and up to 32 IP interfaces; Classless Inter-Domain Routing (CIDR); DHCP relay at Layer 3; Relay of DHCP traffic across IP domains; User Datagram Protocol (UDP) relay	Wirespeed routing of IPv4 packets; Up to 32 static routes and up to 32 IP interfaces; Classless Inter-Domain Routing (CIDR); DHCP relay at Layer 3; Relay of DHCP traffic across IP domains; User Datagram Protocol (UDP) relay
IPv6 functionality	IPv6 host mode; IPv6 over Ethernet; IPv6 neighbor and router discovery (ND); IPv6 stateless address auto-configuration; IPv6 over IPv4 network with Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) support	IPv6 host mode; IPv6 over Ethernet; IPv6 neighbor and router discovery (ND); IPv6 stateless address auto-configuration; IPv6 over IPv4 network with Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) support
Сигурност	Secure Shell (SSH) Protocol; Secure Sockets Layer (SSL); IEEE 802.1X (Authenticator role); STP Bridge Protocol Data Unit (BPDU) Guard; Secure Core Technology (SCT); RADIUS/TACACS+; Storm control; ACLs	Secure Shell (SSH) Protocol; Secure Sockets Layer (SSL); IEEE 802.1X (Authenticator role); STP Bridge Protocol Data Unit (BPDU) Guard; Secure Core Technology (SCT); RADIUS/TACACS+; Storm control; ACLs
Гаранция	3 години	3 години
		http://www.cisco.com/c/en/us/products/collateral/switches/small-business-smart-switches/data_sheet_c78-610061.html
Комутатор Тип 5; притежаващ следните минимални технически характеристики		Комутатор Cisco SG350X-24-K9-EU
Тип	Fixed Port	Fixed Port
Общ брой портове	Min.24	24
Основни портове, тип	24x10/100/1000Base-TX	24x10/100/1000Base-TX
Power Over Ethernet (PoE)	No	No
Uplink портове	Min. 4 x 10Gbps	4 x 10Gbps
Управление	Web user interface	Web user interface

Капацитет за маршрутизиране/превключване, Gbps	Min. 95 Gbps	95.23 Gbps
Пропускателна способност, Mpps	Min. 128Mpps	128Mpps
MAC адреси	Min. 16000 MAC address table size	64000 MAC address table size
VLAN (брой, стандарти)	Support for up to 4096 VLANs simultaneously; Port-based and 802.1Q tag-based VLANs; MAC-based VLAN; Management VLAN; Private VLAN Edge (PVE), also known as protected ports, with multiple uplinks	Support for 4096 VLANs simultaneously; Port-based and 802.1Q tag-based VLANs; MAC-based VLAN; Management VLAN; Private VLAN Edge (PVE), also known as protected ports, with multiple uplinks
QoS	Priority levels: 4 hardware queues; Scheduling: Strict priority and weighted round-robin (WRR). Queue assignment based on DSCP and class of service (802.1p/CoS); Class of service: Port based; 802.1p VLAN priority based	Priority levels: 4 hardware queues; Scheduling: Strict priority and weighted round-robin (WRR). Queue assignment based on DSCP and class of service (802.1p/CoS); Class of service: Port based; 802.1p VLAN priority based
L2 мреживи стандарти	IEEE 802.3, IEEE 802.3u, IEEE 802.3z, IEEE 802.1D, IEEE 802.1Q, IEEE 802.3ab, IEEE 802.1p, IEEE 802.3x, IEEE 802.3ad (LACP), IEEE 802.1w, IEEE 802.1x, IEEE 802.1s	IEEE 802.3, IEEE 802.3u, IEEE 802.3z, IEEE 802.1D, IEEE 802.1Q, IEEE 802.3ab, IEEE 802.1p, IEEE 802.3x, IEEE 802.3ad (LACP), IEEE 802.1w, IEEE 802.1x, IEEE 802.1s
L3 мреживи стандарти	Wirespeed routing of IPv4 packets; Up to 32 static routes and up to 32 IP interfaces; Classless Inter-Domain Routing (CIDR); DHCP relay at Layer 3; Relay of DHCP traffic across IP domains; User Datagram Protocol (UDP) relay	Wirespeed routing of IPv4 packets; Up to 8000 static routes and up to 256 IP interfaces; Classless Inter-Domain Routing (CIDR); DHCP relay at Layer 3; Relay of DHCP traffic across IP domains; User Datagram Protocol (UDP) relay
IPv6 функционалност	IPv6 host mode; IPv6 over Ethernet; IPv6 neighbor and router discovery (ND); IPv6 stateless address auto-configuration; IPv6 over IPv4 network with Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) support	IPv6 host mode; IPv6 over Ethernet; IPv6 neighbor and router discovery (ND); IPv6 stateless address auto-configuration; IPv6 over IPv4 network with Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) support
Сигурност	Secure Shell (SSH) Protocol; Secure Sockets Layer (SSL); IEEE 802.1X (Authenticator role); STP Bridge Protocol Data Unit (BPDU) Guard; Secure Core Technology (SCT); RADIUS/TACACS+; Storm control; ACLs	Secure Shell (SSH) Protocol; Secure Sockets Layer (SSL); IEEE 802.1X (Authenticator role); STP Bridge Protocol Data Unit (BPDU) Guard; Secure Core Technology (SCT); RADIUS/TACACS+; Storm control; ACLs
Гаранция	3 години	3 години
Комутатор Тип 6, притежаващ следните минимални технически характеристики		Комутатор Cisco SRW248G4-K9-EU
Тип	Fixed Port	Fixed Port
Общ брой портове	Min.48	48
Основни портове, тип	48x10/100Base-TX	48x10/100Base-TX
Power Over Ethernet (PoE)	No	No
Uplink портове	Min. 2x10/100/1000Base-T, 2xSFP	2x10/100/1000Base and 2xCombo Ports (2x10/100/1000Base or 2xSFP)
Управление	Web user interface	Web user interface
Routing	Layer 3 Lite	Layer 3 Lite
Капацитет за маршрутизиране/превключване, Gbps	Min. 17 Gbps	17.6 Gbps
Пропускателна способност, Mpps	Min. 13 Mpps	13.1 Mpps
MAC адреси	Min. 8000 MAC address table size	16000 MAC address table size
VLAN (брой, стандарти)	Support for up to 4096 VLANs simultaneously; Port-based and 802.1Q tag-based VLANs; MAC-based VLAN; Management VLAN; Private VLAN Edge (PVE), also known as protected ports, with multiple uplinks	Support for up to 4096 VLANs simultaneously; Port-based and 802.1Q tag-based VLANs; MAC-based VLAN; Management VLAN; Private VLAN Edge (PVE), also known as protected ports, with multiple uplinks
QoS	Priority levels: 4 hardware queues; Scheduling: Strict priority and weighted round-robin (WRR). Queue assignment based on DSCP and class of service (802.1p/CoS); Class of service: Port based; 802.1p VLAN priority based	Priority levels: 4 hardware queues; Scheduling: Strict priority and weighted round-robin (WRR). Queue assignment based on DSCP and class of service (802.1p/CoS); Class of service: Port based; 802.1p VLAN priority based
L2 мреживи стандарти	IEEE 802.3, IEEE 802.3u, IEEE 802.3z, IEEE 802.1D, IEEE 802.1Q, IEEE 802.3ab, IEEE 802.1p, IEEE 802.3x, IEEE 802.3ad (LACP), IEEE 802.1w, IEEE 802.1x, IEEE 802.1s	IEEE 802.3, IEEE 802.3u, IEEE 802.3z, IEEE 802.1D, IEEE 802.1Q, IEEE 802.3ab, IEEE 802.1p, IEEE 802.3x, IEEE 802.3ad (LACP), IEEE 802.1w, IEEE 802.1x, IEEE 802.1s

2014
 2015
 2016
 2017
 2018
 2019
 2020
 2021
 2022
 2023
 2024

L3 мрежови стандарти	Wirespeed routing of IPv4 packets; Up to 32 static routes and up to 32 IP interfaces; Classless Inter-Domain Routing (CIDR); DHCP relay at Layer 3: Relay of DHCP traffic across IP domains; User Datagram Protocol (UDP) relay	Wirespeed routing of IPv4 packets; Up to 32 static routes and up to 32 IP interfaces; Classless Inter-Domain Routing (CIDR); DHCP relay at Layer 3: Relay of DHCP traffic across IP domains; User Datagram Protocol (UDP) relay
IPv6 functionality	IPv6 host mode; IPv6 over Ethernet; IPv6 neighbor and router discovery (ND); IPv6 stateless address auto-configuration; IPv6 over IPv4 network with Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) support	IPv6 host mode; IPv6 over Ethernet; IPv6 neighbor and router discovery (ND); IPv6 stateless address auto-configuration; IPv6 over IPv4 network with Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) support
Сигурност	Secure Shell (SSH) Protocol; Secure Sockets Layer (SSL); IEEE 802.1X (Authenticator role); STP Bridge Protocol Data Unit (BPDU) Guard; Secure Core Technology (SCT); RADIUS/TACACS+; Storm control; ACLs	Secure Shell (SSH) Protocol; Secure Sockets Layer (SSL); IEEE 802.1X (Authenticator role); STP Bridge Protocol Data Unit (BPDU) Guard; Secure Core Technology (SCT); RADIUS/TACACS+; Storm control; ACLs
Гаранция	3 години	3 години
		http://www.cisco.com/c/en/us/products/collateral/switches/small-business-smart-switches/data_sheet_c78-610061.html
Комутатор Тип 7, притежаващ следните минимални технически характеристики		
Комутаторът да притежава следните минимални интерфейси:	Min.24 порта 10 Gigabit Ethernet SFP+-	24 порта 10 Gigabit Ethernet SFP+-
	Минимум 2 порта 10 Gigabit Ethernet 10Gbase-T	2 combo порта 10 Gigabit Ethernet 10Gbase-T/SFP+
	Специализиран Ethernet порт за управление	Специализиран Ethernet порт за управление
	Възможност за включването на комутатора в стек, като се използват вградените Ethernet портове.	Възможност за включването на комутатора в стек, като се използват вградените Ethernet портове.
	Възможност на стекиране на 8 комутатора.:	Възможност на стекиране на 8 комутатора.:
Комутаторът да притежава следната производителност и функционалност:	Производителност (64 byte frames) - не по-лоша от 350 Mpps	Производителност (64 byte frames) - 357.12 Mpps
	Скорост на комутиращата матрица - поне 480 Gbps неблокируема	Скорост на комутиращата матрица - 480 Gbps неблокируема
	Поддръжка на Jumbo Frames (9000 Bytes)	Поддръжка на Jumbo Frames (9000 Bytes)
	Да поддържа MAC таблица с минимум 64,000 MAC адреса;	Да поддържа MAC таблица с 64,000 MAC адреса;
	802.3ad Link Aggregation Control Protocol (LACP) - или еквивалент	802.3ad Link Aggregation Control Protocol (LACP)
	IEEE 802.1w Rapid Spanning Tree Protocol - или еквивалент	IEEE 802.1w Rapid Spanning Tree Protocol
	IEEE 802.1s Multiple Spanning Tree Protocol (MSTP), поне 15 инстанции	IEEE 802.1s Multiple Spanning Tree Protocol (MSTP), поне 15 инстанции
	Откриване на еднопосочни връзки	Откриване на еднопосочни връзки
	Internet Group Management Protocol V1,2,3 (IGMP) Snooping - или еквивалент	Internet Group Management Protocol V1,2,3 (IGMP) Snooping
	Storm control - Broadcast, multicast, and unknown unicast.	Storm control - Broadcast, multicast, and unknown unicast.
	Поддръжка на минимум 7000 статични маршрута	Поддръжка на минимум 7000 статични маршрута
	Поддръжка на RIPv2 динамичен маршрутизиращ протокол	Поддръжка на RIPv2 динамичен маршрутизиращ протокол
	Поддръжка на маршрутизиране базирано на политики	Поддръжка на маршрутизиране базирано на политики
	Поддръжка на Virtual Router Redundancy Protocol (VRRP)	Поддръжка на Virtual Router Redundancy Protocol (VRRP)
	Поддръжка на минимум 4094 едновременно активни VLAN-а	Поддръжка на минимум 4094 едновременно активни VLAN-а
	Поддръжка на частни VLAN-и	Поддръжка на частни VLAN-и
	Възможност за конфигурация на минимум 256 SVI интерфейса	Възможност за конфигурация на 256 SVI интерфейса
	Поддръжка на минимум 7000 маршрута	Поддръжка на 7000 маршрута
	Поддръжка на QoS, минимум 8 хардуерни нишки	Поддръжка на QoS, минимум 8 хардуерни нишки
	IEEE 802.1x автентикация и оторизация с прилагането на динамични VLAN и ACL в зависимост от профила на потребителя	IEEE 802.1x автентикация и оторизация с прилагането на динамични VLAN и ACL в зависимост от профила на потребителя
	IEEE 802.1x автентикация и оторизация на устройства по MAC адреси	IEEE 802.1x автентикация и оторизация на устройства по MAC адреси
	Възможност за асоциирането на потребители без 802.1x възможности в предварително определен VLAN	Възможност за асоциирането на потребители без 802.1x възможности в предварително определен VLAN

	Листи за филтриране на трафика на база порт и на база VLAN. TACACS+ и RADIUS автентикация Spanning-Tree Root Guard или еквивалент Spanning-Tree BPDU Guard или еквивалент IP Source Guard или еквивалент Управление: Поддръжка на SSHv2 и SNMPv3 Минимум 256MB флаш памет. Монтаж в 19" шкаф, 1 RU. Консумация на енергия до 80W	Листи за филтриране на трафика на база порт и на база VLAN. TACACS+ и RADIUS автентикация Spanning-Tree Root Guard Spanning-Tree BPDU Guard IP Source Guard Управление: Поддръжка на SSHv2 и SNMPv4 256MB флаш памет. Монтаж в 19" шкаф, 1 RU. Консумация на енергия 77.5W
Гаранция	3 години хардуерна и софтуерна техническа поддръжка	3 години хардуерна и софтуерна техническа поддръжка https://www.cisco.com/c/en/us/products/collateral/switches/550x-series-stackable-managed-switches/datasheet-c78-735874.html?cachemode=refresh
Комутатор Тип 8, притежаващ следните минимални технически характеристики		Комутатор Cisco SG550X-48-K9-EU
Комутаторът да притежава следните минимални интерфейси:	Минимум 48 порта 10/100/1000 Gigabit Ethernet	48 порта 10/100/1000 Gigabit Ethernet
	Минимум 4 порта 10 Gigabit Ethernet (2 комбо порта 10GBase-T/SFP+ и 2 порта SFP+)	4 порта 10 Gigabit Ethernet (2 комбо порта 10GBase-T/SFP+ и 2 порта SFP+)
	Възможност за включването на комутатора в стек, като се използват вградените Ethernet портове.	Възможност за включването на комутатора в стек, като се използват вградените Ethernet портове.
	Възможност на стекиране на 8 комутатора.	Възможност на стекиране на 8 комутатора.
Комутаторът да притежава следната производителност и функционалност:	Производителност (64 byte frames) - не по-лоша от 130 Mpps	Производителност (64 byte frames) - 130.94 Mpps
	Скоростнакомутиращата матрица - поне 175 Gbps неблокируема	Скоростнакомутиращата матрица - 176 Gbps неблокируема
	Поддръжка на Jumbo Frames (9000 Bytes)	Поддръжка на Jumbo Frames (9000 Bytes)
	Да поддържа MAC таблица с минимум 16,000 MAC адреса; 802.3ad Link Aggregation Control Protocol (LACP) - или еквивалент	Да поддържа MAC таблица с 16,000 MAC адреса; 802.3ad Link Aggregation Control Protocol (LACP)
	IEEE 802.1w Rapid Spanning Tree Protocol - или еквивалент	IEEE 802.1w Rapid Spanning Tree Protocol
	IEEE 802.1s Multiple Spanning Tree Protocol (MSTP), поне 15 инстанции	IEEE 802.1s Multiple Spanning Tree Protocol (MSTP), 16 инстанции
	Откриване на еднопосочни връзки Internet Group Management Protocol VI,2,3 (IGMP) Snooping - или еквивалент	Откриване на еднопосочни връзки Internet Group Management Protocol VI,2,3 (IGMP) Snooping
	Storm control - Broadcast, multicast, and unknown unicast.	Storm control - Broadcast, multicast, and unknown unicast.
	Поддръжка на минимум 7000 статични маршрута	Поддръжка на минимум 7000 статични маршрута
	Поддръжка на RIPv2 динамичен маршрутгоиращ протокол	Поддръжка на RIPv2 динамичен маршрутгоиращ протокол
	Поддръжка на маршрутизиране базирано на политики	Поддръжка на маршрутизиране базирано на политики
	Поддръжка на Virtual Router Redundancy Protocol (VRRP)	Поддръжка на Virtual Router Redundancy Protocol (VRRP)
	Поддръжка на минимум 4094 едновременно активни VLAN-а	Поддръжка на минимум 4094 едновременно активни VLAN-а
	Поддръжка на частни VLAN-и.	Поддръжка на частни VLAN-и.
	Възможност за конфигурация на минимум 256 SVI интерфейса.	Възможност за конфигурация на 256 SVI интерфейса.
	Поддръжка на минимум 7000 маршрута	Поддръжка на 7000 маршрута
	Поддръжка на QoS, минимум 8 хардуерни нишки	Поддръжка на QoS, минимум 8 хардуерни нишки
	IEEE 802. 1x автентикация и оторизация е прилагането на динамични VLAN и ACL в зависимост от профила на потребителя	IEEE 802. 1x автентикация и оторизация е прилагането на динамични VLAN и ACL в зависимост от профила на потребителя
	IEEE 802. 1 x автентикация и оторизация на устройства по MAC адреси	IEEE 802. 1 x автентикация и оторизация на устройства по MAC адреси
	Възможност за асоциирането на потребители без 802.1x възможности в предварително определен VLAN	Възможност за асоциирането на потребители без 802.1x възможности в предварително определен VLAN
	Листи за филтриране на трафика на база порт и на база VLAN. TACACS+ и RADIUS автентикация Spanning-Tree Root Guard или еквивалент	Листи за филтриране на трафика на база порт и на база VLAN. TACACS+ и RADIUS автентикация Spanning-Tree Root Guard

000022

	Spanning-Tree BPDU Guard или еквивалент	Spanning-Tree BPDU Guard
	IP Source Guard или еквивалент	IP Source Guard
	Управление: Поддръжка на SSHv2 и SNMPv3	Управление: Поддръжка на SSHv2 и SNMPv3
	Минимум 256MB флаш памет.	Минимум 256MB флаш памет.
	Монтаж в 19" шкаф, 1 RU.	Монтаж в 19" шкаф, 1 RU.
	Консумация на енергия до 60W.	Консумация на енергия 51.8W
Гаранция	3 години хардуерна и софтуерна техническа поддръжка	3 години хардуерна и софтуерна техническа поддръжка
		https://www.cisco.com/c/en/us/products/collateral/switches/550x-series-stackable-managed-switches/datasheet-c78-735874.html?cachemode=refresh
Комутатор Тип 9, притежаващ следните минимални технически характеристики		Комутатор SG550X-24-K9-EU
Комутаторът да притежава следните минимални интерфейси:	Минимум 24 порта 10/100/1000 Gigabit Ethernet	24 порта 10/100/1000 Gigabit Ethernet
	Минимум 4 порта 10 Gigabit Ethernet (2 комбо порта 10GBase-T/SFP+ и 2 порта SFP+)	4 порта 10 Gigabit Ethernet (2 комбо порта 10GBase-T/SFP+ и 2 порта SFP+)
	Възможност за включването на комутатора в стек, като се използват вградените Ethernet портове.	Възможност за включването на комутатора в стек, като се използват вградените Ethernet портове.
	Възможност на стекиране на 8 комутатора.	Възможност на стекиране на 8 комутатора.
Комутаторът да притежава следната производителност и функционалност:	Производителност (64 byte frames) — не по-лоша от 95 Mpps	Производителност (64 byte frames) — 95.23 Mpps
	Скорост на комутиращата матрица — поне 128 Gbps неблокируема	Скорост на комутиращата матрица — 128 Gbps неблокируема
	Поддръжка на Jumbo Frames (9000 Bytes)	Поддръжка на Jumbo Frames (9000 Bytes)
	Да поддържа MAC таблица с минимум 16,000 MAC адреса;	Да поддържа MAC таблица с минимум 16,000 MAC адреса;
	802.3ad Link Aggregation Control Protocol (LACP) - или еквивалент	802.3ad Link Aggregation Control Protocol (LACP) - или еквивалент
	IEEE 802.1w Rapid Spanning Tree Protocol — или еквивалент	IEEE 802.1w Rapid Spanning Tree Protocol — или еквивалент
	IEEE 802.1s Multiple Spanning Tree Protocol (MSTP), поне 15 инстанции	IEEE 802.1s Multiple Spanning Tree Protocol (MSTP), 16 инстанции
	Откриване на еднопосочни връзки	Откриване на еднопосочни връзки
	Internet Group Management Protocol V1,2,3 (IGMP) Snooping — или еквивалент	Internet Group Management Protocol V1,2,3 (IGMP) Snooping — или еквивалент
	Storm control - Broadcast, multicast, and unknown unicast.	Storm control - Broadcast, multicast, and unknown unicast.
	Поддръжка на минимум 7000 статични маршрута	Поддръжка на 7000 статични маршрута
	Поддръжка на RIPv2 динамичен маршрутизиращ протокол	Поддръжка на RIPv2 динамичен маршрутизиращ протокол
	Поддръжка на маршрутизиране базирано на политики	Поддръжка на маршрутизиране базирано на политики
	Поддръжка на Virtual Router Redundancy Protocol (VRRP)	Поддръжка на Virtual Router Redundancy Protocol (VRRP)
	Поддръжка на минимум 4094 едновременно активни VLAN-а	Поддръжка на 4094 едновременно активни VLAN-а
	Поддръжка на частни VLAN-и.	Поддръжка на частни VLAN-и.
	Възможност за конфигурация на минимум 256 SVI интерфейса.	Възможност за конфигурация на 256 SVI интерфейса.
	Поддръжка на минимум 7000 маршрута	Поддръжка на 7000 маршрута
	Поддръжка на QoS, минимум 8 хардуерни нишки	Поддръжка на QoS, 8 хардуерни нишки
	IEEE 802.1x автентикация и оторизация с прилагането на динамични VLAN и ACL в зависимост от профила на потребителя	IEEE 802.1x автентикация и оторизация с прилагането на динамични VLAN и ACL в зависимост от профила на потребителя
	IEEE 802.1x автентикация и оторизация на устройства по MAC адреси	IEEE 802.1x автентикация и оторизация на устройства по MAC адреси
	Възможност за асоциирането на потребители без 802.1x възможности в предварително определен VLAN	Възможност за асоциирането на потребители без 802.1x възможности в предварително определен VLAN
	Листи за филтриране на трафика на база порт и на база VLAN.	Листи за филтриране на трафика на база порт и на база VLAN.
	TACACS+ и RADIUS автентикация	TACACS+ и RADIUS автентикация
	Spanning-Tree Root Guard или еквивалент	Spanning-Tree Root Guard
	Spanning-Tree BPDU Guard или еквивалент	Spanning-Tree BPDU Guard
	IP Source Guard или еквивалент	IP Source Guard

000023

	Управление: Поддръжка на SSHv2 и SNMPv3	Управление: Поддръжка на SSHv2 и SNMPv3
	Минимум 256MB флаш памет.	256MB флаш памет.
	Монтаж в 19" шкаф, 1 RU.	Монтаж в 19" шкаф, 1 RU.
	Консумация на енергия до 35W	Консумация на енергия 33.5W
Гаранция:	3 години хардуерна и софтуерна техническа поддръжка	3 години хардуерна и софтуерна техническа поддръжка
		https://www.cisco.com/c/en/us/products/collateral/switches/550x-series-stackable-managed-switches/datasheet-c78-735874.html?cachemode=refresh
Комутатор Тип 10, притежаващ следните минимални технически характеристики		Комутатор C9500-24Q
Комутаторът да притежава следните минимални интерфейси:	Минимум 24 QSFP+ базирани порта 40 Gigabit Ethernet	24 QSFP+ базирани порта 40 Gigabit Ethernet
	Специализиран Ethernet порт за управление	Специализиран Ethernet порт за управление
	Възможност за включването на комутатора в стек	Възможност за включването на комутатора в стек
Комутаторът да притежава следната производителност и функционалност:	Производителност - не по-лоша от 1440 Mpps	Производителност - 1440 Mpps
	Скорост на комутиращата матрица-поне 1920 Gbps неблокируема	Скорост на комутиращата матрица-1920 Gbps неблокируема
	Поддръжка на Jumbo Frames (9198 Bytes)	Поддръжка на Jumbo Frames (9198 Bytes)
	Да поддържа MAC таблица с минимум 64,000 MAC адреса;	Да поддържа MAC таблица с 64,000 MAC адреса;
	Поддръжка на минимум 7000 статични маршрута	Поддръжка на 64000 статични маршрута
	802.3ad Link Aggregation Control Protocol (LACP) — или еквивалент	802.3ad Link Aggregation Control Protocol (LACP)
	IEEE 802.1w Rapid Spanning Tree Protocol - или еквивалент	IEEE 802.1w Rapid Spanning Tree Protocol
	IEEE 802.1s Multiple Spanning Tree Protocol (MSTF)	IEEE 802.1s Multiple Spanning Tree Protocol (MSTF)
	Откриване на еднопосочни връзки	Откриване на еднопосочни връзки
	Internet Group Management Snooping или еквивалент	Internet Group Management Snooping
	Функционалност за генериране и експортиране на статистики за преминаващия през комутатора IP трафик	Функционалност за генериране и експортиране на статистики за преминаващия през комутатора IP трафик
	Поддръжка на RIP и OSPF динамични маршрута и рачи протоколи	Поддръжка на RIP и OSPF динамични маршрута и рачи протоколи
	Поддръжка на маршрутизиране базирано на политики	Поддръжка на маршрутизиране базирано на политики
	Поддръжка на Virtual Router Redundancy Protocol (VRRP)	Поддръжка на Virtual Router Redundancy Protocol (VRRP)
	Поддръжка на минимум 4000 VLAN IDs	Поддръжка на минимум 4000 VLAN IDs
	Поддръжка на частни VLAN-и.	Поддръжка на частни VLAN-и.
	Възможност за конфигурация на минимум 4000 SVI интерфейса.	Възможност за конфигурация на минимум 4000 SVI интерфейса.
	Поддръжка на минимум 64000 IPv4 маршрута	Поддръжка на 64000 IPv4 маршрута
	Поддръжка на минимум 16000 IPv4 multicast маршрута	Поддръжка на 16000 IPv4 multicast маршрута
	Възможност за разпределяне на ресурсите според шаблони.	Възможност за разпределяне на ресурсите според шаблони.
	Поддръжка на QoS с възможност на конфигуриране минимум на 18000 контролни листи	Поддръжка на QoS с възможност на конфигуриране минимум на 18000 контролни листи
	IEEE 802.1x автентикация и оторизация с прилагането на динамични VLAN и ACL в зависимост от профила на потребителя	IEEE 802.1x автентикация и оторизация с прилагането на динамични VLAN и ACL в зависимост от профила на потребителя
	IEEE 802.1x автентикация и оторизация на устройства по MAC адреси	IEEE 802.1x автентикация и оторизация на устройства по MAC адреси
	Възможност за асоциирането на потребители без 802.1x възможност в предварително определен VLAN	Възможност за асоциирането на потребители без 802.1x възможност в предварително определен VLAN
	TACACS+ и RADIUS автентикация	TACACS+ и RADIUS автентикация
	Управление: Поддръжка на SSHv2, SNMPv3, API	Управление: Поддръжка на SSHv2, SNMPv3, API
	Поддръжка на NETCONF, RESTCONF, YANG	Поддръжка на NETCONF, RESTCONF, YANG
	Минимум 16GB флаш памет.	Минимум 16GB флаш памет.
	Минимум 16GB DRAM памет.	Минимум 16GB DRAM памет.
	Два резервирани захранващи блока	Два резервирани захранващи блока

2024

	Максимална консумация на всеки един от захранващите блокове до 850W	Максимална консумация на всеки един от захранващите блокове до 850W
	Монтаж в 19" шкаф, 1 RU.	Монтаж в 19" шкаф, 1 RU.
	3 години хардуерна и софтуерна техническа поддръжка	3 години хардуерна и софтуерна техническа поддръжка
		https://www.cisco.com/c/en/us/products/collateral/switches/catalyst-9500-series-switches/datasheet-c78-738978.html

Дата: 12.03.2018 г

ПОДПИС И ПЕЧАТ:

Искра Борова

[име и фамилия]

Упълномощено лице

[качество на представяне,ка]

000025



HPE ProLiant ML110 Gen9 Server

Performance optimized, expandable, and affordable

Performance optimized

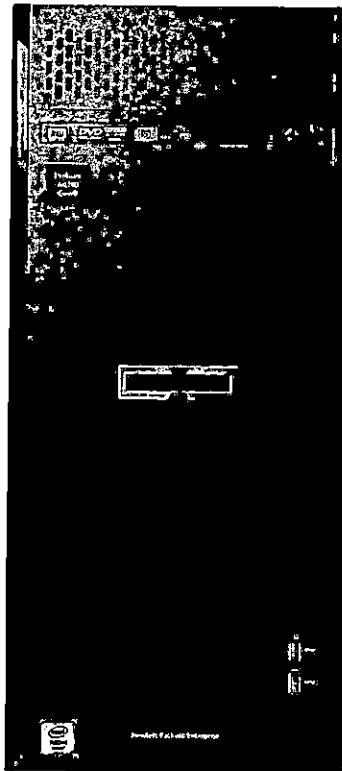
Latest Intel® Xeon® processor E5-2600 v4/v3 or E5-1600 v4/v3

Expandable

Memory, hard disk drive (HDD), and I/O with easy expansion for growing business needs

Affordable

Cost- and energy-efficient, in a compact, lightweight chassis



Plug and play simplicity for your growing business needs

Today, it's not enough for a server to be affordable, performance-optimized, and expandable. HPE is redefining the server experience so that you can plug and play with **HPE ProLiant servers** right out of the box, just like you'd expect from a new smartphone or laptop. The HPE ProLiant ML110 Gen9 Server, powered by Intel®, can now come as a ready-to-use appliance, with

the HPE-qualified ClearOS™ pre-loaded at no additional cost, so you can simply plug in your server and have it working, right away. Built on Linux®, the reliable, secure ClearOS lets you manage your server via an intuitive browser-based interface. You also get immediate access to an application marketplace with over 100—and growing—curated applications that are ideal for small to midsize businesses. And because ClearOS applications are also open source, you pay only if you want support, so you can plow the savings back into your t

000026

ВЯРНОВ. АГЕНТА

When you're ready, you can expand the already robust ProLiant ML110 with HPE Server Options like memory, storage, storage controllers, and networking options to support your growing needs.

The **HPE ProLiant ML110 Gen9 Server** is a small, quiet 4.5U tower with performance and room for expansion at an affordable investment. It offers a single processor, up to 5 PCIe slots, and room to grow with up to 8 large form factor (LFF) or 16 small form factor (SFF) disk drives. It includes 8 DDR4 DIMM slots supporting HPE DDR4 SmartMemory, with a maximum capacity of 256 GB, making this the ideal server for small to midsize businesses and remote or branch offices.

What's new?

- Intel Xeon processors specifically designed for servers with speeds of up to 3.5 GHz and up to 14 cores
- Includes 5 PCIe slots, 8 large form factor (LFF) or 16 small form factor (SFF) disk drives, and 8 DDR4 DIMMs for growing business needs
- Energy efficiency with ASHRAE A3 Compliance
- Ideal for office environments with a chassis depth of less than 19 inches and weighing under 25 kg

Key features and benefits

Right-sized, delivering better performance at an affordable price

- Meets the demands of small to midsize businesses with a compact form factor—less than a 19-inch depth—quiet operation, an affordable price point, and right-fit performance.
- Supports one Intel Xeon processor operating with speeds up to 3.5 GHz and up to 14 cores for improved performance over previous generations.
- Includes an embedded SATA HPE Dynamic Smart Array Controller B140i for both boot and data.
- Supports optional **HPE Smart Array Controllers** to increase disk drive performance and data availability with 12 Gbps SAS technology or HPE Smart Host Bus Adapters with reliable, high-performance SAS connectivity capable of running in HBA or simple RAID mode.

Memory, HDD, and I/O expansion for growing business needs

- Offers up to 8 DIMM slots with support for up to 256 GB of HPE DDR4 SmartMemory, helping prevent data loss and downtime with enhanced error handling while improving workload performance and power efficiency.
- Supports up to 8 large form factor (LFF) or 16 small form factor (SFF) HPE SmartDrives, delivering optimal performance, capacity, and reliability to meet various workload requirements at the right economics.
- Supports solid-state drive (SSD) options for even higher performance.
- Provides the flexibility of networking bandwidth and fabric with two embedded 1GbE adapters and up to 5 PCIe slots, so you can adapt and grow to changing business needs.

Optimized compute for physical and virtual workloads and apps

- Provides flexible expansion capacity with 5 PCIe expansion slots, 8 USB ports, and a redundant power supply option.
- Boosts performance in graphic and virtual desktop infrastructure (VDI) applications for financial services, education, scientific research, and medical imaging applications with support for optional NVIDIA® Quadro GPUs.
- Reduces cooling expenses with the ASHRAE A3 improved ambient temperature standard.¹

Agile infrastructure management with essential simplicity and automation

- Offers essential management for controlling, provisioning, and optimization of HPE ProLiant servers via HPE Insight Control.
- Provides a personalized, online dashboard for converged infrastructure health monitoring and support management with HPE Insight Online.
- Allows you to configure in Unified Extensible Firmware Interface (UEFI) boot mode, provision locally and remotely with HPE Intelligent Provisioning, HPE Scripting Toolkit, or HPE RESTful Interface Tool.
- With HPE OneView 3.1 Standard, more HPE customers can easily manage their heterogeneous platforms with one tool.

- Helps you optimize firmware and driver updates and reduce downtime with HPE Smart Update, consisting of HPE Smart Update Manager (SUM) and HPE Service Pack for ProLiant (SPP) tools.
- Includes embedded management to deploy, monitor, and support your server remotely, out-of-band with **HPE Integrated Lights-Out (iLO)**.

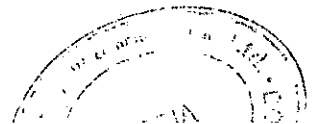
Technical specifications

In the following table, **bold text** in the right-hand column denotes new features, as compared to the HPE ProLiant ML310e Gen8 v2 Server.

Choose from a range of HPE Server Options such as memory, storage, networking, power supplies, and rack and power infrastructure to create the right configuration at the right price.
hpe.com/info/serveroptions

HPE ProLiant ML110 Gen9 Server	
Compute	One Intel Xeon Processor E5-2600 v3 and E5-2600 v4 , and up to 14 cores E5-1600 v3 and E5-1600 v4 , 4/6/8 cores, PCIe 3.0, up to five available slots
Operating system	ClearOS pre-installed at no extra cost (optional) , ² or other choices of supported OS (visit the OS support matrix for details)
Memory	8 HPE DDR4 SmartMemory up to 2400 MT/s (256 GB max)
Storage	Standard HPE Dynamic Smart Array B140i Controller, optional HPE Smart Array Controllers, and HPE Smart Host Bus Adapters (HBAs) via PCIe stand-up cards
Storage drive bays	16 SFF/8 LFF max, HDD/SSD
Networking	2x1GbE
VGA/serial/USB ports/SD	One VGA, eight USB, one microSD
GPU support	NVIDIA Quadro K2200 or NVIDIA Quadro M2000 (optional), HPE OneView 3.1 Standard
Infrastructure management	HPE Systems Insight Manager (SIM), HPE Insight Control
Support management	HPE Insight Online with mobile app
Embedded management	HPE iLO 4 (optional HPE iLO Essentials), HPE SUM, HPE Intelligent Provisioning, UEFI
Power and cooling	Up to 92% efficiency (Gold), 350 W/550 W single, 750 W RPS
Industry compliance	ASHRAE A3
Chassis depth	Tower 4.5U <19 inches
Warranty (parts/labor/on-site)	3/1/1

² Pre-loading of ClearOS operating system is available only on SKUs with HDDs



000027

Optimize your IT investment strategy with new ways to acquire, pay for, and use technology in lock-step with your business and transformation goals.

hpe.com/solutions/hpefinancialservices

Resource

HPE ProLiant ML110 product page
hpe.com/servers/ml110gen9

HPE Services

Let Hewlett Packard Enterprise guide you and your business through the rapidly changing IT landscape. HPE Technology Services delivers confidence, reduces risk, and helps you realize greater agility and stability.

- Our consulting services provide advice and guidance to safely move your workloads to newer technologies.
- HPE implementation and installation services enable faster, more reliable startup of your new ProLiant Gen9 servers, and our support portfolio allows you to get connected and get back to business fast.
- We recommend HPE Proactive Care for ProLiant Gen9 servers to prevent issues and resolve problems quickly and efficiently.
- HPE Foundation Care provides a choice of coverage levels and response times for hardware and software support.
- Our support technology lets you tap into the knowledge of millions of devices and thousands of experts to stay informed and in control, anywhere, any time.

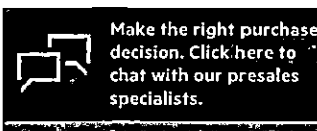
The HPE ProLiant ML110 Gen9 Server has a 3/1/1 server warranty including three years of parts, one year of labor, and one year of on-site support coverage.

Additional HPE support and service coverage for your product can be purchased locally. For information on availability of service upgrades and the cost for these service upgrades, refer to the HPE website at: hpe.com/support.

Learn more at
hpe.com/servers/ml110gen9



hpe.com/qref/ml110gen9



Sign up for updates


**Hewlett Packard
Enterprise**

© Copyright 2015–2017 Hewlett Packard Enterprise Development LP. The information contained herein is subject to change without notice. The only warranties for Hewlett Packard Enterprise products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Hewlett Packard Enterprise shall not be liable for technical or editorial errors or omissions contained herein.

Intel and Intel Xeon are trademarks of Intel Corporation in the U.S. and other countries. SD and microSD are trademarks or registered trademarks of SD-3C in the United States, other countries or both. Linux is the registered trademark of Linus Torvalds in the U.S. and other countries. NVIDIA is a trademark and/or registered trademark of NVIDIA Corporation in the U.S. and other countries. ClearOS is either registered trademark or trademark of ClearCenter Corporation in the United States and/or other countries. All other third-party trademark(s) is/are property of their respective owner(s).

4AA5-6904ENW, July 2017, Rev. 4

REPRODUCTION PROHIBITED

QuickSpecs

Technical Specifications

HP ProLiant ML110 Generation9 (Gen9)

in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9295 (ECMA 109).

Idle	
L WAd	3.6 Bels (LFF Non Hot-Plug Base) 3.6 Bels (LFF Hot-plug Base) 4.1 Bels (LFF Hot-plug Performance)
L pAm	21 dBA (LFF Non Hot-Plug Base) 21 dBA (LFF Hot-plug Base) 27 dBA (LFF Hot-plug Performance)
Operating	
L WAd	3.6 Bels (LFF Non Hot-Plug Base) 3.7 Bels (LFF Hot-plug Base) 4.2 Bels (LFF Hot-plug Performance)
L pAm	21 dBA (LFF Non Hot-Plug Base) 21 dBA (LFF Hot-plug Base) 25 dBA (LFF Hot-plug Performance)

NOTE: Configurations tested for LFF non hot-plug based models included one (1) 1TB LFF SATA Midline HDD and Windows 2012 Enterprise 64-bit.

NOTE: Configurations tested for LFF hot-plug base models included one (1) 1TB LFF SATA Midline HDD and Windows 2012 Enterprise 64-bit.

NOTE: Configurations tested for LFF hot-plug performance models included four (4) 2TB LFF SATA Midline HDD and Windows 2012 Enterprise 64-bit.

NOTE: The Listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels.

Emissions Classification	FCC Rating	Class
	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22; K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1	Class B

NOTE: Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.

HP Dynamic Smart Array B140i Controller	Number of PCI Links	Four
	PCI link rate	4Gb/s
	Storage protocol support	SATA
	SAS/SATA peak data transfer rate	6Gb/s
	Number of SAS/SATA links	10 links
	SAS/SATA connectivity	2x4 connectors; 2x1 connectors
	Expander support	No
	Drives supported (max)	Up to 10 Internal Drives
	RAID support	0, 1, 10, 5 SATA
	Software management	HP SSA, SMH, SIM
	Warranty	Server warranty
	HP Secure Encryption license	Not Supported
	HP SmartCache License	Not Supported
	HP Smart Storage Administrator	Supported

QuickSpecs

Technical Specifications

HP ProLiant ML110 Generation9 (Gen9)

HP Ethernet 1Gb 2-port 330i Adapter	Network Interface	10Base-T/100Base-TX/1000Base-TX
	Compatibility	IEEE 802.3 10Base-T IEEE 802.3ab 1000Base-T IEEE 802.3u 1000Base-TX
	Data Transfer Method	PCI Express, two lanes (x2)
	Controller	BCM5717
	Network Transfer Rate	10Base-T (Half-Duplex) 10 Mb/s per port, 40 Mb/s combined 10Base-T (Full-Duplex) 20 Mb/s per port, 80 Mb/s combined 100Base-TX (Half-Duplex) 100 Mb/s per port, 400 Mb/s combined 100Base-TX (Full-Duplex) 200 Mb/s per port, 800 Mb/s combined 1000Base-TX (Half-Duplex) 1000 Mb/s per port, 4000 Mb/s combined 1000Base-TX (Full-Duplex) 2000 Mb/s per port, 8000 Mb/s combined
	Connector	RJ-45
	Cable Support	10 Base-T Categories 3, 4 or 5 UTP; up to 328 ft (100 m) 10/100/1000 Base-TX Category 5 or higher UTP; up to 328 ft (100 m)

Environment-friendly Products and Approach	End-of-life Management and Recycling	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green . To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.
		The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett-Packard web site at: http://www.hp.com/go/green . These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.



© Copyright 2015 Hewlett-Packard Development Company, L.P.

The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Intel® and Xeon® are registered trademarks of Intel Corporation in the U.S. and other countries.

Microsoft®, Windows®, and Windows Server® are U.S. registered trademarks of the Microsoft group of companies.

For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.

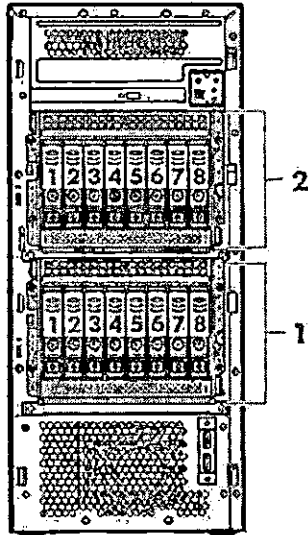


QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

Storage

8-bay SFF hot-plug drive model



1 x 1-8 8 x SFF SATA/SSD Hot Pluggable Hard Drive Bays

1 x 2-8 8 x SFF SATA/SSD Hot Pluggable Hard Drive Bays

Maximum Storage Capacity -
 Total (8 LFF Drive) 48TB
 Total (16 SFF Drive) 25.6TB

HP G O P R I N T H A T A

QuickSpecs

HP ProLiant ML110 Generat

Technical Specifications

System Unit	Tower Dimensions	17.32(H) x 7.68(W) x 18.92(D) in (44 x 19.5 x 48.05 cm)
	Tower Weight	Minimum: 27.56lb (12.5kg) Maximum: 55lb (24.9g)
	Input Requirements	Range Line Voltage 100 to 240 VAC Rated Input Current For 350W & 550W Power Supply: 8A (at 100-240 VAC) Rated Input Frequency 50 to 60 Hz Rated Input Power For 550 W Power Supply: < 639 W (at 100 VAC), < 605 W (at 200 VAC) For 350 W Power Supply: < 427 W (at 100 VAC), < 427 W (at 200 VAC)
	BTU Rating	Maximum For 550 W Power Supply: 2204 BTU/hr (at 100 VAC), 2113 BTU/hr (at 200 VAC) For 350 W Power Supply: 1452 BTU/hr (at 100 VAC), 1544 BTU/hr (at 200 VAC)
	Power Specifications	To review typical system power ratings use the Power Advisor which is available via the online tool located at URL: http://www.hp.com/go/proliant-energy-efficient or http://www.hp.com/go/hppoweradvisor - Click on the system of interest.
	Power Supply Output	Rated Steady-State Power For 550 W Power Supply: 550 W (at 100 VAC), 550 W (at 200 VAC), Maximum Peak Power For 350 W Power Supply: 350 W (at 100 VAC), 350 W (at 200 VAC),
	System Inlet Temperature	Standard Operating Support 10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 304.8 m (1,000 ft) above sea level to a maximum of 3048 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 20°C/hr (36°F/hr). The upper limit and rate of change may be limited by the type and number of options installed. System performance during standard operating support may be reduced if operating with a fan fault or above 30°C (86°F). Extended Ambient Operating Support For approved hardware configurations, the supported system inlet range is extended to be: 5° to 10°C (41° to 50°F) and 35° to 40°C (95° to 104°F) at sea level with an altitude derating of 1.0°C per every 175 m (1,875 ft) above 900 m (2,953 ft) to a maximum of 3048 m (10,000 ft). The approved hardware configurations for this system are listed at the URL: http://www.hp.com/servers/ashrae . For approved hardware configurations, the supported system inlet range is extended to be: 40° to 45°C (104° to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1,875 ft) above 900 m (2,953 ft) to a maximum of 3048 m (10,000 ft). The approved hardware configurations for this system are listed at the URL: http://www.hp.com/servers/ashrae . System performance may be reduced if operating in the extended ambient operating range or with a fan fault. NOTE: Supports A3 extended ambient.
	Relative Humidity	Non-operating -30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr). Operating Minimum to be the higher (more moisture) of -12°C (10.4°F) dew point or 8% relative humidity. Maximum to be the lower (less moisture) of 24°C (75.2°F) dew point or 90% relative humidity. Non-operating 5% to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
	Altitude	Operating 3048 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457m/min (1500 ft/min). Non-operating 9144 m (30,000 ft). Maximum allowable altitude change rate is 457m/min (1500 ft/min).
	Acoustic Noise	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating

QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

Memory

	Slot #	population order		
Chnl 4	3	D		B
	4	H		F
CPU 1				
	Slot #	population order		
Chnl 2	5	F		H
	6	B		D
CPU 1				
	Slot #	population order		
Chnl 1	7	E		G
	8	A		C

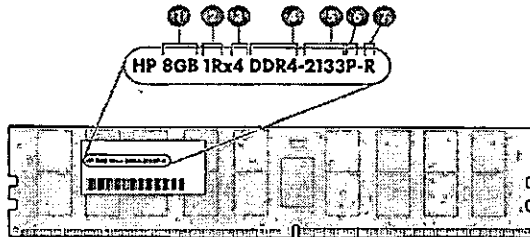
Processor Models	Supported Memory Speeds
E5-2609v3, E5-2603v3,	1600MHz
E5-2640v3, E5-2620v3, E5-2630Lv3, E5-2623v3, E5-1603v3,	1866MHz
E5-2660v3, E5-1620v3, E5-1650v3,	2133MHz

Pre-Configured Models	Standard Memory	Maximum Memory Plus Optional Memory	Standard Memory Replaced with Optional Memory
E5-2603v3,	4GB (1x4GB)	228GB (7x32GB, 1x4GB)	128GB (8x16GB)
E5-2620v3,	8GB (1x8GB)	232GB (7x32GB, 1x8GB)	128GB (8x16GB)

DDR4 memory options part number decoder

NOTE: Capacity references are rounded to the common gigabyte (GB) values.

- 4GB = 4,096MB
- 8GB = 8,192MB
- 16GB = 16,384MB
- 32GB = 32,768MB



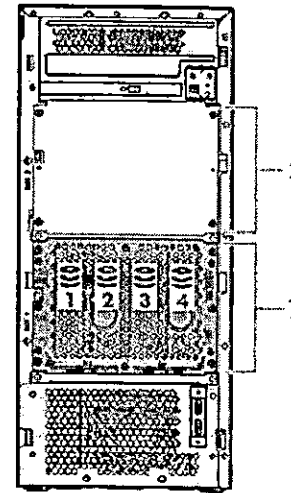
1. Capacity: 4GB/8GB/16GB/32GB
 2. Rank: 1R = Single-rank; 2R = Dual-rank; 4R = Quad-rank
 3. Data width: x4 = 4-bit; x8 = 8-bit
- Memory generation: DDR4
 Maximum memory speed: 2133 MT/s
 Latency: P = 15
 Type: R = RDIMM (registered); L = LRDIMM (load reduced)

QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

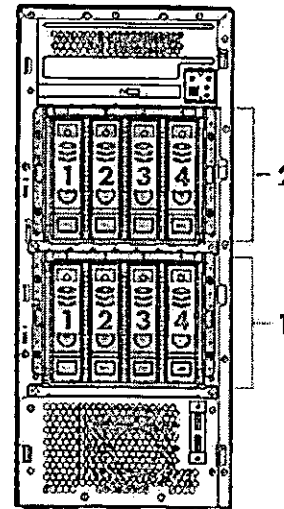
Storage

4-bay LFF non-hot-plug drive model



1-4 4 x LFF SATA/SSD Non-hot-plug Hard Drive Bays

4-bay LFF hot-plug drive model



1-4 4 x LFF SAS/SSD Hot Pluggs

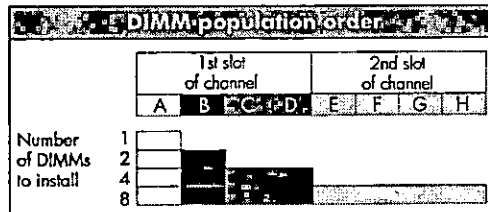
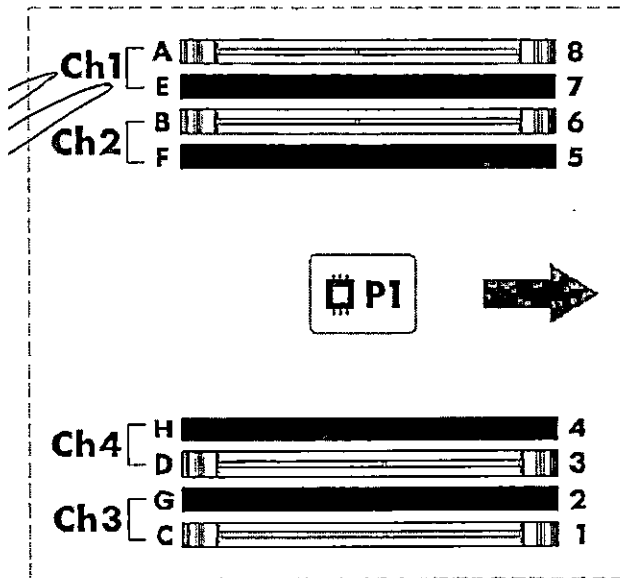


QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

Memory

Memory Subsystem Each Intel® Xeon® E5-2600v3 family processor socket contains four memory channels per installed processor with a channel for a total of four (4) DIMMs or a grand total of eight (8) DIMMs for the server.



General Memory Population Rules and Guidelines:

- Install DIMMs only if the corresponding processor is installed.
- To maximize performance, it is recommended to balance the total memory capacity between all installed processors and load the channels similarly whenever possible.
- White DIMM slots denote the first slot to be populated in a channel.
- Place the DIMMs with the highest number of ranks in the white slot when mixing DIMMs of different ranks on the same channel.
- Do not mix RDIMMs or LRDIMMs.
- Quad rank RDIMMs are not supported in HP ProLiant ML110 Gen9 servers.

QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

Memory

- Quad rank LRDIMMs are capable of up to three DIMMs per channel.
 - RDIMMs operating at 1.2V.
 - DIMMs of different speeds may be mixed in any order; the server will select a common optimal speed.
 - The maximum memory speed is a function of the memory type, memory configuration, and processor model.
 - The maximum memory capacity is a function of the memory type and number of installed processors.
 - To realize the performance memory capabilities listed in this document, HP SmartMemory is required.
- There are four (4) channels per processor
 There are two (2) DIMM slots for each memory channel; eight (8) total slots.
 Memory channels 1 and 3 consists of the two (2) DIMMs that are furthest from the processor.
 Memory channel 2 and 4 consists of the two (2) DIMMs that are closest to the processor.

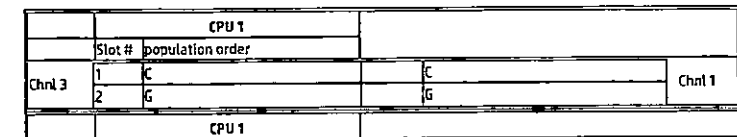
Intel Gen9 Supported Memory Bandwidth for HP ProLiant Gen9 Intel® Xeon® E5-2600v3 Series Processor Family

Memory Bandwidth and Capacity					
DIMM Type	Registered Dimms (RDIMMs)				Load Reduced (LRDIMMs)
	Single Rank		Dual Rank		Dual Rank
DIMM Rank					
DIMM Capacity	4GB	8GB	16GB	32GB	16GB
DIMM Native Speed (MT/s)					
Voltage	Std Voltage 1.2V			Std	
SLOTS THAT CAN BE POPULATED					
8 slot servers	8	8	8	8	16
MAXIMUM CAPACITY (GB)					
	32	64	128	256	
1 DIMM Per Channel	2133				
2 DIMM Per Channel	2133				

DIMM slot and configuration diagram

DIMM slot and configuration diagrams

- Population order; start with "A" first, "B" second, "C" third, etc.
- When one processor is installed, install DIMMs in sequential alphabetic order: A, B, C, D, E, F ...
- alphabetic order: CPU1-A, CPU2-A, CPU1-B, CPU2-B, CPU1-C, CP2-C



QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

Additional Options

HP Rack LED Light Kit	BW939A
HP Kit LCD 1.83m Latch Display Port Cable	G7T29A
HP Advanced Power Manager Kit	741192-B21
HP Uninterruptible Power Systems (UPS)	
HP DirectFlow Three Phase UPS Power Unit (1U UPS)	
HP R12000 DirectFlow - 1U Rackmount Uninterruptible Power System	G9Y75A
...12000 DirectFlow - POD 1U Rackmount Uninterruptible Power System	AF478A
Input/Output Module Options for 1U UPS	
...JA 400-415 Volt Three Phase NA R10000 DirectFlow UPS IEC309 Input/Output Module	AF489A
...JA 480 Volt Three Phase NA R12000 DirectFlow UPS L22-30 Input/Output Module	AF491A
HP 30A 480 Volt Three Phase NA R12000 DirectFlow UPS IEC309 Input/Output Module	AF492A
HP 30A 400-415 Volt Three Phase NA R12000 DirectFlow UPS IEC309 Input/Output Module	G9Y76A
Power Unit (2U UPS)	
...18000 DirectFlow - 2U Rackmount Uninterruptible Power System	AF479A
Input/Output Module Options for 2U UPS	
...30A 480 Volt Three Phase NA R18000 DirectFlow UPS IEC309 Input/Output Module	AF486A
...0A 480 Volt Three Phase NA R18000 DirectFlow UPS IEC309 Input/Output Module	AF487A
...JA 400 Volt Three Phase NA R18000 DirectFlow UPS IEC309 Input/Output Module	D9Q02A
...0A 400-415V Three Phase NA R18000 DirectFlow UPS 1:1 IEC309 Input/Output Module	AF484A
Note: All Input/Output Modules support dual output outlets except the AF484A.	
Battery Pack Options	
HP DirectFlow UPS - 1U Rackmount Lithium-Ion Battery Pack	AF480A
HP DirectFlow UPS - 3U Rackmount VRLA Battery Pack	AF482A
HP WW DirectFlow Secondary Battery Cable	AF497A
NOTE: Please see the HP DirectFlow Three Phase Uninterruptible Power System QuickSpecs for information on additional options and product specifications.	
HP Tower UPS	
HP T750 G4 UPS Models	
HP T750 G4 NA/JP Uninterruptible Power System	J2P85A
HP T1000 G4 UPS Models	
HP T1000 G4 NA/JP Uninterruptible Power System	J2P86A
HP T1500 G4 UPS Models	
HP T1500 G4 NA/JP Uninterruptible Power System	J2P87A
HP T750 G2 UPS Models	
HP T750 G2 750VA NA Tower Uninterruptible Power System	AF446A
HP T1500 G3 UPS Models	
HP T1500 G3 1400VA NA Tower Uninterruptible Power System	AF450A
HP Rack/Tower UPS	
HP R/T2200 G4 UPS Models	
HP R/T2200 G4 NA/JP Uninterruptible Power System	J2R00A
HP R/T3000 G4 UPS Models	
HP R/T3000 G4 Low Voltage NA/JP Uninterruptible Power System	J2R01A
HP R/T3000 G4 High Voltage NA/JP Uninterruptible Power System	J2R02A
HP R/T3000 G2 Uninterruptible Power System (UPS)	
HP R/T3000 G2 2U L530 Low Voltage NA/JP Uninterruptible Power System	AF466A
HP R/T3000 G2 2U L620 High Voltage NA/JP Uninterruptible Power System	AF467A
R1500 G4 Models	
HP R1500 G4 NA Uninterruptible Power System	J2Q99A
R1.5kVA G3 Models	

QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

Additional Options

HP R1.5kVA G3 1U NA Uninterruptible Power System	AF469A
R7000 Uninterruptible Power System (UPS)	
HP R7KVA 4U 50A High Voltage NA/JP Uninterruptible Power System	AF462A
R5000 Uninterruptible Power System (UPS)	
HP R5KVA 3U L630 High Voltage NA/JP Uninterruptible Power System	AF460A
HP UPS Options	
HP R/T2200 G4 Extended Runtime Module	J2R09A
HP R/T3000 G4 Extended Runtime Module	J2R10A
HP 2U Rack/Tower UPS Shipping Kit	L4Q11A
NOTE: Please see the HP Line Interactive Single Phase UPS QuickSpecs for information on additional options and product specifications.	
NOTE: To learn more, please visit the HP Uninterruptible Power Systems (UPS) web page.	

HP USB and SD Options

HP Enterprise Mainstream Flash Media Kits for Memory Cards	
HP 8GB microSD Enterprise Mainstream Flash Media Kit	726116-B21
HP 32GB microSD Enterprise Mainstream Flash Media Kit	700139-B21
HP 8GB USB Enterprise Mainstream Flash Media Drive Key Kit	737953-B21
HP Dual 8GB microSD Enterprise Midline USB Kit	741279-B21

ОРИГИНАЛ

QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

Additional Options

NOTE: Some options may not be integrated at the factory. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

HP Storage Controllers	SAS Controller	
	HP Smart Array P440/4GB FBWC 12Gb 1-port Int SAS Controller	726821-B21
	HP Smart Array P441/4GB FBWC 12Gb 2-ports Ext SAS Controller	726825-B21
	HP Smart Array P840/4GB FBWC 12Gb 2-ports Int SAS Controller	726897-B21
	NOTE: When additional BSFF Drive cage is ordered and also P840 is selected, then Must select one separate HP ML110 Gen9 Mini SAS P440/P840 Cbl Kit.	
	HP Smart Array P841/4GB FBWC 12Gb 4-ports Ext SAS Controller	726903-B21
	HP ML110 Gen9 Mini SAS H240 Cable Kit	789648-B21
	NOTE: Must be selected for H240 controller.	
	1 cable kit is required for Hot Plug 4LFF	
	2 cable kits are required for below:	
	- Hot Plug 4+4 LFF (with additional drive cage)	
	- BSFF	
	HP ML110 Gen9 Mini SAS P440/P840 Cable Kit	789651-B21
	NOTE: Must be selected for P440/P840 controller.	
	1 cable kit is required for P440x1	
	2 cable kits are required for P840x1	
	NOTE: Must select battery holder kit when P series FIO controller is selected.	
	SAS Controller Options	
	HP 96W Smart Storage Battery with 145mm Cable for DL/ML/SL Servers	727259-B21
	HP Host Bus Adapter	
	HP H240 12Gb 2-ports Int Smart Host Bus Adapter	726907-B21
	HP H241 12Gb 2-ports Ext Smart Host Bus Adapter	726911-B21
	Battery Holder	
	HP ML150 Gen9 Smart Storage Battery Holder Kit	786710-B21
	NOTE: Only support P series controllers.	

HP Tape Backup		
	NOTE: For the complete range of tape drives, autoloaders, libraries and media see: http://www.hp.com/go/tape . For hardware and software compatibility of HP tape backup products see: http://www.hp.com/storage/SPOCK and http://www.hp.com/go/ebs .	
	NOTE: Must select SAS controller to support internal SAS tape drives.	
	NOTE: Tape drive and HDD total amount can't exceed SAS controller support qty.	
	NOTE: Limited to H240 when select Tape Drive.	
	Tape Drives	
	HP StoreEver 1/8 G2 LTO-6 Ultrium 6250 FC Tape Autoloader	COH19A
	HP StoreEver LTO-6 Ultrium 6250 Tape Drive in 1U Rack-mount Kit	COL99A
	HP StoreEver LTO-4 Ultrium 1760 SAS (1) in 1U Rack-mount Kit	EH946C
	HP StoreEver LTO-5 Ultrium 3000 SAS Tape Drive in 1U Rack-mount	EJ014B
	HP StoreEver LTO-5 Ultrium 3280 SAS Tape Drive in 3U Rack-mount	EJ013B
	HP StoreEver 1U SAS Rack-mount Kit	AE459B
	HP StoreEver LTO-3 Ultrium 920 SAS External Tape Drive	EH848B
	HP StoreEver LTO-5 Ultrium 3280 SAS External Tape Drive	EH900B
	HP StoreEver LTO-4 Ultrium 1760 SAS External Tape Drive	EH920B
	HP StoreEver LTO-4 Ultrium 1760 SCSI External Tape Drive	EH922B
	HP StoreEver LTO-5 Ultrium 3000 SAS External Tape Drive	EH958B
	HP StoreEver LTO-6 Ultrium 6650 SAS External Tape Drive	EH964A
	HP StoreEver LTO-6 Ultrium 6250 External Tape Drive	EH970A
	HP Tape Storage Systems HP StoreEver MSL6480	
	HP StoreEver MSL6480 Scaleable Expansion Module	QU626A
	HP StoreEver MSL6480 Scaleable Base Module	QU625A
	HP MSL2024 0-Drive Tape Library	AK379A

QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

Additional Options

	HP MSL4048 0-Drive Tape Library	AK381A
HP Disk Backup	HP RDX Removable Disk Backup System	
	HP RDX320 USB3.0 External Disk Backup System	B7B63A
	HP RDX500 USB3.0 External Disk Backup System	B7B66A
	HP RDX1000 USB3.0 External Disk Backup System	B7B69A
	HP RDX 2TB USB3.0 External Disk Backup System	E7X53A
HP Disk Storage Systems	Disk Enclosures	
	HP D6000 w/35 4TB 6G SAS 7.2K LFF Dual Port MDL HDD 140TB Bundle	E7W30A
	HP D6000 w/70 4TB 6G SAS 7.2K LFF Dual Port MDL HDD 280TB Bundle	E7W31A
	HP D6000 Dual I/O Module Disk Enclosure	QQ695A
	HP D6000 w/35 2TB 6G SAS 7.2K LFF Dual port MDL HDD 70TB Bundle	QQ697A
	HP D6000 w/70 2TB 6G SAS 7.2K LFF Dual port MDL HDD 140TB Bundle	QQ698A
	HP D6000 w/35 3TB 6G SAS 7.2K LFF Dual port MDL HDD 105TB Bundle	QQ699A
	HP D6000 w/70 3TB 6G SAS 7.2K LFF Dual port MDL HDD 210TB Bundle	QQ700A
	HP D2600 w/12 4TB 6G SAS 7.2K LFF Dual Port MDL HDD 48TB Bundle	E7W32A
HP Rack Mount Consoles, KVM Switches, and Keyboards	HP Location Discovery Services	
	HP Location Discovery Services LCD8500 Kit	TL052A
	HP Rack Mount Consoles	
	HP LCD8500 1U US Rackmount Console Kit	AF630A
	HP LCD8500 1U US TAA Rackmount Console Kit	AF645A
	HP TFT7600 G2 KVM Console Rackmount Keyboard US Monitor	AZ870A
	HP TFT7600 G2 KVM Console Rackmount Keyboard US TAA Monitor	AZ885A
	NOTE: Please see the HP Rack Console QuickSpecs for information on additional options and product specifications.	
	HP KVM Switches	
	HP Server Console 0x2x8 Port Analog Switch	AF616A
	HP Server Console 0x2x16 Port Analog Switch	AF617A
	HP TAA 0x2x16xKVM Server Console G2 Switch	AF626A
	HP USB Remote Access Key for G3 KVM Console Switches	AF650A
	HP 0x1x8 G3 KVM Console Switch	AF651A
	HP 0x2x16 G3 KVM Console Switch	AF652A
	HP TAA 0x2x16 G3 KVM Console Switch	AF653A
	HP KVM Console USB Interface Adapter	AF628A
	HP 0x2x16 KVM Server Console Switch G2 with Virtual Media CAC Software	AF618A
	HP 0x2x32 KVM Server Console Switch G2 with Virtual Media CAC Software	AF619A
	HP KVM Console USB 2.0 Virtual Media CAC Interface Adapter	AF629A
	HP 1x4 USB/PS2 KVM Console Switch	AF611A
	HP 1x1Ex8 KVM IP Console Switch G2 with Virtual Media CAC Software	AF620A
	HP 2x1Ex16 KVM IP Console Switch G2 with Virtual Media CAC Software	AF621A
	HP 4x1Ex32 KVM IP Console Switch G2 with Virtual Media CAC Software	AF622A
	HP USB Keyboard and Mouse	
	HP USB BFR with PVC Free US Keyboard/Mouse Kit	631341-B21
	HP 1U US Rackmount Keyboard with USB	AG072A
	NOTE: Please see the HP USB Keyboard and Mouse QuickSpecs for information on additional options and product specifications.	
	HP Other Options	

QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

Core Options

6G SATA Hot Plug LFF Value Endurance (3.5-inch) Converter Enterprise Value M1 Solid State Drives		
HP 480GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty M1 Solid State Drive		764943-B21
HP 240GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty M1 Solid State Drive		764941-B21
HP 120GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty M1 Solid State Drive		764939-B21
6G SATA Hot Plug LFF (3.5-inch) Enterprise Value Solid State Drives		
HP 800GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive		718189-B21
HP 600GB 6G SATA Value Endurance LFF 3.5-in SC Converter Enterprise Value 3yr Wty Solid State Drive		739900-B21
HP 480GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive		718183-B21
HP 300GB 6G SATA Value Endurance LFF 3.5-in SC Converter Enterprise Value 3yr Wty Solid State Drive		739890-B21
HP 240GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive		718177-B21
6G SATA Hot Plug LFF (3.5-inch) Enterprise Boot Solid State Drives		
HP 120GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Boot 3yr Wty Solid State Drive		718171-B21
HP 80GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Boot 3yr Wty Solid State Drive		734362-B21
Hard Drive Blank Kits		
HP Large Form Factor Hard Drive Blank Kit		666986-B21
HP Small Form Factor Hard Drive Blank Kit		666987-B21
Hard Drive Kits		
HP ML110 Gen9 4LFF Hot Plug Drv Cage Kit		784584-B21
HP ML110 Gen9 8SFF Hot Plug Drv Cage Kit		784586-B21

000031

HP Networking		
1 Gigabit Ethernet adapters		
HP Ethernet 1Gb 4-port 331T Adapter		647594-B21
HP Ethernet 1Gb 2-port 361T Adapter		652497-B21
HP Ethernet 1Gb 2-port 332T Adapter		615732-B21
10 Gigabit Ethernet adapters		
HP Ethernet 10Gb 2-port 560SFP+ Adapter		665249-B21
HP Ethernet 10Gb 2-port 561T Adapter		716591-B21
HP Ethernet 10Gb 2-port 546SFP+ Adapter		779793-B21

HP Power Supplies		
HP Entry-Level Power Supplies		
HP 750W Common Slot Gold Hot Plug Power Supply Kit		512327-B21
HP 550W ATX Gen9 Power Supply Kit		776444-B21
HP ML110 Gen9 Redundant Power Supply Enablement Kit		784582-B21
NOTE: If this kit must be selected when 750W CS Gold Ht Plg Pwr Supply Kit is ordered.		
NOTE: Check power advisor for power consumption for the customer usage case. Power specifications and technical content for all HP Server power supplies can be found at http://www.hp.com/go/proliant/power supply.		

HP Computation and Graphics Accelerators		
HP NVIDIA Quadro K2200 Graphics Accelerator		J0G89A
HP NVIDIA Quadro K4200 Graphics Accelerator		J0G90A
NOTE: If this SKU is selected, then customer must select HP 750W CS Gold Ht Plg Pwr Supply Kit OR HP 550W ATX-GEN9 Pwr Supply Kit in order.		
NOTE: this option kit cannot be selected with 350W power supplies due to power consumption.		

ВАРИАНТ С ОПРИГОНАЛА

QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

Core Options

NOTE: HP ML110 Gen9 GPU Supporting Holder Kit must be selected.	
HP ML110 Gen9 GPU Supporting Holder Kit	787006-B
NOTE: Only the above listed Graphics cards are HP standard supported options in this server.	
NOTE: The NVIDIA Quadro modules are supported only on 64-bit versions of Linux and Windows operating systems as well as on Virtual Machine client operating systems. The supported bare metal operating systems are RHEL6, SLES 11 and Windows Server 2012 R2.	
NOTE: Please see the HP Power Advisor for estimated power consumption of your individual system configuration prior to installing GPUs. The HP Power Advisor is located at: http://www.hp.com/go/hppoweradvisor.	

HP Cooling Options		
HP ML110 Gen9 PCI Fan and Baffle Kit		784580-B
NOTE: If any PCIe card is selected, then this option kit must be selected. This option kit cannot be selected if no PCIe card is ordered.		
HP ML110 Gen9 System Fan Upgrade Kit		789554-B21
NOTE: When any 140W processor kit or SAS SSD is selected, then this option kit must be ordered.		

QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

Core Options

SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives	
HP 600GB 7.2K rpm SAS 15K rpm LFF (3.5-inch) SC Converter Enterprise 3yr Warranty Hard Drive	765424-B21
HP 450GB 12G SAS 15K rpm LFF (3.5-inch) SC Converter Enterprise 3yr Warranty Hard Drive	737394-B21
HP 300GB 12G SAS 15K rpm LFF (3.5-inch) SC Converter Enterprise 3yr Warranty Hard Drive	737261-B21
SAS Hot Plug LFF (3.5-inch) Midline (MDL) Drives	
HP 6TB 12G SAS 7.2K rpm LFF (3.5-inch) SC Midline 512e 1yr Warranty Hard Drive	765259-B21
HP 6TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	761477-B21
HP 4TB 12G SAS 7.2K rpm LFF (3.5-inch) SC Midline 512e 1yr Warranty Hard Drive	765257-B21
HP 4TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	695510-B21
HP 3TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652766-B21
HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652757-B21
HP 1TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652753-B21
SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives	
HP 1TB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	655710-B21
HP 500GB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	655708-B21
SATA Hot Plug LFF (3.5-inch) Midline (MDL) Drives	
HP 6TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 512e 1yr Warranty Hard Drive	765255-B21
HP 6TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	753874-B21
HP 4TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 512e 1yr Warranty Hard Drive	765253-B21
HP 4TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	693687-B21
HP 3TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	628061-B21
HP 2TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	658079-B21
HP 1TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	657750-B21
HP 500GB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	658071-B21
SATA Non-Hot Plug LFF (3.5-inch) Midline (MDL) Drives	
HP 4TB 6G SATA 7.2K rpm LFF (3.5in) Non-hot Plug Standard 1yr Warranty Hard Drive	801888-B21
HP 3TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	628065-B21
HP 3TB 6G SATA 7.2K rpm LFF (3.5in) Non-hot Plug Standard 1yr Warranty Hard Drive	801886-B21
HP 2TB 6G SATA 7.2K rpm LFF (3.5in) Non-hot Plug Standard 1yr Warranty Hard Drive	801884-B21
HP 1TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	659337-B21
HP 2TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	659339-B21
HP 1TB 6G SATA 7.2K rpm LFF (3.5in) Non-hot Plug Standard 1yr Warranty Hard Drive	801892-B21
HP 500GB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	659341-B21
12G SAS Hot Plug SFF (2.5-inch) Enterprise Performance Solid State Drives	
HP 400GB 12G SAS High Endurance SFF 2.5-in SC Enterprise Performance 3yr Wty Solid State Drive	741155-B21
HP 200GB 12G SAS High Endurance SFF 2.5-in SC Enterprise Performance 3yr Wty Solid State Drive	741151-B21
6G SATA Hot Plug LFF (3.5-inch) Enterprise Light G1 Solid State Drives	
HP 960GB 6G SATA Light Endurance LFF 3.5-in SC Converter ENT Light 3yr Wty G1 Solid State Drive	756604-B21
6G SATA Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives	
HP 800GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691868-B21
HP 400GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691866-B21
HP 200GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691864-B21
HP 100GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691862-B21
6G SATA Hot Plug SFF (2.5-inch) Enterprise Value Solid State Drives	

QuickSpecs

HP ProLiant ML110 Generation9

Core Options

HP 1.6TB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	751337-B21
HP 800GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	717973-B21
HP 600GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	739898-B21
HP 480GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	717971-B21
HP 300GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	739888-B21
HP 240GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	717969-B21
6G SATA Hot Plug SFF Value Endurance (2.5-inch) Enterprise Value G1 Solid State Drives	
HP 480GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty G1 Solid State Drive	756657-B21
HP 240GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty G1 Solid State Drive	756636-B21
HP 120GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty G1 Solid State Drive	756621-B21
6G SATA Hot Plug SFF (2.5-inch) Enterprise Light G1 Solid State Drives	
HP 960GB 6G SATA Light Endurance SFF 2.5-in SC Enterprise Light 3yr Wty G1 Solid State Drive	756601-B21
6G SATA Hot Plug SFF Value Endurance (2.5-inch) Enterprise Value M1 Solid State Drives	
HP 800GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty M1 Solid State Drive	764929-B21
HP 480GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty M1 Solid State Drive	764927-B21
HP 240GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty M1 Solid State Drive	764925-B21
HP 120GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty M1 Solid State Drive	764923-B21
6G SATA Hot Plug SFF (2.5-inch) Enterprise Boot Solid State Drives	
HP 120GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Boot 3yr Wty Solid State Drive	717965-B21
HP 80GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Boot 3yr Wty Solid State Drive	734360-B21
6G SATA Hot Plug LFF (3.5-inch) Enterprise Mainstream Solid State Drives	
HP 800GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691860-B21
HP 400GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691856-B21
HP 200GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691854-B21
HP 100GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691852-B21
6G SATA Hot Plug LFF Value Endurance (3.5-inch) Converter Enterprise Value G1 Solid State Drives	
HP 1.6TB 6G SATA Value Endurance LFF 3.5-in SC Converter Enterprise Value 3yr Wty Solid State Drive	757342-B21
HP 800GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty G1 Solid State Drive	756660-B21
HP 240GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty G1 Solid State Drive	756639-B21
HP 120GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty G1 Solid State Drive	756624-B21

QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

Configuration Information - Factory Integrated Models

Load Reduced DIMMs (LRDIMMs) for E5-2600v3 Series	
HP 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit	726720-B21
NOTE: Select one or more memory options above. Up to 8 memory dimms are supported.	
NOTE: LRDIMM, RDIMM are all distinct memory technologies and cannot be mixed within a server.	
NOTE: The majority of ProLiant Gen9 servers support LRDIMM and RDIMM.	
NOTE: HP memory from previous generation servers are not qualified or warranted on this ProLiant Server. HP SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen9.	
NOTE: Depending on the memory configuration and processor model, the memory speed may run at 2133MHz, 1866MHz, 1600MHz, or 1333MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: http://www.hp.com/go/ddrconfig .	
NOTE: Select quantity one or two HP Entry-Level Power Supplies below. Mixing of power supplies is not supported in the same server.	
NOTE: Prior to selecting a power supply option, it is highly recommended that you review your server configuration in the HP Power Advisor tool to determine the right size power supply for your server configuration. The HP Power Advisor is located at: http://www.hp.com/go/hppoweradvisor .	
NOTE: Check power advisor for power consumption for the customer usage case. Power specifications and technical content for all HP Server power supplies can be found at http://www.hp.com/go/proliant/powersupply .	
HP Entry-Level Power Supplies	
HP 750W Common Slot Gold Hot Plug Power Supply Kit	512327-B21
HP ML110 Gen9 350W ATX Gen9 Power Supply FIO Kit	776442-B21
HP 550W ATX Gen9 Power Supply Kit	776444-B21
Accessories	
HP ML110 Gen9 Redundant Power Supply Enablement Kit	784582-B21
NOTE: This kit must be selected when 750W CS Gold Ht Plg Pwr Supply Kit (P/N 512327-B21) is ordered.	

Step 3: Choose Additional Factory Integratable Options (only one of the following from each list unless otherwise noted)

HP Storage Controllers	NOTE: Select one controller listed below if ordering SAS Hard drives in Step 4.
SAS Controller	
HP Smart Array P440/4GB FBWC 12Gb 1-port Int FIO SAS Controller	761872-B21
NOTE: Smart Storage Battery included.	
NOTE: Must select battery holder P/N: 786710-B21 when purchase P440.	
NOTE: B140i can't mix with any standup internal controller.	
NOTE: Must also select one of HP ML110 Gen9 Mini SAS P440/P840 Cable Kit (P/N 789651-B21)	
HP Smart Array P840/4GB FBWC 12Gb 2-ports Int FIO SAS Controller	761874-B21
NOTE: Smart Storage Battery included.	
NOTE: B140i can't mix with any standup internal controller.	
NOTE: Must select P840/4G Controller when apply 16SFF.	
NOTE: Must also select two of HP ML110 Gen9 Mini SAS P440/P840 Cable Kit (P/N 789651-B21)	
HP Host Bus Adapter	
HP H240 12Gb 2-ports Int FIO Smart Host Bus Adapter	761873-B21
NOTE: Must select for H240 controller.	
1 HP ML110 Gen9 Mini SAS H240 cable kit (P/N 789648-B21) is required for Hot Plug 4LFF Model.	
2 HP ML110 Gen9 Mini SAS H240 cable kit (P/N 789648-B21) are required for below:	
- Hot Plug 4 Model+4 LFF (with additional drive cage)	
- 8SFF Model	
HP AHCI-Enable FIO Setting	
NOTE: This needs to be selected when Advanced Host Controller Interface mode is required on B140i controller.	
	801845-B21

Additional Options for Factory Integration for Core and Additional Options

QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

Core Options

NOTE: Some options may not be integrated at the factory. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

HP Unique Options	HP ML110 Gen9 Mini SAS H240 Cable Kit	789648-B21
	NOTE: Must be selected for H240 controller.	
	1 cable kit is required for Hot Plug 4LFF	
	2 cable kits are required for below:	
	- Hot Plug 4+4 LFF (with additional drive cage)	
	- 8SFF	
	HP ML110 Gen9 Mini SAS P440/P840 Cable Kit	789651-B21
	NOTE: Must be selected for P440/P840 controller.	
	1 cable kit is required for P440x1	
	2 cable kits are required for P840x1	
	HP ML110 Gen9 System Fan Upgrade Kit	789654-B21
	NOTE: When any E5-1600 processor kit or SAS SSD is selected, then this option kit must be ordered.	
	HP ML110 Gen9 PCI Fan and Baffle Kit	784580-B21
	NOTE: If any PCIe card is selected, then this option kit must be selected. This option kit cannot be selected if no PCIe card is ordered.	
	HP ML110 Gen9 Redundant Power Supply Enablement Kit	784582-B21
	NOTE: This kit must be selected when 750W CS Gold Ht Plg Pwr Supply Kit is ordered.	

HP Memory	Registered DIMMs (RDIMMs) for E5-2600v3 Series	
	HP 4GB (1x4GB) Single Rank x8 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726717-B21
	HP 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726718-B21
	HP 8GB (1x8GB) Dual Rank x8 DDR4-2133 CAS-15-15-15 Registered Memory Kit	759934-B21
	HP 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726719-B21
	HP 32GB (1x32GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	728629-B21
	HP 4GB (1x4GB) Single Rank x8 DDR4-2133 CAS-15-15-15 Registered Standard Memory Kit	803026-B21
	HP 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Standard Memory Kit	803028-B21
	Load Reduced DIMMs (LRDIMMs) for E5-2600v3 Series	
	HP 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit	726720-B21

HP Optical Drives	HP 9.5mm SATA DVD-ROM JackBlack Gen9 Optical Drive	726536-B21
	HP 9.5mm SATA DVD-RW JackBlack G9 Optical Drive	726537-B21

HP Drives	NOTE: User may select any combination of SAS or SATA Hard Drives. However, if RAID is selected and both SAS and SATA Hard Drives have been selected, then only the SAS Drives will be used in the RAID set.	
	NOTE: If B140i is the primary controller, user can only select SATA drives.	
	NOTE: SAS drives require the selection of a SAS controller. See card lists in Controllers section.	
	SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives	
	HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) SC Dual Port Enterprise 3yr Warranty Hard Drive	718162-B21
	HP 900GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652589-B21
	HP 600GB 12G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	759212-B21
	HP 600GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652583-B21
	HP 450GB 12G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	759210-B21
	HP 450GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652572-B21
	HP 300GB 12G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	759208-B21
	HP 300GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652564-B21
	HP 146GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652605-B21
	SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives	
	HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652749-B21
	HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652745-B21

ВНЕШНО С ОПРИГНАЛА

QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

Pre-configured Models

For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

1. Pre-configured models ship with the configurations below. Options can be selected from the Core or Additional options section of this QuickSpecs.
2. HP does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.
3. If you desire a custom configuration please see "Configuration Information - Factory Integrated Models" section of this QuickSpecs.

NOTE: All Pre-configured Models come populated with some hard drive blanks installed. Should the customer need additional hard drive blanks, they can order more using either P/N 666987-B21: HP SFF Hard Drive Blank Kit or P/N 666986-B21: HP LFF Hard Drive Blank Kit.

NOTE: All pre-configured servers ship with a standard 6-foot IEC C-13/C-14 jumper cord (ADK02A). This jumper cord is also included with each standard AC power supply option kit. If a different power cord is required, please check the ProLiant Power Cables web page.

Caution: HP recommends that a minimum of two people are required for all Rack Server installations. Please refer to your installation instructions for proper tools and number of people to use for any installation.

	Entry Models	Base Models
[SKU Number]	777160-001	777161-001
Model Name	HP ProLiant ML110 Gen9 E5-2603v3 4GB-R B140i 4LFF NHP 350W PS Entry Server	HP ProLiant ML110 Gen9 E5-2620v3 8GB-R B140i 4LFF 350W PS Base Server
Processor	Intel® Xeon® E5-2603v3	Intel® Xeon® E5-2620v3
Number of Processors	One	
Memory	4GB (1x4GB Registered DIMMs, 2133 MHz)	8GB (1x8GB Registered DIMMs, 1600 MHz)
Network Controller	Broadcom 5717 Dual-port 1GbE	
Storage Controller	HP Dynamic Smart Array B140i	
Hard Drive	None ship standard	
Internal Storage	4 LFF HDD Bays (Non Hot Plug)	4 LFF HDD Bays (Hot Plug)
Optical Drive Bay	Optional Slim Optical Bay (SATA DVD-RW/ROM Optical Drive)	
Optical Drive	Optional Slim Optical Bay (SATA DVD-RW/ROM Optical Drive)	
PCI-Express Slots	5 PCIe 3.0 slots (without risers)	
Power Supply	(1) HP 350W ATX Power Supply	(1) HP 550W ATX Power Supply
Fans	1 non hot plug, non-redundant	
Management	iLO Management (standard), Intelligent Provisioning (standard), iLO Essentials (optional)	
Form Factor	Tower (4.5U)	
Warranty	Server Warranty includes 3-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response.	

QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

Configuration Information - Factory Integrated Models

This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on configurable product offerings and requirements.

1. Factory Integrated Models must start with a CTO Server.
2. FIO indicates that this option is only available as a factory installable option.
3. All Factory Integrated Models will be populated with sufficient hard drive blanks based on the number of initial hard drives ordered with the server.
4. Some options may not be integrated at the factory. Contact your local sales representative for additional information.

Step 1: Base Configuration (choose one of the following configurable models)

CTO Server	HP ProLiant ML110 Gen9 Non Hot Plug 4LFF Configure-to-order Server	HP ProLiant ML110 Gen9 Hot Plug 4LFF Configure-to-order Server	HP ProLiant ML110 Gen9 Hot Plug 8SFF Configure-to-order Server
SKU Number	776933-B21	776934-B21	776935-B21
Processor	1	1	1
DIMM Slots	8 DIMM slots for RDIMM, LRDIMM DDR4 Memory		
Storage Controller	HP Dynamic Smart Array B140i		
PCIe	5 PCIe 3.0 Slots		
Drive Cage	4LFF Non Hot Plug	4LFF Hot Plug	8SFF Hot Plug
Network Controller	Broadcom 5717 Dual-port 1GbE		
Fans	1 non hot plug, non-redundant		
Management	iLO Management (standard), Intelligent Provisioning (standard), iLO Essentials (optional)		
USB	2 front, 2 internal, 4 rear		

Step 2: Choose Required Options (only one of the following from each list unless otherwise noted)

HP Processors

Entry Processors - E5-2600v3 series Processors

HP ML110 Gen9 Intel® Xeon® E5-2609v3 (1.9GHz/6-core/15MB/85W) FIO Processor Kit 773167-L21

HP ML110 Gen9 Intel® Xeon® E5-2603v3 (1.6GHz/6-core/15MB/85W) FIO Processor Kit 773169-L21

Base Processors - E5-2600v3 series Processors

HP ML110 Gen9 Intel® Xeon® E5-2640v3 (2.6GHz/8-core/20MB/90W) FIO Processor Kit 773158-L21

HP ML110 Gen9 Intel® Xeon® E5-2620v3 (2.4GHz/6-core/15MB/85W) FIO Processor Kit 773162-L21

HP ML110 Gen9 Intel® Xeon® E5-2630Lv3 (1.8GHz/8-core/20MB/55W) FIO Processor Kit 773173-L21

HP ML110 Gen9 Intel® Xeon® E5-2623v3 (3GHz/4-core/10MB/105W) FIO Processor Kit 780075-L21

Performance Processors - E5-2600v3 series Processors

HP ML110 Gen9 Intel® Xeon® E5-2660v3 (2.6GHz/10-core/25MB/105W) FIO Processor Kit 773156-L21

Entry Processors - E5-1600v3 series Processors

HP ML110 Gen9 Intel® Xeon® E5-1603v3 (2.8GHz/4-core/10MB/140W) FIO Processor Kit 783017-L21

HP ML110 Gen9 Intel® Xeon® E5-1620v3 (3.5GHz/4-core/10MB/140W) FIO Processor Kit 783021-L21

HP ML110 Gen9 Intel® Xeon® E5-1650v3 (3.5GHz/6-core/15MB/140W) FIO Processor Kit 783023-L21

NOTE: DDR4 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.

NOTE: For the Intel® C600 Chipset E5-2600 Series, the letter preceding the model number indicates the Product Line (E3, E5, E7); 2600x v#, 2 = number of CPUs in a Node, 6 is socket/segment designation, 00 = Processor SKU, x = L for Low power SKUs and v# (not yet designated) = version number.

HP Memory

Registered DIMMs (RDIMMs) for E5-2600v3 Series

HP 4GB (1x4GB) Single Rank x8 DDR4-2133 CAS-15-15-15 Registered Memory Kit 726717-B21

HP 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit 726718-B21

HP 8GB (1x8GB) Dual Rank x8 DDR4-2133 CAS-15-15-15 Registered Memory Kit 759934-B21

HP 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit 726719-B21

HP 32GB (1x32GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit 738629-B21

HP 4GB (1x4GB) Single Rank x8 DDR4-2133 CAS-15-15-15 Registered Standard Memory Kit 803026-B21

HP 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Standard Memory Kit 803028-B21



QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

Service and Support

Service and Support HP Technology Services for Industry Standard Servers
HP Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to HP to help prevent problems and solve issues faster. Our support technology lets you tap into the knowledge of millions of devices and thousands of experts to stay informed and in control, anywhere, any time.

Protect your business beyond warranty with HP Care Pack Services
HP Care Pack Services enable you to order the right service level, length of coverage and response time as you purchase your new server, giving you full entitlement for the term you select.

Optimized Case Optimum performance availability

HP Care with 24x7 coverage, three year Care Pack Service
HP Care helps prevent problems and stabilize IT by utilizing secure, real-time, predictive analytics and consultations when your products are connected to HP. This Care Pack Service combines three years' reporting and advice with our 24x7 coverage and enhanced escalation management, four hour hardware response and two hour call back for software questions on leading industry standard software running on your server. <http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855ENW.pdf>

Intaining high level of server availability

HP Care 24x7, three-year Care Pack Service
HP Care 24x7 connects you to HP 24 hours a day, seven days a week for assistance on resolving issues. HP Care 24x7 provides immediate response within four hours if needed; collaborative software included in this Care Pack service provides troubleshooting assistance on industry leading software running on your HP server. Simplify your support experience and make HP your first call for hardware or software questions. <http://h20195.www2.hp.com/v2/GetDocument.aspx?docname=4AA4-8876ENW&cc=us&lc=en>

Related Services HP ProLiant Server Hardware Installation
Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner. <http://h20195.www2.hp.com/v2/GetPDF.aspx/5981-9356EN.pdf>

Factory Express for Servers and storage
HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed. For more information on Factory Express services for your specific server model please contact your sales representative or go to: <http://www.hp.com/go/factory-express>.

Data Privacy Services
Protect your data through better media management. HP Data privacy services help manage and protect sensitive data to reduce the risk of unauthorized access to private information and help meet compliance requirements. Our retention services allow you to keep drives and other devices upon failure, our removal services provide convenient data sanitization and our recovery services allow you to safely retire IT assets and capture any remaining value from the hardware. <http://www.hp.com/services/dataprivacy>

Additional HP Care Pack services can be found at: <http://www.hp.com/go/cpc>.

Get connected to HP to improve your support experience Prevent problems with innovative, automated monitoring tools and proactive services. Combining Proactive Care Services with our remote support technology such as Insight Online provides you with expert advice and personalized, cloud-based automated IT support, helping to prevent unplanned down time and solve problems quickly. For more information, visit: <http://www.hp.com/go/proactiveinsightexperience>

HP Support Center Personalized online support portal with access to information, tools and experts to support HP business products. Submit support cases online, chat with HP experts, access support resources or collaborate with peers. Learn more <http://www.hp.com/go/hpsc>.

HP's Support Center Mobile App** allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime.
HP Insight Remote Support and HP Support Center are available at no additional cost with a HP warranty, HP Care Pack or HP contractual support agreement.

** HP Support Center Mobile App is subject to local availability.

QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

Service and Support

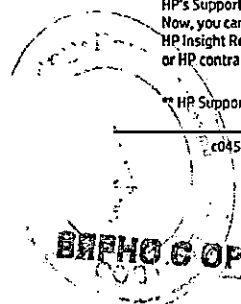
Parts and Materials HP will provide HP-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash due to malfunction.

For more information To learn more on HP ProLiant servers, please contact your HP sales representative or HP Authorized Channel Partner or visit: <http://www.hp.com/services/proliant>.

000033



QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

Optional Features

Embedded Management	iLO Essentials	HP iLO Essentials is the preferred license for small and medium business that offers full remote server management capabilities for small and medium business via the Integrated Remote Console (IRC), virtual media, and e-mail based alerts. Learn more about HP iLO Essentials at http://www.hp.com/go/iLO/essentials .
	iLO Scale-Out	HP iLO Scale-Out is the preferred license built for web hosting, cloud service providers, and high performance computing data centers, managing massive scale out environments. This license offers sophisticated scripting tools that provides remote access through Text Console via SSH, Dynamic power capping, Email-based Alerting and proactive notifications. For more information, visit http://www.hp.com/go/iLO/scale-out .
	Advanced	HP iLO Advanced licenses offer smart remote functionality without compromise, for all HP ProLiant servers. The license includes the full integrated remote console, virtual keyboard, video, and mouse (KVM), multi-user collaboration, console record and replay, and GUI-based and scripted virtual media and virtual folders. You can also activate the enhanced security and power management functionality. Learn more about HP iLO Advanced at http://www.hp.com/go/iLOadvanced .
	HP Insight Control	HP Insight Control, lets you deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. For more information, see http://www.hp.com/go/insightcontrol . NOTE: HP OneView support for HP ProLiant Gen9 rack (DL) and blade (BL) servers will be available with a future version of HP OneView to be released Early 2015. Customers may purchase HP OneView licenses now, and will be granted rights to use HP Insight Control software and transition to HP OneView with a free upgrade, when available. Customers also have the option to purchase HP Insight Control.

High Performance Clusters HP Insight Cluster Management Utility (CMU) is an HP-licensed and HP-supported suite of tools that are used for lifecycle management of hyperscale clusters of Linux ProLiant systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective. <http://www.hp.com/go/cmu>.
HP Cluster Platforms are specifically engineered, factory-integrated large-scale ProLiant clusters optimized for High Performance Computing, with a choice of servers, networks and software. Operating system options include specially priced offerings for Red Hat Enterprise Linux and SUSE Linux Enterprise Server, as well as Microsoft Windows HPC Server. A Cluster Platform Configurator simplifies ordering. <http://www.hp.com/go/clusters>.

HPC Interconnects **NOTE:** High Performance Computing (HPC) interconnect technologies are available for this server under the HP Cluster Platform product portfolio. These high-speed interconnects are fully supported by HP when they are part of these configure to order clusters. Solutions can be defined with a lot of flexibility with the help of configuration tools. Please visit the following URL to configure HPC Clusters with InfiniBand interconnects: <http://www.hp.com/techservers/clusters/furp/index.html>.

Storage Software Whether you need to solve a specific data protection, archiving, or storage command and control challenge, or deliver on strategic consolidation, compliance, or continuity initiatives, look no further than HP storage software. Our storage software helps you reduce costs, simplify storage infrastructure, protect vital assets and respond faster to business opportunities.
Storage software that gets the job done:

- **Data Protection and Recovery Software**
Whether you're a large enterprise or a smaller business, HP data protection and recovery software will cost-effectively protect you against disaster and ensure business continuity.
- **Data Archive and Migration Software**
HP's storage software enables you to comply with data retention and retrieval requirements, improve application performance, and reduce costs by efficiently migrating infrequently accessed or less valuable data to lower cost storage.
- **Storage Resource Management Software (SRM)**
HP's storage resource management software reduces operational costs and provides the command and control foundation you need to efficiently manage and visualize your physical and virtual environments.

QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

Optional Features

- **Data Replication Software**
HP offers array-based and host-based replication software for use in disaster recovery, testing, application development and reporting.
- **Storage Device Management Software**
Maximize your investment in HP storage and networking with software that enables hardware-specific configuration, performance tuning and connectivity management.
- **HP StoreVirtual VSA**
With HP StoreVirtual VSA you can use the power of virtualization to create a virtual array within your host server. Manage it as a single pool of shared storage capacity, and scale it to match your evolving needs. HP ProLiant Gen9 servers include a 3-year limited license for HP StoreVirtual VSA software with 1TB of capacity at no extra cost. Simply select to install HP StoreVirtual VSA software during server setup within Intelligent Provisioning. More information, instructional videos, and free console management software are available at <http://www.hp.com/go/vsa1TB>.

NOTE: For more information about Storage Software including QuickSpecs, please see: <http://www.hp.com/go/storage/software>.

One Config Simple (SCE) SCE is a guided self-service tool to help sales and non-technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes. If you require "custom" rack configuration or configuration for products not available in SCE, please contact HP's Customer Business Center or an Authorized Partner for assistance. <http://www.hp.com/products/configurator>.

QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

Standard Features

Microsoft Certified
 ISO 9001:2015
 ISO 14001:2015
 USB 3.0 Support
 SMBIOS 2.7, 1
 ASHRAE A3

HP NVIDIA Quadro K2200 GPU Module
 HP NVIDIA Quadro K4200 GPU Module
 NOTE: If this SKU is selected, then customer must select HP 750W CS Gold Ht Plg Pwr Supply Kit OR HP 550W PX-GEN9 Pwr Supply Kit in order.
 NOTE: This option kit cannot be selected with 350W power supplies due to power consumption.
 NOTE: The supporting holder kit - 787006-B21 must be selected when K4200 GPU Module kit is ordered.

HP Server UEFI/Legacy ROM

HP Server UEFI/Legacy ROM
 Unified Extensible Firmware Interface (UEFI) is an industry standard that provides better manageability and more secured configuration while interacting with your server at boot time. HP ProLiant Gen9 platform defaults to UEFI and can be factory or field configured for Legacy BIOS Boot Mode.
 NOTE: The UEFI System Utilities function is analogous to the HP ROM-Based Setup Utility (RBSU) of legacy BIOS. For more information, please visit <http://www.hp.com/go/proliantuefi/docs>.
 UEFI enables numerous new capabilities specific to HP ProLiant servers such as:

- Secure Boot
- Operating system specific functionality
- Support for > 2.2 TB (using GPT) boot drives
- USB 3.0 Stack
- Embedded UEFI Shell
- Mass Configuration Deployment Tool using HP RESTful API.
- PXE boot support for IPv6 networks
- Boot support for option cards that only support a UEFI option ROM

For more information please visit <http://www.hp.com/go/proliant/uefi>.
 NOTE: For UEFI Boot Mode, boot environment and OS image installations should be configured properly to support UEFI.
 NOTE: HP Legacy F10 Mode Setting (758959-B22) can be selected to configure the system in Legacy mode in the factory.

Form Factor	Tower (4.5U)
Embedded Management	HP Integrated Lights-Out (HP iLO) Monitor your servers for ongoing management, service alerting, reporting and remote management with HP iLO. Learn more at http://www.hp.com/go/ilo .
	UEFI Configure and boot your servers securely with industry standard Unified Extensible Firmware Interface (UEFI). Learn more at http://www.hp.com/go/ProLiant/uefi .
	HP RESTful API RESTful API is an application programming interface. RESTful Web Service API served by iLO's web server. Learn more at http://www.hp.com/go/restfulapi .
	Intelligent Provisioning Provision servers by discovering and deploying 1 to few servers with Intelligent Provisioning. Learn more at http://www.hp.com/go/intelligentprovisioning .
	Embedded Remote Support HP's embedded remote support, when used with Insight Online direct connect or HP Insight Remote Support, allows HP ProLiant servers to transmit hardware events directly to HP or an HP Authorized Partner for automated phone home support. Learn more at http://www.hp.com/go/insightonline/info .

QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

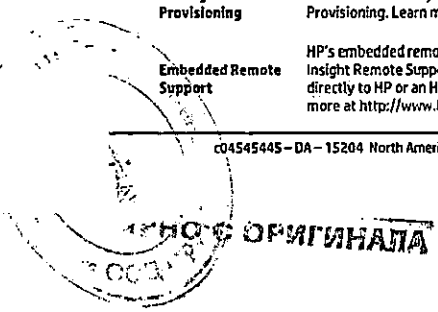
Standard Features

Server utilities	HP Smart Update Optimize firmware and driver updates with HP Smart Update solutions. Learn more at http://www.hp.com/go/smartupdate .
	HP Systems Insight Manager (HP SIM) HP SIM allows you to monitor the health of your HP ProLiant Servers and HP Integrity Servers, and also provides you with basic support for non-HP servers. HP SIM also integrates with HP SUM to provide quick and seamless firmware updates. Learn more at http://www.hp.com/go/sim .
	Scripting Tool Kit and Windows PowerShell Provision 1 to many servers using your own scripts to discover and deploy them with HP Scripting Tool Kit for Windows and Linux or HP Scripting Tools for Windows PowerShell. Learn more at http://www.hp.com/go/ProLiantSTK or http://www.hp.com/go/powershell .
	HP RESTful Interface Tool HP RESTful Interface tool is a scripting tool to provision servers using RESTful API Interface to discover and deploy servers at scale. Learn more at http://www.hp.com/go/restfulapi .
	HP iLO Mobile Application Enables the ability to access, deploy, and manage your server anytime from anywhere from select smartphones and mobile devices. For additional information please visit: http://www.hp.com/go/ilo/mobileapp .
	HP Insight Online HP Insight Online, available at no additional cost as part of your HP warranty, Care Pack or contractual support agreement with HP, is a personalized dashboard for simplified tracking of IT operations and support information from anywhere, anytime. Learn more at http://www.hp.com/go/insightonline/info . NOTE: The Service Pack for ProLiant (which includes HP SUM) can be downloaded from http://www.hp.com/go/spp/download . More information can be found: http://www.hp.com/go/SmartUpdate , http://www.hp.com/go/spp and http://www.hp.com/go/hpsum .

Security	Power-on password Setup password Serial interface control Power switch security Administrator's password TPM 1.2 UEFI
-----------------	---

Warranty	This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners resellers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details. NOTE: Server Warranty includes 3-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at: http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html .
-----------------	--

000034



QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

Standard Features

Expansion Slots

Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Form Factor	Notes
5	PCIe 3.0	x8	x8		Full-height, half-length slot	For processor 1
	PCIe 3.0	x4	x4		Full-height, half-length slot	For processor 1
3	PCIe 3.0	x8	x8		Full-height, half-length slot	For processor 1
2	PCIe 3.0	x4	x4		Full-height, half-length slot	For processor 1
1	PCIe 3.0	x16	x16		Full-height, 1/4 length (up to 9.5") Slot	For processor 1

NOTE: Bus number - Default bus assignment (in decimal). Inserting cards with PCI bridges may alter the actual bus assignment number.

NOTE: Five total expansion PCIe 3.0 slots. One PCIe 3.0 x16 (x16 speed); Two PCIe 3.0 x8 (x8 speed); Two PCIe 3.0 x4 (x4 speed).

Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Device Number	Form Factor	Notes
6	HP ML Gen9 Dedicated iLO Port Kit	x1	x1			Dedicate for ML Series	

Storage Controller

Entry Models	HP Dynamic Smart Array B140i Controller
NOTE: B140i can't mix with any standup internal controller.	
Base Models	HP Dynamic Smart Array B140i Controller
NOTE: B140i can't mix with any standup internal controller.	

Internal Storage Devices

Optical Drive	Optional SATA 9.5mm DVD-ROM Optical Drive Optional SATA 9.5mm DVD RW Optical Drive NOTE: Optical is optional in pre-configured models.
Hard Drives	None ship standard
Hard Drive Bays	Up to 4 Non-hot plug SATA 3.5" drives NOTE: Mixing drive cage types is not allowed. NOTE: All Pre-configured Models come populated with hard drive blanks installed. The 4LFF configurations includes 1 blanks and 8SFF includes 7 blanks. Additional hard drive blanks can be ordered using either P/N 666986-821 for the HP LFF HDD Blank Kit or P/N 666987-821 for the HP SFF HDD Blank Kit. These part numbers for single HDD blanks below are also provided should you require replacement HDD blanks for your server. NOTE: NHP SATA is limited to B140i controller. (4) Hot plug LFF SAS/SATA HDD bays; upgradable to (8) (8) Hot plug SFF SAS/SATA HDD bays; upgradable to (16)

Maximum Internal Storage

	CAPACITY	CONFIGURATION
Hot Plug LFF SAS	48TB	8x6TB
Hot Plug LFF SATA	48TB	8x6TB
Hot Plug SFF SAS	19.2TB	16x1.2TB
Hot Plug SFF SATA	16TB	16x1TB
Non-Hot Plug LFF SATA	24TB	8x3TB
Hot Plug LFF SAS SSD	12.8TB	8x1.6TB
Hot Plug LFF SATA SSD	12.8TB	8x1.6TB
Hot Plug SFF SAS SSD	25.6TB	16x1.6TB
Hot Plug SFF SATA SSD	25.6TB	16x1.6TB

QuickSpecs

HP ProLiant ML110 Generation9

Standard Features

Power Supply

HP 350W ATX-Gen9 Power Supply F10 Kit
HP 550W ATX-Gen9 Power Supply Kit
HP 750W CS Gold Ht Plg Pwr Supply Kit
NOTE: The first 750W CS Gold Ht Plg Pwr Supply Kit requires the RPS Enablement Kit.
NOTE: The RPS Enablement kit will support two power supplies.
HP Entry-Level Power Supplies provide lower-cost options for customers trying to balance their need for enterprise class efficiency and reliability while maintaining lowest possible hardware costs. All Entry-Level power supply options have been designed specifically for HP ProLiant Gen9 Essential Series servers.

The HP 550W F10 Power Supply is the standard, non-redundant AC power supply option for most HP ProLiant Gen9 Essential servers. It features Silver-level (89%) certified power efficiency with a set of features optimized for the Gen9 Essential-series rack and tower servers.

All pre-configured servers ship with a standard 6-foot IEC C-13/C-14 jumper cord (A0K02A). This jumper cord is also included with each standard AC power supply option kit. If a different power cord is required, please check the ProLiant Power Cables web page.

To review the power requirements for your selected system, please use the HP Power Advisor Tool located at <http://www.hp.com/go/hppoweradvisor>.

Power specifications and technical content for all HP Server power supplies can be found at <http://www.hp.com/go/proliant/powersupply>.

System Fans

One of the following depending on model	1P model	Non-redundant 2 fans	Redundant NA
	NOTE: One (1) Non-hot plug, non-redundant fans ship as standard.		

Interfaces

Video	1 (rear)
Network RJ-45 (Ethernet)	2
HP iLO Remote Management Network Port	1Gb Dedicated
Micro SD Slot	1 (internal) NOTE: The Micro-SD slot is not a hot-pluggable device. Customers should not attempt to plug a Micro-SD card into the Micro-SD slot while the server is powered.
USB 3.0	5 (2 rear, 1 internal, 2 front)
USB 2.0	3 (2 rear, 1 internal)

Operating Systems and Virtualization Software Support for ProLiant Servers

Microsoft Windows Server
Canonical Ubuntu
Red Hat Enterprise Linux (RHEL)
SUSE Linux Enterprise Server (SLES)
VMware
NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: <http://www.hp.com/go/ossupport> and our driver download page <http://www.hp.com/support/ML10Gen9>.

Upgradeability

Up to 16 SFF Hard Drive Bays, Or 8 LFF Hard Drive Bays
Up to 8 DIMM slots
Redundant Power Supply
Optional optical drive (up to 1)

Industry Standard Compliance

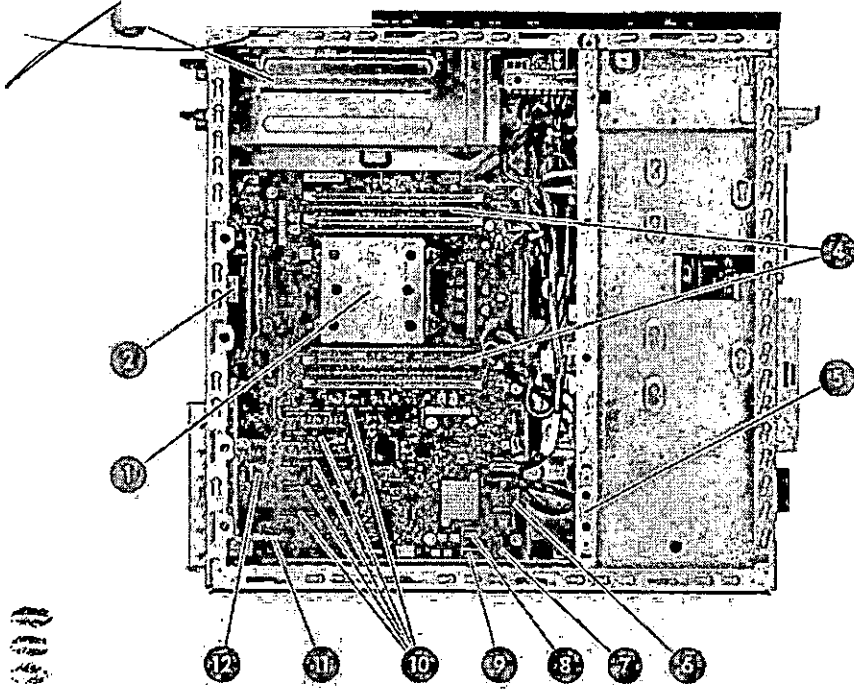
ACPI 2.0b Compliant
PCIe 3.0 Compliant
PXE Support
WOL Support



QuickSpecs

Overview

HP ProLiant ML110 Generation9 (Gen9)



Internal View

1. One (1) processor and heatsink with HP Smart Socket Guide
2. System Fan (92x32mm default), upgrade system fan(92x38mm) is required for 140W E5-1600v3 Processor and SAS SSD
3. Power Supply backplane cage
4. Eight (8) DDR4 DIMM slots
5. PCIe fan (option required to support PCIe expansion cards)
6. Front USB 3.0 connector
7. SATA connector 1
8. Internal USB 3.0 connector
9. Internal USB 2.0 connector
10. Five (5) PCIe expansion slots
11. Dedicated iLO module slot (optional)
12. MicroSD slot

QuickSpecs

Standard Features

HP ProLiant ML110 Generation9 (Gen9)

NOTE: For more information regarding Intel Xeon processors, please see the following <http://www.intel.com/xeon>.

Intel® Xeon® processor E5-2600 v3 product family is designed to deliver the best combination of performance, built-in capabilities, and cost-effectiveness. One (or two) of the following Intel® Xeon® E5-2600 v3 processors based on the model.

Processor One of the following depending on model	Model	CPU frequency	Cores	L3 Cache	Power	QPI	DDR4 Hz
	E5-2660v3	2.6GHz	10	25MB	105W	9.6GT/s	2133
	E5-2640v3	2.6GHz	8	20MB	90W	8.0GT/s	1866
	E5-2630Lv3	1.8GHz	8	20MB	55W	8.0GT/s	1866
	E5-2623v3	3.0GHz	4	10MB	105W	8.0GT/s	1866
	E5-2620v3	2.4GHz	6	15MB	85W	8.0GT/s	1866
	E5-2609v3	1.9GHz	6	15MB	85W	6.4GT/s	1600
	E5-2603v3	1.6GHz	6	15MB	85W	6.4GT/s	1600
	E5-1650v3	3.5GHz	6	15MB	140W	0.0GT/s	2133
	E5-1620v3	3.5GHz	4	10MB	140W	0.0GT/s	2133
	E5-1603v3	2.8GHz	4	10MB	140W	0.0GT/s	1866

NOTE: Up to 1 processor supported. Mixing different processor models is not supported.

Cache Memory
One of the following depending on model

10MB (1 x 10MB) Level 3
NOTE: For Four-core processors.

15MB (1 x 15MB) Level 3
NOTE: For Six-core processors.

20MB (1 x 20MB) Level 3
NOTE: For Eight-core processors.

30MB (1 x 30MB) Level 3
NOTE: For Ten-core processors.

Chipset

Intel® C610 Series Chipset
Intel® E5-2600v3 Processor Family
Intel® E5-1600v3 Processor
NOTE: This is a 140W processor which need to order with the ML110 Gen9 System fan upgrade kit - 789554-B21.
NOTE: For more information regarding Intel® chipsets, please see the following URL:
<http://www.intel.com/products/server/chipsets/>.

On System Management Chipset

HP iLO (Firmware HP iLO4 2.1) 2GB NAND
NOTE: iLO USB user space configurable via UEFI and accessible via iLO. Read and learn more in the iLO QuickSpecs.

Memory

Type:
HP SmartMemory
DDR4 Registered (RDIMM) or Load Reduced (LRDIMM)

DIMM Slots Available 8 (8 DIMM slots per processor, 4 channels per processor, 2 DIMMs per channel)

Maximum Capacity (LRDIMM) 128GB (8 x 16GB LRDIMM @2133MHz)
Maximum Capacity (RDIMM) 256GB (8 x 32GB RDIMM @2133MHz)
NOTE: This server does not support mixing LRDIMMs or RDIMMs. Attempting to mix any combination of these DIMMs can cause the server to halt during BIOS installation.

Memory Protection

Advanced ECC
Advanced ECC uses single device data correction to detect and correct single and all multi-bit error that occurs within a single DRAM chip.

Online spare
Memory online spare mode detects a rank that is degrading and switches operation to the spare rank.

Network Controller Broadcom 5717C0 Dual-port 1Gb



1000PPIHHAJA

QuickSpecs

HP ProLiant ML110 Generation9 (Gen9)

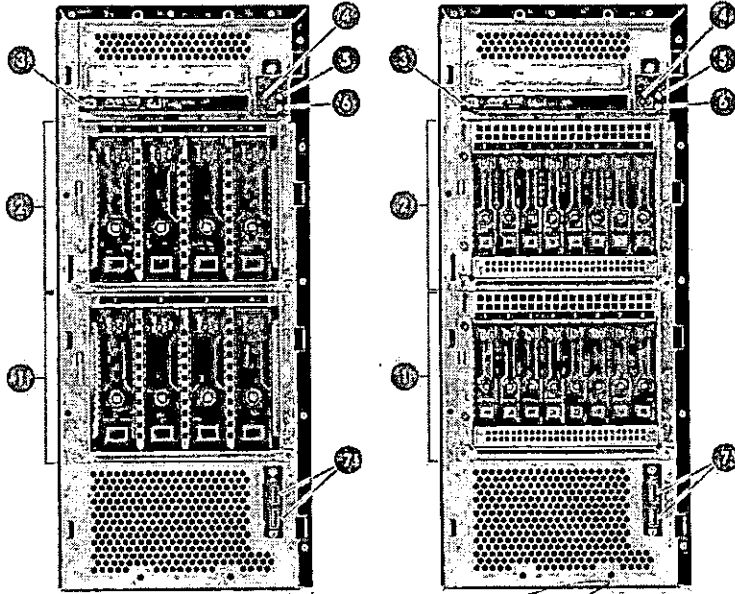
Overview

HP ProLiant ML110 Generation9 (Gen9)

The HP ProLiant ML110 Gen9 Server is a 1P/ 4.5U affordable single-socket tower server featuring better performance, expansion, and growth than previous 1P single-socket tower models. Designed to meet small and midsized businesses' performance compute demands the ML110 Gen9 delivers exceptional value at an affordable price.

8 LFF Model

16 SFF Model



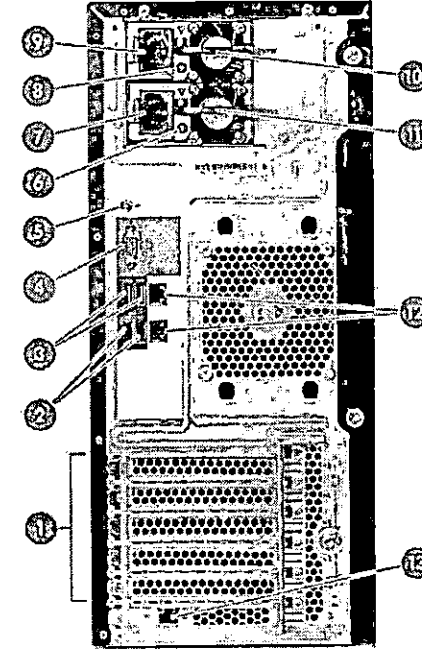
Front View (details for 8LFF and 16SFF)

1. Drive cage
2. Drive cage
3. Optical drive (optional)
4. Power button/LED
5. Health LED
6. NIC status LED
7. USB 3.0 (2) connectors

QuickSpecs

HP ProLiant ML110

Overview



Rear View

1. PCIe3 Slots (Slots 1-5)
2. USB 2.0 (2) connectors
3. USB 3.0 (2) connectors
4. Video connector
5. UID button/LED
6. Power supply 2 LED
7. Power supply 2 power connection
8. Power supply 1 LED
9. Power supply 1 power connection
10. Power Supply 1 bay
11. Power Supply 2 bay
12. Network RJ-45 ports (2)
13. HP ML Gen9 dedicated iLO port kit (optional)



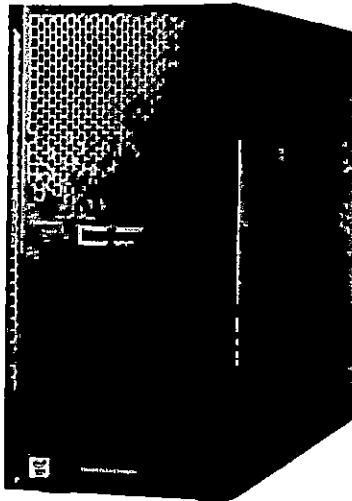


**Hewlett Packard
Enterprise**

Data sheet

HPE ProLiant ML150 Gen9 Server

Essential mix of performance, efficiency, and expandability



Right value tower server for SMBs and enterprise

No matter what your business size, if you're going to be competitive in today's global, digital economy, you need the right compute at the right price. The HPE ProLiant ML150 Gen9 Server is a dual-socket tower server that delivers exceptional value with a low initial capital outlay—making it ideal for stretching limited budgets.

The **HPE ProLiant ML150 Gen9 Server** features essential performance with support for up to two Intel® Xeon® E5-2600 v3 or E5-2600 v4 Processors, along with expansion options that allow you to grow as needed—all in a chassis depth of 24 inches. Built-in ProLiant technologies not only simplify server deployment and management, but also automate mundane IT tasks to improve productivity and efficiency so you can recognize ongoing business benefits.

The flexibility to support sophisticated workloads

Flexible and expandable, the HPE ProLiant ML150 Server is the ideal choice for small- to medium-sized businesses (SMBs), as well as enterprises running key workloads such as IT infrastructure support, database, web, and collaboration. The ML150 can accommodate changing business needs by providing essential performance for current requirements along with the ability to expand as needed by supporting a second processor, additional hard drives, and more memory.

The HPE ProLiant ML150 Gen9 Server offers standard HPE **Integrated Lights-Out (iLO)** capabilities and HPE OneView 3.1 standard for simplified hybrid IT management. The flexible design supports up to 16 DIMM slots for DDR4 HPE SmartMemory with up to 23 percent greater performance,¹ 16 small form factor (SFF) or 10 large form factor (LFF) drives, six PCI Express (PCIe) slots, and eight USB ports. And the HPE ProLiant ML150 Gen9 Server is reliable and secure, with redundant storage and power supply options to increase system uptime.

With essential performance, efficiency, and expandability built in, the HPE ProLiant ML150 Gen9 Server covers a wide range of applications and workloads for sophisticated SMBs, as well as large enterprise-class server environments.

Exceptional value in a chassis depth of 24 inches

HPE is all about choice. And so is the HPE ProLiant ML150 Gen9. You can choose from many options including:

- 10 LFF or 16 SFF drives
- Two single-wide or one double-wide graphics processing unit (GPU) options for boosting performance in graphics and virtual desktop infrastructure (VDI) apps
- Complete HPE Care Pack support options

¹ Up to 23 percent better performance is based on similar capacity DIMM running on HPE server compared to a non-HPE server with DDR4. HPE internal labs estimate, March 2016.

Technical specifications

HPE ProLiant ML150 Gen9 Server

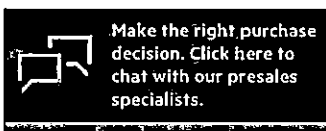
Compute	Up to two Intel Xeon E5-2600 v3 or E5-2600 v4 series with 6/8/10/12/14/16/18 cores. PCIe 3.0, up to six available slots
Memory	HPE SmartMemory (16) DDR4, up to 2400 MHz (512 GB max)
Storage	Standard HPE Dynamic Smart Array B140i and optional HPE Smart Array Controllers, and HPE Smart host bus adapters (HBAs) via PCIe stand-up cards
HPE SmartDrives	16 SFF/10 LFF max, HDD/SSD
Networking	2x 1GbE embedded/Standup
VGA/Serial/USB ports/SD	One VGA, zero serial, eight USB, one microSD
System ROM	UEFI and Legacy BIOS
GPU support	Two single-wide or one double-wide GPU card support
Converged management	HPE Insight Control, HPE iLO Advanced, and HPE OneView 3.1
Support management	HPE Insight Online
Embedded management	HPE iLO 4, Intelligent Provisioning, System Update Manager, RESTful Interface Tool, Scripting Tools for Microsoft® and Windows Server® PowerShell
Power and cooling	89% eff. (Silver) 550 W multi-output, 92% eff. (Gold) 900 W RPS
Industry compliance	ASHRAE A3
Chassis depth	Tower 24"
Warranty	3/1/1

QuickSpecs:

hpe.com/info/quickspecs



hpe.com/info/quickspecs



Sign up for updates

**Hewlett Packard
Enterprise**

HPE Pointnext services

HPE Pointnext leverages our strength in infrastructure, partner ecosystems and the end-to-end lifecycle experience, to accelerate powerful, scalable IT solutions to provide you the assistance for faster time to value. HPE Pointnext provides a comprehensive portfolio including Advisory and Transformational, Professional, and Operational Services to help accelerate your digital transformation.

Operational Services

- **Flexible Capacity:** An infrastructure service that offers on-demand capacity, combining the agility and economics of public cloud with the security and performance of on-premises IT.
- **Datacenter Care:** HPE's most comprehensive support solution tailored to meet your specific data center support requirements. It offers a wide choice of proactive and reactive service levels to cover requirements ranging from the most basic to the most business-critical environments. HPE Datacenter Care Service is designed to scale to any size and type of data center environment while providing a single point of contact for all your support needs for HPE as well as selected multivendor products.
- **Proactive Care:** An integrated set of reactive and proactive services designed to help you improve the stability and operation of your device.
- **Foundation Care:** Support for HPE servers, storage, networking hardware and software to meet your availability requirements with a variety of coverage levels and response times.

Learn more at

hpe.com/servers/ml150gen9

Copyright 2014, 2016–2017 Hewlett Packard Enterprise Development LP. The information contained herein is subject to change without notice. The only warranties for Hewlett Packard Enterprise products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Hewlett Packard Enterprise shall not be liable for technical or editorial errors or omissions contained herein.

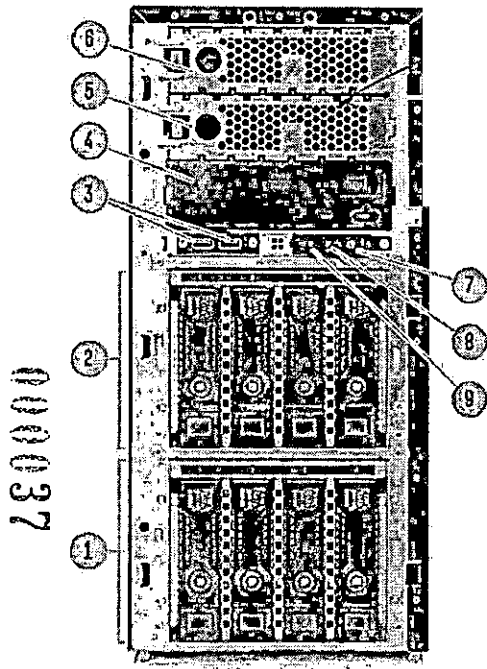
Intel Xeon is trademark of Intel Corporation in the U.S. and other countries. SD and microSD are trademarks or registered trademarks of SD-3C in the United States, other countries or both. Microsoft and Windows Server are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. All other third-party trademark(s) is/are property of their respective owner(s).

JA5-5871ENW, July 2017, Rev. 3

Overview

HPE ProLiant ML150 Generation9 (Gen9)

The HPE ProLiant ML150 Gen9 Server delivers the essential mix of performance, price and expandability to fit the needs of growing budget conscious businesses. Designed as a dual-socket tower server, it is a right size tower with performance and expandability. With expansion options, it allows you to grow as needed with a low initial capital outlay. Covering a wide range of applications and workloads and addressing our customers from sophisticated SMB to large enterprise class server environments.



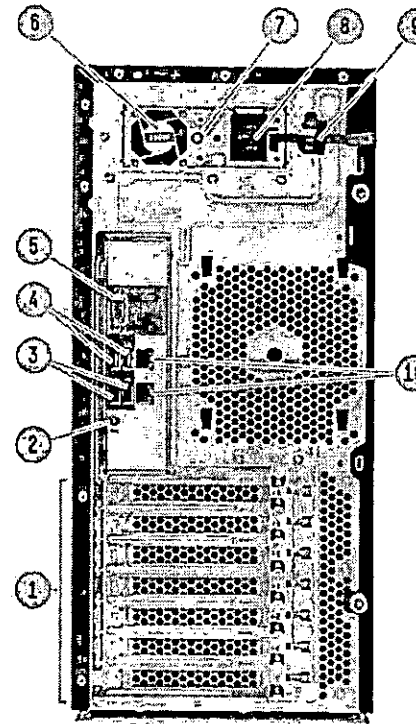
Front View details for Tower (LFF)

- 1 Drive Cage (4 LFF shown) Alternative server choice would offer 8 SFF
- 2 Drive Cage (4 LFF shown) Alternative server choice would offer 8 SFF
- 3 USB 3.0 (2)
- 4 Media bay, Optional SATA 9.5mm DVD-ROM shown
- 5 Media bay, blank shown*
NOTE: Optional choices: SATA 9.5mm DVD-ROM or DVD RW Optical Drive, Tape Drive, or LFF.
NOTE: When populating 10 LFF, not able to install Tape Drive or Optical Drive. Possible
- 6 Media bay, blank shown*
NOTE: Optional choices: SATA 9.5mm DVD-ROM or DVD RW Optical Drive, Tape Drive, or LFF.
- 7 Power On/Standby button and system power LED button
- 8 Health LED

Overview

Configurations: 1) 8LFF +1 ODD + 1 Tape Drive (Full/Half), or 2) 9LFF + 1 ODD, or 3) 9LFF + 1 Tape Drive (Full/Half).

NOTE: When populating 10 LFF, not able to install Tape Drive or Optical Drive. Possible Configurations: 1) 8LFF +1 ODD + 1 Tape Drive (Full/Half), or 2) 9LFF + 1 ODD, or 3) 9LFF + 1 Tape Drive (Full/Half).



Rear View (Tower Model)

- 1 PCI Slots (Slots 1-6) Slot 3 and 5 can support Optional GPU
- 2 Unit ID LED
- 3 USB 2.0 (2)
- 4 HPE 550W Power Supply
- 5 Video Connector
- 6 Power Supply Power connection
- 7 Power supply Power LED
- 8 Network RJ-45 Ports (2)
- 9 Cable tie back
- 10 Network RJ-45 Ports (2)

Standard Features

NOTE: For more information regarding Intel Xeon processors, please see the following <http://www.intel.com/xeon>.

Processor One of the following depending on model	Model	CPU frequency	Cores	L3 Cache	Power	QPI	DDR4 Hz
	E5-2660v3	2.6GHz	10	25MB	105W	9.6GT/s	2133
	E5-2650v3	2.3GHz	10	25MB	105W	9.6GT/s	2133
	E5-2650Lv3	1.8GHz	12	30MB	65W	9.6GT/s	2133
	E5-2640v3	2.6GHz	8	20MB	90W	8.0GT/s	1866
	E5-2630v3	2.4GHz	8	20MB	85W	8.0GT/s	1866
	E5-2630Lv3	1.8GHz	8	20MB	55W	8.0GT/s	1866
	E5-2609v3	1.9GHz	6	15MB	85W	6.4GT/s	1600
	E5-2620v3	2.4GHz	6	15MB	85W	8.0GT/s	1866
	E5-2603v3	1.6GHz	6	15MB	85W	6.4GT/s	1600
	E5-2660v4	2.0GHz	14	35MB	105W	9.6GT/s	2400
	E5-2650v4	2.2GHz	12	30MB	105W	9.6GT/s	2400
	E5-2650Lv4	1.7GHz	14	35MB	65W	9.6GT/s	2400
	E5-2640v4	2.4GHz	10	25MB	90W	8.0GT/s	2133
	E5-2630v4	2.2GHz	10	25MB	85W	8.0GT/s	2133
	E5-2630Lv4	1.8GHz	10	25MB	55W	8.0GT/s	2133
	E5-2620v4	2.1GHz	8	20MB	85W	8.0GT/s	2133
	E5-2609v4	1.7GHz	8	20MB	85W	6.4GT/s	1866
	E5-2603v4	1.7GHz	6	15MB	85W	6.4GT/s	1866
	E5-2695v4	2.1GHz	18	45MB	120W	9.6GT/s	2400
	E5-2683v4	2.1GHz	16	40MB	120W	9.6GT/s	2400
	E5-2680v4	2.4GHz	14	35MB	120W	9.6GT/s	2400

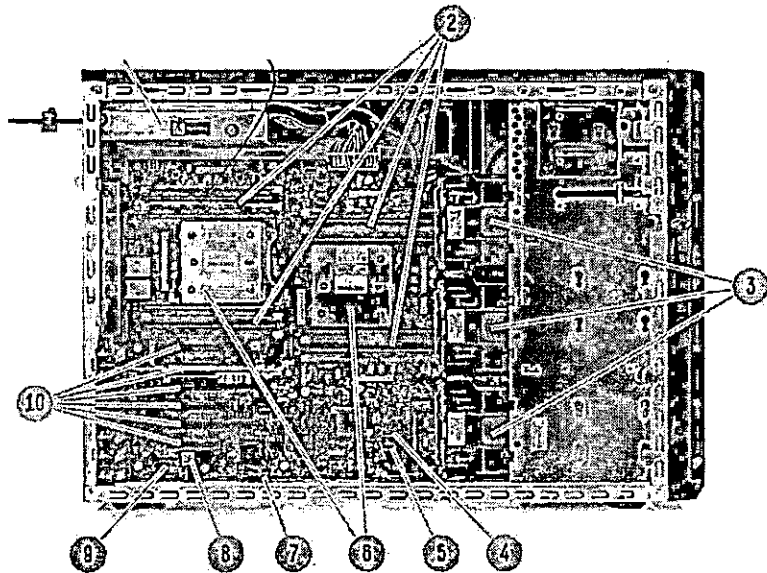
NOTE: Up to 2 processors supported. Mixing different processor models is not supported.

NOTE: Recommend to select 900W for 2P config, or check power advisor for power consumption for the customer usage case.

Cache Memory One of the following depending on model	15MB (1 x 15MB) Level 3 cache
	NOTE: For Six-core processors.
	20MB (1 x 20MB) Level 3 cache
	NOTE: For Eight-core processors.
	25MB (1 x 25MB) Level 3 cache
NOTE: For Ten-core processors.	
30MB (1 x 30MB) Level 3 cache	
NOTE: For Twelve-core processors.	
35MB (1 x 35MB) Level 3 cache	
NOTE: For Fourteen-core processors.	

Chipset	Intel® C610 Series Chipset Intel® E5-2600v4 Processor Family NOTE: For more information regarding Intel® chipsets, please see the following URL: http://www.intel.com/products/server/chipsets/ .
----------------	--

On System Management Chipset	HPE iLO (Firmware HPE iLO4 2.0 or later) with NAND NOTE: Read and learn more in the iLO QuickSpecs .
-------------------------------------	---



Internal View (Tower Model)

- | | |
|---|---|
| 1 Power Supply | 2 Sixteen (16) DDR4 DIMM slots. Shown fully populated in 16 slots (8 per processor) |
| 3 System Fans: Three fans for 2P SKU | 4 Internal USB 3.0 connector |
| 5 Internal USB 2.0 connector | 6 Two (2) processors and heatsinks with HPE Smart Socket Guide (Second Processor is Optional) |
| 7 Gen9 Smart Storage Battery Holder Kit | 8 MicroSD slot |
| 9 Dedicated iLO module slot (optional) | 10 Six (6) PCIe expansion slots |

What's New

- HPE 12TB SATA 7.2K LFF HDD
- HPE RDX 4TB USB 3.0 External/ Internal Disk Backup System
- ClearOS, an easy to use OS with an application marketplace, allows you to build a fully functional server that is just right for you at no upfront cost. To learn more on what you can do, please visit <http://www.hpe.com/servers/clearos>

PHO C OPIFMEHATA

Standard Features

Type:

HPE 5n

DDR4 Registered (RDIMM) or Load Reduced (LRDIMM)

DIMM Slots Available 16

Maximum Capacity 512GB (16 x 32GB LRDIMM @2400MHz) (LRDIMM)

Maximum Capacity 512GB (16 x 32GB RDIMM @2400MHz) (RDIMM)

NOTE: This server does not support mixing LRDIMMs or RDIMMs. Attempting to mix any combination these DIMMs can cause the server to halt during BIOS installation.

Memory Protection Advanced ECC

Advanced ECC uses single device data correction to detect and correct single and all multibit error that occurs within a single DRAM chip.

Online spare

Memory online spare mode detects a rank that is degrading and switches operation to the spare rank.

Network Controller

Broadcom 5717 Dual-port 1Gb

Expansion Slots

Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Form Factor	Notes
6	PCIe 3.0	x8	x8		Full length/full height	For processor 1
5	PCIe 3.0	x16	x16		Full length/full height	For processor 1
4	PCIe 3.0	x8	x8		Half length/full height	For processor 1
3	PCIe 3.0	x16	x16		Full-height, full-length slot	For processor 2
2	PCIe 3.0	x8	x8		Half length/full height	For processor 1
1	PCIe 3.0	x8	x8		Half length/full height	For processor 2

NOTE: Bus number - Default bus assignment (in decimal). Inserting cards with PCI bridges may alter the actual bus assignment number.

NOTE: Six total expansion PCIe 3.0 slots. Two PCIe 3.0 x16 (x16 speed); Four PCIe 3.0 x 8 (x8 speed).

Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Device Number	Form Factor	Notes
7	HPE ML Gen9 Dedicated iLO Port Kit	x1	x1			Dedicate for ML Series	

Storage Controller

Entry Models HPE Dynamic Smart Array B140i Controller

NOTE: B140i can't mix with any standup internal controller.

Base Models HPE Dynamic Smart Array B140i Controller

NOTE: B140i can't mix with any standup internal controller.

Performance Models HPE H240 FIO Smart Host Bus Adapter

Internal Storage Devices

Optical Drive Optional SATA 9.5mm DVD-ROM Optical Drive

Optional SATA 9.5mm DVD RW Optical Drive

NOTE: Optical is optional in entry, base and performance BTO models.

NOTE: ML150 Gen9 Slim ODD Enablement Kit (P/N: 784603-921) is required for any DVD options.

Standard Features

Hard Drives

None ship standard

Hard Drive Bays

Up to 10 Non-hot plug SATA 3.5" drives

NOTE: Mixing drive cage types is not allowed.

NOTE: All Pre-configured Models come populated with hard drive blanks installed. The 4LFF configurations includes 2 blanks and 8SFF includes 6 blanks. Additional hard drive blanks can be ordered using either P/N 654963-B21 for the HPE LFF HDD Blank Kit or P/N 654961-B21 for the HPE SFF HDD Blank Kit. These part numbers for single HDD blanks below are also provided should you require replacement HDD blanks for your server.

NOTE: NHPE SATA is limited to B140i controller.

NOTE: When populate 10 LFF, not able to install any Tape Drive and Optical Drive. Possible Configurations: 1) 8LFF +1 ODD + 1 Tape Drive (Full/Half), or 2) 9LFF + 1 ODD, or 3) 9LFF + 1 Tape Drive (Full/Half).

NOTE: Must select two 4LFF NHPE drive cage and 10LFF enablement kit if customer wants to support 10 LFF drives.

4 Hot plug LFF SAS/SATA HDD bays; upgradable to 8

8 Hot plug SFF SAS/SATA HDD bays; upgradable to 16

NOTE: 16SFF is limited to P840 controller.

NOTE: 10LFF is limited to H140i controller

NOTE: H240 8LFF/8SFF require 2 cable kit P/N: 784606-B21.

NOTE: P84016SFF require 2 cable kit P/N: 784608-B21.

Maximum Internal Storage

One of the following depending on model

	CAPACITY	CONFIGURATION
Hot Plug LFF SAS	80TB	8x10TB
Hot Plug LFF SATA	80TB	8x10TB
Hot Plug SFF SAS	32TB	16x2TB
Hot Plug SFF SATA	32TB	16x2TB
Non Hot Plug LFF SATA	40TB	10x4TB
Hot Plug LFF SAS SSD	12.8TB	8x1.6TB
Hot Plug LFF SATA SSD	30.72TB	8x3.84TB
Hot Plug SFF SAS SSD	30.72TB	16x1.92TB
Hot Plug SFF SATA SSD	61.44TB	16x3.84TB

Power Supply

One of the following depending on model

HPE 550W FIO Power Supply
 HPE 900W AC 240V DC Redundant Power Supply
 NOTE: Each Redundant Power Supply Backplane can support up to two (2) power input modules. Non-redundant configurations with a single power input module installed can provide up to 900W (200 - 240VAC) and up to 550W (100 - 127VAC) of power. Redundant configurations with two power input modules installed can provide up to 800W (200 - 240VAC) and up to 550W (100 - 127VAC) of power.
 Looking for high-efficiency power solutions at an entry-level price for your ProLiant Gen9 Essential Server? HPE Entry-Level Power Supplies offer an optimized set of features with options for both redundant and non-redundant power configurations.

The HPE 550W FIO Power Supply offers Silver-certified 80 Plus power efficiency (up to 89%) with an optimized set of features for non-redundant power configurations.

The HPE 900W AC 240VDC Power Input Module with Power Backplane can be configured to support power redundancy in ProLiant servers that offer only a single power supply bay, providing additional protection against power loss. With an 80 Plus Gold power efficiency rating (up to 92%), this power option helps to reduce operating expenses while protecting against trapped power capacity in the data

Standard Features

center. Hot-plug AC power input modules allow for better serviceability with fast and easy deployment

Rack Options
One of the following depending on model

2
RACK KIT

System Fans
One of the following depending on model

	Non-redundant	Redundant
del	2 fans	NA
Two (2) Non-hot plug, non-redundant fans ship as standard.		
del	3 fans	NA
Third fan is shipped with 2nd CPU Kit. Third fan is only required in 2P configurations.		

Interfaces

	1 (rear)
10Gb RJ-45 (Ethernet)	2
HPE iLO Remote Management Network Port	2GB NAND
NOTE: Dedicated Port for iLO is Optional.	
Micro SD Slot	1 (internal)
NOTE: The Micro-SD slot is not a hot-pluggable device. Customers should not attempt to plug a Micro-SD card into the Micro-SD slot while the server is powered.	
USB 3.0	5 (2 rear, 1 internal, 2 front)
USB 2.0	3 (2 rear, 1 internal)

Operating Systems and Virtualization Software Support for ProLiant Servers
Microsoft Windows Server
Red Hat Enterprise Linux (RHEL)
SUSE Linux Enterprise Server (SLES)
VMware
ClearOS

NOTE: ClearOS allows you to build a fully functional server that is just right for you at no upfront cost. It is available via CTO preload, Intelligent Provisioning or via download. For more information on ClearOS, please visit <http://www.hpe.com/servers/clearos>.
 NOTE: For more information on Hewlett Packard Enterprise Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: <http://www.hpe.com/info/ossupport> and our [driver download page](#).

Upgradeability

Upgradeable to 2 processors (36 Cores)
 NOTE: Total 6, 8, 10, 12, 14, 16, 18 cores.
 Up to 16 SFF Hard Drive Bays; Or 10 LFF Hard Drive Bays
 Up to 16 DIMM slots
 Redundant Power Supply
 Tower to rack conversion
 Optional optical drive (up to 1)
 NOTE: If you populate 10 LFF, not able to install Optical Drive. Possible Configurations: 1) 8LFF + 1 ODD, or 2) 9LFF + 1 ODD, or 3) 9LFF + 1 Tape Drive (Full/Half).

Standard Features

Industry Standard Compliance
 ACPI 2.0b Compliant
 PCIe 3.0 Compliant
 PXE Support
 WOL Support
 Novell Certified
 IPMI 2.0, SMASH CLP, DCMI 1.0 compliant
 Microsoft® Logo certifications
 USB 3.0 Support
 SMBIOS 2.7.1
 ASHRAE A3

Graphics

Integrated Matrox G200 video standard
 • 1280 x 1024 (32 bpp)
 • 1920 x 1200 (16 bpp)

HPE Server UEFI/Legacy ROM

Unified Extensible Firmware Interface (UEFI) is an industry standard that provides better manageability and more secured configuration than the legacy ROM while interacting with your server at boot time. HPE ProLiant Gen9 platform defaults to UEFI and can be factory or field configured for Legacy BIOS Boot Mode.
 NOTE: The UEFI System Utilities function is analogous to the HPE ROM-Based Setup Utility (RBSU) of legacy BIOS. For more information, please visit <http://www.hpe.com/servers/uefi>.

UEFI enables numerous new capabilities specific to HPE ProLiant servers such as:

- Secure Boot
- Operating system specific functionality
- Support for > 2.2 TB (using GPT) boot drives
- USB 3.0 Stack
- Embedded UEFI Shell
- Mass Configuration Deployment Tool using RESTful API for iLO 4
- PXE boot support for IPv6 networks
- Boot support for option cards that only support a UEFI option ROM
- Network Stack configurations

NOTE: For UEFI Boot Mode, boot environment and OS image installations should be configured properly to support UEFI.
 NOTE: UEFI F10 Setting (758959-B22) can be selected to configure the system in Legacy mode in the factory for your HPE ProLiant Gen9 Server.

Form Factor

Tower or Rack (SU)

Embedded Management

HPE Integrated Lights-Out (iLO) Monitor your servers for ongoing management, service alerting, reporting and remote management with HPE iLO. Not available on ML10 Gen9. Learn more at <http://www.hpe.com/info/ilo>.

UEFI

Configure and boot your servers securely with industry standard Unified Extensible Firmware Interface (UEFI). Learn more at <http://www.hpe.com/servers/uefi>.

Standard Features

RESTful API RESTful API for iLO 4 is Redfish 1.0 conformance for simplified server management such as configuration and maintenance tasks based on modern industry standards. Learn more at <http://www.hpe.com/info/restfulapi>.

Intelligent Provisioning Hassle free server and OS provisioning for 1 or few servers with Intelligent Provisioning. Learn more at <http://www.hpe.com/servers/intelligentprovisioning>.

Embedded Remote Support The Hewlett Packard Enterprise embedded remote support, when used with Insight Online direct connect or HPE Insight Remote Support, allows HPE ProLiant servers to transmit hardware events directly to Hewlett Packard Enterprise or a Hewlett Packard Enterprise Authorized Partner for automated phone home support. Learn more at <http://www.hpe.com/info/insightonline/explore>.

Server utilities **Smart Update** Optimize firmware and driver updates with Smart Update solutions including Smart Update Manager (SUM) and Service Pack for ProLiant (SPP) and smart components. Learn more at <http://www.hpe.com/servers/smartupdatemanager>.

HPE Systems Insight Manager (HPE SIM) HPE SIM allows you to monitor the health of your HPE ProLiant Servers and HPE Integrity Servers, and also provides you with basic support for non-HPE servers. HPE SIM also integrates with Smart Update Manager to provide quick and seamless firmware updates. Learn more at <http://www.hpe.com/servers/hpsim>.

Scripting Tool Kit and Windows PowerShell Provision 1 to many servers using your own scripts to discover and deploy them with Scripting Tool Kit (STK) for Windows and Linux or Scripting Tools for Windows PowerShell. Learn more at <http://www.hpe.com/servers/proliant/stk> or <http://www.hpe.com/servers/powershell>.

RESTful Interface Tool RESTful Interface tool is a scripting tool to provision using RESTful API for iLO 4 to discover and deploy servers at scale. Learn more at <http://www.hpe.com/info/resttool>.

HPE iLO Mobile Application Enables the ability to access, deploy, and manage your server anytime from anywhere from select smartphones and mobile devices. For additional information please visit: <http://www.hpe.com/info/ilo/mobileapp>.

HPE Insight Online HPE Insight Online, available at no additional cost as part of your Hewlett Packard Enterprise warranty, HPE Pointnext operational services or contractual support agreement with Hewlett Packard Enterprise, is a personalized dashboard for simplified tracking of IT operations and support information from anywhere, anytime. Learn more at <http://www.hpe.com/info/insightonline/explore>.

NOTE: The Service Pack for ProLiant (which includes HPE SUM) can be downloaded from <http://www.hp.com/go/spp/download>. More information can be found: <http://www.hp.com/go/SmartUpdate>, <http://www.hp.com/go/spp> and <http://www.hp.com/go/hpsum>.

Security

Power-on password

Setup password
Serial interface control
Power switch security
Administrator's password
TPM 1.2
UEFI

Standard Features

Warranty

This product is covered by a global limited warranty and supported by HPE Services and a worldwide network of HPE Authorized Channel Partners resellers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HPE Pointnext operational services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.
NOTE: Server Warranty includes 3-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response. Warranty repairs may be accomplished through the use of Customer Self-Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have Hewlett Packard Enterprise replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at: <http://h17007.www1.hpe.com/us/en/enterprise/servers/warranty/>.

ВЕРНО С ОРИГИНАЛА

Optional Features

Embedded Management	ILO Essentials	HPE iLO Essentials is the preferred license for small and medium business that offers full remote server management capabilities for small and medium business via the Integrated Remote Console (IRC), virtual media, and e-mail based alerts. Learn more about HPE iLO Essentials at http://www.hpe.com/servers/iLO/essentials .
		HPE iLO Scale-Out is the preferred license built for web hosting, cloud service providers, and high performance computing data centers, managing massive scale out environments for the DL 100 and 10 series servers, not available for ML servers. This license offers sophisticated scripting tools that provides remote access through Text Console via SSH, Dynamic power capping, Email-based Alerting and proactive notifications. For more information, visit http://www.hpe.com/servers/iLO/scale-out .
		HPE iLO Advanced licenses offer smart remote functionality without compromise, for all HPE ProLiant servers. The license includes the full integrated remote console, virtual keyboard, video, and mouse (KVM), multi-user collaboration, console record and replay, and GUI-based and scripted virtual media and virtual folders. You can also activate the enhanced security and power management functionality. Learn more about HPE iLO Advanced at http://www.hpe.com/servers/iLO/advanced .
Server Management	HPE Insight Control	HPE Insight Control, lets you deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. For more information, see http://www.hpe.com/info/insightcontrol .
High Performance Clusters		HPE Insight Cluster Management Utility (CMU) is a Hewlett Packard Enterprise licensed and supported suite of tools that are used for lifecycle management of hyperscale clusters of Linux ProLiant systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective. http://www.hp.com/go/cmu . HPE Cluster Platforms are specifically engineered, factory-integrated large-scale ProLiant clusters optimized for High Performance Computing, with a choice of servers, networks and software. Operating system options include specially priced offerings for Red Hat Enterprise Linux and SUSE Linux Enterprise Server, as well as Microsoft Windows HPEC Server. A Cluster Platform Configurator simplifies ordering. http://www.hp.com/go/clusters .
HPC Interconnects		NOTE: High Performance Computing (HPC) interconnect technologies are available for this server under the HPE Cluster Platform product portfolio. These high-speed interconnects are fully supported by Hewlett Packard Enterprise when they are part of these configure to order clusters. Solutions can be defined with a lot of flexibility with the help of configuration tools. Please visit the following URL to configure HPEC Clusters with InfiniBand interconnects: http://www.hp.com/techservers/clusters/ucp/index.html
Storage Software		Whether you need to solve a specific data protection, archiving, or storage command and control challenge, or deliver on strategic consolidation, compliance, or continuity initiatives, look no further than Hewlett Packard Enterprise storage software. Our storage software helps you reduce costs, simplify storage infrastructure, protect vital assets and respond faster to business opportunities. Storage software that gets the job done.

Data Protection and Recovery Software

Whether you're a large enterprise or a smaller business, Hewlett Packard Enterprise data

Optional Features

- protection and recovery software will cost-effectively protect you against disaster and ensure business continuity.
- **Data Archive and Migration Software**
Hewlett Packard Enterprise storage software enables you to comply with data retention and retrieval requirements, improve application performance, and reduce costs by efficiently migrating infrequently accessed or less valuable data to lower cost storage.
 - **Storage Resource Management Software (SRM)**
Hewlett Packard Enterprise storage resource management software reduces operational costs and provides the command and control foundation you need to efficiently manage and visualize your physical and virtual environments.
 - **Data Replication Software**
Hewlett Packard Enterprise offers array-based and host-based replication software for use in disaster recovery, testing, application development and reporting.
 - **Storage Device Management Software**
Maximize your investment in Hewlett Packard Enterprise storage and networking with software that enables hardware-specific configuration, performance tuning and connectivity management.
 - **HPE StoreVirtual VSA**
With HPE StoreVirtual VSA you can use the power of virtualization to create a virtual array within your host server. Manage it as a single pool of shared storage capacity, and scale it to match your evolving needs. HPE ProLiant Gen9 servers include a 3-year limited license for HPE StoreVirtual VSA software with 1TB of capacity at no extra cost. Simply select to install HPE StoreVirtual VSA software during server setup within Intelligent Provisioning. More information, instructional videos, and free console management software are available at <http://www.hp.com/go/vsa1TB>.

NOTE: For more information about Storage Software including QuickSpecs, please see: <http://www.hp.com/go/storage/software>

ClearOS	HPE and ClearCenter will help you lower the cost of building on-premise solutions without sacrificing security and ease of use. HPE ProLiant servers with ClearOS give you a simple, secure, and affordable operating system with an intuitive web based graphical user interface that provides a cloud-like experience on-premise, and an Application Marketplace with over 100 apps and growing. Whether you're starting out or scaling, you decide what applications you need and pay as you grow.
One Config Simple (SCE)	SCE is a guided self-service tool to help sales and non-technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes. If you require "custom" rack configuration or configuration for products not available in SCE, please contact Hewlett Packard Enterprise Customer Business Center or an Authorized Partner for assistance. http://ocs.ext.hpe.com/

Service and Support

HPE Support Services HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to Hewlett Packard Enterprise to help prevent problems and solve issues faster. HPE Support Services enable you to choose the right service level, length of coverage and response time as you purchase your new server, giving you full entitlement to the support for need for your IT and

Connect your devices Unlock all of the benefits of your technology investment by connecting your products to Hewlett Packard Enterprise. Achieve up to 77%¹ reduction in down time, near 100%² diagnostic accuracy and a single consolidated view of your environment. By connecting, you will receive 24x7 monitoring, pre-failure alerts, automatic call logging, and automatic parts dispatch. HPE Proactive Care Service and HPE Datacenter Care Service customers will also benefit from proactive activities to help prevent issues and increase optimization. All of these benefits are already available to you with your server storage and networking products, securely connected to Hewlett Packard Enterprise support.

1- IDC 2- HP CSC reports 2014 - 2015

Recommended Support

Standard: HPE Foundation Care 24x7, three-year Support Service

HPE Foundation Care 24x7 gives you access to Hewlett Packard Enterprise 24 hours a day, seven days a week for assistance on resolving issues. This service includes need based Hardware onsite response within four hours. In addition, collaborative software support is included in this service that provides troubleshooting assistance on industry leading software running on your HPE server. Simplify your support experience and make Hewlett Packard Enterprise your first call to help resolve hardware or software problems.

<https://www.hpe.com/h20195/v2/GetDocument.aspx?docname=4AA4-8876ENW&cc=us&lc=en>

Optimized: HPE Proactive Care* with 24x7 coverage, three year Support Service

HPE Proactive Care gives customers an enhanced call experience. When your products are connected to Hewlett Packard Enterprise, Proactive Care helps prevent problems and maintains IT stability by utilizing personalized proactive reports with recommendations and advice. This service combines three years proactive reporting and advice with our 24x7 coverage, four hour hardware response time when there is a problem. This service also includes collaborative software support for Independent Software Vendors (ISVs), (Red Hat, VMWare, Microsoft, etc.) running on your HPE servers.

<https://www.hpe.com/h20195/v2/GetPDE.aspx/4AA3-8855ENW.pdf>

Parts and Materials

Hewlett Packard Enterprise will provide Hewlett Packard Enterprise-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product QuickSpecs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction.

Related Services

HPE Server Hardware Installation

Provides for the basic hardware installation of Hewlett Packard Enterprise branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner.

<https://www.hpe.com/h20195/v2/GetPDE.aspx/5981-9356EN.pdf>

HPE Installation and Startup Service

Provides for the installation and startup of Hewlett Packard Enterprise technology including BladeSystems, C-Class enclosure, HPE ProLiant c-Class and Integrity server blades, storage blades, SAN switch blades, HPE Virtual Connect modules (Ethernet and Fibre Channel), Ethernet network interconnects, and InfiniBand, as well as the installation of one supported operating system type (Windows® or Linux).

Service and Support

HPE Technology Services Support Credits

Offer flexible services and technical skills to meet your changing IT demands. With a menu of service that is tailored to suit your needs, you get additional resources and specialist skills to help you maintain peak performance of your IT. Offered as annual credits, you can plan your budgets while proactively responding to your dynamic business.

HPE Education Services

Keep your IT staff trained making sure they have the right skills to deliver on your business outcomes. Book on a class today and learn how to get the most from your technology investment. <http://www.hpe.com/ww/learn>

HPE Support Center

The HPE Support Center is a personalized online support portal with access to information, tools and experts to support Hewlett Packard Enterprise business products. Submit support cases online, chat with Hewlett Packard Enterprise experts, access support resources or collaborate with peers.

Learn more <http://www.hpe.com/support/hpesc>

The Hewlett Packard Enterprise Support Center Mobile App* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime.

HPE Insight Remote Support and HPE Support Center are available at no additional cost with a Hewlett Packard Enterprise warranty, HPE Support Service or Hewlett Packard Enterprise contractual support agreement.

*HPE Support Center Mobile App is subject to local availability.

For more information: <http://www.hpe.com/services>

Pre-configured Models

For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

1. Pre-configured models ship with the configurations below. Options can be selected from the Core or Additional options section of this QuickSpec
2. Hewlett Packard Enterprise does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.
3. If you desire a custom configuration please see "Configuration Information - Factory Integrated Models" section of this QuickSpec.

Regions. Check with your local country Hewlett Packard Enterprise offices for availability.

NOTE: All Pre-configured Models come populated with hard drive blanks installed. The 4LFF configurations includes 2 blanks and 8SFF includes 2 blanks. Additional hard drive blanks can be ordered using either P/N 666986-B21 for the HP LFF HDD Blank Kit or P/N 666987-B21 for the HP SFF HDD Blank Kit. These part numbers for single HDD blanks below are also provided should you require replacement HDD blanks for your server.

NOTE: All pre-configured servers ship with a standard 6-foot IEC C-13/C-14 jumper cord (A0K02A). This jumper cord is also included with each standard AC power supply option kit. If a different power cord is required, please check the [ProLiant Power Cables](#) web page.

CAUTION: Hewlett Packard Enterprise recommends that a minimum of two people are required for all Rack Server installations. Please refer to your installation instructions for proper tools and number of people to use for any installation.

	Entry Models		Base Models	
[SKU Number]	776274-xx1	834606-xx1	776275-xx1	834607-xx1
Model Name	HP ProLiant ML150 Gen9 E5-2603v3 4GB B140i Non-hot Plug 4LFF SATA Entry 550W PS Server	HPE ProLiant ML150 Gen9 E5-2603v4 8GB-R B140i NHP 4LFF SATA 550W Entry Svr	HP ProLiant ML150 Gen9 E5-2609v3 8GB B140i Hot Plug 4LFF SATA Base 550W PS Server	HPE ProLiant ML150 Gen9 E5-2609v4 8GB-R B140i Hot Plug 4LFF SATA 550W Base Svr
Processor	Intel® Xeon® E5-2603v3	Intel® Xeon® E5-2603v4	Intel® Xeon® E5-2609v3	Intel® Xeon® E5-2609v4
Number of Processors	One			
Memory	4GB (1x4GB Registered DIMMs, 2133 MHz)	8GB (1x8GB Registered DIMMs, 2400 MHz)	8GB (1x8GB Registered DIMMs, 2133 MHz)	8GB (1x8GB Registered DIMMs, 2400 MHz)
Network Controller	Broadcom 5717 Dual-port 1GbE			
Storage Controller	HPE Dynamic Smart Array B140i			
Hard Drive	None ship standard			
Internal Storage	4 LFF HDD Bays (Non Hot Plug)		4 LFF HDD Bays	
Optical Drive Bay	1; (Optional: DVD-ROM, DVD-RW)			
Optical Drive	Optional Slim Optical Bay (SATA DVD-RW/ROM Optical Drive)			
PCI-Express Slots	6 PCIe slots			
Power Supply	(1) HPE 550W FIO Power Supply			
Fans	2 non hot plug, non-redundant fans			
Management	iLO Management (standard), Intelligent Provisioning (standard), iLO Essentials (optional), iLO Advanced (optional), HPE OneView (standard)			
Form Factor	Tower (5U)			
Warranty	Server Warranty includes 3-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response.			

Pre-configured Models

	Performance Models
[SKU Number]	834608-xx1
Model Name	HPE ProLiant ML150 Gen9 E5-2620v4 16GB-R H240 Hot Plug 8SFF SAS 900W Perf Svr
Processor	Intel® Xeon® E5-2620v4
Number of Processors	One
Memory	16GB (1x16GB Registered DIMMs, 2400 MHz)
Network Controller	Broadcom 5717 Dual-port 1GbE
Storage Controller	HPE H240 Smart Host Bus Adapter NOTE: HPE ML150 Gen9 PCI BAFFLE Kit (779861-B21) is included with order Performance Model with H240 Storage Controller.
Hard Drive	None ship standard
Internal Storage	8 SFF HDD Bays
Optical Drive Bay	1; (Optional: DVD-ROM, DVD-RW)
Optical Drive	Optional Slim Optical Bay (SATA DVD-RW/ROM Optical Drive)
PCI-Express Slots	6 PCIe slots
Power Supply	900W AC 240VDC Power Supply
Fans	2 non hot plug, non-redundant fans
Management	iLO Management (standard), Intelligent Provisioning (standard), iLO Essentials (optional), iLO Scale-out (optional only for DL), iLO Advanced (optional)
Form Factor	Tower (5U)
Warranty	Server Warranty includes 3-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response.

Country Code Key	xx1 = B21	Worldwide
	xx1 = 001	US
	xx1 = 031	UK
	xx1 = 291	Japan
	xx1 = 371	AP
	xx1 = 421	EU
	xx1 = AA1	PRC

NOTE: Not all models are available in all regions. Check with your local country Hewlett Packard Enterprise offices for availability.



Configuration Information - Factory Integrated Models

This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are recommended, the use of an HPE approved configurator. Contact your local sales representative for configurable product offerings and requirements.

Configuration must start with a CTO Server.

Option is only available as a factory installable option.

Models will be populated with sufficient hard drive blanks based on the number of initial hard drives

are integrated at the factory. Contact your local sales representative for additional information.

Step 1: Base Configuration (choose one of the following configurable models)

(Chassis)	HP ProLiant ML150 Gen9 Non-hot Plug 4LFF Configure-to-order Server	HP ProLiant ML150 Gen9 Hot Plug 4LFF Configure-to-order Server	HP ProLiant ML150 Gen9 Hot Plug 8SFF Configure-to-order Server
SKU Number	767062-B21	767063-B21	767064-B21
Processor	2 (optional) x HPE Smart Socket Guide		
DIMM Slots	16 DIMM slots for RDIMM, LRDIMM DDR4 Memory		
Storage Controller	HPE Dynamic Smart Array B140i		
PCIe	6 Standard (4FH/HL, 2FH/FL)		
Drive Cage	4LFF Non Hot Plug	4LFF Hot Plug	8SFF Hot Plug
Network Controller	Broadcom 5717 Dual-port 1GbE		
Fans	2 non hot plug, non-redundant fans		
Management	iLO Management (standard), Intelligent Provisioning (standard)		
USB	2 front, 2 internal, 4 rear		

Step 2: Choose Required Options (only one of the following from each list unless otherwise noted)

Select one or two processors from Core options-Processor section below.

- If one processor is desired, select one xxxxxx-L21
- If two processors are desired, select one xxxxxx-L21 and one xxxxxx-B21.
- Up to 2 processors supported. Mixing different processor models is not supported.
- DDR4 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.

For the Intel® C600 Chipset E5-2600 Series, the letter preceding the model number indicates the Product Line (E3, E5, E7); 2600x v#, 2 = number of CPUs in a Node, 6 is socket/segment designation, 00 = Processor SKU, x = L for low power SKUs and v# (not yet designated) = version number.

Select one or more memory from Core options-Memory section below.

- LRDIMM, RDIMM are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen9 servers support LRDIMM and RDIMM.
- HPE memory from previous generation servers are not qualified or warranted with this HPE ProLiant Server. HPE SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen9.
- If only one processor is installed, only half of the total DIMM slots are available. When populating with two processors all DIMM slots are available.
- Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: <http://www.hp.com/go/proliant-energy-efficient>.

Configuration Information - Factory Integrated Models

- Depending on the memory configuration and processor model, the memory speed may run at 2133MHz, 1866MHz, 1600MHz or 1333MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: <http://www.hp.com/go/ddr4config>.

Select one or more power supplies from Core Options-Power Supplies section below.

- Prior to selecting a power supply option, it is highly recommended that you review your server configuration in the HPE Power Advisor tool to determine the right size power supply for your server configuration. The HPE Power Advisor is located at: <http://www.hpe.com/info/hppoweradvisor>.
- Mixing of power supplies in the same server is not supported. All power supplies must be of the same input voltage, output rating, and efficiency rating. If non-matching power supplies are installed, you may receive an error message and/or experience operational issues with your server.

Step 3: Choose Additional Factory Integratable Options

Select a startup NIC adapter from Core options-Networking section below.

- Please see the QuickSpecs for Technical Specifications and additional information: <http://www.hp.com/go/ProLiantNICs>.
- These options are upgradeable and can be changed from the original configuration after the server is shipped.
- For 10Gb adapters, a minimum of two Gigabytes (2 GB) of server memory is required per each adapter.

Select one or more drives from Core options-HPE Drives section below.

- The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.
- Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.
- The HPE ProLiant Gen9 Smart Storage solutions are equipped with re-designed Small Form Factor (SFF 2.5 in) and Large Form Factor (LFF 3.5 in) hot plug carriers for HPE Qualified Hard Drives and Solid State Drives. These new carriers provide status and activity indicators as well as caution indicators for "Do Not Remove".

Select one or more graphics adapter from Additional options section below.

- Please see the HPE Power Advisor for estimated power consumption of your individual system configuration prior to installing GPUs. The HPE Power Advisor is located at: <http://www.hpe.com/info/hppoweradvisor>.
- This section may contain FIO options, please see HPE Computation & Graphics Accelerators section below.

Select one or more Unique options from Core options section below.

- This section may contain FIO options, please see the Unique options section below.
- FIO indicates that this option is only available as a factory installable option.

Select one or more Fan Kits from Core options section below.

- This section may contain FIO options, please see HPE Cooling Options section below.
- FIO indicates that this option is only available as a factory installable option.

Select one or more Storage options from Additional options section below.

- The embedded B140i controller will operate in UEFI only mode. For legacy support an additional controller will be needed, and for CTO orders please also select the Legacy mode settings part, 758959-B22

ИПНО С ОПРИГНАТА

Configuration Information - Factory Integrated Models

- This section may contain FIO options, please see HPE Storage Controllers section below.
- FIO indicates that this option is only available as a factory installable option.

Core Options

NOTE: Some options may not be integrated at the factory. To ensure only valid configurations are ordered, Hewlett Packard Enterprise recommends the use of an HPE approved configurator. Contact your local sales representative for additional information.

HPE Unique Options	HP ML150 Gen9 4LFF Hot Plug Drive Cage NOTE: Adding 4LFF Hard Drive Cage allow up to 8FF Drive Bays.	725872-B21
	HP ML150 Gen9 8SFF Hot Plug Drive Cage NOTE: Adding 8SFF Hard Drive backplane allow up to 16SFF Drive Bays.	725874-B21
	HP ML150 Gen9 4LFF Non-hot Plug Drive Cage NOTE: Adding 4LFF Hard Drive Cage allow for up to 8LFF Drive Bays.	779859-B21
	HP ML150 Gen9 PCI Baffle Kit NOTE: Must select when a PCIe card is installed with any Networking, Controllers (SAS, SCSI and Fiber Channel), and Graphic options. NOTE: HPE ML150 Gen9 PCI BAFFLE Kit (779861-B21) is included while order Performance Model with H240 Storage Controller.	779861-B21
	HP ML150 Gen9 Slim ODD Enablement Kit NOTE: Must select with the ODD option.	784603-B21
	HP ML150 Gen9 Smart Storage Battery Holder Kit NOTE: Must select when install Smart Store Battery P/N: 727258-B21. NOTE: Must select when install P440/B40 FIO controller P/N: 761872-B21/761874-B21. NOTE: Must select when support upgrade battery.	786710-B21
	HP ML150 Gen9 9/10LFF Drive Enablement Kit NOTE: When populate 10 LFF, not able to install any Tape Drive or Optical Drive. Possible Configurations: 1) 8LFF + 1 ODD + 1 Tape Drive (Full/Half), or 2) 9LFF + 1 ODD, or 3) 9LFF + 1 Tape Drive (Full/Half). NOTE: 10LFF is limited to B140i controller. NOTE: Must select both 4LFF NHPE drive cage and 10LFF enablement kit if plan to expand to 10LFF. NOTE: Only support NHPE SATA HDD. NOTE: Must select B140i controller.	788567-B21
	HP ML150 Gen9 Dedicated iLO Management Port Kit	780310-B21
	HP ML150 Gen9 Mini SAS H240 Cable Kit NOTE: Must be selected for H240 controller. 1 cable kit is required for Hot Plug 4LFF. 2 cable kits are required for below: - Hot Plug 4+4 LFF (with additional drive cage) - 8 SFF	784606-B21
	HP ML150 Gen9 Mini SAS P440/P840 Cable Kit NOTE: Must be selected for P440/P840 controller. 1 cable kit is required for P440x1. 2 cable kits are required for P840x1.	784608-B21
	HP Tower to Rack Conversion Tray Universal Kit	417705-B21
	HP AHCI-Enable FIO Setting NOTE: This needs to be selected when Advanced Host Controller Interface mode is required on B140i controller.	801845-B21
	HP ML150 Gen9 GPU Enablement Kit	779863-B21

Core Options

HPE Processors	E5-2600v4 series Processors	
	HPE ML150 Gen9 Intel® Xeon® E5-2620v4 (2.1GHz/8-core/20MB/85W) Processor Kit	828355-B21
	HPE ML150 Gen9 Intel® Xeon® E5-2620v4 (2.1GHz/8-core/20MB/85W) FIO Processor Kit	828355-L21
	HPE ML150 Gen9 Intel® Xeon® E5-2609v4 (1.7GHz/8-core/20MB/85W) Processor Kit	828356-B21
	HPE ML150 Gen9 Intel® Xeon® E5-2609v4 (1.7GHz/8-core/20MB/85W) FIO Processor Kit	828356-L21
	HPE ML150 Gen9 Intel® Xeon® E5-2603v4 (1.7GHz/6-core/15MB/85W) Processor Kit	828357-B21
	HPE ML150 Gen9 Intel® Xeon® E5-2603v4 (1.7GHz/6-core/15MB/85W) FIO Processor Kit	828357-L21
	HPE ML150 Gen9 Intel® Xeon® E5-2650Lv4 (1.7GHz/14-core/35MB/65W) Processor Kit	828358-B21
	HPE ML150 Gen9 Intel® Xeon® E5-2650Lv4 (1.7GHz/14-core/35MB/65W) FIO Processor Kit	828358-L21
	HPE ML150 Gen9 Intel® Xeon® E5-2630Lv4 (1.8GHz/10-core/25MB/55W) Processor Kit	828361-B21
	HPE ML150 Gen9 Intel® Xeon® E5-2630Lv4 (1.8GHz/10-core/25MB/55W) FIO Processor Kit	828361-L21
	HPE ML150 Gen9 Intel® Xeon® E5-2640v4 (2.4GHz/10-core/25MB/90W) Processor Kit	828353-B21
	HPE ML150 Gen9 Intel® Xeon® E5-2640v4 (2.4GHz/10-core/25MB/90W) FIO Processor Kit	828353-L21
	HPE ML150 Gen9 Intel® Xeon® E5-2660v4 (2.0GHz/14-core/35MB/105W) Processor Kit	828359-B21
	HPE ML150 Gen9 Intel® Xeon® E5-2660v4 (2.0GHz/14-core/35MB/105W) FIO Processor Kit	828359-L21
	HPE ML150 Gen9 Intel® Xeon® E5-2650v4 (2.2GHz/12-core/30MB/105W) Processor Kit	828360-B21
	HPE ML150 Gen9 Intel® Xeon® E5-2650v4 (2.2GHz/12-core/30MB/105W) FIO Processor Kit	828360-L21
	HPE ML150 Gen9 Intel® Xeon® E5-2630v4 (2.2GHz/10-core/25MB/85W) Processor Kit	828354-B21
	HPE ML150 Gen9 Intel® Xeon® E5-2630v4 (2.2GHz/10-core/25MB/85W) FIO Processor Kit	828354-L21
	HPE ML150 Gen9 Intel® Xeon® E5-2680v4 (2.4GHz/14-core/35MB/120W) Processor Kit	860714-B21
	HPE ML150 Gen9 Intel® Xeon® E5-2680v4 (2.4GHz/14-core/35MB/120W) FIO Processor Kit	860714-L21
	HPE ML150 Gen9 Intel® Xeon® E5-2683v4 (2.1GHz/16-core/40MB/120W) Processor Kit	860715-B21
	HPE ML150 Gen9 Intel® Xeon® E5-2683v4 (2.1GHz/16-core/40MB/120W) FIO Processor Kit	860715-L21
	HPE ML150 Gen9 Intel® Xeon® E5-2695v4 (2.1GHz/18-core/45MB/120W) Processor Kit	860716-B21
	HPE ML150 Gen9 Intel® Xeon® E5-2695v4 (2.1GHz/18-core/45MB/120W) FIO Processor Kit	860716-L21
	E5-2600v3 series Processors	

Core Options

HP ML150 Gen9 Intel® Xeon® E5-2609v3 (1.9GHz/6-core/15MB/85W) Processor Kit	726660-B21
HP ML150 Gen9 Intel® Xeon® E5-2609v3 (1.9GHz/6-core/15MB/85W) FIO Processor Kit	726660-L21
HP ML150 Gen9 Intel® Xeon® E5-2603v3 (1.6GHz/6-core/15MB/85W) Processor Kit	726663-B21
HP ML150 Gen9 Intel® Xeon® E5-2603v3 (1.6GHz/6-core/15MB/85W) FIO Processor Kit	726663-L21
HP ML150 Gen9 Intel® Xeon® E5-2640v3 (2.6GHz/8-core/20MB/90W) Processor Kit	726650-B21
HP ML150 Gen9 Intel® Xeon® E5-2640v3 (2.6GHz/8-core/20MB/90W) FIO Processor Kit	726650-L21
HP ML150 Gen9 Intel® Xeon® E5-2630v3 (2.4GHz/8-core/20MB/85W) Processor Kit	726653-B21
HP ML150 Gen9 Intel® Xeon® E5-2630v3 (2.4GHz/8-core/20MB/85W) FIO Processor Kit	726653-L21
HP ML150 Gen9 Intel® Xeon® E5-2620v3 (2.4GHz/6-core/15MB/85W) Processor Kit	726657-B21
HP ML150 Gen9 Intel® Xeon® E5-2620v3 (2.4GHz/6-core/15MB/85W) FIO Processor Kit	726657-L21
HP ML150 Gen9 Intel® Xeon® E5-2650Lv3 (1.8GHz/12-core/30MB/65W) FIO Processor Kit	726667-L21
HP ML150 Gen9 Intel® Xeon® E5-2660v3 (2.6GHz/10-core/25MB/105W) Processor Kit	726644-B21
HP ML150 Gen9 Intel® Xeon® E5-2660v3 (2.6GHz/10-core/25MB/105W) FIO Processor Kit	726644-L21
HP ML150 Gen9 Intel® Xeon® E5-2650v3 (2.3GHz/10-core/25MB/105W) Processor Kit	726647-B21
HP ML150 Gen9 Intel® Xeon® E5-2650v3 (2.3GHz/10-core/25MB/105W) FIO Processor Kit	726647-L21
HP ML150 Gen9 Intel® Xeon® E5-2630Lv3 (1.8GHz/8-core/20MB/55W) Processor Kit	726670-B21
HP ML150 Gen9 Intel® Xeon® E5-2630Lv3 (1.8GHz/8-core/20MB/55W) FIO Processor Kit	726670-L21

NOTE: Recommend to select 900W for 2P configurations or check power advisor for power consumption for the customer usage case.

HPE Memory	Registered DIMMs (RDIMMs)	
	HP 4GB (1x4GB) Single Rank x8 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726717-B21
	HP 4GB (1x4GB) Single Rank x8 DDR4-2133 CAS-15-15-15 Registered Standard Memory Kit	803026-B21
	NOTE: Available WW except EMEA.	
	HP 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726718-B21
	HP 8GB (1x8GB) Dual Rank x8 DDR4-2133 CAS-15-15-15 Registered Memory Kit	759934-B21
	HP 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Standard Memory Kit	803028-B21
	NOTE: Available WW except EMEA.	

Core Options

HP 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726719-B21
HP 32GB (1x32GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	728629-B21
HP Single Rank x8 DDR4-2400 CAS-17-17-17 Registered Memory Kit	805347-B21
HP Single Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	805349-B21
HP Dual Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	805351-B21
HP Dual Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	836220-B21
HP Single Rank x8 DDR4-2400 CAS-17-17-17 Registered Memory Kit	851353-B21
HP Single Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit (LRDIMMs) for E5-2600v3 Series	851353-B21
HP Dual Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit	726720-B21
HP Dual Rank x4 DDR4-2400 CAS-17-17-17 Load Reduced Memory Kit	805353-B21

HPE Optical Drives	HP 9.5mm SATA DVD-ROM JackBlack Gen9 Optical Drive	726536-B21
	HP 9.5mm SATA DVD-RW JackBlack G9 Optical Drive	726537-B21
	HP ML150 Gen9 Slim ODD Enablement Kit	784603-B21
	NOTE: Must be selected with the ODD option.	
	NOTE: Must select ODD enablement kit, one kit per ODD.	

HPE Drives	NOTE: User may select any combination of SAS or SATA Hard Drives. However, if RAID is selected and both SAS and SATA Hard Drives have been selected, then only the SAS Drives will be used in the RAID set.	
	NOTE: If B140 is the primary controller, user can only select SATA drives.	
	NOTE: SAS drives require the selection of a SAS controller. See card lists in Controllers section.	
	SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives	
	HPE 2.4TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD	881457-B21
	HPE 1.8TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD	872481-B21
	HPE 1.2TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty HDD	781518-B21
	HPE 1.2TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	872479-B21
	HPE 900GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	870759-B21
	HPE 900GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD	870765-B21
	HPE 900GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty HDD	785069-B21
	HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	870757-B21
	HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD	870763-B21

Core Options

HPE 600GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	872477-B21
HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty HDD	759212-B21
HPE 600GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty HDD	781516-B21
HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty 512e HDD	748387-B21
HPE 450GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty HDD	759210-B21
HPE 300GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	870753-B21
HPE 300GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	872475-B21
HPE 300GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty HDD	759208-B21
HPE 300GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty HDD	785067-B21
HPE 1.8TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e HDD	791034-B21
SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives	
HPE 600GB SAS 12G Enterprise 15K LFF (3.5in) SC 3yr Wty HDD	765424-B21
HPE 450GB SAS 12G Enterprise 15K LFF (3.5in) SCC 3yr Wty HDD	737394-B21
HPE 300GB SAS 12G Enterprise 15K LFF (3.5in) SCC 3yr Wty HDD	737261-B21
SAS Hot Plug LFF (3.5-inch) Midline (MDL) Drives	
HPE 10TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty Helium 512e Digitally Signed Firmware HDD	857644-B21
HPE 8TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD	819201-B21
HPE 8TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty Helium 512e Digitally Signed Firmware HDD	861590-B21
HPE 6TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty Digitally Signed Firmware HDD	846514-B21
HPE 4TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty HDD	818367-B21
HPE 3TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty Digitally Signed Firmware HDD	846528-B21
HPE 2TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty HDD	818365-B21
HPE 1TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty Digitally Signed Firmware HDD	846524-B21
SATA Hot Plug LFF (3.5-inch) Midline (MDL) Drives	
HPE 12TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty Helium 512e Digitally Signed Firmware HDD	881785-B21
HPE 10TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty Helium 512e Digitally Signed Firmware HDD	857648-B21
HPE 8TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty Helium 512e Digitally Signed Firmware HDD	861594-B21
HPE 8TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD	819203-B21
HPE 6TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty Digitally Signed Firmware HDD	846510-B21
HPE 4TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty HDD	861678-B21
HPE 3TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty Digitally Signed Firmware HDD	861693-B21
HP 3TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	628061-B21
HPE 2TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty HDD	861676-B21
HPE 2TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty HDD	858596-B21

Core Options

HPE 1TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty HDD	861691-B21
HPE 1TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty HDD	858594-B21
SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives	
HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD	765455-B21
HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e HDD	765466-B21
HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD	765453-B21
HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD	655710-B21
HPE 1TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD	765464-B21
HPE 1TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD	832514-B21
SATA Non-Hot Plug LFF (3.5-inch) Midline (MDL) Drives	
HPE 4TB SATA 6G Midline 7.2K LFF (3.5in) RW 1yr Wty HDD	801888-B21
HPE 2TB SATA 6G Midline 7.2K LFF (3.5in) RW 1yr Wty HDD	801884-B21
HPE 1TB SATA 6G Midline 7.2K LFF (3.5in) RW 1yr Wty HDD	801882-B21
12G SAS Hot Plug SFF (2.5-inch) Read Intensive Solid State Drives	
HPE 7.68TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	870144-B21
HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872394-B21
HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875330-B21
HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872392-B21
HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875326-B21
HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872390-B21
HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875313-B21
HPE 480GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875311-B21
12G SAS Hot Plug SFF (2.5-inch) Write Intensive Solid State Drives	
HPE 1.6TB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873357-B21
HPE 800GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873355-B21
HPE 400GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873351-B21
12G SAS Hot Plug SFF (2.5-inch) Mixed Use Solid State Drives	
HPE 3.2TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873367-B21
HPE 3.2TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872386-B21
HPE 1.6TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873365-B21

Core Options

HPE 1.6TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872382-B21
HPE 800GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873363-B21
HPE 800GB SAS 12G Mixed Use LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	872378-B21
HPE 400GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873359-B21
HPE 400GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872374-B21
12G SAS Hot Plug LFF (3.5-inch) Mixed Use Solid State Drives	
HPE 800GB SAS 12G Mixed Use LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	872378-B21
6G SATA Hot Plug SFF (2.5-inch) SC Read Intensive Solid State Drives	
HPE 3.84TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877764-B21
HPE 3.84TB SATA 6G RI SFF SC DS SSD	868830-B21
HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877758-B21
HPE 1.92TB SATA 6G RI SFF SC DS SSD	868826-B21
HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	871770-B21
HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875513-B21
HPE 1.6TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	869386-B21
HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877752-B21
HPE 960GB SATA 6G RI SFF SC DS SSD	868822-B21
HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	869384-B21
HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875511-B21
HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	871768-B21
HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877746-B21
HPE 480GB SATA 6G RI SFF SC DS SSD	868818-B21
HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875509-B21
HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	869378-B21
HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877740-B21
HPE 240GB SATA 6G RI SFF SC DS SSD	868814-B21
HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875503-B21
HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	869376-B21
HPE 150GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	869374-B21

Core Options

Part Number	Description	Part Number
6	ate Drives	
872363-B21	HPE 400GB SATA 6G WI SFF SC DS SSD	
872359-B21	6G SATA Hot Plug SFF (2.5-Inch) SC Mixed Use Solid State Drives	
872355-B21	HPE 1.92TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877788-B21
	HPE 1.92TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872352-B21
	HPE 1.92TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875478-B21
	HPE 1.6TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty SSD	804631-B21
	HPE 960GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877782-B21
	HPE 960GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872348-B21
	HPE 960GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875474-B21
	HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877776-B21
	HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872344-B21
	HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875470-B21
	HPE 240GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	880295-B21
	HPE 240GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875483-B21
	6G SATA Hot Plug LFF (3.5-Inch) SC Read Intensive Solid State Drives	
	HPE 1.92TB SATA 6G Read Intensive LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	877760-B21
	HPE 1.6TB SATA 6G Read Intensive LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	869388-B21
	HPE 960GB SATA 6G Read Intensive LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	877754-B21
	HPE 480GB SATA 6G Read Intensive LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	877748-B21
	HPE 480GB SATA 6G Read Intensive LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	869380-B21
	6G SATA Hot Plug LFF (3.5-Inch) SC Mixed Use Solid State Drives	
	HPE 1.92TB SATA 6G Mixed Use LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	877790-B21
	HPE 1.92TB SATA 6G Mixed Use LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	875480-B21
	HPE 1.6TB SATA 6G Mixed Use LFF (3.5in) SCC 3yr Wty SSD	804634-B21
	HPE 960GB SATA 6G Mixed Use LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	877784-B21
	HPE 960GB SATA 6G Mixed Use LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	875476-B21

Core Options

HPE 960GB SATA 6G Mixed Use LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	872350-B21
HPE 480GB SATA 6G Mixed Use LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	875472-B21
HPE 480GB SATA 6G Mixed Use LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	872346-B21
Hard Drive Blank Kits	
HPE Large Form Factor Hard Drive Blank Kit	666986-B21
HPE Small Form Factor Hard Drive Blank Kit	666987-B21

HPE Networking

1 Gigabit Ethernet adapters	
HP Ethernet 1Gb 4-port 331T Adapter	647594-B21
HP Ethernet 1Gb 2-port 361T Adapter	652497-B21
HP Ethernet 1Gb 2-port 332T Adapter	615732-B21
HP Ethernet 1Gb 4-port 366T Adapter	811546-B21
10 Gigabit Ethernet adapters	
HP Ethernet 10Gb 2-port 560SFP+ Adapter	665249-B21
HP Ethernet 10Gb 2-port 561T Adapter	716591-B21
HP Ethernet 10Gb 2-port 562SFP+ Adapter	727055-B21

HPE Power Supplies

HPE Entry-Level Power Supplies	
HPE 550W Standard FIO Power Supply Kit	730941-B21
NOTE: The above power supply option is 80Plus Silver-certified with an efficiency rating of up to 89%. Power specifications and technical content for all HPE Server power supplies can be found at http://www.hp.com/go/proliant/powersupply .	
HPE 900W Standard AC 240VDC Power Input Module	775595-B21
NOTE: This part number can only be bought standalone and is for field integration only.	
NOTE: HPE 900W Gold (Redundant) AC 240VDC Power Input Module (814835-B21) must be used with Power Backplane (814835-B21).	
HPE 900W Standard AC 240VDC RPS Power Backplane	814835-B21
NOTE: This part number can only be bought standalone and is for field integration only.	
NOTE: This RPS backplane is mandatorily needed with 900W RPS Input module.	
NOTE: Each Redundant Power Supply Backplane can support up to two (2) power input modules.	
NOTE: When purchase HPE 900W AC 240VDC RPS Power Backplane (814835-B21) - HPE 900W AC 240VDC Power Input Module (775595-B21), it supports 900W non-redundant PS.	
HPE 900W Standard AC 240VDC Redundant Power Supply Kit	820792-B21
NOTE: This Redundant Power supply kit includes 2 power supply input module and 1 backplane kit.	
NOTE: This part number is both factory installed option and field integratable option.	
NOTE: Redundant AC Power Input Modules do not share power. Redundant AC Power Input Module #1 is the primary AC Power Input Module. Redundant AC Power Input Module #2 is the backup AC Power Input Module.	

Core Options

the same server is not supported. All power supplies must be of the same efficiency rating. If non-matching power supplies are installed, you may experience operational issues with your server.

For 2P configurations or check power advisor for power consumption specifications and technical content for all HPE Server power supplies at: go/proliant/power-supply.

Accelerators

W7100 Accelerator Kit (J0H10A) is selected.

HP ML150 Gen9 GPU Enablement Kit 779863-B21

NOTE: Only the above listed Graphics cards are HPE standard supported options in this server.

NOTE: The NVIDIA Quadro modules and AMD FirePro W7100 are supported only on 64-bit versions of Linux and Windows operating systems as well as on Virtual Machine client operating systems. The supported bare metal operating systems are RHEL6, SLES 11 and Windows Server 2012 R2.

NOTE: Please see the HPE Power Advisor for estimated power consumption of your individual system configuration prior to installing GPUs. The HPE Power Advisor is located at: <http://www.hpe.com/info/hppoweradvisor>.

HPE Cooling Options

HP ML150 Gen9 PCI Baffle Kit 779861-B21

NOTE: Must be selected when a PCIe card is installed with any Networking, Controllers (SAS, SCSI and Fiber Channel), and Graphic options.

NOTE: HPE ML150 Gen9 PCI BAFFLE Kit (779861-B21) is included while order Performance Model with H240 Storage Controller.

Kit J0H10A
9 GPU Enablement Kit (779863-B21) if

Additional Options

NOTE: Some options may not be integrated at the factory. To ensure only valid configurations are ordered, Hewlett Packard Enterprise recommends the use of an HPE approved configurator. Contact your local sales representative for additional information.

Embedded Management	HPE iLO Advanced	
	HPE iLO Advanced including 3yr 24x7 Tech Support and Updates 1-server LTU	BD505A
	HPE iLO Advanced including 1yr 24x7 Technical Support and Updates E-LTU	E6U59ABE
	HPE iLO Advanced including 1yr 24x7 Technical Support and Updates 1-server LTU	S12485-B21
	HPE Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO LTU	C6N36A
	HPE iLO Advanced including 3yr 24x7 Technical Support and Updates E-LTU	E6U64ABE
	HPE Insight Control including 1yr 24x7 Technical Support and Updates 1-server LTU	C6N27A
	HPE Insight Management Media Kit	C6N31A
	HPE iLO Essentials	
	HPE iLO Essentials including 3yr 24x7 Tech Support and Updates 1-server LTU	BD774A
	HPE iLO Essentials including 1yr 24x7 Tech Support and Updates 1-server LTU	BD775A
	HPE iLO Essentials including 3yr 24x7 Technical Support and Updates E-LTU	E6U61ABE
	HPE iLO Essentials including 1yr 24x7 Technical Support and Updates E-LTU	E6U62ABE

High Performance Clusters

HPE Insight Cluster Management Utility	
HPE Insight Cluster Management Utility 3yr 24x7 Flexible LTU	BD476A
HPE Insight Cluster Management Utility 1yr 24x7 Flexible LTU	OL803B
NOTE: These part numbers can be used to purchase one certificate for multiple licenses and support with a single activation key. Each license is for one node (server). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key. Customer also will receive a support agreement.	
HPE Insight Cluster Management Utility Media	BD477A

HPE Security

HP Trusted Platform Module 2.0 Kit	
HP Trusted Platform Module 2.0 Kit	745823-B21
NOTE: HPE Trusted Platform Module 2.0 Option works with Gen9 servers with UEFI Mode not Legacy Mode. It is not compatible with HPE ProLiant Gen8 servers or earlier generation variants.	
NOTE: HPE Gen9 servers purchased earlier may need the latest firmware update to be compatible with the TPM 2.0 Option.	
NOTE: HPE server systems can have a TPM module (of any type) installed only once. It cannot be replaced with any other TPM module.	

HPE Storage Controllers

SAS Controllers	
HPE Smart Array Controllers	
HP Smart Array P440/2GB FBWC 12Gb 1-port Int SAS Controller	820834-B21
HP Smart Array P440/4GB FBWC 12Gb 1-port Int SAS Controller	726821-B21
HP Smart Array P441/4GB FBWC 12Gb 2-ports Ext SAS Controller	726825-B21
HP Smart Array P840/4GB FBWC 12Gb 2-ports Int SAS Controller	726897-B21
NOTE: 16SFF is limited to P840.	
HP Smart Array P841/4GB FBWC 12Gb 4-ports Ext SAS Controller	726903-B21
HP Smart Array P440/4GB FBWC 12Gb 1-port Int FIO SAS Controller	761872-B21
NOTE: Smart Storage Battery included.	

N: 786710-B21 when purchasing

dup internal controller.

P440/P840 Cable Kit must be selected P/N:
Cable kit is required for P440x1).

NOTE: HPE ML150 Gen9 PCI BAFFLE Kit (779861-B21) is required when ordering the H240 controller card.

HP Smart Array P840/4GB FBWC 12Gb 2-ports Int FIO SAS Controller 761874-B21

NOTE: Smart Storage Battery included.

NOTE: B140i can't mix with any standup internal controller.

NOTE: Must select the P840/4G FIO Controller when an additional drive cage is selected.

NOTE: Must select P840/4G Controller when apply 16SFF.

NOTE: Must select battery holder when purchase P440 P/N: 786710-B21.

NOTE: HPE ML150 Gen9 Mini SAS P440/P840 Cable Kit must be selected P/N: 784606-B21 for P840 controller (2 cable kits are required for P840x1).

NOTE: HPE ML150 Gen9 PCI BAFFLE Kit (779861-B21) is required when ordering a controller card.

SAS Controller Options

HP 96W Smart Storage Battery with 145mm Cable for DL/ML/SL Servers 727258-B21

HPE Host Bus Adapter

HP H240 12Gb 2-ports Int Smart Host Bus Adapter 726907-B21

HP H241 12Gb 2-ports Ext Smart Host Bus Adapter 726911-B21

HP H240 12Gb 2-ports Int FIO Smart Host Bus Adapter 761873-B21

NOTE: Must select for H240 controller when selecting a Tape Drive.

NOTE: Cable Rule:

1 cable kit is required for Hot Plug 4LFF.

2 cable kits are required for below:

- Hot Plug 4+4 LFF (with additional drive cage)

- 8SFF

NOTE: If H240 is the primary controller and if HPE Mfg FIO Enable HBA Mode Setting is selected, then RAID is not allowed.

NOTE: B140i can't mix with any standup internal controller.

NOTE: HPE ML150 Gen9 PCI BAFFLE Kit (779861-B21) is required when ordering a controller card.

HPE Cable Options

HP ML150 Gen9 Mini SAS H240 Cable Kit 784606-B21

HP ML150 Gen9 Mini SAS P440/P840 Cable Kit 784608-B21

Optional Software

HPE SmartCache No Media 24x7 Technical Support 1-server LTU D7S26A

HPE SmartCache No Media 24x7 Technical Support Flexible LTU D7S27A

HPE SmartCache No Media 24x7 Technical Support E-LTU D7S27AAE

: HPE SmartCache is supported when one of the supported Smart Array controllers is installed in the server.

: HPE SmartCache comes standard (no licensing is required) if the HPE Array P840 Controller is installed in the server.

Battery Holder

HP 96W Smart Storage Battery Holder Kit 786710-B21

Additional Options

HPE Tape Backup **NOTE:** For the complete range of tape drives, autoloaders, libraries and media see: <http://www.hp.com/go/tape>. For hardware and software compatibility of HPE tape backup products <http://www.hpe.com/storage/BURACompatibility>.

NOTE: Must select SAS controller to support internal SAS tape drives.

NOTE: Tape drive and HDD total amount can't exceed SAS controller support qty.

NOTE: Limited to H240 when select Tape Drive.

Tape Drives

HPE StoreEver LTO-7 Ultrium 15000 External Tape Drive 88874A

HPE StoreEver LTO-7 Ultrium 15000 Internal Tape Drive 88873A

HPE StoreEver LTO-6 Ultrium 6250 Tape Drive in a 1U Rack Mount Kit COL99A

HPE StoreEver LTO-6 Ultrium 6250 External Tape Drive EH970A

HPE StoreEver LTO-6 Ultrium 6250 Internal Tape Drive EH969A

HPE StoreEver LTO-5 Ultrium 3000 SAS Tape Drive in a 1U Rack Mount Kit EJ014B

HPE StoreEver LTO-5 Ultrium 3000 SAS External Tape Drive EH958B

HPE StoreEver LTO-5 Ultrium 3000 SAS Internal Tape Drive EH957B

HPE StoreEver LTO-4 Ultrium 1760 SAS (1) in a 1U Rack Mount Kit EH946C

HPE StoreEver LTO-4 Ultrium 1760 SAS External Tape Drive EH920B

HPE StoreEver LTO-4 Ultrium 1760 SAS Internal WW Tape Drive EH919B

HPE StoreEver 1U SAS Rack Mount Kit AE459B

HPE StoreEver Mini-SAS High Density to 4-lane Mini-SAS External Fanout 2m Cable K2R09A

HPE StoreEver Mini-SAS High Density to 4-lane Mini-SAS External Fanout 4m Cable K2R10A

Cable

Cable

HPE Tape Storage Systems HPE StoreEver MSL6480

HPE StoreEver MSL6480 Scaleable Expansion Module QU626A

HPE StoreEver MSL6480 Scalable Base Module OU625A

HPE StoreEver MSL2024 0-drive Tape Library AK379A

HPE StoreEver MSL4048 0-drive Tape Library AK381A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

<https://www.hp.com/h20195/v2/GetHTML.aspx?docname=c04111416>

HPE Disk Backup		
HPE RDX Removable Disk Backup System		
HPE RDX500 USB3.0 Internal Disk Backup System		B7B64A
HPE RDX1000 USB3.0 Internal Disk Backup System		B7B67A
HPE RDX USB 3.0 Internal Docking Station		C8S06A
HPE RDX 2TB USB3.0 Internal Disk Backup System		E7X52A
HPE RDX 3TB USB 3.0 Internal Disk Backup System		P9L71A
HPE RDX 4TB USB 3.0 Internal Disk Backup System		Q2R32A
HPE RDX+ External Docking System		C8S07B
HP RDX+ 500GB External Backup System		B7B66B
HP RDX+ 1TB External Backup System		B7B69B
HP RDX 2TB USB3.0 External Disk Backup System		E7X53B
HPE RDX+ 3TB USB 3.0 External Disk Backup System		P9L72A
HPE RDX 4TB USB 3.0 External Disk Backup System		Q2R33A
NOTE: For the complete range of RDX drives and media see: http://www.hp.com/go/rdx . For hardware and software compatibility of HPE disk backup products see: http://www.hp.com/storage/SPOCK .		

HPE Power Distribution Units (PDUs)		
HPE Power Distribution Units (PDUs)	HPE Basic Power Distribution Units (PDU)	
	HPE Basic 1.9kVA/LS-20P 16A/120V Outlets (12) 5-20R/Horizontal NA/JP PDU	H5M54A

Additional Options

	0V Outlets (12)	H5M56A
	5-20R/Vertical NA/JP PDU	H5M55A
	0V Outlets (20) C13/Vertical	H5M57A
	C13/Vertical NA/JP PDU	H5M58A
	s (20) C13/Vertical INTL PDU	H5M68A
	s (18) C13/Vertical NA/JP	H5M61A
	C13 (6) C19/Vertical NA/JP	H5M59A
PDU		
	HPE Basic 7.3kVA/60309 3-wire 32A/230V Outlets (24) C13 (6) C19/Vertical INTL PDU	H5M70A
	HPE Basic 8.3kVA/CS8265C 40A/208V Outlets (30) C13 (6) C19/Vertical NA PDU	H5M60A
	HPE Basic 11kVA/60309 63A 3-wire 48A/230V Outlets (30) C13 (6) C19/Vertical INTL PDU	H5M71A
	HPE Basic 9.2kVA/50A Terminal Block 40A/230V Outlets (30) C13 (6) C19/Vertical WW PDU	H5M75A
	HPE Basic 3Ph 5.7kVA/ L21-20P 16A/120-208V Outlets (24) C13 (3) 5-20R/Vertical NA/JP PDU	H5M63A
	HPE Basic 3Ph 8.6kVA/L21-30P 24A/120-208V Outlets (24) C13 (3) C19 (3) 5-20R/Vertical NA/JP PDU	H5M64A
	HPE Basic 3Ph 8.6kVA/L15-30P 24A/208V Outlets (24) C13 (6) C19/Vertical NA/JP PDU	H5M62A
	HPE Basic 3Ph 11kVA/60309 5-wire 16A/230V Outlets (24) C13 (6) C19/Vertical INTL PDU	H5M72A
	HPE Basic 3Ph 11kVA/60309 5-wire 16A/230V Outlets (36) C13 (6) C19/Vertical INTL PDU	H5M73A
	HPE Basic 3Ph 11kVA/60309 16A/240V Outlets (36) C13 (6) C19/Vertical NA PDU	H5M67A
	HPE Basic Modular 2.8kVA/L5-30P 24A/120V Outlets (4) C19/Horizontal NA/JP PDU	252663-D71
	HPE Basic Modular 4.9kVA/L6-30P 24A/208V Outlets (4) C19/Horizontal NA/JP Core Only PDU	252663-D74
	HPE Basic Modular 8.3kVA/CS8265C 40A/208V Outlets (4) C19/Horizontal NA/JP PDU	252663-D75
	HPE Basic Modular 7.3kVA/60309 3-wire 32A/230V Outlets (4) C19/Horizontal INTL Core Only PDU	252663-B33
	HPE Basic Modular 9.2kVA/60309 63A 3-wire 40A/230V Outlets (4) 15-30P 24A/208V Outlets (6) C19/Horizontal	AF512A
	0309 5-wire 16A/230V Outlets (6)	AF513A
	CS8365C 40A/208V Outlets (6)	AF519A
	60309 60A 4-wire 48A/208V Outlets (6)	AF511A
	0309 5-wire 32A/230V Outlets (6)	AF518A
	Output NA Rack Mount Transformer	H3X09A

Additional Options

NOTE: Please see the **HPE Basic Power Distribution Units (PDU) QuickSpecs** for information on additional options and product specifications.

HPE Metered Power Distribution Units (PDU)

HPE Metered 2.8kVA/L5-30P 24A/120V Outlets (12) 5-20R/Horizontal NA/JP PDU	D9
HPE Metered 3.6kVA/60320 C20 Detachable 16A/230V Outlets (12) C13/Horizontal WW PDU	D9
HPE Metered 4.9kVA/L6-30P 24A/208V Outlets (12) C13/Horizontal NA/JP PDU	D9
HPE Metered 3.6kVA/60320 C20 Detachable 16A/230V Outlets (16) C13/Vertical WW PDU	D9
HPE Metered 4.9kVA/L6-30P 24A/208V Outlets (12) C13/Vertical NA/JP PDU	G9Z05A G9Z06A
HPE Metered 7.3kVA/60309 3-wire 32A/230V Outlets (12) C13/Vertical INTL PDU	
HPE Metered 4.9kVA/L6-30P 24A/208V Outlets (20) C13 (4) C19/Vertical NA/JP PDU	D9N47A
HPE Metered 7.3kVA/60309 32A 3-wire/230V Outlets (20) C13 (4) C19/Vertical INTL PDU	D9N48A
HPE Metered 3Ph 8.6kVA/L15-30P 24A/208V Outlets (18) C13 (3) C19/Vertical NA/JP PDU	D9N51A
HPE Metered 3Ph 8.6kVA/L21-30P 24A/120-208V Outlets (18) C13 (3) C19 (3) 5-20R/Vertical NA/JP PDU	D9N53A
HPE Metered 3Ph 11kVA/60309 5-wire 16A/230V Outlets (18) C13 (3) C19/Vertical INTL PDU	D9N55A
HPE Metered 8.3kVA/CS8265C 40A/208V Outlets (30) C13 (3) C19/Vertical NA PDU	D9N49A
HPE Metered 7.3kVA/60309 32A 3-wire/230V Outlet (32) C13 (4) C19/Vertical INTL PDU	D9N50A
HPE Metered 3Ph 11kVA/60309 5-wire 16A/230V Outlets (30) C13 (3) C19/Vertical INTL PDU	D9N57A
HPE Metered 3Ph 14.4kVA/CS8365C 40A/208V Outlets (12) C13 (12) C19/Vertical NA/JP PDU	D9N58A
HPE Metered 3Ph 16.6kVA/60309 32A-30A 5-wire 24A/230V Outlets (30) C13 (3) C19/Vertical NA/JP PDU	D9N61A
HPE Metered 3Ph 16.6kVA/60309 32A-30A 5-wire 24A/230V Outlets (12) C13 (12) C19/Vertical NA/JP PDU	D9N62A
HPE Metered 3Ph 17.3kVA/60309 60A 4-wire 48A/208V Outlets (24) C13 (3) C19/Vertical NA/JP PDU	D9N54A
HPE Metered 3Ph 17.3kVA/60309 60A 4-wire 48A/208V Outlets (12) C13 (12) C19/Vertical NA/JP PDU	D9N59A
HPE Metered 3Ph 17.3kVA/60309 60A 4-wire 48A/208V Outlets (12) C13 (12) C19/Vertical NA/JP PDU	G9Z07A
HPE Metered 3Ph 19.9kVA/L22-30P 24A/277V Outlets (30) RF-203P-HP/Vertical NA PDU	D9N63A
HPE Metered 3Ph 22kVA/60309 5-wire 32A/230V Outlet (30) C13 (3) C19/Vertical INTL PDU	D9N56A
HPE Metered 3Ph 22kVA/60309 5-wire 32A/230V Outlets (12) C13 (12) C19/Vertical INTL PDU	D9N60A
HPE Metered 3Ph 22kVA/60309 5-wire WT 32A/230V Outlets (12) C13 (12) C19/Vertical INTL PDU	G9Z08A
HP Environmental Sensor for Remote Monitored and Managed PDUs	E2D53A

NOTE: Please see the **HPE Metered Power Distribution Units (PDU) QuickSpecs** for information on additional options and product specifications.

Power Distribution Unit (PDU)	
Modular 4.9kVA/L6-30P 24A/208V Outlets (6) C19/Horizontal	AF520A
Modular 8.3kVA/CS8265C 40A/208V Outlets (6) C19/Horizontal	AF521A
Modular 3Ph 8.6kVA/L15-30P 24A/208V Outlets (6) NA/JP PDU	AF522A
Modular 3Ph 17.3kVA/60309 60A 4-wire 48A/208V (6) NA/JP PDU	AF523A
Intelligent Modular 3Ph 17.3kVA/60309 30A 5-wire 24A/240V (6) C19/Horizontal NA/JP PDU	AF901A
Intelligent Modular 7.3kVA/60309 3-wire 32A/230V Outlets (6) C19/Horizontal INTL PDU	AF525A
Intelligent Modular 3Ph 11kVA/60309 5-wire 16A/230V Outlets (6) C19/Horizontal INTL PDU	AF526A
Intelligent Modular 3Ph 22kVA/60309 5-wire 32A/230V Outlets (6) C19/Horizontal INTL PDU	AF527A
Intelligent Modular 3Ph 17.3kVA/IEC 60309 60A 4-wire 48A/208V (12) C19/Horizontal NA/JP PDU	AF535A
Intelligent Modular 3Ph 22kVA/60309 5-wire 32A/230V Outlets (12) C19/Horizontal INTL PDU	AF538A
Intelligent Modular 4.9kVA/L6-30P 24A/208V Outlets (20) C13 (6) C19/Horizontal NA/JP PDU	AF531A
Intelligent Modular 3Ph 8.6kVA/L15-30P 24A/208V Outlets (20) C13 (6) C19/Horizontal NA/JP PDU	AF532A
Intelligent Modular 3Ph 14.4kVA/CS8365C 40A/208V Outlets (6) C19/Horizontal NA/JP PDU	AF533A
Intelligent Modular 7.3kVA/60309 3-wire 32A/230V Outlets (6) C19/Horizontal INTL PDU Kit	AF534A
5xC13 Intelligent PDU Extension Bar G2 Kit	AF547A
5xC13 Outlets Power and UID LEDs Pair Standard Extension Bar	AF528A
NOTE: Please see the HPE Intelligent Power Distribution Unit (PDU) QuickSpecs for information on additional options and product specifications.	
HPE Metered and Switched Power Distribution Units (PDU)	
Metered Switched 2.8kVA/L5-30P 24A/120V Outlets (24) 5-20R/Vertical NA/JP PDU	H8B48A
Metered Switched 3.6kVA/60320 C20 Detachable 16A/230V Outlets (7) C13 (1) C19/Vertical WW PDU	H8B49A
Metered Switched 4.9kVA/L6-30P 24A/208V Outlets (20) C13 (4) C19/Vertical NA/JP PDU	H8B50A
Metered Switched 7.3kVA/60309 3-wire 32A/230V Outlets (20) C13 (4) /Vertical INTL PDU	H8B51A
Metered Switched 3Ph 8.6kVA/L15-30P 24A/208V Outlets (18) C13 (6) /Vertical NA/JP PDU	H8B52A
Metered Switched 3Ph 8.6kVA/L21-30P 24A/208V Outlets (20) C13 (1) 5-20R/Vertical NA/JP PDU	H8B53A
Metered Switched 3Ph 11kVA/60309 5-wire 16A/230V Outlets (21) C13 C19/Vertical INTL PDU	H8B54A
Metered Switched 3Ph 14.4kVA/CS8365C 40A/208V Outlets (12) C13 (12) /Vertical NA/JP PDU	H8B55A
Metered Switched 3Ph 17.3kVA/60309 4-wire 48A/208V Outlets (12) C13 (12) /Vertical NA/JP PDU	H8B56A

Additional Options

NOTE: Please see the [HPE Metered and Switched Power Distribution Units \(PDU\) QuickSpecs](#) for information on additional options and product specifications.

NOTE: To learn more, please visit the [HPE Uninterruptible Power Systems \(UPS\) web page](#).

HPE Rack Mount Consoles, KVM Switches, and Keyboards	HPE Location Discovery Services	
	HPE Location Discovery Services LCD8500 Kit	TL052A
	NOTE: Please see the HPE Location Discovery Services QuickSpecs for information on additional options and product specifications.	
	HPE Rack Mount Consoles	
	HP LCD8500 1U US Rackmount Console Kit	AF630A
	HP LCD8500 1U UK Rackmount Console Kit	AF631A
	HP LCD8500 1U DE Rackmount Console Kit	AF632A
	HP LCD8500 1U FR Rackmount Console Kit	AF633A
	HP LCD8500 1U JP Rackmount Console Kit	AF642A
	HP LCD8500 1U RU Rackmount Console Kit	AF643A
	HP LCD8500 1U INTL Rackmount Console Kit	AF644A
	HP LCD8500 1U US TAA Rackmount Console Kit	AF645A
	HPE KVM Switches	
	HP 0x1x8 G3 KVM Console Switch	AF651A
	HP 0x2x16 G3 KVM Console Switch	AF652A
	HP TAA 0x2x16 G3 KVM Console Switch	AF653A
	HP USB Remote Access Key for G3 KVM Console Switches	AF650A
	HP KVM Console USB Interface Adapter	AF628A
	HP 0x2x16 KVM Server Console Switch G2 with Virtual Media CAC Software	AF618A
	HP 0x2x32 KVM Server Console Switch G2 with Virtual Media CAC Software	AF619A
	HP KVM Console USB 2.0 Virtual Media CAC Interface Adapter	AF629A
	HP 1x4 USB/PS2 KVM Console Switch	AF611A
	HP 1x1Ex8 KVM IP Console Switch G2 with Virtual Media CAC Software	AF620A
	HP 2x1Ex16 KVM IP Console Switch G2 with Virtual Media CAC Software	AF621A
	HP 4x1Ex32 KVM IP Console Switch G2 with Virtual Media CAC Software	AF622A
	NOTE: To learn more, please visit the HPE KVM Switches web page .	
	HPE USB Keyboard and Mouse	
	HP USB BFR with PVC Free US Keyboard/Mouse Kit	631341-821
	HP USB BFR with PVC Free Intl Keyboard/Mouse Kit	672097-833
	HP USB BFR with PVC Free UK Keyboard/Mouse Kit	631344-821
	HP USB BFR with PVC Free FR Keyboard/Mouse Kit	631346-821
	HP USB BFR with PVC Free ES Keyboard/Mouse Kit	631348-821
	HP USB BFR with PVC Free DE Keyboard/Mouse Kit	631358-821
	HP USB BFR with PVC Free JP Keyboard/Mouse Kit	631360-821
	HP USB BFR with PVC Free IT Keyboard/Mouse Kit	631362-821
	HP USB BFR with PVC Free CN Keyboard/Mouse Kit	631364-821
	HP USB BFR with PVC Free AE Keyboard/Mouse Kit	638212-821
	HP USB BFR with PVC Free RU Keyboard/Mouse Kit	638214-821
	HP USB BFR with PVC Free SE Keyboard/Mouse Kit	672097-103
	HP USB BFR with PVC Free CH Keyboard/Mouse Kit	672097-113
	HP USB BFR with PVC Free PT Keyboard/Mouse Kit	672097-133
	HP USB BFR with PVC Free TR Keyboard/Mouse Kit	672097-143
	HP USB BFR with PVC Free CZ Keyboard/Mouse Kit	672097-223
	HP USB BFR with PVC Free FI Keyboard/Mouse Kit	672097-353

Additional Options

	672097-373
	672097-D63
	672097-KD3
	BW939A
	G7T29A
	TK815A
	TK816A
	TK817A
	417705-821
HP ConvergedSystem Rack Light Kit	
HP ConvergedSystem Rack Side Panel 1075mm Kit	
HP Tower to Rack Conversion Tray Universal Kit	

HPE Uninterruptible HPE DirectFlow Three Phase UPS

Power Systems (UPS)	Power Unit (1U UPS)	
	HPE R12000 DirectFlow - 1U Rackmount Uninterruptible Power System	G9Y75A
	HPE R12000 DirectFlow - POD 1U Rackmount Uninterruptible Power System	AF478A
	Input/Output Module Options for 1U UPS	
	HPE 32A 400-415 Volt Three Phase INTL R12000 DirectFlow UPS IEC309 Input/Output Module	AF488A
	HPE 30A 400-415 Volt Three Phase NA R10000 DirectFlow UPS IEC309 Input/Output Module	AF489A
	HPE 32A 380 Volt Three Phase China R12000 DirectFlow UPS Unterminated Input/Output Module	AF490A
	HPE 30A 480 Volt Three Phase NA R12000 DirectFlow UPS L22-30 Input/Output Module	AF491A
	HPE 30A 480 Volt Three Phase NA R12000 DirectFlow UPS IEC309 Input/Output Module	AF492A
	HPE 30A 400-415 Volt Three Phase NA R12000 DirectFlow UPS IEC309 Input/Output Module	G9Y76A
	Power Unit (2U UPS)	
	HPE R18000 DirectFlow - 2U Rackmount Uninterruptible Power System	AF479A
	Input/Output Module Options for 2U UPS	
	HPE 32A 400-415 Volt Three Phase INTL R18000 DirectFlow UPS IEC309 Input/Output Module	AF483A
	HPE 30A 380 Volt Three Phase China R18000 DirectFlow UPS Unterminated Input/Output Module	AF485A
	HPE 30A 480 Volt Three Phase NA R18000 DirectFlow UPS IEC309 Input Module	AF486A
	3A 480 Volt Three Phase NA R18000 DirectFlow UPS IEC309 Input Module	AF487A
	3A 400 Volt Three Phase NA R18000 DirectFlow UPS IEC309 Input Module	D9002A
	3A 400-415V Three Phase NA R18000 DirectFlow UPS 1:1 IEC309 Input Module	AF484A

Note: All Input/Output Modules support dual output outlets except the AF484A.

Rackmount Lithium-Ion Battery Pack	AF480A
Rackmount VRLA Battery Pack	AF482A
Redundant Battery Cable	AF497A

HPE DirectFlow Three Phase Uninterruptible Power System QuickSpecs

For additional options and product specifications.

Additional Options

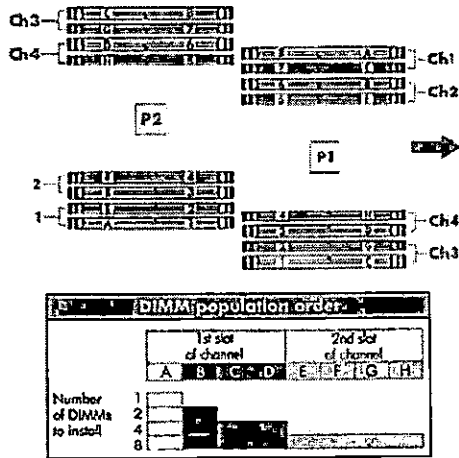
HPE T750 G4 UPS Models	
HPE T750 G4 NA/JP Uninterruptible Power System	J2
HPE T750 G4 INTL Uninterruptible Power System	J2
HPE T1000 G4 UPS Models	
HPE T1000 G4 NA/JP Uninterruptible Power System	J2
HPE T1000 G4 INTL Uninterruptible Power System	J2
HPE T1500 G4 UPS Models	
HPE T1500 G4 NA/JP Uninterruptible Power System	J2
HPE T1500 G4 INTL Uninterruptible Power System	J2P90A
HPE Rack/Tower UPS	
HPE R/T2200 G4 UPS Models	
HPE R/T2200 G4 NA/JP Uninterruptible Power System	J2R00A
HPE R/T3000 G4 UPS Models	
HPE R/T3000 G4 Low Voltage NA/JP Uninterruptible Power System	J2R01A
HPE R/T3000 G4 High Voltage NA/JP Uninterruptible Power System	J2R02A
HPE R/T3000 G4 High Voltage INTL Uninterruptible Power System	J2R04A
R1500 G4 Models	
HPE R1500 G4 NA Uninterruptible Power System	J2O99A
HPE R1500 G4 JP/TWN Uninterruptible Power System	J2R05A
HPE R1500 G4 INTL Uninterruptible Power System	J2R03A
R7000 Uninterruptible Power System (UPS)	
HPE R7000 4U 50A High Voltage NA/JP Uninterruptible Power System	AF462A
HPE R7000 4U IEC-32A High Voltage INTL Uninterruptible Power System	AF463A
R5000 Uninterruptible Power System (UPS)	
HPE R5000 3U L630 High Voltage NA/JP Uninterruptible Power System	AF460A
HPE R5000 3U IEC309-32A High Voltage INTL Uninterruptible Power System	AF461A
NOTE: To learn more, please visit the HPE Uninterruptible Power Systems (UPS) web page	

HPE USB and SD Options	HPE Enterprise Mainstream Flash Media Kits for Memory Cards	
	HPE 32GB microSD Mainstream Flash Media Kit	700139-B21
	HPE 8GB microSD Enterprise Mainstream Flash Media Kit	726116-B21
	HP 8GB USB Enterprise Mainstream Flash Media Drive Key Kit	737953-B21
	HP Dual 8GB microSD Enterprise Midline USB Kit	741279-B21

HPE Support Services	Installation & Start-up Services	
	HPE Installation ML350e/ML150 Service	U6D41E
	HPE Startup ML350e/ML150 Service	U6D43E
	Foundation Care	
	HPE 3 year Foundation Care 24x7 ML150 Gen9 Service	U7WR1E
	HPE 3 year Foundation Care 24x7 wDMR ML150 Gen9 Service	U7WR2E
	HPE 3 year Foundation Care 24x7 wCDMR ML150 Gen9 Service	U7WR3E
	Proactive Care	
	HPE 3 year Proactive Care 24x7 ML150 Gen9 Service	U7WT8E
	HPE 3 year Proactive Care 24x7 with DMR ML150 Gen9 Service	U7WT9E
	HPE 3 year Proactive Care 24x7 with CDMR ML150 Gen9 Service	U7WU0E

Memory

Memory Population guidelines



General Memory Population Rules and Guidelines:

- Install DIMMs only if the corresponding processor is installed.
- If only one processor is installed in a two processor system, only half of the DIMM slots are available.
- To maximize performance, it is recommended to balance the total memory capacity between all installed processors and load the channels similarly whenever possible.
- When two processors are installed, balance the DIMMs across the two processors.
- White DIMM slots denote the first slot to be populated in a channel.
- Place the DIMMs with the highest number of ranks in the white slot when mixing DIMMs of different ranks on the same channel.
- Do not mix RDIMMs or LRDIMMs.
- Quad rank RDIMMs are not supported in HPE ProLiant ML150 Gen9 servers.
- Quad rank LRDIMMs are capable of up to three DIMMs per channel.
- RDIMMs operating at 1.2V.
- DIMMs of different speeds may be mixed in any order; the server will select a common optimal speed.
- The maximum memory speed is a function of the memory type, memory configuration, and processor model.
- The maximum memory capacity is a function of the memory type and number of installed processors. To achieve the performance memory capabilities listed in this document, HPE SmartMemory is required.

Handwritten notes and a circular stamp are present in the bottom left corner of the page.

Memory

Intel Gen9 Supported Memory Bandwidth for HPE ProLiant Gen9 Intel® Xeon® E5-2600v4 Series Processor Family

[DIMM Type]	Registered DIMMs (RDIMMs)				Load Reduced (LRDIMMs)
	805347-B21	805349-B21	836220-B21	805351-B21	805353-B21
HPE SKU P/N	805347-B21	805349-B21	836220-B21	805351-B21	805353-B21
DIMM Rank	Single Rank	Single Rank	Dual Rank	Dual Rank	Dual Rank
DIMM Capacity	8GB	16GB	16GB	32GB	32GB
Voltage	Std Voltage 1.2V	Std Voltage 1.2V	Std Voltage 1.2V	Std Voltage 1.2V	Std Voltage 1.2V
DRAM Depth [bit]	1G	2G	1G	2G	2G
DRAM Width [bit]	x8	x4	x4	x4	x4
DRAM Density	8Gb	8Gb	4Gb	8Gb	8Gb
CAS Latency	17-17-17	17-17-17	17-17-17	17-17-17	17-17-17
DIMM Native Speed (MT/s)	2400	2400	2400	2400	2400
SLOTS THAT CAN BE POPULATED					
16 slot servers	16	16	16	16	16
MAXIMUM CAPACITY (GB)					
	128	256	256	512	512
POPULATED DIMM SPEED (MT/s)					
1 DIMM Per Channel	2400	2400	2400	2400	2400
2 DIMM Per Channel	2133	2133	2133	2133	2400
3 DIMM Per Channel	n/a	n/a	n/a	n/a	n/a

DIMM slot and configuration diagram

DIMM slot and configuration diagrams

- Population order; start with "A" first, "B" second, "C" third, etc.
- When one processor is installed, install DIMMs in sequential alphabetic order: A, B, C, D, E, F.
- When two processors are installed, install DIMMs in sequential alphabetic order: CPU1-A, CPU2-A, CPU1-B, CPU2-B, CPU1-C, CPU2-C.

	CPU 1		CPU 2		
	Slot #	population order	Slot #	population order	
Chnl 3	1	C	1	A	Chnl 1
	2	G	2	E	
Chnl 4	3	D	3	B	Chnl 2
	4	H	4	F	
CPU 1		CPU 2			

Memory

CPU 2			
Population order			
		Chnl 4	
CPU 2			
Slot #	Population order	Slot #	Population order
7	E	7	G
8	A	8	C

Chnl 1		Chnl 3	
Slot #	Population order	Slot #	Population order
7	E	7	G
8	A	8	C

Memory Speed by Processor Model	Processor Models	Supported Memory Speeds
	E5-2609v3, E5-2603v3	1600MT/s
	E5-2640v3, E5-2630v3, E5-2620v3, E5-2630Lv3	1866MT/s
	E5-2650Lv3, E5-2660v3, E5-2650v3	2133MT/s
	E5-2609v4, E5-2603v4	1866MT/s
	E5-2620v4, E5-2630Lv4, E5-2640v4, E5-2630v4	2133MT/s
	E5-2650Lv4, E5-2660v4, E5-2650v4, E5-2680v4, E5-2683v4, E5-2695v4	2400MT/s

Standard and Maximum Memory Capacity (Pre-configured Models)	Pre Configured Models	Standard Memory	Maximum Memory Plus Optional Memory	Standard Memory Replaced with Optional Memory
	E5-2620v4	16GB (1x16GB)	496GB (15x32GB, 1x16GB)	512GB (16x32GB)
	E5-2609v4, E5-2609v3, E5-2603v4	8GB (1x8GB)	488GB (15x32GB, 1x8GB)	512GB (16x32GB)
	E5-2603v3	4GB (1x4GB)	484GB (15x32GB, 1x4GB)	512GB (16x32GB)

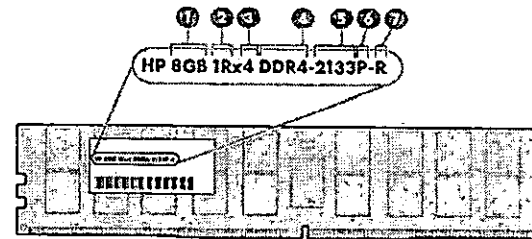
DDR4 memory options part number decoder

NOTE: Capacity references are rounded to the common gigabyte (GB) values.

- 4GB = 4,096MB
- 8GB = 8,192MB
- 16GB = 16,384MB

TPM1/2/3/4/5/6/7/8/9/10/11/12/13/14/15/16/17/18/19/20

Memory



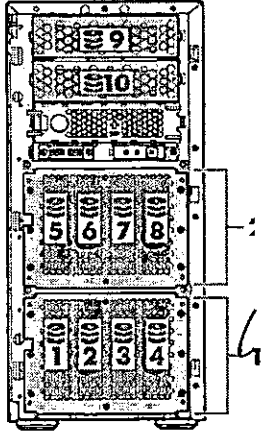
1. Capacity: 4GB/8GB/16GB/32GB
2. Rank: 1R = Single-rank; 2R = Dual-rank; 4R = Quad-rank
3. Data width: x4 = 4-bit; x8 = 8-bit
4. Memory generation: DDR4
5. Maximum memory speed: 2133 MT/s
6. CAS latency: P = 15
7. DIMM type: R = RDIMM (registered); L = LRDIMM (load reduced)

Storage

4-bay LFF non-hot-plug drive model

1-8 8 x LFF SATA/SSD Non-hot-plug Hard Drive Bays

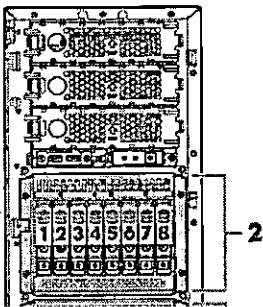
9-10 Media Bays
NOTE: When occupying 10 LFF, not able to
| Drive. Possible
ODD+ 1 Tape Drive
DD, or 3) 9LFF + 1



8-bay SFF hot-plug drive model

1 x 1-8 8 x SFF SAS/SSD Hot Pluggable Hard Drive Bays

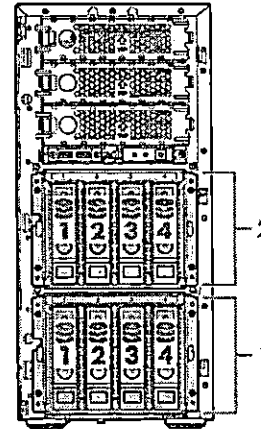
2 x 1-8 8 x SFF SAS/SSD Hot Pluggable Hard Drive Bays



1 x 1-4 4 x LFF SATA/SSD Hot Pluggable Hard Drive Bays

Storage

2 x 1-4 4 x LFF SATA/SSD Hot Pluggable Hard Drive Bays



Maximum Storage Capacity -
Total (10 LFF Drive) 80 TB
Total (16 SFF Drive) 61.44 TB

187(W) x 24.41(D) in (43.26 x 20 x 62 cm)

32lb (14.51kg)
64lb (29.10kg)
100 to 240 VAC
For 550W Power Supply: 6.7 A (at 100 VAC) 3.3 A (at 200 VAC)

PSU, see power specifications tables for detail on 460W, 750W and 1200W power supplies)

BTU Rating Maximum For 550 W Power Supply: 2201 BTU/hr (at 100 VAC), 2153 BTU/hr (at 200 VAC)

Power Specifications To review typical system power ratings use the Power Advisor which is available via the online tool located at: <http://www.hpe.com/info/hppoweradvisor> - Click on the system of interest. Example: ML150 Gen9-Follow the instructions of the next screens.

Power Supply Output Rated Steady-State Power For 550 W Power Supply: 550 W (at 100 VAC), 550 W (at 200 VAC)
Maximum Peak Power For 550 W Power Supply: 550 W (at 100 VAC), 550 W (at 200 VAC)

System Inlet Temperature Standard 10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 304.8 m (1.8°F per every 1000 ft) above sea level to a maximum of 3048 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 20°C/hr (36°F/hr). The upper limit and rate of change may be limited by the type and number of options installed. System performance during standard operating support may be reduced if operating with a fan fault or above 30°C (86°F).

Extended Ambient Operating Support For approved hardware configurations, the supported system inlet range is extended to be: 5° to 10°C (41° to 50°F) and 35° to 40°C (95° to 104°F) at sea level with an altitude derating of 1.0°C per every 175m (1.8°F per every 574 ft) above 900 m (2953 ft) to a maximum of 3048m (10,000 ft). The approved hardware configurations for this system are listed at the URL: <http://www.hpe.com/servers/ashrae>

For approved hardware configurations, the supported system inlet range is extended to be: 40° to 45°C (104° to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1.8°F per every 410 ft) above 900 m (2953 ft) to a maximum of 3048 m (10,000 ft). The approved hardware configurations for this system are listed at the URL: <http://www.hpe.com/servers/ashrae>

System performance may be reduced if operating in the extended ambient operating range or with a fan fault.

Technical Specifications

	Non-operating	NOTE: Supports A3 extended ambient, A4 extended ambient will be available in early 2015. -30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
Relative Humidity	Operating	Minimum to be the higher (more moisture) of -12°C (10.4°F) dew point or 8% relative humidity. Maximum to be the lower (less moisture) of 24°C (75.2°F) dew point or 90% relative humidity.
	Non-operating	5% to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
Altitude	Operating	3048 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457m/min (1500 ft/min).
	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457m/min (1500 ft/min).
Acoustic Noise	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).	
	Idle	
	L WAd	3.8 Bels (1P LFF Non Hot-Plug Entry) 3.8 Bels (1P LFF Hot-plug Base) 4.3 Bels (1P SFF Hot-plug Performance)
	L pAm	22 dBA (1P LFF Non Hot-Plug Entry) 22 dBA (1P LFF Hot-plug Base) 25 dBA (1P SFF Hot-plug Performance)
	Operating	
	L WAd	3.8 Bels (1P LFF Non Hot-Plug Entry) 3.8 Bels (1P LFF Hot-plug Base) 4.1 Bels (1P SFF Hot-plug Performance)
	L pAm	23 dBA (1P LFF Non Hot-Plug Entry) 22 dBA (1P LFF Hot-plug Base) 25 dBA (1P SFF Hot-plug Performance)
Emissions Classification	FCC Rating	Class A
	Normative Standards	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1
	NOTE: Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.	

HPE Dynamic Smart Array B140i Controller	Number of PCI links	Four
	PCI link rate	4Gb/s

000048

BSPP

Technical Specifications

Storage protocol SATA support
 SAS/SATA peak data transfer rate 6Gb/s
 Number of SAS/SATA links 10 links
 SAS/SATA connectivity 2x4 connect
 Expander support No
 Drives supported (max) Up to 10 (int)
 RAID support 0, 1, 10, 5, 5i
 Software management HPE SSA, SM
 Warranty Server work
 HPE Secure Encryption license Not Support
 HPE SmartCache License Not Support
 HPE Smart Storage Administrator Supported

HPE Ethernet 1Gb 4-port 331i Adapter
 Network Interface 10Base-T/100Base-TX/1000Base-TX
 Compatibility IEEE 802.3 10Base-T
 IEEE 802.3ab 1000Base-T
 IEEE 802.3u 1000Base-TX
 Data Transfer Method PCI Express, two lanes (x2)
 Controller BCM5717
 Network Transfer Rate
 10Base-T (Half-Duplex) 10 Mb/s per port, 40 Mb/s combined
 10Base-T (Full-Duplex) 20 Mb/s per port, 80 Mb/s combined
 100Base-TX (Half-Duplex) 100 Mb/s per port, 400 Mb/s combined
 100Base-TX (Full-Duplex) 200 Mb/s per port, 800 Mb/s combined
 1000Base-TX (Half-Duplex) 1000 Mb/s per port, 4000 Mb/s combined
 1000Base-TX (Full-Duplex) 2000 Mb/s per port, 8000 Mb/s combined
 Cable length
 10Base-T Categories 3, 4 or 5 UTP; up to 328 ft (100 m)
 100/1000 Base-TX Category 5 or higher UTP; up to 328 ft (100 m)

Technical Specifications

Environment-friendly Products and Approach

End-of-life Management and Recycling

Hewlett Packard Enterprise offers end-of-life product return, trade-in, and recycling programs. In many geographic areas, for our products. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner.

<http://www.hpe.com/recycle>

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard Enterprise web site. These instructions may be used by recyclers and other WEEE treatment facilities as well as Hewlett Packard Enterprise OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.

<http://www.hpe.com/recycle>

Summary of Changes

Qu
St

		Description of Change	
			d new HPE 1.2TB SATA 7.2K LFF HDD and RDX 4TB USB 3.0 External/ Internal Disk Backup m. d new Solid State Drives offering to the HPE s section. lere SKUs were removed from the QuickSpecs. d new Solid State Drives offering to the HPE s section.
11-Jul-2017	From Version 23 to 24	Added	Added support for HPE OneView Standard version 3.1.
5-Jun-2017	From Version 22 to 23	Added	Added new Solid State Drives offering to the HPE Drives section.
8-May-2017	From Version 21 to 22	Added	Added support for ClearOS.
		Changed	Operating Systems and Virtualization Software Support for ProLiant Servers and HPE Drives were revised.
		Removed	Obsolete SKUs were removed from the QuickSpecs.
27-Mar-2017	From Version 20 to 21	Added	Added new Hard Drives.
13-Feb-2017	From Version 19 to 20	Added	Added new HDD and SSD offering to the HPE Drives section.
28-Nov-2016	From Version 18 to 19	Added	Added new Hard Drives offering.
		Changed	Maximum Internal Storage was revised.
		Removed	Obsolete SKUs were removed from the QuickSpecs.
28-Oct-2016	From Version 17 to 18	Removed	Obsolete Hard Drives were removed from the QuickSpecs.
26-Sep-2016	From Version 16 to 17	Added	Added new SATA LFF hard drives offering.
		Changed	Maximum Internal Storage and Pre-configured Models were revised.
		Removed	Obsolete SKUs were removed from the QuickSpecs.
15-Aug-2016	From Version 15 to 16	Changed	SmartBuy model 860119-S01 was revised.
24-Jun-2016	From Version 14 to 15	Changed	Tower weight under Technical Specifications was revised.
6-Jun-2016	From Version 13 to 14	Added	Added new HPE Drives, and HPE Disk Backup options.
		Changed	Maximum Internal Storage, Upgradeability, HPE Power Supplies, and Storage were revised.
6-May-2016	From Version 12 to 13	Changed	Maximum Internal Storage, Upgradeability, Memory, and HPE Drives were revised.
8-Apr-2016	From Version 11 to 12	Changed	HPE Processors section was revised.
31-Mar-2016	From Version 10 to 11	Added	Added Intel Xeon E5-2600 v4 Processor support, new HPE Gen9 Standard Memory, and new HPE 900W AC 24QVDC Redundant Power.
		Changed	Maximum Internal Storage, Power Supplies, Embedded Management, Service and Support, Pre-configured Models, and Memory were revised.
		Removed	Obsolete SKUs were removed from the QuickSpecs.
16-Feb-2016	From Version 9 to 10	Added	New HDD offering was added to HPE Drives.
		Changed	HPE Power Supplies, HPE Disk Backup, and HPE Power Distribution Units (PDUs) were revised.
		Removed	Obsolete SKUs were removed from the QuickSpecs.
		Added	New Smart Buy model was added to the NA version only.

1-Dec-2015	From Version 7 to 8	Changed	On System Management Chipset, Embedded Management, Server utilities, and HPE Tape Backup were revised. Product images were updated.
		Removed	Obsolete SKUs were removed from the QuickSpecs.
28-Sep-2015	From Version 6 to 7	Added	Added new 6Gb SATA Solid State Drives.
		Removed	Obsolete SKUs were removed from the QuickSpecs.
17-Aug-2015	From Version 5 to 6	Added	New Solid State Drives offering. Added new graphic options.
		Changed	Service and Support was updated. Maximum Storage was revised.
		Removed	Obsolete SKUs were removed from the QuickSpecs.
1-Jun-2015	From Version 4 to 5	Added	New Hard Drives were added to Core Options. New RDX+ external backup options were added.
		Changed	Standard Features and HPE Power Supplies were revised.
		Removed	Obsolete SKUs were removed from the QuickSpecs.
24-Apr-2015	From Version 3 to 4	Added	Added 813534-B21 and 813535-B21 to HPE Power Supplies.
30-Mar-2015	From Version 2 to 3	Added	New Hard Drives offering. Optional Software added to HPE Storage Controllers. Added HPE Smart Array P841/4GB FBWC 12Gb 4-ports Ext SAS Controller.
		Changed	HPE Memory and HPE Disk Storage Systems were updated.
2-Sep-2014	From Version 1 to 2	Added	Added HPE Insight Software section and Network controller sections. Added new HPE Drives and new G4 UPS models.
		Changed	HPE Processors, HPE Memory, HPE Drives, HPE Tape Backup, HPE Disk Backup, HPE Rack Mount Consoles, KVM Switches, and Keyboards, HPE Uninterruptible Power Systems (UPS), and HPE USB and SD Options were updated.



THATA

Summary of Changes

f t in ✉
Sign up for updates

© Copyright 2017 Hewlett Packard Enterprise Development LP. The information contained herein is subject to change without notice. The only warranties for Hewlett Packard Enterprise products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Hewlett Packard Enterprise shall not be liable for technical or editorial errors or omissions contained herein.

Intel® and Xeon® are registered trademarks of Intel Corporation in the U.S. and other countries.

Microsoft®, Windows®, and Windows Server® are U.S. registered trademarks of the Microsoft group of companies.

For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.

ber-2017



[Handwritten scribble]

[Handwritten line]

[Handwritten "107"]

[Handwritten stamp: PATENTADA]

[Handwritten circular stamp]

[Handwritten circle]

[Handwritten scribble]

[Handwritten mark]

[Handwritten line]

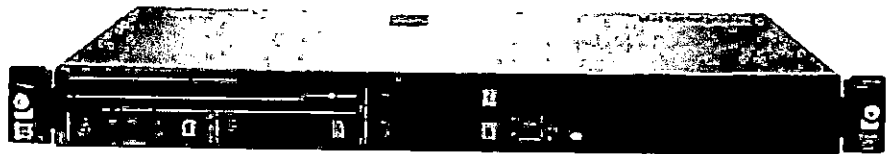


**Hewlett Packard
Enterprise**

Data sheet

HPE ProLiant DL20 Gen9 Server

Compact, versatile, efficient



Is the HPE ProLiant DL20 Gen9 Server right for my business?

- **Small and midsize businesses**—Reduce costs and increase simplicity with preloaded ClearOS so you can spend more time working on your business than on IT.
- **Enterprises**—Tap into performance, data protection, and ease of use that is suitable for small-to-medium workloads in an “install anywhere” compact server at a competitive price point.
- **Tier 2 and 3 service providers**—Scale out quickly and affordably to respond to changing business needs. The rack now provides cheaper drive options for environments requiring an affordable solution that can be easily ripped and replaced.

Finally—a server that’s simple, open, and affordable

When you get a new smartphone or laptop, you expect to be able to start using it right out of the box. Why should your server be any different? HPE is redefining the end-to-end server experience for small and midsize businesses. The HPE ProLiant DL20 Gen9 Server can come as a ready-to-use appliance—with the HPE qualified ClearOS preloaded at no additional cost—so you can simply plug in your server and have it work right away.

What makes this possible is the simple and easy-to-use ClearOS. Built on Linux®, the reliable and secure ClearOS software lets you manage your server via an intuitive browser-based interface. You also get immediate access to an application marketplace with over 100 (and growing) curated applications that are perfect for small and midsize businesses and service providers. You can install these applications as needed—and because ClearOS applications are also open source—you pay only if you want support, allowing you to plow the savings back into your business.

Data protection, ease of use, reliability, and performance

The ProLiant DL20 Gen9 Server offers data protection features, including optional redundant power supplies, DDR4 memory, enhanced error handling, HPE Smart Array RAID mirroring and striping capabilities, with Flash Backed Write Cache (FBWC) up to 4 GB. FBWC protects data by capturing and holding it indefinitely in the event of a power loss, equipment failure, human error, or virus attacks.

The server also features extreme ease of use, starting with a short-depth chassis for easy deployment and mobility. Embedded HPE Integrated Lights-Out 4 (iLO 4) management provides tools for deploying, managing, and troubleshooting servers—ideal for those with large data centers. A wide choice of Intel® Pentium®, i3, and Intel® Xeon® E3-1200 v5/v6 processors. Up to 64 GB of DDR4 memory helps you handle a variety of workload demands. HPE ProLiant DL20 Gen9 Servers consume up to 29% less power¹ which, combined with an optional redundant power supply option,² provides you with an ENERGY STAR® certified solution.

¹ Compare:

² RPS optic

000050

ВАРИАНТ С ОПТИЧЕСКИМ

Technical specifications

In the following table, **bold** text in the right-hand column denotes new features as compared to the HPE ProLiant DL320e Gen8 v2 Server.

Component	HPE ProLiant DL20 Gen9 Server
Compute	Choice of: one Intel Xeon E3-1200 v5/v6 series , 4-core; one Intel Pentium, 2-core; or one Intel® Core™ i3, 2-core PCIe 3.0, up to 2 PCIe 3.0 slots
Operating system	ClearOS pre-installed at no extra cost (optional) ³ or various choices of OS (visit the Operating System Support Matrices for details)
Memory	Four DDR4 , up to 2400 MHz (64 GB max)
Storage	HPE Dynamic Smart Array B140i, HPE Smart Array Controller P440 with FBWC, and HPE Smart Host Bus Adapters (HBAs)
HPE SmartDrives	Two LFF non-hot plug and hot plug (SAS/SATA); four SFF hot plug (SAS/SATA)
Networking	Two 1GbE embedded Ethernet adapters and FlexibleLOM to upgrade to 10 Gb
VGA/serial/USB ports/SD	Two rear USB 3.0, two front USB 2.0, one internal USB 3.0
GPU support	One single-width, half-length GPU (optional)
On-premises management	HPE OneView with HPE iLO Advanced
On-cloud management	HPE Insight Online with enhanced mobile application
On-system management	HPE iLO 4, Intelligent Provisioning, Smart Update Manager (SUM), RESTful Interface Tool
Power and cooling	Standard 290W (80 PLUS Silver certified) power supply; HPE 900W AC 240VDC Redundant Power Supply Kit (80 PLUS Gold certified)—optional, for SFF chassis only
Industry compliance	ASHRAE A3, ENERGY STAR (only on RPS configuration models)
Form factor/chassis depth	Rack (1U) 15.05 in. (ear-to-ear)
Warranty (parts/labor/on-site)	1/1/1
System ROM	UEFI and Legacy BIOS

³ Pre-installation of ClearOS is available only on SKUs with HDDs

HPE Services

Let Hewlett Packard Enterprise guide you and your business through the rapidly changing IT landscape. HPE Technology Services delivers confidence, reduces risk, and helps you realize greater agility and stability.

- Our consulting services provide advice and guidance to safely move your workloads to newer technologies.
- HPE implementation and installation services enable faster, more reliable startup of your new ProLiant Gen9 servers, and our support portfolio allows you to get connected and get back to business fast.

Extend HPE Proactive Care for ProLiant Gen9 servers to prevent issues, and resolve quickly and efficiently.

Proactive Care provides a choice of coverage levels and response times for hardware and software support.

- Our support technology lets you tap into the knowledge of millions of devices and thousands of experts to stay informed and in control—anywhere, any time.

Learn more at hpe.com/servers/dl20gen9



Sign up for updates



© Copyright 2015–2017 Hewlett Packard Enterprise Development LP. The information contained herein is subject to change without notice. The only warranties for Hewlett Packard Enterprise products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Hewlett Packard Enterprise shall not be liable for technical or editorial errors or omissions contained herein.

ENERGY STAR is a registered mark owned by the U.S. government. Intel, Pentium, Intel Xeon Corporation in the U.S. and other countries. Linux is the registered trademark of Linus Torvalds. SD-3C is a registered trademark of SD-3C in the United States and other countries or both property of their respective owner(s).

4AA6-2663ENW, May 2017, Rev. 5

Intel
SD is a
is/are

QuickSpecs

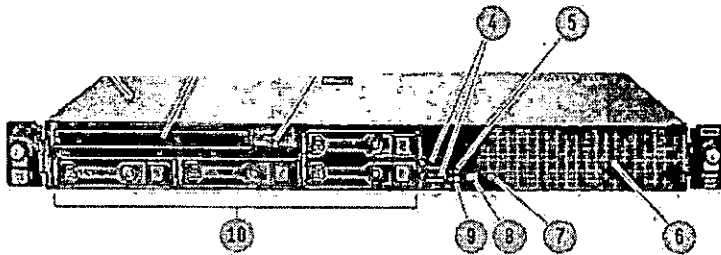
Overview

HP

The server business

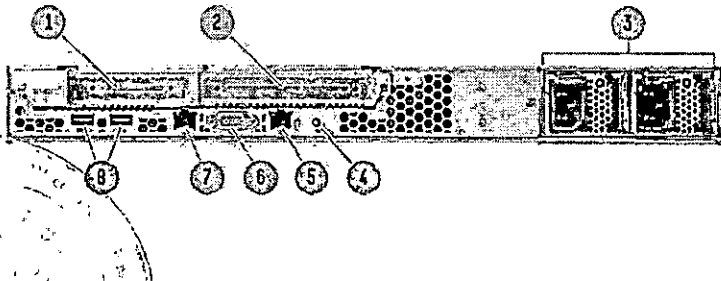
HPE ProLiant DL20 Generation9 (Gen9)

Powered by Intel Pentium, Core i3 and E3-1200v5 processors provides outstanding configuration flexibility to cater to a wide variety of



Front View

- | | |
|--|-------------------------|
| 1. Access Panel | 2. Optical Drive |
| 3. Serial number/iLO information pull tab | 4. 2 USB 2.0 connectors |
| 5. Health LED | 6. Front 2 Fan Assembly |
| 7. Power On/Standby button and system power LED button | 8. UID LED |
| 9. NIC status LED | 10. Hard Drive Bays |



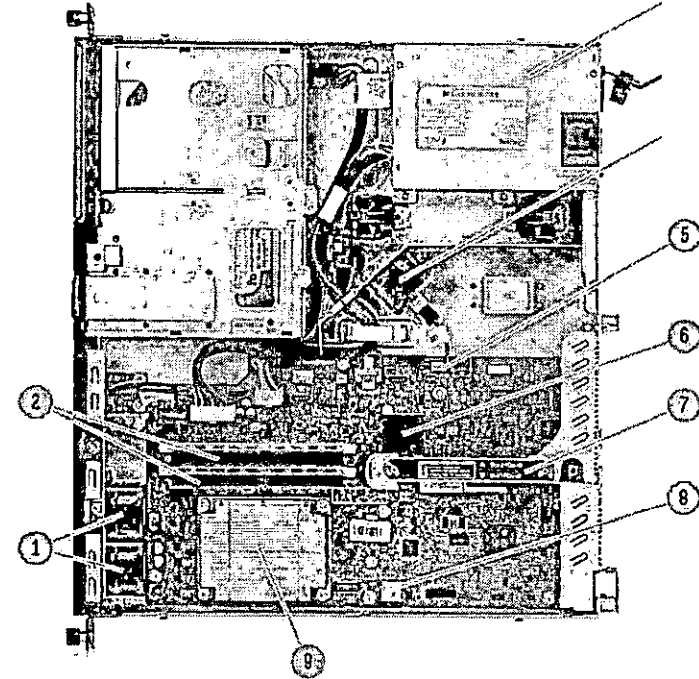
Rear View

- | |
|--------------------------------|
| 2. Expansion Slot 2, PCIe x 16 |
| 4. UID LED |
| 6. Video Connector |
| 8. USB 3.0 Connector |

QuickSpecs

HPE ProLiant DL20 Generation9 (Gen9)

Overview



Internal View

- | | |
|--|--|
| 1. Fan cage shown with 2 fans | 2. DDR4 DIMM slots. 4 slots |
| 3. (Under) Power supply (1x 290W power supply shown) | 4. Central Fan Assembly |
| 5. Internal USB 3.0 connector | 6. Embedded HPE Smart Array B140i controller |
| 7. PCIe Riser | 8. MicroSD card slot |
| 9. 1 Processor, heatsink showing, with HP Smart Socket Guide | |

What's New

- New SSD offering.

QuickSpecs
Standard

ProLiant DL20 Generation9 (Gen9)

NOTE: For Intel® Xeon® capabilities, of the following Processor One of the following depending on

www.intel.com/xeon
combination of performance, built-in 3 dual core processors. Choose one

						DDR4 Hz
						2133
G4500	3.5GHz	2	3MB	51W		2133
i3-6100	3.7GHz	2	3MB	51W		2133
i3-6300	3.8GHz	2	4MB	51W		2133
E3-1220v5	3.0GHz	4	8MB	80W		2133
E3-1225v5	3.3GHz	4	8MB	80W		2133
E3-1230v5	3.4GHz	4	8MB	80W		2133
E3-1240v5	3.5GHz	4	8MB	80W		2133
E3-1270v5	3.6GHz	4	8MB	80W		2133
E3-1280v5	3.7GHz	4	8MB	80W		2133
E3-1240Lv5	2.1GHz	4	8MB	25W		2133
E3-1260Lv5	2.9GHz	4	8MB	45W		2133
G4560	3.5GHz	2	3MB	54W		2400
G4600	3.6GHz	2	3MB	51W		2400
i3-7100	3.9GHz	2	3MB	51W		2400
i3-7300	4.0GHz	2	3MB	51W		2400
E3-1220v6	3.0GHz	4	8MB	72W		2400
E3-1225v6	3.3GHz	4	8MB	73W		2400
E3-1230v6	3.5GHz	4	8MB	72W		2400
E3-1240v6	3.7GHz	4	8MB	72W		2400
E3-1270v6	3.8GHz	4	8MB	72W		2400
E3-1280v6	3.9GHz	4	8MB	72W		2400

Chipset Intel® C232 Chipset
NOTE: For more information regarding Intel® chipsets, please see the following URL:
<http://www.intel.com/products/server/chipsets/>

On System HPE iLO (Firmware HPE iLO4 2.3) 4GB NAND
configurable via UEFI and accessible via iLO. Read and learn more in the

4 DIMM slots per processor; 2 channels per processor, 2 DIMMs per channel
iB (4 x 16GB UDIMM @2400MHz)

QuickSpecs

HPE ProLiant DL20 Generation9

Standard Features

Network Controller HPE Ethernet 1Gb 2-port 332i network Adapter or BCM5720.

The HPE ProLiant DL20 Gen9 server offers the customer a dual-port NIC standard with the option to upgrade with a variety of networking options.

Expansion Slots

Dual side Low profile riser	Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Form Factor	Notes
	1	PCIe 3.0	X8	X8		Half length/half height	
	2	PCIe 3.0	X8	X8		Half length/full height	

NOTE: Bus Width data indicates the number of physical electrical lanes running to the connector.

FlexibleLOM Riser	Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Form Factor	Notes
	1	Flexible LOM	x8	x8		Half length/half height	
	2	PCIe 3.0	x8	x8		Half length/full height	

NOTE: This riser is mandatory for installing FlexibleLOMs.

GPU Riser	Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Form Factor	Notes
	1						
	2	PCIe 3.0	x16	x16		Half length/full height	

NOTE: It is mandatory to choose one of the above risers.

Storage Controller Entry Models HPE Dynamic Smart Array B140i Controller
One of the following Base Models HPE Dynamic Smart Array B140i Controller
model Performance Models HPE H240 FIO Smart Host Bus Adapter

NOTE: B140i provides support for up to 4 SATA drives, data transmission speeds up to 6Gb/s and supports RAID 0, 1 & 5 on DL20 Gen9.

NOTE: H240 provides support for up to 4 SAS/SATA drives, data transmission speeds up to 12Gb/s and supports RAID 0, 1 & 5 on DL20 Gen9.

NOTE: DL20 Gen9 also supports other controller options like P440; read additional option to know more.

Standard Features

Internal Storage Devices	Optical Drive	Ships standard in Performance Models Optional: DVD-ROM, DVD-RW
One of the following	Optical Drive	Optional: DVD-ROM, DVD-RW
		Standard bays total with Optical Bay bays total with Optical Bay HPE ProLiant DL20 Gen9 server offers Hot plug LFF, Non hot plug LFF options in CTO. The Optical Drive bay is available with both models. Cage changes are not supported. Pre-configured Models come populated with some hard drive blanks. If the customer need additional hard drive blanks, they can order either P/N 654961-B21: HPE SFF Gen9 Hard Drive Blank Kit or P/N 654963-B21: HPE LFF Gen9 Hard Drive Blank Kit or P/N 654963-B21: HPE LFF Gen9 Hard Drive Blank kit. These part numbers for single HDD blanks below are also provided should the customer require replacement HDD blanks for their server.

Maximum Internal Storage		CAPACITY	CONFIGURATION
	Hot Plug SFF SAS	8TB	4 x 2TB
	Hot Plug SFF SATA	8TB	4 x 2TB
	Hot Plug LFF SAS	20TB	2 x 10TB
	Hot Plug LFF SATA	20TB	2 x 10TB
	Hot Plug SFF SAS SSD	15.36TB	4 x 3.84TB
	Hot Plug SFF SATA SSD	15.36TB	4 x 3.84TB
	Hot Plug LFF SATA SSD	15.36TB	4 x 3.84TB
	Non Hot Plug LFF SATA	8TB	2 x 4TB

Power Supply	HPE 290W FIO Power Supply
One of the following depending on model	HPE 900W AC 240V DC Redundant Power Supply
	NOTE: HPE 900W Redundant Power Supply supports 100VAC to 240VAC and also supports 240VDC. HPE Entry-Level Power Supplies provide lower-cost options for customers trying to balance their need for enterprise class efficiency and reliability while maintaining lowest possible hardware costs. The above mentioned Entry-Level power supply options have been designed specifically for HPE ProLiant DL20 Gen9 Server. The HPE 290W FIO Power Supply is the standard, non-redundant AC power supply with 80Plus Silver Certification. It features 92% power efficiency with a set of features optimized for the DL20 Gen9 rack server.

The HPE 900W Gold (Redundant) AC/240V DC Power Input Module with Power Backplane can be configured to support power redundancy in ProLiant servers that offer only a single power supply bay, providing additional protection against power loss. With an 80 Plus Gold power efficiency rating (up to 92%), this power option helps to reduce operating expenses while protecting against trapped power capacity in the data center. The power backplane option can support up to two (2) hot-plug AC power input modules. This Redundant power supply option is only supported on DL20 Gen9 SFF chassis model.

All pre-configured servers ship with a standard 6-foot IEC C-13/C-14 jumper cord (A0K02A). This jumper cord is also included with each standard AC power supply option kit.

To review the power requirements for your selected system, please use the HPE Power Advisor Tool

ИСТОЧНИК ИНФОРМАЦИИ

Standard Features

located at <http://www.hpe.com/info/hppoweradvisor>.

System Fans		Non-redundant	Redundant
One of the following depending on model	1P model	3 fans	NA
	NOTE: DL20 has 3 fans, 2 front fan assemblies and 1 center fan assembly which ship standard, redundant.		

Interfaces	Video	1 rear video connector
	USB	5 USB ports (standard) Front: 2xUSB 2.0 Rear: 2xUSB 3.0 Internal: 1x USB 3.0
	Micro SD Slot	1 Micro SD
	NOTE: The SD slot is not a hot-pluggable device. Customers should not attempt to plug an SD card into the SD slot while the server is powered.	
	LOM Network Ports	2x1GbE ports
	NOTE: Customers can upgrade to next generation network (10 GbE) by installing a FlexibleLOM riser.	

Operating Systems and Virtualization Software Support for ProLiant Servers	Microsoft Windows Server
	Red Hat Enterprise Linux (RHEL)
	SUSE Linux Enterprise Server (SLES)
	VMware
	ClearOS
	NOTE: VMWare availability is dependent on General availability from the vendor. DL20 supports VMWare 5.5U3 and 6.0 U1.
	NOTE: ClearOS allows you to build a fully functional server that is just right for you at no upfront cost. It is available via CTO preload, Intelligent Provisioning or via download. For more information on ClearOS, please visit http://www.hpe.com/servers/clearos .
	NOTE: For more information on the Hewlett Packard Enterprise Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: http://www.hpe.com/info/ossupport and our driver download page .

Upgradeability	FlexibleLOM connector for 1 Gigabit or 10 Gigabit networking options
One of the following depending on model	Up to 4 DIMM slots available for higher memory capacity
	Up to 4SFF Drive bays or 2LFF Drive bays
	HPE Smart Array or Smart HBA Controller
	Redundant Power Supply
	NOTE: RPS is only compatible with DL20 SFF Chassis. Customer can upgrade from DL20 Gen9 on SFF chassis with 290W PSU to 900W redundant power supply.

Industry Standard Compliance	UEFI (Unified Extensible Firmware Interface Forum)
	PCIe 3.0 Compliant
	PXE Support
	WOL Support
	Microsoft® Logo certifications
	USB 3.0 Support
	ASHRAE A3

Standard Features

Graphics

On-board graphics, integrated Intel or AMD video standard

- 1280 x 1024 (32 bpp)
- 1920 x 1200 (16 bpp)

HP iLO 4 On System Management Memory

- 16 MB Flash
- 256 MB DDR 3 with ECC (112 MB after ECC and video)

HPE NVIDIA Quadro M2000 GPU Module

NOTE: Install GPU riser option to support GPU card. A GPU enablement kit 811271-B21 is mandatory to support GPU.

HPE Server
UEFI/Legacy ROM

Unified Extensible Firmware Interface (UEFI) is an industry standard that provides better manageability and more secured configuration than the legacy ROM while interacting with your server at boot time. HPE ProLiant Gen9 platform defaults to UEFI and can be factory or field configured for Legacy BIOS Boot Mode.

NOTE: The UEFI System Utilities function is analogous to the HPE ROM-Based Setup Utility (RBSU) of legacy BIOS. For more information, please visit <http://www.hpe.com/servers/uefi>.

UEFI enables numerous new capabilities specific to HPE ProLiant servers such as:

- Secure Boot
- Operating system specific functionality
- Support for > 2.2 TB (using GPT) boot drives
- USB 3.0 Stack
- Embedded UEFI Shell
- Mass Configuration Deployment Tool using RESTful API for iLO 4
- PXE boot support for IPv6 networks
- Boot support for option cards that only support a UEFI option ROM
- Network Stack configurations

NOTE: For UEFI Boot Mode, boot environment and OS image installations should be configured properly to support UEFI.

NOTE: UEFI BIOS setting (758959-B22) can be selected to configure the system in Legacy mode in the ProLiant Gen9 Server.

in:

Width x 15.05" (38.22cm) Depth x 17.11" (43.46cm) Length

Chassis is measured from rear to ear at 15.05". Depth from rear to bezel is 15.5".

Monitor your servers for ongoing management, service alerting, reporting and remote management with HPE iLO. Learn more at <http://www.hpe.com/info/ilo>.

Standard Features

UEFI	Configure and boot your servers securely with industry standard Unified Extensible Firmware Interface (UEFI). Learn more at http://www.hpe.com/servers/uefi
RESTful API	RESTful API for iLO 4 is Redfish 1.0 conformance for simplified server management such as configuration and maintenance tasks based on modern industry standards. Learn more at http://www.hpe.com/info/restfulapi .
Intelligent Provisioning	Hassle free server and OS provisioning for 1 or few servers with Intelligent Provisioning. Learn more at http://www.hpe.com/servers/intelligentprovisioning .
Embedded Remote Support	The Hewlett Packard Enterprise embedded remote support, when used with Insight Online direct connect or HPE Insight Remote Support, allows HPE ProLiant servers to transmit hardware events directly to Hewlett Packard Enterprise or a Hewlett Packard Enterprise Authorized Partner for automated phone home support. Learn more at http://www.hpe.com/info/insightonline/explore .
Server utilities	<p>Smart Update Optimize firmware and driver updates with Smart Update solutions including Smart Update Manager (SUM) and Service Pack for ProLiant (SPP). Learn more at http://www.hpe.com/servers/smartupdatemanager.</p> <p>HPE Systems Insight Manager (HPE SIM) HPE SIM allows you to monitor the health of your HPE ProLiant Servers and HPE Integrity Servers, and also provides you with basic support for non-HPE servers. HPE SIM also integrates with Smart Update Manager to provide quick and seamless firmware updates. Learn more at http://www.hpe.com/servers/hpsim.</p> <p>Scripting Tool Kit and Windows PowerShell Provision 1 to many servers using your own scripts to discover and deploy them with Scripting Tool Kit (STK) for Windows and Linux or Scripting Tools for Windows PowerShell. Learn more at http://www.hpe.com/servers/proliant/stk or http://www.hpe.com/servers/powershell.</p> <p>RESTful Interface Tool RESTful Interface tool is a scripting tool to provision using RESTful API for iLO 4 to discover and deploy servers at scale. Learn more at http://www.hpe.com/info/resttool.</p> <p>HPE iLO Mobile Application Enables the ability to access, deploy, and manage your server anytime from anywhere from select smartphones and mobile devices. For additional information please visit: http://www.hpe.com/info/ilo/mobileapp.</p> <p>HPE Insight Online HPE Insight Online, available at no additional cost as part of your Hewlett Packard Enterprise warranty or contractual support agreement with Hewlett Packard Enterprise, is a personalized dashboard for simplified tracking of IT operations and support information from anywhere, anytime. Learn more at http://www.hpe.com/info/insightonline/explore.</p>
Security	<p>Power-on password</p> <p>Serial interface control</p> <p>Administrator's password</p> <p>UEFI</p> <p>TPM 1.2</p> <p>TPM 2.0</p>

Standard Features

APCI 2.0b

Warranty

This product is covered by a global limited warranty and supported by HPE Services and a worldwide network of HPE Authorized Channel Partners resellers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HPE Pointnext operational services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

NOTE: Server Warranty includes 1-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have Hewlett Packard Enterprise replace Optional CSR parts at no charge. Additional

technical support is available at:
[services/warranty/](http://www.hpe.com/services/warranty/).

Optional Features

Embedded Management	iLO Essentials	HPE iLO Essentials is the preferred license for small and medium business that offers remote server management capabilities for small and medium business via the Integrated Remote Console (IRC), virtual media, and e-mail based alerts. Learn more about HPE iLO Essentials at http://www.hpe.com/servers/iLO/essentials .
	iLO Scale-Out	HPE iLO Scale-Out is the preferred license built for web hosting, cloud service providers and high performance computing data centers, managing massive scale out environments for the DL 100 and 10 series servers, not available for ML servers. This license offers sophisticated scripting tools that provides remote access through Telemetry Console via SSH, Dynamic power capping, Email-based Alerting and proactive notifications. For more information, visit http://www.hpe.com/servers/iLO/scale-out .
	iLO Advanced	HPE iLO Advanced licenses offer smart remote functionality without compromise, for all HPE ProLiant servers. The license includes the full integrated remote console, virtual keyboard, video, and mouse (KVM), multi-user collaboration, console record and replay, and GUI-based and scripted virtual media and virtual folders. You can also activate the enhanced security and power management functionality. Learn more about HPE iLO Advanced at http://www.hpe.com/servers/iLOadvanced .
Server Management	HPE Insight Control	HPE Insight Control, lets you deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. For more information, see http://www.hpe.com/info/insightcontrol .
Rack and Power Infrastructure		HPE Rack and Power Infrastructure products and services create highly efficient and intelligent solutions for existing or new IT data centers. HPE Rack and Power infrastructure solutions – rack infrastructure, power protection and management, performance optimized data centers (PODs) – are the foundation you are looking for to help secure your long-term IT success. These products are designed to help you react to changes in the industry. They deliver efficient, easy-to-use capabilities to manage, monitor, deploy and provision infrastructure from entry to enterprise. As an industry leader, Hewlett Packard Enterprise is uniquely positioned to address the key concerns of power, cooling, cable management and system access. Learn more at HPE Rack and Power Infrastructure .
High Performance Clusters		HPE Cluster Platforms are specifically engineered, factory-integrated large-scale ProLiant clusters optimized for High Performance Computing, with a choice of servers, networks and software. Operating system options include specially priced offerings for Red Hat Enterprise Linux and SUSE Linux Enterprise Server, as well as Microsoft Windows HPEC Server. A Cluster Platform Configurator simplifies ordering. https://www.hpe.com/us/en/solutions/hpc-high-performance-computing/hpc-software.html
HPC Interconnects		NOTE: High Performance Computing (HPC) interconnect technologies are available for this server under the HPE Cluster Platform product portfolio. These high-speed interconnects are fully supported by Hewlett Packard Enterprise when they are part of these configurations to order clusters. Solutions can be defined with a lot of flexibility with the help of configuration tools. Please visit the following URL to configure HPEC Clusters with InfiniBand Interconnects: https://www.hpe.com/info/hpc/solutions .
Storage Software		Whether you're a large enterprise or a smaller business, Hewlett Packard Enterprise data protection and recovery software will cost-effectively protect you against disaster and ensure business continuity.

TWHATA

Optional Features

- ClearOS** HPE and ClearCenter will help you lower the cost of building on-premise solutions without sacrificing security and ease of use. HPE ProLiant servers with ClearOS give you a simple, secure, and affordable operating system with an intuitive web based graphical user interface that provides a cloud-like experience on- premise, and an Application Marketplace with over 100 apps and growing. Whether you're starting out or scaling, you decide what applications you need and pay as you grow.
- One Config Simple (SCE)** SCE is a guided self-service tool to help sales and non-technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes. If you require "custom" rack configuration or configuration for products not available in SCE, please contact Hewlett Packard Enterprise Customer Business Center or an Authorized Partner for assistance. <http://ocs.ext.hpe.com/>.

Service and Support

- HPE Support Services** HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to Hewlett Packard Enterprise to help prevent problems and solve issues faster. HPE Support Services enable you to choose the right service level, length of coverage and response time as you purchase your new server, giving you full entitlement to the support for need for your IT and business.
- Connect your devices** Unlock all of the benefits of your technology investment by connecting your products to Hewlett Packard Enterprise. Achieve up to 77%¹ reduction in down time, near 100%² diagnostic accuracy and a single consolidated view of your environment. By connecting, you will receive 24x7 monitoring, pre-failure alerts, automatic call logging, and automatic parts dispatch. HPE Proactive Care Service and HPE Datacenter Care Service customers will also benefit from proactive activities to help prevent issues and increase optimization. All of these benefits are already available to you with your server storage and networking products, securely connected to Hewlett Packard Enterprise support.
1-IDC 2-HPE CSC reports 2014-2015
- Recommended Support** **Basic: HPE Foundation Care NBD, three-year Support Service**
HPE Foundation Care Next Business Day connects you to Hewlett Packard Enterprise during business hours for assistance on resolving issues – This service features need based next business day hardware onsite response and software call back within two hours. In addition, Collaborative software support and provides troubleshooting assistance on industry leading software running on your HPE server. Simplify your support experience and make Hewlett Packard Enterprise your first call to help resolve hardware or software problems.
<https://www.hpe.com/h20195/V2/GetDocument.aspx?docname=4AA4-8B76ENW&cc=us&lc=en>
- Standard: HPE Foundation Care 24x7, three-year Support Service**
HPE Foundation Care 24x7 gives you access to Hewlett Packard Enterprise 24 hours a day, seven days a week for assistance on resolving issues. This service includes need based Hardware onsite response within four hours. In addition, collaborative software support is included in this service that provides troubleshooting assistance on industry leading software running on your HPE server. Simplify your support experience and make Hewlett Packard Enterprise your first call to help resolve hardware or software problems.
<https://www.hpe.com/h20195/V2/GetDocument.aspx?docname=4AA4-8B76ENW&cc=us&lc=en>
- Optimized: HPE Proactive Care* with 24x7 coverage, three year Support Service**
HPE Proactive Care gives customers an enhanced call experience. When your products are connected to Hewlett Packard Enterprise, Proactive Care helps prevent problems and maintains IT stability by utilizing personalized proactive reports with recommendations and advice. This service combines three years proactive reporting and advice with our 24x7 coverage, four hour hardware response time when there is a problem. This service also includes collaborative software support for Independent Software Vendors (ISVs). (Red Hat, VMware, Microsoft, etc.) running on your HPE servers.
- Parts and Materials** Hewlett Packard Enterprise will provide Hewlett Packard Enterprise-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.
- Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product QuickSpecs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.
- The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction.
- Related Services** **HPE Server Hardware Installation**
Provides for the basic hardware installation of Hewlett Packard Enterprise branded servers, storage devices

bringing your new hardware into operation in a timely and

[getPDE.aspx/5981-9354EN.pdf](#)

HPE Installation and Startup Service

Provides for the installation and startup of Hewlett Packard Enterprise technology including BladeSystems, C-Class enclosure, HPE ProLiant c-Class and Integrity server blades, storage blades, SAN switch blades, HPE Virtual Connect modules (Ethernet and Fibre Channel), Ethernet network interconnects, and InfiniBand, as well as the installation of one supported operating system type (Windows® or Linux).

HPE Technology Services Support Credits

Offer flexible services and technical skills to meet your changing IT demands. With a menu of service that is tailored to suit your needs, you get additional resources and specialist skills to help you maintain peak performance of your IT. Offered as annual credits, you can plan your budgets while proactively responding to your dynamic business.

HPE Education Services

Keep your IT staff trained making sure they have the right skills to deliver on your business outcomes. Book on a class today and learn how to get the most from your technology investment.
<http://www.hpe.com/ww/learn>

HPE Support Center

The HPE Support Center is a personalized online support portal with access to information, tools and experts to support Hewlett Packard Enterprise business products. Submit support cases online, chat with Hewlett Packard Enterprise experts, access support resources or collaborate with peers.

Learn more <http://www.hpe.com/support/hpesc>

The Hewlett Packard Enterprise Support Center Mobile App* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime.

HPE Insight Remote Support and HPE Support Center are available at no additional cost with a Hewlett Packard Enterprise warranty, HPE Support Service or Hewlett Packard Enterprise contractual support agreement.

*HPE Support Center Mobile App is subject to local availability.

For more information: <http://www.hpe.com/services>

Pre-configured Models

	Entry Models		Base Models	
[SKU Number]	829889-B21	871428-B21	823556-B21	871429-B21
Model Name	HPE ProLiant DL20 Gen9 G4400 4GB-U Non-hot Plug 2LFF 290W PS Entry Server	HPE ProLiant DL20 Gen9 G4560 8GB-U Non-hot Plug 2LFF 290W PS Entry Server	HPE ProLiant DL20 Gen9 E3-1220v5 8GB-U B140i 2LFF 290W PS Base Server	HPE ProLiant DL20 Gen9 E3-1220v6 8GB-U B140i 2LFF 290W PS Base Server
Processor	Intel® Pentium® G4400	Intel® Pentium® G4560	Intel® Xeon® E3-1220v5	Intel® Xeon® E3-1220v6
Number of Processors	One			
Memory	4GB (1x4GB UDIMMs, 2133 MHz)	8GB (1x8GB UDIMM, 2400 MHz)	8GB (1x8GB UDIMMs, 2133 MHz)	8GB (1x8GB UDIMM, 2400 MHz)
Network Controller	HPE embedded 1Gb 2-port 332i network Adapter			
Storage Controller	HPE Dynamic Smart Array B140i			
Hard Drive	None ship standard; includes 2 LFF hard drive blanks		None ship standard	
Internal Storage	2 LFF HDD Bays (Non Hot Plug)		2 LFF HDD Bays (Hot Plug)	
Optical Drive Bay	1; (Optional: DVD-ROM, DVD-RW)			
Optical Drive	None			
PCI-Express Slots	2 PCIe 3.0 slots			
Power Supply	(1) 290W Non Hot Plug Power Supply			
Fans	3 non hot plug, non-redundant			
Management	iLO Management (standard), Intelligent Provisioning (standard), iLO Essentials (optional), iLO Scale-out (optional only for DL), iLO Advanced (optional)			
Form Factor	Rack (1U), HPE Short Friction Rail Kit			
Warranty	Server Warranty includes 1-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response			

000054

Handwritten notes and a circular stamp.

Pre-configure

Performance Models				
[SKU Number]	823559-B21	823562-B21	871430-B21	871431-B21
Model Name	HPE ProLiant DL20 Gen9 E3-1240v5 8GB-U H240 4SFF 290W PS Performance Server	HPE ProLiant DL20 Gen9 E3-1240v5 8GB-U H240 4SFF 900W RPS Performance Server	HPE ProLiant DL20 Gen9 E3-1240v6 16GB-U H240 4SFF 290W PS Performance Server	HPE ProLiant DL20 Gen9 E3-1240v6 8GB-U H240 4SFF 900W RPS Performance Server
Processor	Intel® Xeon® E3-1240v5		Intel® Xeon® E3-1240v6	
Number of Processors	One			
Memory	8GB (1x8GB UDIMMs, 2133 MHz)		16GB (1x16GB UDIMMs, 2400 MHz)	
Network Controller	HPE embedded 1Gb 2-port 332i network Adapter			
Storage Controller	HPE H240 Smart Host Bus Adapter			
Hard Drive	None ship standard			
Internal Storage	4 SFF HDD Bays			
Optical Drive Bay	1; (Optional: DVD-ROM, DVD-RW)			
Optical Drive	None			
PCI-Express Slots	2 PCIe 3.0 slots			
Power Supply	(1) 290W Non Hot Plug Power Supply	(1) HPE 900W Redundant Power Supply and RPS Backplane kit	(1) 290W Non Hot Plug Power Supply	(1) HPE 900W Redundant Power Supply and RPS Backplane kit
Fans	3 non hot plug, non-redundant			
Management	iLO Management (standard), Intelligent Provisioning (standard), iLO Essentials (optional), iLO Scale-out (optional only for DL), iLO Advanced (optional)			
Energy Star		Meets Energy Star requirements		Meets Energy Star requirements
Form Factor	Rack (1U), HPE Short Friction Rail Kit			
Warranty	Server Warranty includes 1-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response			

NOTE: For 823562-B21 Model, add additional 900W Redundant Power supply input module for redundancy. The BTO includes the backplane cable kit and need not be added additionally.

Country Code Key	xx1 = B21	Worldwide
	xx1 = 291	Japan

Configuration Information - Factory Integrated Models

This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, Hewlett Packard Enterprise recommends the use of an HPE approved configurator. Contact your local sales representative for information on configurable product offerings and requirements.

1. Factory Integrated Models must start with a CTO Server.
2. FIO indicates that this option is only available as a factory installable option.
3. All Factory Integrated Models will be populated with sufficient hard drive blanks based on the number of initial hard drives ordered with the server.
4. Some options may not be integrated at the factory. Contact your local sales representative for additional information.

Step 1: Base Configuration (choose one of the following configurable models)

[Chassis]	HPE ProLiant DL20 Gen9 Non-hot Plug 2LFF Configure-to-order Server	HPE ProLiant DL20 Gen9 2LFF Configure-to-order Server	HPE ProLiant DL20 Gen9 4SFF Configure-to-order Server
SKU Number	819784-B21	819785-B21	819786-B21
Processor	1	1	1
DIMM Slots	4 DIMM slots for UDIMM DDR4 Memory		
Storage Controller	HPE Dynamic Smart Array B140i		
PCIe	2 PCIe 3.0 Slots		
Drive Cage	2LFF Non Hot Plug	2LFF Hot Plug	4SFF Hot Plug
Network Controller	HPE embedded 1Gb 2-port 332i network Adapter		
Fans	3 non hot plug, non-redundant		
Management	iLO Management (standard), Intelligent Provisioning (standard)		
USB	2 front, 1 internal, 2 rear		
Ears	HPE Thumbscrew Ears		

Step 2: Choose Required Options (only one of the following from each list unless otherwise noted)

HPE Processors Select one processor from Core Options-Processor section below

- Select one xxxxxx-L21.
- Only one processor supported.
- DDR4 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.

For the Intel® C232 Chipset E3-1200 Series, the letter preceding the model number indicates the Product Line (E3, E5, E7): 1200x v#, 1 is the number of CPU, 2 is socket type/segment designation, 00 = Processor SKU, x = L for low power SKUs and v# (not yet designated) is the version number.

HPE Memory Select one or more types of memory from Core Options-Memory section below,

- HPE memory from previous generation servers is not qualified or warranted with this HPE ProLiant Server.
- HPE Standard Memory (UDIMM) is required to realize the memory performance improvements and enhanced functionality listed in this document for this HPE ProLiant Server.

Integrated Models

- If installed, four DIMMs slots are available.
- Depending on the memory configuration and processor model, the memory speed would run at 2133MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: <http://www.hpe.com/go/ddr4config>

HPE Power Supplies Select power supply from Core Options-Power Supplies section below.

- Prior to selecting a power supply option, it is highly recommended that you review your server configuration in the HPE Power Advisor tool to determine the right size power supply for your server configuration. The HPE Power Advisor is located at: <http://www.hpe.com/info/hppoweradvisor>.

On RPS Enablement Kit power options, mixing of power supplies in the same RPS enablement kit is not supported. All power supplies must be of the same input voltage, output rating, and efficiency rating. If non-matching power supplies are installed, you may receive an error message and/or experience operational issues with your server.

- HPE RPS requires both a Redundant backplane kit and an RPS cable kit option for redundancy.

Step 3: Choose Additional Factory Integratable Options

HPE Unique Options Select one or more Unique options from Core Options section below.

- This section may contain FIO options, please see the Unique options section below.
- FIO indicates that this option is only available as a factory installable option.

HPE I/O Expansion Options Select one Riser Kit options from Core Options section below.

- It is mandatory to choose one riser kit option for DL20 Gen9 configurations.
- This section may contain FIO options, please see HPE I/O Expansion Options section below.
- FIO indicates that this option is only available as a factory installable option.

HPE Drives Select one or more drives from Core Options-HPE Drives section below.

- The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.
- Hard drives have either a one year or three year warranty, refer to the specific hard drive QuickSpecs for details.
- The HPE ProLiant Gen9 Smart Storage solutions are equipped with re-designed Small Form Factor (SFF 2.5 in) and Large Form Factor (LFF 3.5 in) hot plug carriers for HPE Qualified Hard Drives and Solid State Drives. These new carriers provide status and activity indicators as well as caution indicators for "Do Not Remove."

HPE FlexibleLOM Select a FlexibleLOM from Core Options-Networking section below.

FlexibleLOM can be added to the server. These options are upgradeable and can be from the original configuration after the server is shipped.
b adapters, a minimum of two Gigabytes (2 GB) of server memory is required per each

See the QuickSpecs for Technical Specifications and additional information:
www.hpe.com/go/ProLiantNICs.

Configuration Information - Factory Integrated Models

HPE Networking Select a startup NIC adapter from Core Options-Networking section below.

- Please see the QuickSpecs for Technical Specifications and additional information: <http://www.hps.com/go/ProLiantNICs>
- These options are upgradeable and can be changed from the original configuration after the server is shipped.
- For 10Gb adapters, a minimum of two Gigabytes (2 GB) of server memory is required adapter.

HPE Storage Controllers

Select one or more Storage options from Additional Options section below.

- The embedded B140i controller will operate in UEFI only mode. For legacy support controller will be needed, and for CTO orders please also select the Legacy mode settings part, 758959-B22.
- This section may contain FIO options, please see HPE Storage Controllers section below.
- FIO indicates that this option is only available as a factory installable option.

HPE Rail Kits

Select one type of rail kit from Additional Options section below.

- Please take a moment to review the installation documentation that comes with the server to help you with the installation of your Gen9 server.
- To assist in the installation of the server into the rack, an optional installation tool is available by contacting your local services representative (p/n 695539-001).
- See Hewlett Packard Enterprise Rack Options in Additional Options section of this QuickSpecs for more rack kit choices.

CAUTION: Hewlett Packard Enterprise recommends that a minimum of two people are required for all Rack Server installations. Please refer to your installation instructions for proper tools and number of people to use for any installation.

Core Options

NOTE: Some options may not be available in all regions. Enterprise recommends the use of an HPE approved configurator. Contact your local sales representative for additional information.

HPE Unique Options	Description	Part Number
	HPE DL20 Gen9 2LFF Mini SAS P440 Cable Kit	811279-B21
	NOTE: This cable kit is required to support P440 controller on 2LFF chassis.	
	HPE DL20 Gen9 4SFF Mini SAS P440 Cable Kit	811282-B21
	NOTE: This cable kit is required to support P440 controller on 4SFF chassis.	
	HPE DL20 Gen9 Smart Storage Battery Holder	822451-B21
	NOTE: This holder is required to install the HPE Smart Storage battery (727258-B21) on P440 controller with FBWC (820834-B21, 726821-B21).	
	HPE DL20 Gen9 Redundant Power Supply Backplane Cable Kit	820306-B21
	NOTE: It is mandatory to choose this back plane cable kit to support 828734-B21, 775595-B21 Redundant Power Supply Input Module. This cable kit is required in instances of single or double 900W PSU unit.	
	HPE DL20 Gen9 M.2 RA and Optical Disk Drive Power Cable Kit	816284-B21
	NOTE: This cable kit is required to support M.2 and/or ODD.	
	HPE DL20 Gen9 Flexible LOM Riser Kit	811259-B21
	NOTE: This option is required to upgrade to next generation networking capabilities like 10GbE.	
	HPE DL20 Gen9 PCIe Low Profile Riser FIO Kit	854846-B21
	HPE DL20 Gen9 GPU Enablement Kit	811271-B21
	NOTE: It is mandatory to choose the GPU enablement kit to support qualified GPU card.	

HPE Processors

E3-1200v6 series Processors

HPE DL20 Gen9 Intel® Xeon® E3-1220v6 (3.0GHz/4-core/8MB/72W) FIO Processor Kit	871049-L21
HPE DL20 Gen9 Intel® Xeon® E3-1225v6 (3.3GHz/4-core/8MB/73W) FIO Processor Kit	872140-L21
NOTE: On E3-1225v6 we do not support Intel's embedded graphics capability.	
HPE DL20 Gen9 Intel® Xeon® E3-1230v6 (3.5GHz/4-core/8MB/72W) FIO Processor Kit	871051-L21
HPE DL20 Gen9 Intel® Xeon® E3-1240v6 (3.7GHz/4-core/8MB/72W) FIO Processor Kit	871053-L21
HPE DL20 Gen9 Intel® Xeon® E3-1270v6 (3.8GHz/4-core/8MB/72W) FIO Processor Kit	871055
HPE DL20 Gen9 Intel® Xeon® E3-1280v6 (3.9GHz/4-core/8MB/72W) FIO Processor Kit	871057

E3-1220v5 series Processors

Gen9 E3-1220v5 (3.0GHz/4-core/8MB/80W) FIO Processor Kit	822425
Gen9 E3-1225v5 (3.3GHz/4-core/8MB/80W) FIO Processor Kit	836037-L21
NOTE: On E3-1225v5 we do not support Intel's embedded graphics capability.	
Gen9 E3-1230v5 (3.4GHz/4-core/8MB/80W) FIO Processor Kit	822427-L21
Gen9 E3-1240v5 (3.5GHz/4-core/8MB/80W) FIO Processor Kit	822429-L21
Gen9 E3-1270v5 (3.6GHz/4-core/8MB/80W) FIO Processor Kit	822431-L21
Gen9 E3-1280v5 (3.7GHz/4-core/8MB/80W) FIO Processor Kit	822433-L21

Core Options

HPE DL20 Gen9 E3-1260Lv5 (2.9GHz/4-core/8MB/45W) FIO Processor Kit	822437-L21
HPE DL20 Gen9 E3-1240Lv5 (2.1GHz/4-core/8MB/25W) FIO Processor Kit	822435-L21
Intel® Core i3-7000 series Processors	
HPE DL20 Gen9 Intel® Core™ i3-7100 (3.9GHz/2-core/3MB/51W) FIO Processor Kit	871059-L21
HPE DL20 Gen9 Intel® Core™ i3-6300 (3.8GHz/2-core/4MB/51W) FIO Processor Kit	871061-L21
Intel® Core i3-6000 series Processors	
HPE ProLiant DL20 Gen9 Intel® Core™ i3-6300 (3.8GHz/2-core/3MB/51W) FIO Processor Kit	840012-L21
HPE ProLiant DL20 Gen9 Intel® Core™ i3-6100 (3.7GHz/2-core/3MB/51W) FIO Processor Kit	840010-L21
Intel® Pentium® G4000 series Processors	
HPE DL20 Gen9 Intel® Pentium® G4600 (3.6GHz/2-core/3MB/51W) FIO Processor Kit	871065-L21
HPE DL20 Gen9 Intel® Pentium® G4560 (3.5GHz/2-core/3MB/54W) FIO Processor Kit	871063-L21
HPE DL20 Gen9 Intel® Core™ i3-6300 (3.8GHz/2-core/4MB/51W) FIO Processor Kit	871061-L21
HPE ProLiant DL20 Gen9 Intel® Pentium® G4500 (3.5GHz/2-core/3MB/51W) FIO Processor Kit	840016-L21
HPE ProLiant DL20 Gen9 Intel® Pentium® G4400 (3.3GHz/2-core/3MB/54W) FIO Processor Kit	840018-L21

HPE Memory

Unbuffered DIMMs (UDIMMs) – 2400 MHz

NOTE: The following memory is supported by the E3-1200v6, i3-7000 and G4560 and G4600 processors only

HPE 8GB (1x8GB) Single Rank x8 DDR4-2400 CAS-17-17-17 Unbuffered Standard Memory Kit	862974-B21
HPE 16GB (1x16GB) Dual Rank x8 DDR4-2400 CAS-17-17-17 Unbuffered Standard Memory Kit	862976-B21

Unbuffered DIMMs (UDIMMs) – 2133 MHz

NOTE: The following memory is supported by the E3-1200v5, i3-6000 and G4500 and G4400 processors only

HPE 16GB (1x16GB) Dual Rank x8 DDR4-2133 CAS-15-15-15 Unbuffered Standard Memory Kit	805671-B21
HPE 8GB (1x8GB) Dual Rank x8 DDR4-2133 CAS-15-15-15 Unbuffered Standard Memory Kit	805669-B21
HPE 8GB (1x8GB) Single Rank x8 DDR4-2133 CAS-15-15-15 Unbuffered Standard Memory Kit	819880-B21
HPE 4GB (1x4GB) Single Rank x8 DDR4-2133 CAS-15-15-15 Unbuffered Standard Memory Kit	805667-B21

E: Depending on the processor selected these memory will run at 2133MHz.

9.5mm SATA DVD-ROM JackBlack Gen9 Optical Drive	726536-B21
9.5mm SATA DVD-RW JackBlack G9 Optical Drive	726537-B21

HPE Drives

SATA Non-Hot Plug LFF (3.5-Inch) Midline (MDL) Drives

HPE 1TB SATA 6G Midline 7.2K LFF (3.5in) RW 1yr Wty HDD	801882-B21
HPE 2TB SATA 6G Midline 7.2K LFF (3.5in) RW 1yr Wty HDD	801884-B21
HPE 4TB SATA 6G Midline 7.2K LFF (3.5in) RW 1yr Wty HDD	801888-B21

SATA Non-Hot Plug LFF (3.5-inch) Entry (ETY) Drives

HPE 500GB SATA 6G Midline 7.2K LFF (3.5in) RW 1yr Wty HDD	843264-B21
HPE 1TB SATA 6G Entry 7.2K LFF (3.5in) RW 1yr Wty HDD	843266-B21
HPE 2TB SATA 6G Midline 7.2K LFF (3.5in) RW 1yr Wty HDD	843268-B21
HPE 3TB SATA 6G Midline 7.2K LFF (3.5in) RW 1yr Wty HDD	843270-B21
HPE 4TB SATA 6G Entry 5.9K LFF (3.5in) RW 1yr Wty HDD	815635-B21

NOTE: These Entry drives will have lower performance and workload rating in comparison to HPE enterprise drives.

6G SATA SC Hot Plug LFF 7.2K (3.5-inch) Standard Drives

HPE 1TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty HDD	858594-B21
HPE 2TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty HDD	858596-B21

SATA Hot Plug LFF (3.5-inch) Midline (MDL) Drives

HPE 1TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty HDD	861691-B21
HPE 2TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty Digitally Signed Firmware HDD	872489-B21
HPE 2TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty HDD	861676-B21
HPE 3TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty Digitally Signed Firmware HDD	861693-B21
HPE 4TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty 512e HDD	861752-B21
HPE 4TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty Digitally Signed Firmware HDD	872491-B21
HPE 4TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty HDD	861678-B21
HPE 6TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty 512e HDD	861750-B21
HPE 6TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty Digitally Signed Firmware HDD	846510-B21
HPE 8TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty Helium 512e Digitally Signed Firmware HDD	861594-B21
HPE 8TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD	819203-B21
HPE 10TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty Helium 512e Digitally Signed Firmware HDD	857648-B21
HPE 12TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty Helium 512e Digitally Signed Firmware HDD	881785-B21

SAS Hot Plug SFF (2.5-Inch) Enterprise (ENT) Drives

HPE 300GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	870753-B21
HPE 300GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	872475-B21
HPE 300GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty HDD	759208-B21
HPE 300GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty HDD	785067-B21
HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty HDD	759210-B21
HPE 600GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	870757-B21
HPE 900GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	872477-B21
HPE 900GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty HDD	759212-B21

Core Options

HPE 600GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty HDD	781516-B21
HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD	870763-B21
HPE 900GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	
HPE 900GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty HDD	
HPE 900GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD	
HPE 1.2TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	
HPE 1.2TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty HDD	
HPE 1.8TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e HDD	
HPE 1.8TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD	872481-B21
HPE 2.4TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD	881457-B21

SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives

HPE 300GB SAS 12G Enterprise 15K LFF (3.5in) SCC 3yr Wty HDD	737261-B21
HPE 450GB SAS 12G Enterprise 15K LFF (3.5in) SCC 3yr Wty HDD	737394-B21
HPE 600GB SAS 12G Enterprise 15K LFF (3.5in) SC 3yr Wty HDD	765424-B21

SAS Hot Plug LFF (3.5-inch) Midline (MDL) Drives

HPE 1TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty Digitally Signed Firmware HDD	846524-B21
HPE 2TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty Digitally Signed Firmware HDD	872485-B21
HPE 2TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty HDD	818365-B21
HPE 3TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty Digitally Signed Firmware HDD	846528-B21
HPE 4TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty 512e HDD	861756-B21
HPE 4TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty Digitally Signed Firmware HDD	872487-B21
HPE 4TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty HDD	818367-B21
HPE 6TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty Digitally Signed Firmware HDD	846514-B21
HPE 6TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty 512e HDD	861754-B21
HPE 6TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty Helium 512e Digitally Signed Firmware HDD	861590-B21
HPE 6TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD	819201-B21
HPE 6TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty Helium 512e Digitally Signed Firmware HDD	857644-B21

ch) Midline (MDL) Drives

7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD	655710-B21
---	------------

6G SATA Hot Plug SFF (2.5-inch) SC 512e Drives

HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD	765453-B21
HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD	765455-B21

SSD Selection

To streamline the configuration process for HPE ProLiant Gen9 servers and to provide the best product availability, HPE recommends SSDs from the list located here:

<https://ssd.hpe.com/recommend>

759212

HATA

Core Options

6G SATA Hot Plug SFF (2.5-inch) SC Mixed Use Solid State Drives

HPE 240GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	880295-B21
HPE 240GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875483-B21
HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877776-B21
HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872344-B21
HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875470-B21
HPE 960GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877782-B21
HPE 960GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872348-B21
HPE 960GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875474-B21
HPE 1.6TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty SSD	804631-B21
HPE 1.92TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877788-B21
HPE 1.92TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872352-B21
HPE 1.92TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875478-B21

12G SAS Hot Plug SFF (2.5-inch) SC 512e Drives

HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty 512e HDD	748387-B21
HPE 1TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD	765464-B21
HPE 1TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD	832514-B21
HPE 2TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e HDD	765466-B21

12G SAS Hot Plug SFF (2.5-inch) SC Read Intensive Solid State Drives

HPE 480GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875311-B21
HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872390-B21
HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875313-B21
HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872392-B21
HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875326-B21
HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872394-B21
HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875330-B21

12G SAS Hot Plug SFF (2.5-inch) SC Write Intensive Solid State Drives

3B SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware	873351-B21
3B SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware	873355-B21
B SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware	873357-B21

Hot Plug SFF (2.5-inch) SC Mixed Use Solid State Drives

3B SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873359-B21
3B SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872374-B21
3B SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873363-B21
GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872376-B21

Core Options

HPE 1.6TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873365-B21
HPE 1.6TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872382-B21
HPE 3.2TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873367-B21
HPE 3.2TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872386-B21
12G SAS Hot Plug SFF (3.5-inch) SC Mixed Use Solid State Drives	
HPE 800GB SAS 12G Mixed Use LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	872378-B21
6G SATA Hot Plug LFF (3.5-inch) Mixed Use SCC Solid State Drives	
HPE 480GB SATA 6G Mixed Use LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	875472-B21
HPE 480GB SATA 6G Mixed Use LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	872346-B21
HPE 960GB SATA 6G Mixed Use LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	877784-B21
HPE 960GB SATA 6G Mixed Use LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	875476-B21
HPE 960GB SATA 6G Mixed Use LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	872350-B21
HPE 1.6TB SATA 6G Mixed Use LFF (3.5in) SCC 3yr Wty SSD	804634-B21
HPE 1.92TB SATA 6G Mixed Use LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	877790-B21
HPE 1.92TB SATA 6G Mixed Use LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	875480-B21
Mixed Use - 6G SATA - M.2 - Solid State Drives	
HPE 240GB SATA 6G Mixed Use M.2 2280 3yr Wty Digitally Signed Firmware SSD	875488-B21
HPE 480GB SATA 6G Mixed Use M.2 2280 3yr Wty Digitally Signed Firmware SSD	875490-B21
HPE 960GB SATA 6G Mixed Use M.2 2280 3yr Wty Digitally Signed Firmware SSD	875492-B21
6G SATA Hot Plug SFF (2.5-inch) SC Read Intensive Solid State Drives	
HPE 150GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	869374-B21
HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877740-B21
HPE 240GB SATA 6G RI SFF SC DS SSD	868814-B21
HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	869376-B21
HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875503-B21
HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877746-B21
HPE 480GB SATA 6G RI SFF SC DS SSD	868818-B21
HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	869378-B21
HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875509-B21
HPE 960GB SATA 6G RI SFF SC DS SSD	868822-B21
HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	869384-B21

HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875511-B21
HPE 1.6TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	869386-B21
HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877752-B21
HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty SSD	871768-B21
HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877758-B21
HPE 1.92TB SATA 6G RI SFF SC DS SSD	868826-B21
HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	871770-B21
HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875513-B21
HPE 3.84TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877764-B21
HPE 3.84TB SATA 6G RI SFF SC DS SSD	868830-B21
HPE 7.68TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	870144-B21
6G SATA Hot Plug LFF (3.5-inch) SC Read Intensive Solid State Drives	
HPE 480GB SATA 6G Read Intensive LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	877748-B21
HPE 480GB SATA 6G Read Intensive LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	869380-B21
HPE 960GB SATA 6G Read Intensive LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	877754-B21
HPE 1.6TB SATA 6G Read Intensive LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	869388-B21
HPE 1.92TB SATA 6G Read Intensive LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware SSD	877760-B21
Read Intensive - 6G SATA - M.2 - Solid State Drives	
HPE 150GB SATA 6G Read Intensive M.2 2280 3yr Wty Digitally Signed Firmware SSD	875317-B21
HPE 480GB SATA 6G Read Intensive M.2 2280 3yr Wty Digitally Signed Firmware SSD	875319-B21
HPE 480GB SATA 6G Read Intensive M.2 2280 3yr Wty Digitally Signed Firmware SSD	875498-B21
HPE 960GB SATA 6G Read Intensive M.2 2280 3yr Wty Digitally Signed Firmware SSD	875500-B21
6G SATA Hot Plug SFF (2.5-inch) SC Write Intensive Solid State Drives	
HPE 400GB SATA 6G Wt SFF SC DS SSD	872355-B21
HPE 800GB SATA 6G Wt SFF SC DS SSD	872359-B21
TA 6G Wt SFF SC DS SSD	872363-B21
Hot Plug LFF (3.5-inch) SC Write Intensive Solid State Drives	
TA 6G Wt LFF SCC DS SSD	872357-B21
TA 6G Wt LFF SCC DS SSD	872361-B21
TA 6G Wt LFF SCC DS SSD	872365-B21
SATA HHL 3yr Wty M.2 Kit	
TA 6G Read Intensive 3yr Wty M.2 Kit	878783-B21
TA 6G Read Intensive 3yr Wty Dual M.2 Kit	835563-B21
	835565-B21

HPE DL20 Gen9 M.2 RA and Optical Disk Drive Power Cable Kit	816284-B21
NOTE: 816284-B21 cable kit is a mandatory option required to support M.2 SSDs.	
NOTE: M.2 drives go in PCIe slot and use B140i SATA controller.	
Hard Drive Blank Kits	
HPE Large Form Factor Hard Drive Blank Kit	
HPE Small Form Factor Hard Drive Blank Kit	

HPE Networking

1 Gigabit Ethernet adapters	
HPE Ethernet 1Gb 4-port 331T Adapter	647594-B21
NOTE: This networking card can NOT be selected with P440, H240, and P841. As an alternate solution the 4-port FlexibleLOM Adapter 629135-B21 can be chosen with P440, H240 or P841.	
HPE Ethernet 1Gb 2-port 332T Adapter	615732-B21
HPE Ethernet 1Gb 2-port 361T Adapter	652497-B21
HPE Ethernet 1Gb 4-port 366T Adapter	811546-B21
NOTE: This networking card can NOT be selected with P440, H240, and P841. As an alternate solution the 4-port FlexibleLOM Adapter 665240-B21 can be chosen with P440, H240 or P841.	
HPE PS1810-24G Switch	J9834A
10 Gigabit Ethernet adapters	
HPE Ethernet 10Gb 2-port 530SFP Adapter	652503-B21
HPE Ethernet 10Gb 2-port 530T Adapter	656596-B21
HPE Ethernet 10Gb 2-port 546SFP+ Adapter	779793-B21
HPE Ethernet 10Gb 2-port 557SFP+ Adapter	788995-B21
HPE Ethernet 10Gb 2-port 560SFP+ Adapter	665249-B21
HPE Ethernet 10Gb 2-port 561T Adapter	716591-B21
HPE Ethernet 10Gb 2-port 562SFP+ Adapter	727055-B21
NOTE: A minimum of two Gigabytes (2 GB) of server memory is required per each adapter.	
NOTE: Direct Attach Cable (DAC) for copper environments or fiber transceivers and cables for fiber-optic environments must be purchased separately.	
25 Gigabit Ethernet adapters	
HPE Ethernet 4x25Gb 1-port 620QSFP28 Adapter	817762-B21
Flexible LOM Adapters	
3b 4-port 331FLR Adapter	629135-B22
3b 4-port 366FLR Adapter	665240-B21
10Gb 2-port 533FLR-T Adapter	700759-B21
10Gb 2-port 534FLR-SFP+ Adapter	700751-B21
10Gb 4-port 536FLR-T Adapter	764302-B21
10Gb 2-port 546FLR-SFP+ Adapter	779799-B21
HPE Flexible 10Gb 2-port 556FLR-SFP+ Adapter	727060-B21
HPE Ethernet 10Gb 2-port 560FLR-SFP+ Adapter	665243-B21
HPE Ethernet 10Gb 2-port 561FLR-T Adapter	700699-B21
Please see the related NIC QuickSpecs for Technical Specifications and additional information: http://www.hpe.com/servers/ProLiantNICs .	

HPE I/O Expansion

HPE DL20 Gen9 PCIe Low Profile Riser FIO Kit	854846-B21
--	------------

Core Option

Options		
HPE DL20 Gen9 GPU Enablement Kit	811259-B21	
	811271-B21	
NOTE: It is mandatory to choose any of the above riser kit for CTO configurations.		
HPE Power Supplies	HPE ProLiant Gen9 Essential Server Power Supplies - Non-Redundant	
	HPE DL20 Gen9 290W FIO Power Supply Unit Kit	816283-B21
	NOTE: 290W PSU is a Non hot plug power supply.	
	NOTE: This FIO option can only be bought integrated in the server. It cannot be ordered as a standalone option after server purchase.	
	HPE ProLiant Gen9 Essential Server Power Supplies - Redundant	
	HPE 900W Standard AC 240VDC Power Input Module FIO Kit	828734-B21
	NOTE: This Power supply supports both 100-240V AC and 240V DC.	
	HPE 900W Standard AC 240VDC RPS Power Backplane FIO Kit	828735-B21
	NOTE: The backplane kit and the backplane cable kit (820306-B21) are mandatory with the power input module.	
	NOTE: This FIO option can only be bought integrated in the server. It cannot be ordered as a standalone option after server purchase.	
	HPE 900W Standard AC 240VDC Redundant Power Supply Kit	820792-B21
	NOTE: This Redundant Power supply kit includes 2 power supply input modules and 1 backplane kit. Backplane cable kit (820306-B21) is mandatory for this option.	
	HPE 900W Standard AC 240VDC Power Input Module	775595-B21
	NOTE: This part number can only be bought standalone and is for field integration only.	
	HPE 900W Standard AC 240VDC RPS Power Backplane	814835-B21
	NOTE: This part number can only be bought standalone and is for field integration only.	
	NOTE: The backplane kit and the backplane cable kit (820306-B21) are mandatory with the power input module.	
	HPE DL20 Gen9 Redundant Power Supply Backplane Cable Kit	820306-B21
	NOTE: This RPS backplane Cable kit is mandatory to be chosen along with 900W backplane.	
	NOTE: This Power supply supports both 100-240V AC and 240V DC.	
	is Gold-level efficiency (92%) with a standard C14 inlet connector. No support for HPE ProLiant Services. Only compatible with select HPE ProLiant Gen9 Essential servers.	
	900W Gold (Redundant) AC 240VDC Power Input Module (775595-B21/ 828734-B21) with Power Backplane (814835-B21/828735-B21).	
	Redundant Power Supply Backplane can support up to two (2) power input modules.	
	Redundant Power Supply Backplane cable kit is a mandatory option with the backplane for DL20 Gen9.	
	Redundant AC Power Input Modules do not share power. Redundant AC Power Input Module #1 is the primary AC Power Input Module. Redundant AC Power Input Module #2 is the backup AC Power Input Module.	
	HPE ProLiant M2000 Graphics Accelerator	P8Y48A
	Supported per Server:	
	GPU Enablement kit 779611-B21 must be selected when adding a GPU option.	
	The above listed Graphics cards are Hewlett Packard Enterprise standard supported options in this server.	
	NOTE: The NVIDIA Quadro modules are supported only on 64-bit versions of Linux and Windows	

Core Options

operating systems as well as on Virtual Machine client operating systems. The supported bare metal operating systems are RHEL6, SLES 11 and Windows Server 2012 R2.

NOTE: Please see the HPE Power Advisor for estimated power consumption of your individual system configuration prior to installing GPUs. The HPE Power Advisor is located at: <http://www.hpe.com/info/hppoweradvisor>.

Additional Options

NOTE: Some options may not be pre-installed at the factory. To ensure all options are ordered, Hewlett Packard Enterprise representative for additional information.

HPE Insight Software	HPE Insight Control	
	HPE Insight Control including 1yr 24x7 Technical Support and Updates 1-server LTU	C6N27A
	HPE Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO LTU	C6N36A
	NOTE: Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key.	
	NOTE: Customer will receive a license entitlement certificate. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HPE Software Technical Support and Update Service.	
	NOTE: Licenses ship without media. The HPE Insight Control Media Kit can be ordered separately, or can be downloaded at: https://www.hpe.com/info/insightmanagement .	
	NOTE: For additional license options please see the HPE Insight Control QuickSpecs .	

Embedded Management	HPE iLO Advanced	
	HPE iLO Advanced including 1yr 24x7 Technical Support and Updates 1-server LTU	512485-B21
	HPE iLO Advanced including 1yr 24x7 Technical Support and Updates Flexible Quantity LTU	512486-B21
	HPE iLO Advanced including 1yr 24x7 Technical Support and Updates Tracking LTU	512487-B21
	HPE iLO Advanced including 3yr 24x7 Tech Support and Updates 1-server LTU	BD505A
	HPE iLO Advanced including 3yr 24x7 Tech Support and Updates Flexible Quantity LTU	BD506A
	HPE iLO Advanced including 3yr 24x7 Tech Support and Updates Tracking LTU	BD507A
	HPE iLO Advanced including 1yr 24x7 Technical Support and Updates E-LTU	E6U59ABE
	HPE iLO Advanced including 3yr 24x7 Technical Support and Updates E-LTU	E6U64ABE
	HPE iLO Essentials	
	HPE iLO Essentials including 3yr 24x7 Tech Support and Updates 1-server LTU	BD774A
	HPE iLO Essentials including 1yr 24x7 Tech Support and Updates 1-server LTU	BD775A
	HPE iLO Essentials including 3yr 24x7 Technical Support and Updates E-LTU	E6U61ABE
	HPE iLO Essentials including 1yr 24x7 Technical Support and Updates E-LTU	E6U62ABE
	HPE iLO Scale-Out	
	HPE iLO Scale-Out 3yr 24x7 Tech Support and Updates Flexible Quantity LTU	BD776A
	HPE iLO Scale-Out including 3yr 24x7 Tech Support and Updates Flex Qty E-LTU	BD776AAE
	HPE iLO Scale-Out including 3yr 24x7 Tech Support and Updates Tracking LTU	BD777A
	e-Out 1yr 24x7 Tech Support and Updates Flexible Quantity LTU	BD778A
	e-Out including 1yr 24x7 Tech Support and Updates Flex Qty E-LTU	BD778AAE
	e-Out including 1yr 24x7 Tech Support and Updates Tracking LTU	BD779A
	w Advanced (without HPE iLO Advanced)	
	w w/o iLO including 3yr 24x7 Support 1-server LTU	P8B24A
	w w/o iLO including 3yr 24x7 Support Flexible Quantity E-LTU	P8B26AAE

Management Utility

Additional Options

Clusters	HPE Insight Cluster Management Utility 1yr 24x7 Flexible LTU	OL803B
	HPE Insight Cluster Management Utility 3yr 24x7 Flexible LTU	BD476A
	HPE Insight Cluster Management Utility Media	BD477A
	NOTE: For additional license kits please see the HPE Insight Cluster Management Utility QuickSpecs .	

HPE Security	HPE Trusted Platform Module 2.0 Kit	
	HPE Trusted Platform Module Option	
	HPE 1U Security Bezel Kit	
	NOTE: Quick Release Ear option kit (P/N 811254-B21) is mandatory for installing security bezel.	
	HPE DL20 Gen9 Quick Release Ear FIO Kit	811254-B21
	NOTE: DL20 Gen9 ships with thumbscrew ear attachments (BTO and CTO) as standard. The Quick Release Ear kit needs to be purchased if you want to have a security bezel installed.	

HPE Storage Controllers	SAS Controllers	
	HPE Smart Array Controllers	
	HPE Smart Array P440/2GB FBWC 12Gb 1-port Int SAS Controller	820834-B21
	NOTE: The above SKUs include 96W Smart Storage Battery..	
	HPE Smart Array P440/4GB FBWC 12Gb 1-port Int SAS Controller	726821-B21
	NOTE: The option requires a 96W Smart Storage Battery p/n 727258-B21.	
	HP Smart Array P440/4GB FBWC 12Gb 1-port Int FIO SAS Controller	761872-B21
	NOTE: The above SKUs include 96W Smart Storage Battery..	
	HPE Smart Array P441/4GB FBWC 12Gb 2-ports Ext SAS Controller	726825-B21
	HPE Smart Array P841/4GB FBWC 12Gb 4-ports Ext SAS Controller	726903-B21
	NOTE: P440 needs to be populated in slot 2 (Full Height).	
	HPE Smart Host Bus Adapters	
	HPE H240 12Gb 2-ports Int Smart Host Bus Adapter	726907-B21
	HP H240 12Gb 2-ports Int FIO Smart Host Bus Adapter	761873-B21
	HPE H241 12Gb 2-ports Ext Smart Host Bus Adapter	726911-B21
	NOTE: H240 needs to be populated in slot 2 (Full Height).	
	HPE Cable Options	
	HPE DL20 Gen9 2LFF Mini SAS P440 Cable Kit	811279-B21
	HPE DL20 Gen9 4SFF Mini SAS P440 Cable Kit	811282-B21
	NOTE: One of the above cables is required to be selected depending on the combination of server and storage controller. Cable option kit descriptions include the right server and storage controller names.	
	NOTE: FIO indicates that this option is only available as a factory installable option. Please select FIO option if you want the option to be factory installed.	
	NOTE: All the server chassis (Mod-x) includes min-SAS cables required to connect drives to embedded B140i SATA controller or HBA24D controller (HBA240 is optional).	

Optional Software	HP Secure Encryption per Svr Entitlement	C9A82AAE
	HPE Smart Array SR SmartCache (Single Key/Single Server) LTU	D7S26A
	HPE Smart Array SR SmartCache (Single Key/Multiple Servers) LTU	D7S27A

004458

HPE
Infra
Mana
Softw

High

ОРИГИНАЛ

Additional Options

HPE Smart Array SR SmartCache (Single Key/Multiple Servers) E-LTU	D7S27AAE
HPE Smart Array SR Secure Encryption (Data at Rest Encryption/per Server Entitlement) E-LTU	Q2F26AAE
Optional Upgrades	
HP 96W Smart Storage Battery with 145mm Cable for DL/ML/SL Servers	727258-B21
NOTE: This option is mandatorily required with HPE Smart Array controllers. One server can accommodate only 1 Smart Storage Battery that would suffice the requirement of all HPE Smart Array controllers.	
Battery Holder	
HPE DL20 Gen9 Smart Storage Battery Holder	822451-B21
NOTE: This holder is mandatorily required with Smart Storage Battery.	

HPE Tape Backup

NOTE: For the complete range of tape drives, autoloaders, libraries and media see: <http://www.hpe.com/storage/storeever>. For hardware and software compatibility of Hewlett Packard Enterprise tape backup products <http://www.hpe.com/storage/BURAcompatibility>.

NOTE: For Internal drives to be connected to DL servers please make sure that you order rack mount kit as well.

Tape Drives

SAS Rack-Mount Tape Solutions

HPE StoreEver LTO-7 Ultrium 15000 External Tape Drive	B8874A
HPE StoreEver MSL LTO-7 Ultrium 15000 SAS Drive Upgrade Kit	N7P37A
HPE StoreEver MSL LTO-7 Ultrium 15000 FC Drive Upgrade Kit	N7P36A
HPE StoreEver LTO-6 Ultrium 6250 Tape Drive in a 1U Rack Mount Kit	COL99A
HPE StoreEver LTO-6 Ultrium 6250 External Tape Drive	EH970A
HPE StoreEver MSL LTO-6 Ultrium 6250 SAS Drive Upgrade Kit	COH27A
HPE StoreEver MSL LTO-6 Ultrium 6250 Fibre Channel Drive Upgrade Kit	COH28A
HPE StoreEver LTO-5 Ultrium 3000 SAS Tape Drive in a 1U Rack Mount Kit	EJQ14B
HPE StoreEver LTO-5 Ultrium 3000 SAS External Tape Drive	EH958B
HPE StoreEver MSL LTO-5 Ultrium 3000 SAS Drive Upgrade Kit	BL540B
HPE StoreEver LTO-4 Ultrium 1760 SAS (1) in a 1U Rack Mount Kit	EH946C
HPE StoreEver LTO-4 Ultrium 1760 SAS External Tape Drive	EH920B
HPE StoreEver 1U SAS Rack Mount Kit	AE459B

HPE DAT Autoloader

HPE StoreEver 1/8 G2 LTO-7 Ultrium 15000 SAS Tape Autoloader	N7P35A
HPE StoreEver 1/8 G2 LTO-7 Ultrium 15000 FC Tape Autoloader	N7P34A
HPE StoreEver 1/8 G2 LTO-6 Ultrium 6250 Fibre Channel Tape Autoloader	COH19A
HPE StoreEver 1/8 G2 LTO-5 Ultrium 3000 SAS Tape Autoloader	BL536B

Tape Library

MSL2024 0-drive Tape Library	AK379A
------------------------------	--------

Tape Library

MSL4048 0-drive Tape Library	AK381A
------------------------------	--------

MSL6480

MSL6480 Scaleable Expansion Module	QU626A
MSL6480 Scalable Base Module	QU625A

NOTE: Please see the [HPE StoreEver MSL6480 Tape Library QuickSpecs](#) for Technical Specifications and additional information).

Additional Options

HPE Disk Backup	HPE RDX Removable Disk Backup System	
	HPE RDX 4TB USB 3.0 External Disk Backup System	12R33A
	HPE RDX+ 3TB USB 3.0 External Disk Backup System	9L72A
	HPE RDX 3TB USB 3.0 Internal Disk Backup System	9L71A
	HPE RDX 2TB USB3.0 External Disk Backup System	7X53B
	HP RDX+ 1TB External Backup System	37B69B
	HP RDX+ 500GB External Backup System	B7B66B
	HPE RDX+ External Docking System	C8S07B
	HPE StoreOnce Backup systems	
	HPE StoreOnce 3100 8TB System	BB913A
	HPE StoreOnce 3520 12TB System	BB922A
	HPE StoreOnce 3540 24TB System	BB914A
	HPE StoreOnce 5100 48TB System	BB915A
	D2D Backup	
	HPE D3700 Enclosure	QW967A
	HPE D3600 Enclosure	QW968A
	NOTE: For the complete range of RDX drives and media see: https://www.hpe.com/us/en/product-catalog/storage/disk-based-backup-systems.html . For hardware and software compatibility of Hewlett Packard Enterprise disk backup products see: http://www.hpe.com/storage/spock	

HPE Storage Options

Emulex Fibre Channel HBAs

HPE 82E 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AJ763B
HPE StoreFabric SN1100E 16Gb Dual Port Fibre Channel Host Bus Adapter	C8R39A
QLogic Fibre Channel HBAs	
HPE 82Q 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AJ764A
HPE StoreFabric SN1000Q 16GB 2-port PCIe Fibre Channel Host Bus Adapter	QW972A

HPE Data Center Racks

HPE Advanced Series Racks

HPE 48U 600mm x 1075mm Advanced Pallet Rack	H6J87A
HPE 48U 600mm x 1075mm Advanced Shock Rack	H6J88A
HPE 42U 600mm x 1075mm Advanced Pallet Rack	H6J65A
HPE 42U 600mm x 1075mm Advanced Shock Rack	H6J66A
HPE 42U 600mm x 1200mm Advanced Pallet Rack	H6J67A
HPE 42U 600mm x 1200mm Advanced Shock Rack	H6J68A
HPE 36U 600mm x 1075mm Advanced Pallet Rack	H6J77A
HPE 36U 600mm x 1075mm Advanced Shock Rack	H6J78A
HPE 22U 600mm x 1075mm Advanced Pallet Rack	H6J83A
HPE 22U 600mm x 1075mm Advanced Shock Rack	H6J84A
HPE 14U 600mm x 1075mm Advanced Shock Rack	H6J82A

NOTE: Please see the [HPE Advanced Series Racks QuickSpecs](#) for information on additional racks options and rack specifications.

Additional C

HPE Enterprise Series Racks

HP 47U 600mm x 1200mm Enterprise Pallet Rack	BW913A
HP 47U 600mm x 1200mm Enterprise Shock Rack	BW914A
HP 42U 600mm x 1200mm Enterprise Pallet Rack	BW907A
HP 42U 600mm x 1200mm Enterprise Shock Rack	BW908A
HP 42U 800mm x 1075mm Enterprise Pallet Rack	BW917A
HP 42U 800mm x 1075mm Enterprise Shock Rack	BW918A

NOTE: Please see the [HPE Enterprise Series Racks QuickSpecs](#) for information on additional racks options and rack specifications.

HPE Power Distribution Units (PDUs)

HPE Basic Power Distribution Units (PDU)

HPE 800VA - 277V Input / 230V Output NA Rack Mount Transformer	H3X09A
--	--------

NOTE: Please see the [HPE Basic Power Distribution Units \(PDU\) QuickSpecs](#) for information on additional options and product specifications.

HPE Metered Power Distribution Units (PDU)

HPE Metered 4.9kVA/L6-30P 24A/208V Outlets (12) C13/Horizontal NA/JP PDU	D9N44A
HPE Metered 3.6kVA/60320 C20 Detachable 16A/230V Outlets (16) C13/Vertical WW PDU	D9N45A
HPE Metered 4.9kVA/L6-30P 24A/208V Outlets (20) C13 (4) C19/Vertical NA/JP PDU	D9N47A
HPE Metered 7.3kVA/60309 32A 3-wire/230V Outlets (20) C13 (4) C19/Vertical INTL PDU	D9N48A
HPE Metered 3Ph 8.6kVA/L15-30P 24A/208V Outlets (18) C13 (3) C19/Vertical NA/JP PDU	D9N51A
HPE Metered 3Ph 8.6kVA/L21-30P 24A/120-208V Outlets (18) C13 (3) C19 (3) 5-20R/Vertical NA/JP PDU	D9N53A
HPE Metered 3Ph 11kVA/60309 5-wire 16A/230V Outlets (18) C13 (3) C19/Vertical INTL PDU	D9N55A
HPE Metered 7.3kVA/60309 32A 3-wire/230V Outlet (32) C13 (4) C19/Vertical INTL PDU	D9N50A
HPE Metered 3Ph 11kVA/60309 5-wire 16A/230V Outlets (30) C13 (3) C19/Vertical INTL PDU	D9N57A
HPE Metered 3Ph 14.4kVA/CS8365C 40A/208V Outlets (12) C13 (12) C19/Vertical NA/JP PDU	D9N58A
HPE Metered 3Ph 16.6kVA/60309 32A-30A 5-wire 24A/230V Outlets (30) C13 (3) C19/Vertical NA/JP PDU	D9N61A
HPE Metered 3Ph 16.6kVA/60309 32A-30A 5-wire 24A/230V Outlets (12) C13 (12) C19/Vertical NA/JP PDU	D9N62A
HPE Metered 3Ph 17.3kVA/60309 60A 4-wire 48A/208V Outlets (24) C13 (3) C19/Vertical NA/JP PDU	D9N54A
HPE Metered 3Ph 17.3kVA/60309 60A 4-wire 48A/208V Outlets (12) C13 (12) C19/Vertical NA/JP PDU	D9N59A
HPE Metered 3Ph 17.3kVA/60309 60A 4-wire 48A/208V Outlets (12) C13 (12) C19/Vertical WW PDU	G9Z07A
HPE Metered 3Ph 19.9kVA/L22-30P 24A/277V Outlets (30) RF-203P-HP/Vertical	D9N63A
HPE Metered 3Ph 22kVA/60309 5-wire 32A/230V Outlet (30) C13 (3) C19/Vertical	D9N56A

Additional Options

HPE Metered 3Ph 22kVA/60309 5-wire 32A/230V Outlets (12) C13 (12) C19/Vertical INTL PDU	D9N60A
HPE Metered 3Ph 22kVA/60309 5-wire WT 32A/230V Outlets (12) C13 (12) C19/Vertical INTL PDU	G
HP Environmental Sensor for Remote Monitored and Managed PDUs	E
NOTE: Please see the HPE Metered Power Distribution Units (PDU) QuickSpecs for information on additional options and product specifications.	
HPE Intelligent Power Distribution Unit (PDU)	
HPE Intelligent Modular 4.9kVA/L6-30P 24A/208V Outlets (6) C19/Horizontal NA/JP PDU	AI
HPE Intelligent Modular 8.3kVA/CS8265C 40A/208V Outlets (6) C19/Horizontal NA/JP PDU	AF521A
HPE Intelligent Modular 3Ph 8.6kVA/L15-30P 24A/208V Outlets (6) C19/Horizontal NA/JP PDU	AF522A
HPE Intelligent Modular 3Ph 17.3kVA/60309 60A 4-wire 48A/208V (6) C19/Horizontal NA/JP PDU	AF523A
HPE Intelligent Modular 3Ph 17.3kVA/60309 30A 5-wire 24A/240V (6) C19/Horizontal NA/JP PDU	AF901A
HPE Intelligent Modular 7.3kVA/60309 3-wire 32A/230V Outlets (6) C19/Horizontal INTL PDU	AF525A
HPE Intelligent Modular 3Ph 11kVA/60309 5-wire 16A/230V Outlets (6) C19/Horizontal INTL PDU	AF526A
HPE Intelligent Modular 3Ph 22kVA/60309 5-wire 32A/230V Outlets (6) C19/Horizontal INTL PDU	AF527A
HPE Intelligent Modular 3Ph 17.3kVA/IEC 60309 60A 4-wire 48A/208V (12) C19/Horizontal NA/JP PDU	AF535A
HPE Intelligent Modular 3Ph 22kVA/60309 5-wire 32A/230V Outlets (12) C19/Horizontal INTL PDU	AF538A
HPE Intelligent Modular 4.9kVA/L6-30P 24A/208V Outlets (20) C13 (6) C19/Horizontal NA/JP PDU	AF531A
HPE Intelligent Modular 3Ph 8.6kVA/L15-30P 24A/208V Outlets (20) C13 (6) C19/Horizontal NA/JP PDU	AF532A
HPE Intelligent Modular 3Ph 14.4kVA/CS8365C 40A/208V Outlets (6) C19/Horizontal NA/JP PDU	AF533A
HPE Intelligent Modular 7.3kVA/60309 3-wire 32A/230V Outlets (6) C19/Horizontal INTL PDU Kit	AF534A
HPE 5xC13 Intelligent PDU Extension Bar G2 Kit	AF547A
HPE 5xC13 Outlets Power and UID LEDs Pair Standard Extension Bar	AF528A
NOTE: Please see the HPE Intelligent Power Distribution Unit (PDU) QuickSpecs for information on additional options and product specifications.	
HPE Metered and Switched Power Distribution Units (PDU)	
HPE Metered Switched 2.8kVA/L5-30P 24A/120V Outlets (24) 5-20R /Vertical NA/JP PDU	H8B48A
HPE Metered Switched 3.6kVA/60320 C20 Detachable 16A/230V Outlets (7) C13 (1) C19/Vertical WW PDU	H8B49A
HPE Metered Switched 4.9kVA/L6-30P 24A/208V Outlets (20) C13 (4) C19/Vertical NA/JP PDU	H8B50A
HPE Metered Switched 7.3kVA/60309 3-wire 32A/230V Outlets (20) C13 (4) C19/Vertical INTL PDU	H8B51A

POPHENATA

650059

LV7

Additional Option

208V Outlets (18) C13 (6)	H8B52A
C19/Vertical NA/JP PDU	
HPE Metered Switched 3Ph 8.6kVA/L21-30P 24A/208V Outlets (20)C13 (3)C19 (1)5-20R/Vertical NA/JP PDU	H8B53A
HPE Metered Switched 3Ph 11kVA/60309 5-wire 16A/230V Outlets (21) C13 (3) C19/Vertical INTL PDU	H8B54A
HPE Metered Switched 3Ph 14.4kVA/CS8365C 40A/208V Outlets (12) C13 (12) C19/Vertical NA/JP PDU	H8B55A
HPE Metered Switched 3Ph 17.3kVA/60309 4-wire 48A/208V Outlets (12) C13 (12) C19/Vertical NA/JP PDU	H8B56A
NOTE: Please see the HPE Metered and Switched Power Distribution Units (PDU) QuickSpecs for information on additional options and product specifications.	
NOTE: To learn more, please visit the HPE Uninterruptible Power Systems (UPS) web page .	

HPE Rack Mount Consoles, KVM Switches, and Keyboards

HPE Location Discovery Services

HPE Location Discovery Services LCD8500 Kit	TL052A
NOTE: Please see the HPE Location Discovery Services QuickSpecs for information on additional options and product specifications.	

HPE Rack Mount Consoles

HP LCD8500 1U US Rackmount Console Kit	AF630A
HP LCD8500 1U UK Rackmount Console Kit	AF631A
HP LCD8500 1U DE Rackmount Console Kit	AF632A
HP LCD8500 1U FR Rackmount Console Kit	AF633A
HP LCD8500 1U JP Rackmount Console Kit	AF642A
HP LCD8500 1U RU Rackmount Console Kit	AF643A
HP LCD8500 1U INTL Rackmount Console Kit	AF644A
HP LCD8500 1U US TAA Rackmount Console Kit	AF645A

HPE KVM Switches

HP 0x1x8 G3 KVM Console Switch	AF651A
HP 0x2x16 G3 KVM Console Switch	AF652A
HP TAA 0x2x16 G3 KVM Console Switch	AF653A
HP USB Remote Access Key for G3 KVM Console Switches	AF650A
HP KVM Console USB Interface Adapter	AF628A
HP 0x2x16 KVM Server Console Switch G2 with Virtual Media CAC Software	AF618A
HP 0x2x32 KVM Server Console Switch G2 with Virtual Media CAC Software	AF619A
Virtual Media CAC Interface Adapter	AF629A
Console Switch	AF611A
Console Switch G2 with Virtual Media CAC Software	AF620A
Console Switch G2 with Virtual Media CAC Software	AF621A
Console Switch G2 with Virtual Media CAC Software	AF622A
Console Port Interface Adapter	AF654A
Console Interface Adapter	AF655A

visit the [HPE KVM Switches web page](#).

Kit	631341-B21
Kit	631344-B21

Additional Options

HPE USB FR Keyboard/Mouse Kit	531346-B21
HPE USB ES Keyboard/Mouse Kit	531348-B21
HPE USB DE Keyboard/Mouse Kit	531358-B21
HPE USB JP Keyboard/Mouse Kit	631360-B21
HPE USB IT Keyboard/Mouse Kit	631362-B21
HPE USB CN Keyboard/Mouse Kit	631364-B21
HPE USB AE Keyboard/Mouse Kit	638212-B21
HPE USB RU Keyboard/Mouse Kit	638214-B21
HPE USB IN Keyboard/Mouse Kit	672097-D63
HPE USB AP/INTL Keyboard/Mouse Kit	672097-373
HPE USB INTL Keyboard/Mouse Kit	672097-B33
HPE USB PT Keyboard/Mouse Kit	672097-133
HPE USB TR Keyboard/Mouse Kit	672097-143
HPE USB CZ Keyboard/Mouse Kit	672097-223
HPE USB FI Keyboard/Mouse Kit	672097-353
HPE USB SE Keyboard/Mouse Kit	672097-103
HPE USB CH Keyboard/Mouse Kit	672097-113
HPE USB KR Keyboard/Mouse Kit	672097-KD3
Rail Kits	
HP 1U Short Friction Rail Kit	775612-B21
HPE Other Options	
HPE Rack LED Light Kit	BW939A
HP Kit LCD 1.83m Latch Display Port Cable	G7T29A
HP ConvergedSystem Door Branding Kit	TK815A
HP ConvergedSystem Rack Light Kit	TK816A
HP ConvergedSystem Rack Side Panel 1075mm Kit	TK817A

HPE Uninterruptible Power Systems (UPS)

HPE DirectFlow Three Phase UPS

Power Unit (1U UPS)	
HPE R12000 DirectFlow - 1U Rackmount Uninterruptible Power System	G9Y75A
HPE R12000 DirectFlow - POD 1U Rackmount Uninterruptible Power System	AF478A
HPE RP12000/3 12000VA Three Phase INTL 6U Rackmount Uninterruptible Power System	AF437A
Input/Output Module Options for 1U UPS	
HPE 32A 400-415 Volt Three Phase INTL R12000 DirectFlow UPS IEC309 Input/Output Module	AF488A
HPE 30A 400-415 Volt Three Phase NA R10000 DirectFlow UPS IEC309 Input/Output Module	AF489A
HPE 32A 380 Volt Three Phase China R12000 DirectFlow UPS Unterminated Input/Output Module	AF490A
HPE 30A 480 Volt Three Phase NA R12000 DirectFlow UPS L22-30 Input/Output Module	AF491A
HPE 30A 480 Volt Three Phase NA R12000 DirectFlow UPS IEC309 Input/Output Module	AF492A
HPE 30A 400-415 Volt Three Phase NA R12000 DirectFlow UPS IEC309 Input/Output Module	G9Y76A
HPE DirectFlow UPS Management Card	AF493A

Additional Options

3U Rackmount Uninterruptible Power System	AF479A
Input/Output Module Options for 2U UPS	
HPE 32A 400-415 Volt Three Phase INTL R18000 DirectFlow UPS IEC309 Input/Output Module	AF483A
HPE 30A 380 Volt Three Phase China R18000 DirectFlow UPS Unterminated Input/Output Module	AF485A
HPE 30A 480 Volt Three Phase NA R18000 DirectFlow UPS IEC309 Input/Output Module	AF486A
HPE 30A 480 Volt Three Phase NA R18000 DirectFlow UPS IEC309 Input/Output Module	AF487A
HPE 30A 400 Volt Three Phase NA R18000 DirectFlow UPS IEC309 Input/Output Module	D9Q02A
HPE 30A 400-415V Three Phase NA R18000 DirectFlow UPS 1:1 IEC309 Input/Output Module	AF484A
NOTE: All Input/Output Modules support dual output outlets except the AF484A.	
Battery Pack Options	
HPE DirectFlow UPS - 1U Rackmount Lithium-ion Battery Pack	AF480A
HPE DirectFlow UPS - 3U Rackmount VRLA Battery Pack	AF482A
HPE WW DirectFlow Secondary Battery Cable	AF497A
NOTE: Please see the HPE DirectFlow Three Phase Uninterruptible Power System QuickSpecs for information on additional options and product specifications.	
HPE Tower UPS	
HPE T750 G4 UPS Models	
HPE T750 G4 NA/JP Uninterruptible Power System	J2P85A
HPE T750 G4 INTL Uninterruptible Power System	J2P88A
HPE T1000 G4 UPS Models	
HPE T1000 G4 NA/JP Uninterruptible Power System	J2P86A
HPE T1000 G4 INTL Uninterruptible Power System	J2P89A
HPE T1500 G4 UPS Models	
HPE T1500 G4 NA/JP Uninterruptible Power System	J2P87A
HPE T1500 G4 INTL Uninterruptible Power System	J2P90A
HPE Rack-mountable UPS	
HPE R/T2200 G4 UPS Models	
HPE R/T2200 G4 NA/JP Uninterruptible Power System	J2R00A
HPE R/T3000 G4 UPS Models	
HPE R/T3000 G4 Low Voltage NA/JP Uninterruptible Power System	J2R01A
HPE R/T3000 G4 High Voltage NA/JP Uninterruptible Power System	J2R02A
HPE R/T3000 G4 High Voltage INTL Uninterruptible Power System	J2R04A
HPE R/T3000 G4 High Voltage INTL Uninterruptible Power System	J2Q99A
HPE R/T3000 G4 High Voltage INTL Uninterruptible Power System	J2R05A
HPE R/T3000 G4 High Voltage INTL Uninterruptible Power System	J2R03A

HA

Additional Options

R7000 Uninterruptible Power System (UPS)

HPE R7000 4U 50A High Voltage NA/JP Uninterruptible Power System
HPE R7000 4U IEC-32A High Voltage INTL Uninterruptible Power System

R5000 Uninterruptible Power System (UPS)

HPE R5000 3U L630 High Voltage NA/JP Uninterruptible Power System
HPE R5000 3U IEC309-32A High Voltage INTL Uninterruptible Power System

NOTE: Please see the [HPE Line Interactive Single Phase UPS QuickSpecs](#) for information on additional options and product specifications.

HPE UPS Options

HPE R/T2200 G4 Extended Runtime Module	J2R09A
HPE R/T3000 G4 Extended Runtime Module	J2R10A
HPE 2U Rack/Tower UPS Shipping Kit	L4Q11A

NOTE: To learn more, please visit the [HPE Uninterruptible Power Systems \(UPS\) web page](#).

HPE USB and SD Options**HPE Enterprise Mainstream Flash Media Kits for Memory Cards**

HPE 32GB microSD Mainstream Flash Media Kit	700139-B21
HPE 8GB microSD Enterprise Mainstream Flash Media Kit	726116-B21
HPE 8GB USB Enterprise Mainstream Flash Media Drive Key Kit	737953-B21
HPE Dual 8GB microSD Enterprise Midline USB Kit	741279-B21

HPE Support Services**Installation & Start-up Services**

HPE Installation ML/DL Series 10 Service	U7WZ5E
HPE Startup ML/DL Series 10 Service	U7WZ7E

Foundation Care

HPE 3 year Foundation Care Next business day DL20 Gen9 Service	H1AH3E
HPE 3 year Foundation Care Next business day with DMR DL20 Gen9 Service	H1AH4E
HPE 3 year Foundation Care 24x7 DL20 Gen9 Service	H1AH9E
HPE 3 year Foundation Care 24x7 with DMR DL20 Gen9 Service	H1AJ0E
HPE 3 year Foundation Care 24x7 with CDMR DL20 Gen9 Service	H1APOE
HPE 3 year Foundation Care Next business day with CDMR DL20 Gen9 Service	H1AN7E

Proactive Care

HPE 3 year Proactive Care 24x7 DL20 Gen9 Service	H1AJ1E
HPE 3 year Proactive Care 24x7 with DMR DL20 Gen9 Service	H1AJ2E
HPE 3 year Proactive Care 24x7 with CDMR DL20 Gen9 Service	H1AP1E

Memory

HPE Standard Memory UDIMMs has passed the rigorous Hewlett Packard Enterprise qualification and testing processes. The memory subsystem in this server supports UDIMMs. The server supports single-rank and dual-rank DDR4 UDIMMs operating at up to 2133 MHz DIMM speeds.

Memory Population guidelines The server supports two channels per processor with two DIMMs per channel for a total of four DIMMs per DL20 Gen9 Server.

General Memory Population Rules and Guidelines:

- Only UDIMMs are supported on DL20 Gen9. No support for RDIMMs and LRDIMMs.
- All the channels in a system run at the fastest common frequency.
- Both single DIMM per channel and dual DIMMs per channel are supported at 2133MHz.

Intel Gen9 Supported Memory Bandwidth for HPE ProLiant Gen9 Intel® Xeon® E3-1200v5 Series Processor Family

Memory Bandwidth and Capacity				
[DIMM Type]	Unbuffered with ECC DIMMs (UDIMMs)			
HPE SKU P/N	805667-B21	819880-B21	805669-B21	805671-B21
DIMM Rank	Single Rank	Single Rank	Dual Rank	Dual Rank
DIMM Capacity	4GB	8GB	8GB	16GB
Voltage	Std Voltage 1.2V	Std Voltage 1.2V	Std Voltage 1.2V	Std Voltage 1.2V
DIMM Native Speed (MT/s)	2133	2133	2133	2133
SLOTS THAT CAN BE POPULATED				
4 slot servers	4	4	4	4
MAXIMUM CAPACITY (GB)				
	16	32	32	64
POPULATED DIMM SPEED (MT/s)				
1 DIMM Per Channel	2133	2133	2133	2133
2 DIMM Per Channel	2133	2133	2133	2133
3 DIMM Per Channel		n/a		

Memory

Intel Gen9 Supported Memory Bandwidth for HPE ProLiant Gen9 Intel® Xeon® E3-1200v6 Series Processor Family

[DIMM Type]	Unbuffered with ECC DIMMs (UDIMMs)	
HPE SKU P/N	862974-B21	862976-B21
DIMM Rank	Single Rank	Dual Rank
DIMM Capacity	8GB	16GB
Voltage	Std Voltage 1.2V	Std Voltage 1.2V
DIMM Native Speed (MT/s)	2400	2400
SLOTS THAT CAN BE POPULATED		
4 slot servers	4	4
MAXIMUM CAPACITY (GB)		
	32	64
POPULATED DIMM SPEED (MT/s)		
1 DIMM Per Channel	2400	2400
2 DIMM Per Channel	2400	2400
3 DIMM Per Channel	n/a	n/a

DIMM slot and configuration diagram

UDIMM maximum configuration (1 CPU model)

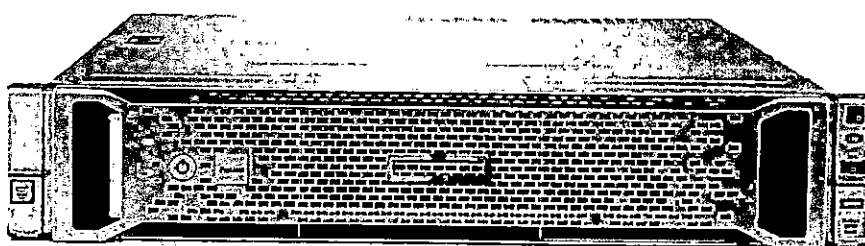
Population order; start with "A" first, "B" second, "C" third, etc.

CPU 1		
	Slot #	Population order
Chnl 2	1	B
	2	D
CPU 1		
	Slot #	Population order
Chnl 1	3	A
	4	C

**Hewlett Packard
Enterprise**

HPE ProLiant DL180 Gen9 Server

The new standard for growing data center needs



Meets the needs of SMB and budget-conscious data centers

For years, the HPE ProLiant DL180 Server (formerly the DL380e Gen8 Server) has met the needs of small- to medium-sized businesses (SMBs), large enterprises, and service providers alike. And with the Gen9 release, this server platform is even better.

By including the optimal combination of performance and affordability—coupled with a broad range of storage drive configurations and options—HPE ProLiant DL180 Gen9 Server delivers the flexibility and scalability you need for the varied demands of 2U rack deployments and applications.

So if your SMB or enterprise is looking for affordability, flexibility, and growth options—delivered in a single server with a balanced design—then the HPE ProLiant DL180 Gen9 Server is the right choice.

Ideal for your storage needs

A variety of storage configurations and options—enhanced by a choice of storage controllers—enables this server to support a wide range of storage workloads. You can use the DL180 Gen9 Server for small to medium databases, file serving, Windows® storage, and even the most demanding Big Data applications like Apache™ Hadoop®, which require the right mix of compute and storage.

Designed for scalability, high availability, and efficiency

With workload-optimized processors, 16 DIMM slots, 92 percent efficient power supply, ASHRAE A3/A4¹ compliance (for higher ambient temperature support), option capability, and redundancy features, the ProLiant DL180 Gen9 Server offers the high availability required for growing workloads—making it a perfect match for and hyperscale environments.

The simple and compact design provides features that are easy to configure and enhanced efficiency and agility with HPE Infrastructure management. The rest is IT service delivery.

High storage density

Ready to expand to meet your growing needs.

Simple design

Flexible configurations provide the options you need today, as well as the capacity and scalability for future growth.

Automated management

For accelerating IT service delivery; streamline management with HPE OneView—the software-defined management platform that delivers automation simplicity across servers, storage, and networking.

¹ See hpe.com/servers/ASHRAE for details.

000061

Data sheet

Technical specifications

In the following table, bold text designates a new or improved feature, as compared to the HPE ProLiant DL380e Gen8 Server.

HPE ProLiant DL180 Gen9 Server	
Compute	Up to 2 Intel® Xeon® E5-2600 v3/v4 Series, 4/6/8/10/12/14/16/18 Cores , PCIe 3.0, up to 6 available slot(s)
Memory	HPE SmartMemory (16) DDR4 , up to 2400 MHz (1 TB max)
Storage	Standard HPE Dynamic Smart Array B140i, optional HPE Smart Array Controllers, and HPE Smart HBAs via PCIe stand-up cards
Battery	HPE DL/ML/SL 96 W Smart Storage Battery to support the standup controllers
HPE SmartDrive	16 SFF/12 LFF max, HDD/SSD, M.2 enabled
Networking	Embedded 2x 1GbE, optional FlexibleLOM slot on riser
VGA/Serial/USB/SD ports	1 VGA , 0 Serial, 4 USB 3.0, 1 microSD, Dual microSD optional
GPU Support	Single-Wide and Active (1)
System ROM	UEFI and Legacy BIOS
Converged management	HPE OneView with HPE iLO Advanced
Support management	HPE Insight Online with enhanced mobile application
Embedded management	HPE iLO 4, HPE Intelligent Provisioning, HP SUM, HPE RESTful Interface Tool, HPE Scripting Tools for Microsoft® Windows Server® PowerShell
Power and cooling	Up to 92 percent efficient (80 PLUS gold certified), 550 W multi-output, 900 W non-RPS Hot swap fans with optional redundancy
Industry compliance	ASHRAE A3 and A4, ENERGY STAR®
Location Discovery Services	Optional
Form factor/Chassis Depth	Rack (2U), 23.9" (SFF), 23.9" (LFF)
Serviceability—easy install rails	Standard
Warranty	3/1/1

QuickSpecs: hpe.com/info/quickspecs

HPE Services

- Our **Consulting** services provide advice and guidance to safely move your workloads to newer technologies.
- HPE implementation and installation services enable faster, more reliable startup of your new ProLiant Gen9 servers, and our support portfolio allows you to get connected and get back to business fast.
- We recommend HPE **Proactive Care** for ProLiant Gen9 servers to prevent issues and resolve problems quickly and efficiently.
- HPE **Foundation Care** provides a choice of coverage levels and response times for hardware and software support.

• **Datacenter Care** enables you to operate and evolve your IT environment at a lower cost with more agility, including our **Flexible Capacity** Service to acquire IT without impacting tal budget.

support technology lets you tap into the knowledge of millions of devices and thousands of experts to stay informed and in control, anywhere, any time.

Learn more at
hpe.com/servers/DL180gen9



Sign up for updates

★ Rate this document


**Hewlett Packard
Enterprise**

© 2014–2016 Hewlett Packard Enterprise Development LP. The information contained without notice. The only warranties for Hewlett Packard Enterprise products and services are set statements accompanying such products and services. Nothing herein should be construed as cc Hewlett Packard Enterprise shall not be liable for technical or editorial errors or omissions contain

Microsoft, Windows, and Windows Server are either registered trademarks or trademarks of Microsoft Corporation in the United States and other countries. Intel Xeon is a trademark of Intel Corporation in the U.S. and other countries. Apache Hadoop is either registered trademark or trademark of the Apache Software Foundation in the United States and other countries. SD and microSD are trademarks or registered trademarks of SanDisk Corporation in the United States and other countries.

4AA5-4157ENW, April 2016, Rev. 4

LLMP

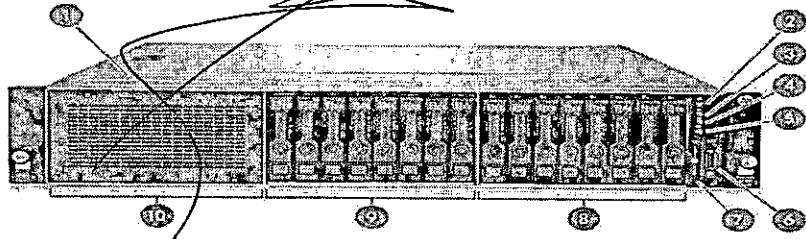
QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Overview

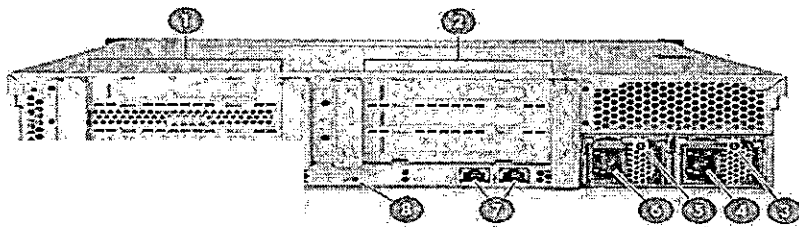
HP ProLiant DL180 Generation9 (Gen9)

The new standard for growing data center needs. Redefining an optimized 2U server designed with the right balance of expandability, performance, and reliability—all in a new compact form factor. The right mix of components for a deal platform for SMBs and enterprises running...



Front View

1. Access Panel (Top Cover)
2. Power On/Standby button and system power LED
3. Health LED
4. NIC status LED
5. UID button/LED
6. USB 2.0 connector
7. Serial label pull tab
8. Fixed 8-bay SFF drive cage (box 3)
9. 8-bay SFF drive cage bay (box 2, for the second 8-bay SFF drive cage option)
10. HP Media Bay (box 1, for the optical drive cage option)



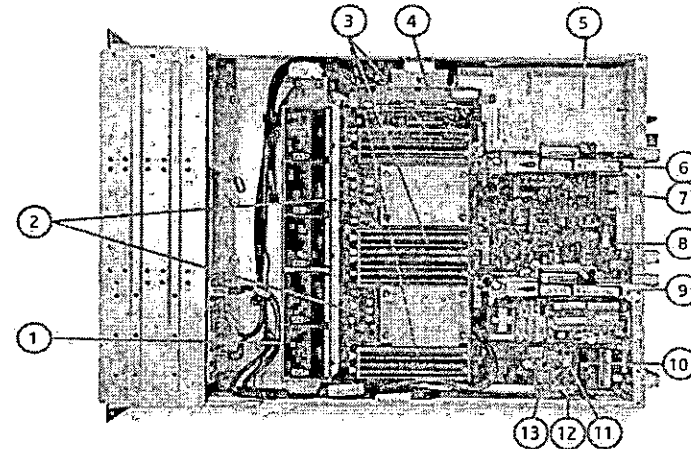
th processor 1)
with processor 2)
onal)

QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Overview

6. Power Supply 1 Power Connector (Optional)
7. NIC connectors
8. UID LED
9. Video Connector
10. USB 3.0 Connectors
11. Dedicated iLO connector (optional)



Internal View

1. Fan cage shown with 5 Hot-swap fans (for 2P Redundancy)
2. 2 Processors, heatsink showing, with HP Smart Socket Guide
3. DDR4 DIMM slots. Shown fully populated in 16 slots (8 per processor)
4. Optional HP Smart Storage Battery
5. Entry level power supply bay (1x900W shown)
NOTE: RPS (with one module) shown in the picture above.
6. Connection for second (optional) riser (Required second CPU)
7. Embedded 2x1 GbE NIC
8. Flexible LOM sideband signal connector
9. Primary PCIe riser, standard
10. Dedicated iLO module connector
11. MicroSD card slot
12. SATA optical drive connector
13. Internal USB 3.0 connector (for USB flash devices)

QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Standard Features

NOTE: For more information regarding Intel Xeon processors, please see the following <http://www.intel.com/xeon>.

Processor Model	CPU frequency	Cores	L3 Cache	Power	QPI	DDR4 Hz
d	2.6GHz	10	25MB	105W	9.6GT/s	2133
	2.3GHz	10	25MB	105W	9.6GT/s	2133
	1.8GHz	12	30MB	65W	9.6GT/s	2133
	2.6GHz	8	20MB	90W	8.0GT/s	1866
	2.4GHz	8	20MB	85W	8.0GT/s	1866
	1.8GHz	8	20MB	55W	8.0GT/s	1866
	3.0GHz	4	10MB	105W	8.0GT/s	1866
	2.4GHz	6	15MB	85W	8.0GT/s	1866
	1.9GHz	6	15MB	85W	6.4GT/s	1600
	E5-2603v3	1.6GHz	6	15MB	85W	6.4GT/s

Chipset Intel® C610 Series Chipset
 One of the following Intel® E5-2600v3 Processor Family depending on model
 NOTE: For more information regarding Intel chipsets, please see the following URL: <http://www.intel.com/products/server/chipsets/>.

On System Management Chipset HP iLO (Firmware HP iLO4 2.0) 2GB NAND
 NOTE: For more information visit: <http://www.hp.com/go/ilo>.
 One of the following depending on model

Memory Type: HP SmartMemory
 One of the following depending on model
 DDR4 Registered (RDIMM) or Load Reduced (LRDIMM)
 DIMM Slots Available 16 (8 DIMM slots per processor, 4 channels per processor, 2 DIMMs per channel)
 Maximum Capacity (LRDIMM) 512GB (16 x 32GB LRDIMM @2133MHz)
 Maximum Capacity (RDIMM) 512GB (16 x 32GB RDIMM @2133MHz)

Advanced ECC uses single device data correction to detect and correct single and all multi-bit error that occurs within a single DRAM chip.
 Memory online spare mode detects a rank that is degrading and switches operation to the spare rank.

Ethernet Adapter

QuickSpecs

HP ProLiant DL180

(Gen9)

Standard Features

Primary Riser (Optional)	Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Form Factor	Notes
	1	PCIe 3.0	x8	x8		Full-height, full-length slot	
	2	PCIe 3.0	x8	x8		Full-height, half-length slot	
	3	PCIe 3.0	x8	x8		Full-height, half-length slot	
NOTE: Bus Width data indicates the number of physical electrical lanes running to the connector.							
Primary Riser (Optional)	Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Form Factor	Notes
	1	PCIe 3.0	x16	x16		Full-height, full-length slot	
	2	PCIe 3.0	x8	x8		Full-height, half-length slot	
Riser with Flexible LOM (Optional)	Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Form Factor	Notes
	1	PCIe 3.0	x8	x8		Full-height, full-length slot	
	2	PCIe 3.0	x8	x8		Full-height, half-length slot	
	3	Flexible LOM				Full-height, half-length slot	Can only be used for flexible LOMs
NOTE: This riser is mandatory for installing Flexible LOMs & has to be installed in Primary riser slot. NOTE: When populating slots on second riser, a second processor must be installed.							

Storage Controller Entry Models HP Dynamic Smart Array B140i Controller
 One of the following depending on model
 NOTE: Provides support for up to 10 SATA drives and data transmission speeds up to 6Gb/s and supports RAID 0, 1 & 5.
 Base Models HP Dynamic Smart Array B140i Controller
 HP H240 FIO Smart Host Bus Adapter
 NOTE: H240 Provides support for up to 8 SAS/SATA drives, data transmission speeds up to 12Gb/s and supports RAID 0, 1 & 5.
 Storage Models HP Flexible Smart Array P840/4G FIO Controller
 NOTE: P840 Provides support for up to 16 SAS/SATA drives, data transmission speeds up to 12Gb/s.
 Performance Models HP Flexible Smart Array P840/4G FIO Controller
 NOTE: P840 Provides support for up to 16 SAS/SATA drives, data transmission speeds up to 12Gb/s.

Internal Storage Devices One of the following
 Optical Drives Optional: DVD-ROM, DVD-RW
 NOTE: This option available with all 8SFF drive bay models only.
 Hard Drives None ship standard
 Hard Drive Bays 8 SFF drive bays total with Optical Bay
 Optional: +8SFF drive bay (total of 16SFF drive bays)
 NOTE: The Optical Drive bay is not available with +8SFF drive bay optional upgrade.
 8 LFF drive bays total without Optical Bay
 NOTE: Optical drive is not supported on LFF Chassis.
 12 LFF drive bays total without Optical Bay
 Up to 4 Non-hot plug SATA 3.5" drives

QuickS

Standard Feat

HP ProLiant DL180 Generation9 (Gen9)

Maximum Internal Storage	Configuration	Capacity
One of the following depending on model	Hot Plug SFF SATA	32TB
	Hot Plug LFF SAS	96.0TB
	Hot Plug LFF SATA	96.0TB
	Hot Plug SFF SAS SSD	30.7TB
	Hot Plug SFF SATA SSD	25.6TB
	Hot Plug LFF SATA SSD	19.2TB
	Non-Hot Plug LFF SATA	32TB

Power Supply HP 550W F10 Power Supply
 One of the following depending on model HP 800W/900W Gold AC Power Input Module
 HP Entry-Level Power Supplies provide lower-cost options for customers trying to balance their need for enterprise class efficiency and reliability while maintaining lowest possible hardware costs. All Entry-Level power supply options have been designed specifically for HP ProLiant Gen9 Essential Series servers.

The HP 550W F10 Power Supply is the standard, non-redundant AC power supply option for most HP ProLiant Gen9 Essential servers. It features Silver-level (89%) certified power efficiency with a set of features optimized for the Gen9 Essential-series rack and tower servers.

All pre-configured servers ship with a standard 6-foot IEC C-13/C-14 jumper cord (A0K02A). This jumper cord is also included with each standard AC power supply option kit. If a different power cord is required, please check the ProLiant Power Cables web page.

To review the power requirements for your selected system, please use the HP Power Advisor Tool located at <http://www.hp.com/go/hppoweradvisor>.

Power specifications and technical content for all HP Server power supplies can be found at <http://www.hp.com/go/proliant/powersupply>.

System Fans	Non-redundant	Redundant
One of the following depending on model	2 fans	4 fans
	4 fans	5 fans

2P model
 NOTE: Customers may separately purchase redundant fans with the 725571-B21 option kit. Additional fans (two) are also included in -B21 processor option kits when upgrading from one processor to two processors.

Interfaces	Video	1 (Vaux Support)
	LOM Network Ports	2x1 GbE ports
	HP iLO Remote Management Network Port	1 GbE (Optional)
	SD Slot	1 Micro SD
	NOTE: The SD slot is not a hot-pluggable device. Customers should not attempt to plug an SD card into the SD slot while the server is powered.	
	Up to 4 USB ports (standard); Front: 1xUSB 2.0 std; (1xUSB3.0 optional upgrade with quick release ears)	

HP/HP/HP/HP/HP

QuickSpecs

Standard Features

HP ProLiant DL180 Generation9 (Gen9)

Rear: 2xUSB 3.0
 Internal: 1xUSB 3.0
 NOTE: 8LFF & 12LFF drive cage models with Quick release latch rack ears supports front USB 3.0.

Operating Systems and Virtualization Software Support for ProLiant Servers
 Microsoft Windows Server
 Red Hat Enterprise Linux (RHEL)
 SUSE Linux Enterprise Server (SLES)
 Oracle Solaris
 VMware
 NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: <http://www.hp.com/go/ossupport> and our driver download page <http://www.hp.com/support/DL180Gen9>.

Upgradeability Upgradeable to two processors (24 cores)
 One of the following depending on model Up to 16 DIMM slots available
 NOTE: To take advantage of DIMMs 9-16, a second processor must be installed.
 FlexibleLOM slot for 1Gigabit or 10 Gigabit Ethernet or QDR/FDR InfiniBand networking options
 Optional 2 slot riser (x16, x8)
 NOTE: To take advantage of the additional 2 PCI slot upgrade, a second processor must be installed.
 Redundant Power Supply
 Redundant Fan
 Optical Drive (8 SFF/16 SFF only)

Industry Standard Compliance
 ACPI 2.0b Compliant
 PCIe 3.0 Compliant
 PXE Support
 WOL Support
 Microsoft® Logo certifications
 USB 3.0 Support
 ASHRAE A3/A4
 NOTE: Supports A3 & A4 extended ambience.
 NOTE: Refer to technical specifications section for more details.

Graphics Integrated Matrox G200eH2 video standard
 • 1280 x 1024 (32 bpp)
 • 1920 x 1200 (16 bpp)

HP Server UEFI/Legacy ROM HP Server UEFI/Legacy ROM
 Unified Extensible Firmware Interface (UEFI) is an industry standard that provides better manageability and more secured configuration while interacting with your server at boot time. HP ProLiant Gen9 platform defaults to UEFI and can be factory or field configured for Legacy BIOS Boot Mode.
 NOTE: The UEFI System Utilities function is analogous to the HP ROM-Based Setup Utility (RBSU) of legacy BIOS. For more information, please visit <http://www.hp.com/go/proliantuefi/docs>.
 UEFI enables numerous new capabilities specific to HP ProLiant servers such as:
 • Secure Boot
 • Operating system specific functionality
 • Support for > 2.2 TB (using GPT) boot drives

QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Standard Features

- USB 3.0 Stack
- Embedded UEFI Shell
- Mass Configuration Deployment Tool using HP RESTful API.
- PXE boot support for IPv6 networks
- Boot support for option cards that only support a UEFI option ROM

For more information please visit <http://www.hp.com/go/proliant/uefi>.
NOTE: For UEFI Boot Mode, boot environment and OS image installations should be configured properly to support UEFI.
NOTE: HP Legacy FIO Mode Setting (758959-B22) can be selected to configure the system in Legacy mode in the factory.

Form Factor 2U Rack form factor
 One of the following All models ship with Easy Install rails (Cable management arm optional).
 depending on model 8 SFF Drive Bay Version:
 3.44 (8.75 cm) Height x 17.54" (44.55 cm) Width x 23.9" (60.70 cm) Length
 8 LFF Drive Bay Version:
 3.44 (8.75cm) Height x 17.54" (44.55 cm) Width x 23.9" (60.70 cm) Length
 12 LFF Drive Bay Version:
 3.44 (8.75cm) Height x 17.54" (44.55 cm) Width x 23.9" (60.70 cm) Length
 16 SFF Drive Bay Version:
 3.44 (8.75 cm) Height x 17.54" (44.55 cm) Width x 23.9" (60.70 cm) Length

Embedded Management **HP Integrated Lights-Out (HP iLO)** Monitor your servers for ongoing management, service alerting, reporting and remote management with HP iLO. Learn more at <http://www.hp.com/go/iLO>.

UEFI Configure and boot your servers securely with industry standard Unified Extensible Firmware Interface (UEFI). Learn more at <http://www.hp.com/go/ProLiant/uefi>.

HP RESTful API RESTful API is an application programming interface. RESTful Web Service API served by iLO's web server. Learn more at <http://www.hp.com/go/restfulapi>.

Provision servers by discovering and deploying 1 to few servers with Intelligent Provisioning. Learn more at <http://www.hp.com/go/intelligentprovisioning>.

HP's embedded remote support, when used with Insight Online direct connect or HP Insight Remote Support, allows HP ProLiant servers to transmit hardware events directly to HP or an HP Authorized Partner for automated phone home support. Learn more at <http://www.hp.com/go/insightonline/info>.

Optimize firmware and driver updates with HP Smart Update solutions. Learn more at <http://www.hp.com/go/smartupdate>.

HP SIM allows you to monitor the health of your HP ProLiant Servers and HP Integrity Servers, and also provides you with basic support for non-HP servers. HP SIM also integrates with HP SUM to provide quick and seamless firmware updates. Learn more at <http://www.hp.com/go/sim>.

HP OneView Standard HP OneView Standard can inventory, monitor, alert, and report on your G6, G7, Gen8, and Gen9 servers, while using the HP OneView user interface. Annual

QuickSpecs

HP ProLiant DL180 Generation9 (G)

Standard Features

support is optionally available. Learn more at <http://www.hp.com/go/oneview>.

Scripting Tool Kit and Windows PowerShell Provision 1 to many servers using your own scripts to discover and deploy them with HP Scripting Tool Kit for Windows and Linux or HP Scripting Tools for Windows PowerShell. Learn more at <http://www.hp.com/go/ProLiantSTK> or <http://www.hp.com/go/powershell>.

HP RESTful Interface Tool HP RESTful Interface tool is a scripting tool to provision servers using RESTful API Interface to discover and deploy servers at scale. Learn more at <http://www.hp.com/go/restfulapi>.

HP iLO Mobile Application Enables the ability to access, deploy, and manage your server anytime from anywhere from select smartphones and mobile devices. For additional information please visit: <http://www.hp.com/go/iLO/mobileapp>.

HP Insight Online HP Insight Online, available at no additional cost as part of your HP warranty, Care Pack or contractual support agreement with HP, is a personalized dashboard for simplified tracking of IT operations and support information from anywhere, anytime. Learn more at <http://www.hp.com/go/insightonline/info>.

Security Power-on password
 Serial interface control
 Administrator's password
 TPM 1.2
 UEFI

Warranty This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners resellers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

NOTE: Server Warranty includes 3-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at: <http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>.

QuickSpec

HP ProLiant DL180 Generation9 (Gen9)

Optional Features

Embedded Management	iLO Essentials	HP iLO Essentials is the preferred license for small and medium business that provides remote access through Text Console via SSH, Dynamic power capping, Email-based Alerting and proactive notifications. For more information, visit http://www.hp.com/go/iLO/essentials .
	iLO Scale-Out	HP iLO Scale-Out is the preferred license built for web hosting, cloud service providers, and high performance computing data centers, managing massive scale out environments. This license offers sophisticated scripting tools that provides remote access through Text Console via SSH, Dynamic power capping, Email-based Alerting and proactive notifications. For more information, visit http://www.hp.com/go/iLO/scale-out .
	iLO Advanced	HP iLO Advanced licenses offer smart remote functionality without compromise, for all HP ProLiant servers. The license includes the full integrated remote console, virtual keyboard, video, and mouse (KVM), multi-user collaboration, console record and replay, and GUI-based and scripted virtual media and virtual folders. You can also activate the enhanced security and power management functionality. Learn more about HP iLO Advanced at http://www.hp.com/go/iLOadvanced .

Server Management	HP Insight Control	HP Insight Control, lets you deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. For more information, see http://www.hp.com/go/insightcontrol .
	HP OneView Advanced	HP OneView Advanced is converged management that eliminates infrastructure complexity with automation simplicity. This modern architecture is designed to accelerate your IT operations across servers, storage, and network resources using software-defined approaches and automation, see http://www.hp.com/go/oneview .

Rack and Power Infrastructure	HP Rack and Power Infrastructure products and services create highly efficient and intelligent solutions for existing or new IT data centers. HP Rack and Power infrastructure solutions – rack infrastructure, power protection and management, performance optimized data centers (PDDs) – are the foundation you are looking for to help secure your long-term IT success. These products are designed to help you react to changes in the industry. They deliver efficient, easy-to-use capabilities to manage, monitor, deploy and provision infrastructure from entry to enterprise. As an industry leader, HP is uniquely positioned to address the key concerns of power, cooling, cable management and system access. Learn more at HP Rack and Power Infrastructure.
-------------------------------	--

High Performance Clusters	HP Cluster Platforms are specifically engineered, factory-integrated large-scale ProLiant clusters optimized for High Performance Computing, with a choice of servers, networks and software. Operating system options include specially priced offerings for Red Hat Enterprise Linux and SUSE Linux Enterprise Server, as well as Microsoft Windows HPC Server. A Cluster Platform Configurator simplifies ordering. http://www.hp.com/go/clusters .
---------------------------	--

HP Insight Cluster Management Utility (CMU) is an HP-licensed and HP-supported suite of tools that are used for lifecycle management of hyperscale clusters of Linux ProLiant systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective. <http://www.hp.com/go/cmu>.

NOTE: High Performance Computing (HPC) interconnect technologies are available for this server as part of the HP Cluster Platform portfolio. These high-speed InfiniBand and Gigabit interconnects are fully supported by HP when integrated within an HP cluster. Flexible, validated solutions can be defined with the help of configuration tools. <http://www.hp.com/techservers/clusters/ucp/index.html>.

HPC Interconnects	NOTE: High Performance Computing (HPC) interconnect technologies are available for this server under these high-speed interconnects are fully supported by HP
-------------------	--



QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Optional Features

when they are part of these configure to order clusters. Solutions can be defined with the help of configuration tools. Please visit the following URL to configure HPI InfiniBand Interconnects: <http://www.hp.com/techservers/clusters/ucp/index.htm>

Storage Software	Whether you need to solve a specific data protection, archiving, or storage challenge, or deliver on strategic consolidation, compliance, or continuity initiative HP storage software. Our storage software helps you reduce costs, simplify storage protect vital assets and respond faster to business opportunities. Storage software that gets the job done:
------------------	---

- **Data Protection and Recovery Software**
Whether you're a large enterprise or a smaller business, HP data protection and recovery software will cost-effectively protect you against disaster and ensure business continuity.
- **Data Archive and Migration Software**
HP's storage software enables you to comply with data retention and retrieval requirements, improve application performance, and reduce costs by efficiently migrating infrequently accessed or less valuable data to lower cost storage.
- **Storage Resource Management Software (SRM)**
HP's storage resource management software reduces operational costs and provides the command and control foundation you need to efficiently manage and visualize your physical and virtual environments.
- **Data Replication Software**
HP offers array-based and host-based replication software for use in disaster recovery, testing, application development and reporting.
- **Storage Device Management Software**
Maximize your investment in HP storage and networking with software that enables hardware-specific configuration, performance tuning and connectivity management.
- **HP StoreVirtual VSA**
With HP StoreVirtual VSA you can use the power of virtualization to create a virtual array within your host server. Manage it as a single pool of shared storage capacity, and scale it to match your evolving needs. HP ProLiant Gen9 servers include a 3-year limited license for HP StoreVirtual VSA software with 1TB of capacity at no extra cost. Simply select to install HP StoreVirtual VSA software during server setup within Intelligent Provisioning. More information, instructional videos, and free console management software are available at <http://www.hp.com/go/vsa1TB>.

NOTE: For more information about Storage Software including QuickSpecs, please see: <http://www.hp.com/go/storage/software>.

One Config Simple (SCE)	SCE is a guided self-service tool to help sales and non-technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes. If you require "custom" rack configuration or configuration for products not available in SCE, please contact HP's Customer Business Center or an Authorized Partner for assistance. http://www.hp.com/products/configurator .
-------------------------	---

QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Service and Support

Service and Support **HP Technology Services for Industry Standard Servers**
HP Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to HP to help prevent problems and solve issues faster. Our support technology lets you to tap into the knowledge of millions of devices and thousands of experts to stay informed and in control, anywhere, any time.

Protect your business beyond warranty with HP Care Pack Services
HP Care Pack Services enable you to order the right service level, length of coverage and response time as you purchase your new server, giving you full entitlement for the term you select.

Optimized Care **Supports maintaining servers at optimum performance availability**

HP Proactive Care with 24x7 coverage, three year Care Pack Service
HP Proactive Care helps prevent problems and stabilize IT by utilizing secure, real-time, predictive analytics and proactive consultations when your products are connected to HP. This Care Pack Service combines three years' proactive reporting and advice with our 24x7 coverage and enhanced escalation management, four hour hardware response time and two hour call back for software questions on leading industry standard software running on your HP ProLiant server.
<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855ENW.pdf>

Standard Care Package **Supports maintaining high level of server availability**

Foundation Care 24x7, three-year Care Pack Service
HP Foundation Care 24x7 connects you to HP 24 hours a day, seven days a week for assistance on resolving issues. Hardware onsite response within four hours if needed; collaborative software included in this Care Pack service provides troubleshooting assistance on industry leading software running on your HP server. Simplify your support experience and make HP your first call for hardware or software questions.
<http://h20195.www2.hp.com/v2/GetDocument.aspx?docname=4AA4-8876ENW&cc=us&lc=en>

Related Services **HP ProLiant Server Hardware Installation**
Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner.
<http://h20195.www2.hp.com/v2/GetPDF.aspx/5981-9356EN.pdf>

Factory Express for Servers and storage
HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed. For more information on Factory Express services for your specific server model please contact your sales representative or go to: <http://www.hp.com/go/factory-express>.

Data Privacy Services
Through better media management, HP Data privacy services help manage and protect data, reduce the risk of unauthorized access to private information and help meet compliance requirements. Retention services allow you to keep drives and other devices upon failure, our removal services allow you to safely retire IT assets, our data sanitization and our recovery services allow you to safely retire IT assets, retaining value from the hardware. <http://www.hp.com/services/dataprivacy>

Cloud-based services can be found at: <http://www.hp.com/go/cpc>

Combine Proactive Care with innovative, automated monitoring tools and proactive services. Combining Proactive Care with our remote support technology such as Insight Online provides you with expert advice and cloud-based automated IT support, helping to prevent unplanned down time and solve issues. For more information, visit: <http://www.hp.com/go/proactiveinsightexperience>

QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Service and Support

HP Support Center Personalized online support portal with access to information, tools and experts to support HP business products. Submit support cases online, chat with HP experts, access support resources or collaborate with peers. Learn more <http://www.hp.com/go/hpsc>

HP's Support Center Mobile App** allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime.
HP Insight Remote Support and HP Support Center are available at no additional cost with a HP warranty, HP Care Pack or HP contractual support agreement.

** HP Support Center Mobile App is subject to local availability.

Parts and Materials HP will provide HP-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HP due to malfunction.

For more information To learn more on HP ProLiant servers, please contact your HP sales representative or HP Authorized Channel Partner or visit: <http://www.hp.com/services/proliant>

QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Pre-configured Models

For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

1. Pre-configured models ship with the configurations below. Options can be selected from the Core or Additional options section of this QuickSpecs.
2. HP does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.
3. If you desire a custom configuration please see "Configuration Information - Factory Integrated Models" section of this QuickSpecs.
4. Not all models are available in all regions. Check with your local country HP offices for availability.

NOTE: All Pre-configured Models come populated with some hard drive blanks installed. Should the customer need additional hard drive blanks, they can order more using either P/N 666987-B21: HP SFF Hard Drive Blank Kit or P/N 666986-B21: HP LFF Hard Drive Blank Kit.

NOTE: All pre-configured servers ship with a standard 6-foot IEC C-13/C-14 jumper cord (ADK02A). This jumper cord is also included with each standard AC power supply option kit. If a different power cord is required, please check the ProLiant Power Cables web page.

Caution: HP recommends that a minimum of two people are required for all Rack Server installations. Please refer to your installation instructions for proper tools and number of people to use for any installation.

[SKU Number]	Entry Models		Base Models	
	778452-B21	778453-B21	778454-B21	778455-B21
Model Name	HP ProLiant DL180 Gen9 E5-2603v3 1P 8GB-R B140i 4LFF NHP SATA 550W PS Entry Server	HP ProLiant DL180 Gen9 E5-2603v3 1P 8GB-R B140i 8LFF Hot Plug SATA 550W PS Entry Server	HP ProLiant DL180 Gen9 E5-2609v3 1P 8GB-R H240 8LFF SAS 550W PS Base Server	HP ProLiant DL180 Gen9 E5-2609v3 1P 8GB-R H240 8SFF SAS 550W PS Base Server
Processor	Intel® Xeon® E5-2603v3		Intel® Xeon® E5-2609v3	
Number of Processors	One			
Memory	8GB (1x8GB Registered DIMMs, 2133 MHz) NOTE: Due to processor limitation, these DDR4 DIMMs will operate at 1600 MHz in this model.			
Network Controller	HP Ethernet 1Gb 2-port i350 Adapter			
Storage Controller	HP Dynamic Smart Array B140i		HP H240 FIO Smart Host Bus Adapter	
Hard Drive	None ship standard; includes 4 LFF hard drive blanks	None ship standard; includes 6 LFF hard drive blanks	None ship standard; includes 6 SFF hard drive blanks	
Internal Storage	4 LFF HDD Bays (Non Hot Plug)	8 LFF HDD Bays	8 SFF HDD Bays	
Optical Drive Bay	Not Available			1; (Optional: DVD-ROM, DVD-RW)
PCI-Express Slots	3 Standard (1-FL/FH, 2-FH/HL)			
Power Supply	(1) HP 550W FIO Power Supply			
Fans	2 hot swap fans, non-redundant			
Management	Management (standard), Intelligent Provisioning (standard), iLO Essentials (optional)			
Form Factor	Rack (2U), HP Easy Install Rails			
Warranty	Warranty includes 3-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response.			

QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Pre-configured Models

[SKU Number]	Storage Models	Energy Star Models
	778456-B21	778457-B21
Model Name	HP ProLiant DL180 Gen9 E5-2623v3 1P 16GB-R P840 12LFF SAS 900W PS Storage Server	HP ProLiant DL180 Gen9 E5-2623v3 1P 32GB-R P840/4G 16SFF ES Server
Processor	Intel® Xeon® E5-2623v3	
Number of Processors	One	
Memory	16GB (2x8GB Registered DIMMs, 2133 MHz)	32GB (2x16GB Registered DIMMs, 2133 MHz)
Network Controller	HP Ethernet 1Gb 2-port i350 Adapter	
Storage Controller	HP Flexible Smart Array PB40/4G FIO Controller	
Hard Drive	None ship standard	
Internal Storage	12 LFF HDD Bays	16 SFF HDD Bays
Optical Drive Bay	Not Available	1; (Optional: DVD-ROM, DVD-RW)
PCI-Express Slots	3 Standard (1-FL/FH, 2-FH/HL)	
Power Supply	(1) HP 900W Redundant Power Supply	(2) HP 900W Redundant Power Supply
Fans	4 hot plug fans, redundant	5 hot plug fans, redundant
Management	iLO Management (standard), Intelligent Provisioning (standard), iLO Essentials (optional)	
Energy Star	Meets Energy Star requirements	
Form Factor	Rack (2U), HP Easy Install Rails	Rack (2U), HP Easy Install Rails with CMA
Warranty	Server Warranty includes 3-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response.	

Country Code Key
 xx1 = B21 Worldwide
 NOTE: The -B21 WW SKU is to be ordered in all countries other than Japan or PRC.
 xx1 = 291 Japan
 xx1 = AA1 PRC

COPIED

QuickSpecs

DL180 Generation9 (Gen9)

Configuration Information - Factory Integrated Models

This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on configurable product offerings and requirements.

1. Factory Integrated Models must start with a CTO Server.
2. FIO indicates that this option is only available as a factory installable option.
3. All Factory Integrated Models will be populated with sufficient hard drive blanks based on the number of initial hard drives ordered with the server.
4. Some options may not be integrated at the factory. Contact your local sales representative for additional information.

Step 1: Base Configuration (choose one of the following configurable models)

[Chassis]	HP ProLiant DL180 Gen9 Non-hot Plug LFF Configure-to-order Server	HP ProLiant DL180 Gen9 Hot Plug 8LFF Configure-to-order Server	HP ProLiant DL180 Gen9 Hot Plug 8SFF Configure-to-order Server	HP ProLiant DL180 Gen9 Hot Plug 12LFF Configure-to-order Server
SKU Number	754525-B21	754524-B21	754523-B21	775506-B21
Processor	2 (optional) x HP Smart Socket Guide			
DIMM Slots	16 DIMM slots for RDIMM, LRDIMM DDR4 Memory			
Storage Controller	HP Dynamic Smart Array B140i			
PCIe	3 PCIe slots (+3 PCI slots available with upgrade option, second processor required)			
Drive Cage	4LFF or 8LFF Non Hot Plug	8LFF Hot Plug (+4LFF optional field upgradable)	8SFF Hot Plug (+8SFF Optional)	12LFF Hot Plug
Network Controller	HP Ethernet 1Gb 2-port i350 Adapter			
Fans	2 hot swap fans, non-redundant			
Management	iLO Management (standard), Intelligent Provisioning (standard), iLO Essentials (optional)			
USB	1 front, 1 internal, 2 rear			
Ears	Optional	HP Quick Release Ears	Optional	HP Quick Release Ears

NOTE: HP ProLiant DL180 Gen9 Non-hot plug chassis (P/N- 754525-B21) supports both 4LFF and 8LFF configurations.
NOTE: Thumb screw ears are not supported on Hot Plug LFF Chassis.

Step 2: Choose Required Options (only one of the following from each list unless otherwise noted)

- HP Processors** Select one or two processors from Core options-Processor section below.
- If one processor is desired, select one xxxxxx-L21
 - If two processors are desired, select one xxxxxx-L21 and one xxxxxx-B21.
 - Up to 2 processors supported. Mixing different processor models is not supported.
- um memory speed of the processor. Actual memory speed may depend of DIMMs installed.
J0 Series, the letter preceding the model number indicates the Product mber of CPUs in a Node, 6 is socket/segment designation, 00 = r SKUs and v# (not yet designated) = version number.
Core options-Memory section below.
- inct memory technologies and cannot be mixed within a server. The } servers support LRDIMM and RDIMM.
s generation servers are not qualified or warranted with this HP tMemory is required to realize the memory performance improvements iy listed in this document for Gen9.

QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Configuration Information - Factory Integrated Models

- If only one processor is installed, only half of the total DIMM slots are available. When populating with two processors all DIMM slots are available.
- Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: <http://www.hp.com/go/proliant-energy-efficient>.
- Depending on the memory configuration and processor model, the memory speed may run at 2133MHz, 1866MHz, 1600MHz or 1333MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: <http://www.hp.com/go/ddr4config>.

- Power Supplies - 100 series servers** Select one or more power supplies from Core Options-Power Supplies section below.
- Prior to selecting a power supply option, it is highly recommended that you review your server configuration in the HP Power Advisor tool to determine the right size power supply for your server configuration. The HP Power Advisor is located at: <http://www.hp.com/go/hppoweradvisor>.
 - By RPS Enablement Kit power options, mixing of power supplies in the same RPS enablement kit is not supported. All power supplies must be of the same input voltage, output rating, and efficiency rating. If non-matching power supplies are installed, you may receive an error message and/or experience operational issues with your server.

Step 3: Choose Additional Factory Integratable Options

- HP Unique Options** Select one or more Unique options from Core options section below.
- This section may contain FIO options, please see the Unique options section below.
 - FIO indicates that this option is only available as a factory installable option.
- HP Drives** Select one or more drives from Core options-HP Drives section below.
- The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.
 - Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.
 - The HP ProLiant Gen9 Smart Storage solutions are equipped with re-designed Small Form Factor (SFF 2.5 in) and Large Form Factor (LFF 3.5 in) hot plug carriers for HP Qualified Hard Drives and Solid State Drives. These new carriers provide status and activity indicators as well as caution indicators for "Do Not Remove".

- HP Flexible LOM** Select a FlexibleLOM from Core options-Networking section below.
- Only one FlexibleLOM can be added to the server. These options are upgradeable and can be changed from the original configuration after the server is shipped.
 - For 10Gb adapters, a minimum of two Gigabytes (2 GB) of server memory is required per each adapter.
 - Please see the QuickSpecs for Technical Specifications and additional information: <http://www.hp.com/go/ProLiantNICs>.
- Select a standup NIC adapter from Core options-Networking section below.
- Please see the QuickSpecs for Technical Specifications and additional information: <http://www.hp.com/go/ProLiantNICs>.
 - These options are upgradeable and can be changed from the original configuration after the server is shipped.
 - For 10Gb adapters, a minimum of two Gigabytes (2 GB) of server memory is required per each adapter.

QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Configuration Information - Factory Integrated Models

HP Graphics Options Select one or more graphics adapter from Additional options section below.

- Please see the HP Power Advisor for estimated power consumption of your individual system configuration prior to installing GPUs. The HP Power Advisor is located at: <http://www.hp.com/go/hppoweradvisor>.
- This section may contain FIO options, please see HP Computation & Graphics Accelerators section below.

HP Cooling Options Select one or more Fan Kits from Core options section below.

- This section may contain FIO options, please see HP Cooling Options section below.
- FIO indicates that this option is only available as a factory installable option.

HP Storage Controllers Select one or more Storage options from Additional options section below.

- The embedded B140i controller will operate in UEFI only mode. For legacy support an additional controller will be needed, and for CTO orders please also select the Legacy mode settings part, 758959-B22
- This section may contain FIO options, please see HP Storage Controllers section below.
- FIO indicates that this option is only available as a factory installable option.

HP I/O Expansion Options Select one or more Riser Kit options from Core options section below.

- To take advantage of the additional PCI slot upgrade, the second processor must be installed.
- This section may contain FIO options, please see HP I/O Expansion Options section below.
- FIO indicates that this option is only available as a factory installable option.

HP Rail Kits Select one type of rail kit from Additional options section below.

- Please take a moment to review the installation documentation that comes with the server to help you with the installation of your Gen9 server.
- To assist in the installation of the server into the rack, an optional installation tool is available by contacting your local services representative (p/n 695539-001).
- See HP Rack Options in Additional Options section of this QuickSpecs for more rack kit choices.

Caution: HP recommends that a minimum of two people are required for all Rack Server installations. Please refer to your installation instructions for proper tools and number of people to use for any installation.

HP PARTS

QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Core Options

NOTE: Some options may not be integrated at the factory. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

HP Unique Options	HP DL180 Gen9 Dedicated iLO Management Port Kit	
	HP DL180 Gen9 8SFF Hard Drive Cage/Backplane Kit	
	HP DL180 Gen9 12LFF Hot Plug Enablement Kit	
	NOTE: This can be used only with BLFF Hot Plug Chassis and contains the controller cables required for upgrade.	
	HP DL180 Gen9 3 Slot x8 PCI-E Riser Kit	
	HP DL180 Gen9 x16 PCI-E Riser Kit	
	HP Quick-release Latch Rack Ears FIO Kit	
	NOTE: This option kit is required for Security Bezel. This option also provides one front USB 3.0 upgrade.	
	HP AHCI-Enable FIO Setting	801845-B21
	NOTE: This needs to be selected when Advanced Host Controller Interface mode is required with B140i controller.	

HP Processors	Entry Processors - E5-2600v3 series Processors	
	HP DL180 Gen9 Intel® Xeon® E5-2609v3 (1.9GHz/6-core/15MB/85W) Processor Kit	733925-B21
	HP DL180 Gen9 Intel® Xeon® E5-2609v3 (1.9GHz/6-core/15MB/85W) FIO Processor Kit	733925-L21
	HP DL180 Gen9 Intel® Xeon® E5-2603v3 (1.6GHz/6-core/15MB/85W) Processor Kit	733929-B21
	HP DL180 Gen9 Intel® Xeon® E5-2603v3 (1.6GHz/6-core/15MB/85W) FIO Processor Kit	733929-L21
	Base Processors - E5-2600v3 series Processors	
	HP DL180 Gen9 Intel® Xeon® E5-2640v3 (2.6GHz/8-core/20MB/90W) Processor Kit	733916-B21
	HP DL180 Gen9 Intel® Xeon® E5-2640v3 (2.6GHz/8-core/20MB/90W) FIO Processor Kit	733916-L21
	HP DL180 Gen9 Intel® Xeon® E5-2630v3 (2.4GHz/8-core/20MB/85W) Processor Kit	733918-B21
	HP DL180 Gen9 Intel® Xeon® E5-2630v3 (2.4GHz/8-core/20MB/85W) FIO Processor Kit	733918-L21
	HP DL180 Gen9 Intel® Xeon® E5-2630Lv3 (1.8GHz/8-core/20MB/55W) Processor Kit	763226-B21
	HP DL180 Gen9 Intel® Xeon® E5-2630Lv3 (1.8GHz/8-core/20MB/55W) FIO Processor Kit	763226-L21
	HP DL180 Gen9 Intel® Xeon® E5-2620v3 (2.4GHz/6-core/15MB/85W) FIO Processor Kit	733921-L21
	HP DL180 Gen9 Intel® Xeon® E5-2620v3 (2.4GHz/6-core/15MB/85W) Processor Kit	733921-B21
	HP DL180 Gen9 Intel® Xeon® E5-2623v3 (3GHz/4-core/10MB/105W) Processor Kit	779830-B21
	HP DL180 Gen9 Intel® Xeon® E5-2623v3 (3GHz/4-core/10MB/105W) FIO Processor Kit	779830-L21
	Performance Processors - E5-2600v3 series Processors	
	HP DL180 Gen9 Intel® Xeon® E5-2660v3 (2.6GHz/10-core/25MB/105W) Processor Kit	733912-B21
	HP DL180 Gen9 Intel® Xeon® E5-2660v3 (2.6GHz/10-core/25MB/105W) FIO Processor Kit	733912-L21

Quick

HP ProLiant DL180 Generation9 (Gen9)

Core Options

HP DL180 Gen9 Intel® Xeon® E5-2650v3 (2.3GHz/10-core/25MB/105W) Processor Kit	733914-B21
HP DL180 Gen9 Intel® Xeon® E5-2650v3 (2.3GHz/10-core/25MB/105W) FIO Processor Kit	733914-L21
HP DL180 Gen9 Intel® Xeon® E5-2650Lv3 (1.8GHz/12-core/30MB/65W) Processor Kit	763222-B21
HP DL180 Gen9 Intel® Xeon® E5-2650Lv3 (1.8GHz/12-core/30MB/65W) FIO Processor Kit	763222-L21

HP Memory

Registered DIMMs (RDIMMs) for E5-2600v3 Series

HP 4GB (1x4GB) Single Rank x8 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726717-B21
HP 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726718-B21
HP 8GB (1x8GB) Dual Rank x8 DDR4-2133 CAS-15-15-15 Registered Memory Kit	759934-B21
HP 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726719-B21
HP 32GB (1x32GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	728629-B21

Load Reduced DIMMs (LRDIMMs) for E5-2600v3 Series

HP 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit	726720-B21
HP 32GB (1x32GB) Quad Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit	726722-B21

HP Standard Memory

HP 4GB (1x4GB) Single Rank x8 DDR4-2133 CAS-15-15-15 Registered Standard Memory Kit	803026-B21
HP 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Standard Memory Kit	803028-B21

NOTE: These memory options are available as standalone only and can not be configured in the factory. These are standard memory DIMMs with no Smart Memory features.

HP Optical Drives

HP DL180 Gen9 Optical Disk Drive Enablement Kit	725582-B21
HP 9.5mm SATA DVD-ROM JackBlack Gen9 Optical Drive	726536-B21
HP 9.5mm SATA DVD-RW JackBlack G9 Optical Drive	726537-B21
HP Mobile USB Non-Leaded System DVD RW Drive	701498-B21

NOTE: Optical drive is not supported on LFF models.

HP Drives

SAS Hot Plug SFF (2.5-Inch) Enterprise (ENT) Drives

HP 1.8TB 12G SAS 10K rpm SFF (2.5-inch) SC Enterprise 512e 3yr Warranty Hard Drive	791034-B21
HP 1.2TB 12G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	781518-B21
HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) SC Dual Port Enterprise 3yr Warranty Hard Drive	718162-B21
HP 900GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	785069-B21
HP 900GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652589-B21
HP 600GB 12G SAS 15K rpm SFF (2.5-inch) SC 512e Enterprise 3yr Warranty Hard Drive	748387-B21
HP 600GB 12G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	759212-B21
HP 600GB 12G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	781516-B21

QuickSpecs

HP ProLiant DL180 Gen9

Core Options

HP 600GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652583-B21
HP 450GB 12G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	759210-B21
HP 450GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652572-B21
HP 300GB 12G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	759208-B21
HP 300GB 12G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	785067-B21
HP 300GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652564-B21
HP 146GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652605-B21
SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives	
HP 2TB 12G SAS 7.2K rpm SFF (2.5-inch) SC 512e 1yr Warranty Hard Drive	765466-B21
HP 1TB 12G SAS 7.2K rpm SFF (2.5-inch) SC 512e 1yr Warranty Hard Drive	765464-B21
HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652749-B21
HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652745-B21
SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives	
HP 600GB 12G SAS 15K rpm LFF (3.5-inch) SC Converter Enterprise 3yr Warranty Hard Drive	765424-B21
HP 450GB 12G SAS 15K rpm LFF (3.5-inch) SC Converter Enterprise 3yr Warranty Hard Drive	737394-B21
HP 300GB 12G SAS 15K rpm LFF (3.5-inch) SC Converter Enterprise 3yr Warranty Hard Drive	737261-B21
SAS Hot Plug LFF (3.5-inch) Midline (MDL) Drives	
HP 8TB 12G SAS 7.2K rpm LFF (3.5-inch) SC 512e Helium 1yr Warranty Hard Drive	793703-B21
HP 6TB 12G SAS 7.2K rpm LFF (3.5-inch) SC 512e Helium 1yr Warranty Hard Drive	793699-B21
HP 6TB 12G SAS 7.2K rpm LFF (3.5-inch) SC Midline 512e 1yr Warranty Hard Drive	765259-B21
HP 6TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	761477-B21
HP 6TB 12G SAS 7.2K rpm LFF (3.5-inch) SC 512e Performance 1yr Warranty Hard Drive	793671-B21
HP 4TB 12G SAS 7.2K rpm LFF (3.5-inch) SC Midline 512e 1yr Warranty Hard Drive	765257-B21
HP 4TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	695510-B21
HP 4TB 12G SAS 7.2K rpm LFF (3.5-inch) SC 512e Performance 1yr Warranty Hard Drive	793669-B21
HP 3TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652766-B21
HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652757-B21
HP 1TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652753-B21
SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives	
HP 2TB 6G SATA 7.2K rpm SFF (2.5-inch) SC 512e 1yr Warranty Hard Drive	765455-B21
HP 1TB 6G SATA 7.2K rpm SFF (2.5-inch) SC 512e 1yr Warranty Hard Drive	765453-B21
HP 1TB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	655710-B21
HP 500GB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	655708-B21
SATA Hot Plug LFF (3.5-inch) Midline (MDL) Drives	
HP 8TB 6G SATA 7.2K rpm LFF (3.5-inch) SC 512e Helium 1yr Warranty Hard Drive	793695-B21
HP 6TB 6G SATA 7.2K rpm LFF (3.5-inch) SC 512e Helium 1yr Warranty Hard Drive	793683-B21
HP 6TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 512e 1yr Warranty Hard Drive	765255-B21
HP 6TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	753874-B21
HP 6TB 6G SATA 7.2K rpm LFF (3.5-inch) SC 512e Performance 1yr Warranty Hard Drive	793667-B21
HP 4TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 512e 1yr Warranty Hard Drive	765253-B21
HP 4TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	693687-B21

QuickSpecs

Core Options

HP ProLiant DL180 Generation9 (Gen9)

HP 4TB 6G SATA 7.2K rpm LFF (3.5-inch) SC 512e Performance 1yr Warranty Hard Drives	793665-B21
HP 3TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	628061-B21
HP 2TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	658079-B21
HP 1TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	657750-B21
HP 500GB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	658071-B21
SATA Non-Hot Plug LFF (3.5-Inch) Midline (MDL) Drives	
HP 4TB 6G SATA 7.2K rpm LFF (3.5in) Non-hot Plug Standard 1yr Warranty Hard Drive	801888-B21
HP 3TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	628065-B21
HP 3TB 6G SATA 7.2K rpm LFF (3.5in) Non-hot Plug Standard 1yr Warranty Hard Drive	801885-B21
HP 2TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	659339-B21
HP 2TB 6G SATA 7.2K rpm LFF (3.5in) Non-hot Plug Standard 1yr Warranty Hard Drive	801884-B21
HP 1TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	659337-B21
HP 1TB 6G SATA 7.2K rpm LFF (3.5in) Non-hot Plug Standard 1yr Warranty Hard Drive	801882-B21
HP 500GB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	659341-B21
12G SAS Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives	
HP 1.6TB 12G SAS Mainstream Endurance SFF 2.5-in ENT Mainstream SC 3yr Wty H2 Solid State Drive	779176-B21
HP 800GB 12G SAS Mainstream Endurance SFF 2.5-in ENT Mainstream SC 3yr Wty H2 Solid State Drive	779172-B21
HP 400GB 12G SAS Mainstream Endurance SFF 2.5-in ENT Mainstream SC 3yr Wty H2 Solid State Drive	779168-B21
HP 200GB 12G SAS Mainstream Endurance SFF 2.5-in ENT Mainstream SC 3yr Wty H2 Solid State Drive	779164-B21
HP 200GB 12G SAS Write Intensive SFF 2.5-in SC 3yr Wty Solid State Drive	802578-B21
HP 400GB 12G SAS Write Intensive SFF 2.5-in SC 3yr Wty Solid State Drive	802582-B21
HP 800GB 12G SAS Write Intensive SFF 2.5-in SC 3yr Wty Solid State Drive	802586-B21
12G SAS Hot Plug SFF (2.5-Inch) Enterprise Value Solid State Drives	
HP 1.6TB 12G SAS Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	762263-B21
HP 800GB 12G SAS Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	762261-B21
HP 1.92TB 12G SAS Read Intensive SFF 2.5-in SC 3yr Wty Solid State Drive	802891-B21
12G SAS Hot Plug LFF (3.5-Inch) Enterprise Value Solid State Drives	
HP 1.6TB 12G SAS Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive	762272-B21
HP 800GB 12G SAS Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive	762270-B21
Hot Plug SFF (2.5-Inch) Enterprise Mainstream Solid State Drives	
6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream Solid State Drive	691868-B21

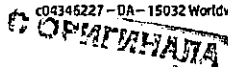
QuickSpecs

Core Options

HP ProLiant DL180 Generation9 (Gen9)

HP 400GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691866-B21
HP 200GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691864-B21
HP 100GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691862-B21
HP 200GB 6G SATA Write Intensive-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804639-B21
HP 400GB 6G SATA Write Intensive-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804665-B21
HP 800GB 6G SATA Write Intensive-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804671-B21
HP 1.2TB 6G SATA Write Intensive-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804677-B21
6G SATA Hot Plug SFF (2.5-Inch) Enterprise Value Solid State Drives	
HP 1.6TB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	757339-B21
HP 800GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	717973-B21
HP 600GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	739898-B21
HP 480GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	717971-B21
HP 300GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	739888-B21
HP 240GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	717969-B21
HP 240GB 6G SATA Read Intensive SFF 2.5-in SC 3yr Wty Solid State Drive	789135-B21
HP 480GB 6G SATA Read Intensive SFF 2.5-in SC 3yr Wty Solid State Drive	789145-B21
HP 960GB 6G SATA Read Intensive SFF 2.5-in SC 3yr Wty Solid State Drive	789155-B21
HP 80GB 6G SATA Read Intensive-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804575-B21
HP 120GB 6G SATA Read Intensive-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804581-B21
HP 240GB 6G SATA Read Intensive-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804587-B21
HP 480GB 6G SATA Read Intensive-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804593-B21
HP 800GB 6G SATA Read Intensive-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804599-B21
HP 1.6TB 6G SATA Read Intensive-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804605-B21
6G SATA Hot Plug RI-3 SFF (2.5-Inch) SC Solid State Drives	
HP 3.84TB 6G SATA Read Intensive-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816929-B21
HP 1.92TB 6G SATA Read Intensive-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816919-B21
HP 960GB 6G SATA Read Intensive-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816909-B21
HP 480GB 6G SATA Read Intensive-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816899-B21
HP 240GB 6G SATA Read Intensive-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816889-B21
HP 120GB 6G SATA Read Intensive-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816879-B21
6G SATA Hot Plug SFF Value Endurance (2.5-Inch) Enterprise Value G1 Solid State Drives	
HP 480GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty G1 Solid State Drive	756657-B21
HP 240GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty G1 Solid State Drive	756636-B21
HP 120GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty G1 Solid State Drive	756621-B21
6G SATA Hot Plug SFF (2.5-Inch) Enterprise Light G1 Solid State Drives	

20067



QuickSpec

HP ProLiant DL180 Generation9 (Gen9)

Core Options

HP 960GB 6G SATA Light Endurance SFF 2.5-in SC Enterprise Light 3yr Wty G1 Solid State Drive	756601-B21
HP 200GB 6G SATA Mixed Use-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804613-B21
HP 800GB 6G SATA Mixed Use-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804625-B21
HP 1.6TB 6G SATA Mixed Use-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804631-B21
HP 480GB 6G SATA Mixed Use-2 SFF 2.5-in SC 3yr Wty Solid State Drive	832414-B21
6G SATA Hot Plug MU-3 SFF (2.5-inch) SC Solid State Drives	
HP 1.92TB 6G SATA Mixed Use-3 SFF 2.5-in SC 3yr Wty Solid State Drive	817011-B21
HP 960GB 6G SATA Mixed Use-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816995-B21
HP 480GB 6G SATA Mixed Use-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816985-B21
HP 240GB 6G SATA Mixed Use-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816975-B21
HP 120GB 6G SATA Mixed Use-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816965-B21
6G SATA Hot Plug SFF Value Endurance (2.5-inch) Enterprise Value M1 Solid State Drives	
HP 800GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty M1 Solid State Drive	764929-B21
HP 480GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty M1 Solid State Drive	764927-B21
HP 240GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty M1 Solid State Drive	764925-B21
HP 120GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty M1 Solid State Drive	764923-B21
6G SATA Hot Plug SFF (2.5-inch) Enterprise Boot Solid State Drives	
HP 120GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Boot 3yr Wty Solid State Drive	717965-B21
HP 80GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Boot 3yr Wty Solid State Drive	734360-B21
6G SATA Hot Plug LFF (3.5-inch) Enterprise Mainstream Solid State Drives	
HP 800GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691860-B21
HP 400GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691856-B21
HP 200GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691854-B21
HP 100GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691852-B21
HP 200GB 6G SATA Write Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804642-B21
HP 400GB 6G SATA Write Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804668-B21
HP 800GB 6G SATA Write Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804674-B21
HP 1.2TB 6G SATA Write Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804680-B21
6G SATA Hot Plug LFF Value Endurance (3.5-inch) Converter Enterprise Value G1 Solid State Drives	
HP 800GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty G1 Solid State Drive	756660-B21
HP 240GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty G1 Solid State Drive	756639-B21
HP 120GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty G1 Solid State Drive	756624-B21

QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Core Options

6G SATA Hot Plug LFF Value Endurance (3.5-inch) Converter Enterprise Value M1 Solid State Drives	
HP 800GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty M1 Solid State Drive	764945-B21
HP 480GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty M1 Solid State Drive	764943-B21
HP 240GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty M1 Solid State Drive	764941-B21
HP 120GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty M1 Solid State Drive	764939-B21
6G SATA Hot Plug LFF (3.5-inch) Enterprise Value Solid State Drives	
HP 1.6TB 6G SATA Value Endurance LFF 3.5-in SC Converter Enterprise Value 3yr Wty Solid State Drive	757342-B21
HP 800GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive	718189-B21
HP 600GB 6G SATA Value Endurance LFF 3.5-in SC Converter Enterprise Value 3yr Wty Solid State Drive	739900-B21
HP 480GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive	718183-B21
HP 300GB 6G SATA Value Endurance LFF 3.5-in SC Converter Enterprise Value 3yr Wty Solid State Drive	739890-B21
HP 240GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive	718177-B21
HP 240GB 6G SATA Read Intensive LFF 3.5-in SC Converter 3yr Wty Solid State Drive	789137-B21
HP 480GB 6G SATA Read Intensive LFF 3.5-in SC Converter 3yr Wty Solid State Drive	789147-B21
HP 960GB 6G SATA Read Intensive LFF 3.5-in SC Converter 3yr Wty Solid State Drive	789157-B21
HP 80GB 6G SATA Read Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804578-B21
HP 120GB 6G SATA Read Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804584-B21
HP 240GB 6G SATA Read Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804590-B21
HP 480GB 6G SATA Read Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804596-B21
HP 800GB 6G SATA Read Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804602-B21
HP 1.6TB 6G SATA Read Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804608-B21
6G SATA Hot Plug LFF (3.5-inch) RI-3 SCC SSD	
HP 3.84TB 6G SATA Read Intensive-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816933-B21
HP 1.92TB 6G SATA Read Intensive-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816923-B21
HP 960GB 6G SATA Read Intensive-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816913-B21
HP 480GB 6G SATA Read Intensive-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816903-B21
HP 240GB 6G SATA Read Intensive-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816893-B21
HP 120GB 6G SATA Read Intensive-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816883-B21
6G SATA Hot Plug LFF (3.5-inch) Enterprise Light G1 Solid State Drives	

HP ProLiant DL180 Generation9 (Gen9)

HP 960GB 6G SATA Light Endurance LFF 3.5-in SC Converter ENT Light 3yr Wty G1 Solid State Drive	756604-B21
HP 200GB 6G SATA Mixed Use-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804616-B21
HP 800GB 6G SATA Mixed Use-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804628-B21
HP 1.6TB 6G SATA Mixed Use-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804634-B21
HP 480GB 6G SATA Mixed Use-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	832417-B21
6G SATA Hot Plug LFF (3.5-inch) MU-3 SCC SSD	
HP 1.92TB 6G SATA Mixed Use-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	817015-B21
HP 960GB 6G SATA Mixed Use-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816999-B21
HP 480GB 6G SATA Mixed Use-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816989-B21
HP 240GB 6G SATA Mixed Use-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816979-B21
HP 120GB 6G SATA Mixed Use-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816969-B21
6G SATA Hot Plug LFF (3.5-inch) Enterprise Boot Solid State Drives	
HP 120GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Boot 3yr Wty Solid State Drive	718171-B21
HP 80GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Boot 3yr Wty Solid State Drive	734362-B21
M.2 SSD	
HP Dual 120GB Value Endurance Solid State M.2 Enablement Kit for ProLiant ML/DL Servers	777894-B21
HP 120GB Value Endurance Solid State M.2 Enablement Kit for ProLiant ML/DL Servers	788028-B21
NOTE: M.2 drives go in PCIe slot and use B140i SATA controller only.	
Hard Drive Blank Kits	
HP Large Form Factor Hard Drive Blank Kit	666986-B21
HP Small Form Factor Hard Drive Blank Kit	666987-B21
Hard Drive Kits	
HP DL180 Gen9 8SFF Hard Drive Cage/Backplane Kit	725572-B21
HP DL180 Gen9 12LFF Hot Plug Enablement Kit	725574-B21

HP Networking

1 Gigabit Ethernet adapters	
HP Ethernet 1Gb 4-port 331T Adapter	647594-B21
HP Ethernet 1Gb 2-port 332T Adapter	615732-B21
HP Ethernet 1Gb 2-port 361T Adapter	652497-B21
HP Ethernet 1Gb 4-port 366T Adapter	811546-B21
10 Gigabit Ethernet adapters	
HP Ethernet 10Gb 2-port 530SFP Adapter	652503-B21
HP Ethernet 10Gb 2-port 530T Adapter	656596-B21
HP Ethernet 10Gb 2-port 561T Adapter	716591-B21
HP Ethernet 10Gb 2-port 560SFP+ Adapter	665249-B21
HP Ethernet 10Gb 2-port 546SFP+ Adapter	779793-B21
FlexibleLOM Adapters	
HP Ethernet 1Gb 4-port 331FLR Adapter	629135-B22
HP Ethernet 1Gb 4-port 366FLR Adapter	665240-B21
HP Ethernet 10Gb 2-port 561FLR-T Adapter	700699-B21
HP Ethernet 10Gb 2-port 534FLR-SFP+ Adapter	700751-B21
HP Ethernet 10Gb 2-port 533FLR-T Adapter	700759-B21

QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Core Options

HP Ethernet 10Gb 2-port 546FLR-SFP+ Adapter	779799-B21
HP Ethernet 10Gb 2-port 560FLR-SFP+ Adapter	665243-B21
HP InfiniBand	
HP InfiniBand FDR 2-port 545QSFP Adapter	702211-B21
HP InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+FLR-QSFP Adapter	764285-B21
HP InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+QSFP Adapter	764284-B21
HP InfiniBand QDR/Ethernet 10Gb 2-port 544+FLR-QSFP Adapter	764286-B21
HP I/O Expansion Options	
HP DL180 Gen9 3 Slot x8 PCI-E Riser Kit	725569-B21
HP DL180 Gen9 x16 PCI-E Riser Kit	725570-B21
HP DL180 Gen9 FlexibleLOM Enablement Kit	780965-B21
HP Power Supplies	
HP Entry-Level Power Supplies	
HP 550W FIO Power Supply Kit	730941-B21
NOTE: The above power supply option is 80Plus Silver-certified with an efficiency rating of up to 89%. Power specifications and technical content for all HP Server power supplies can be found at http://www.hp.com/go/proliant/powersupply.	
HP 800W Gold (Redundant)/900W (Non-Redundant) AC Power Input Module	744689-B21
NOTE: HP Server RPS Backplane Kit (P/N: 745813-B21) is required for this power supply.	
NOTE: Up to two of these option kits can be selected in one system.	
NOTE: This kit is only available as option kit and cannot be factory installed in the server.	
NOTE: With just one power supply module installed, up to 900W wattage is supported while with both power supply modules installed in RPS mode, up to 800W is supported	
HP Server Redundant Power Supply Backplane Kit	745813-B21
NOTE: This kit is only available as option kit and cannot be factory installed in the server.	
NOTE: The above power supply option is 80Plus Gold-certified with an efficiency rating of up to 92%. Each power backplane kit (745813-B21) can support up to two (2) AC power input modules (744689-B21). Power specifications and technical content for all HP Server power supplies can be found at http://www.hp.com/go/proliant/powersupply.	
HP 800W Gold (Redundant)/900W (Non-Redundant) AC Power Input FIO Module	813534-B21
NOTE: HP Server RPS FIO Backplane Kit (P/N: 813535-B21) is required for this power supply.	
NOTE: Up to two of these option kits can be installed in one system.	
NOTE: This FIO kit only be bought integrated in the server. It cannot be ordered as standalone option after server purchase.	
NOTE: With just one power supply module installed, up to 900W wattage is supported while with both power supply modules installed in RPS mode, up to 800W is supported	
HP Server Redundant Power Supply Backplane FIO Kit	813535-B21
NOTE: Required for RPS capability.	
NOTE: This FIO kit only be bought integrated in the server. It cannot be ordered as standalone option after server purchase.	
NOTE: The above power supply option is 80Plus Gold-certified with an efficiency rating of up to 92%. Each power backplane kit (813535-B21) can support up to (2) AC power input modules (813534-B21). Power specifications and	

OPPIVHATA

Handwritten signature

QuickSpecs

DL180 Generation9 (Gen9)

Core Options

technical content for all HP Server power supplies can be found at <http://www.hp.com/go/proliant/powersupply>.

HP Computation and Graphics Accelerators	HP NVIDIA Quadro K2200 Graphics Accelerator	J0G89A
	HP NVIDIA Quadro K4200 Graphics Accelerator	J0G90A
	NOTE: 1 Graphics Adapter Kit 725576-B21 must be selected per K4200.	
	HP DL180 Gen9 Graphic Card Adapter Kit	725576-B21
	NOTE: Must select 2 processor if 2 graphic cards are selected.	
	NOTE: Must select 800W Gold (redundant)/900W non-redundant power supply when 2 graphic cards are selected.	
	NOTE: Only the above listed Graphics cards are HP standard supported options in this server.	
	NOTE: The NVIDIA Quadro modules are supported only on 64-bit versions of Linux and Windows operating systems as well as on Virtual Machine client operating systems. The supported bare metal operating systems are RHEL6, SLES 11 and Windows Server 2012 R2.	
	NOTE: Please see the HP Power Advisor for estimated power consumption of your individual system configuration prior to installing GPUs. The HP Power Advisor is located at: http://www.hp.com/go/hppoweradvisor .	
HP Cooling Options	HP DL180 Gen9 Redundant Fan FIO Kit	779841-B21
	NOTE: Upgrades a non-redundant server with one additional hot-plug fan (FIO only).	
	HP DL180 Gen9 Redundant Fan Kit	725571-B21
	NOTE: Customers can upgrade to a redundant fan configuration with the purchase of above option kit (contains 2 Fans).	

QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Additional Options

NOTE: Some options may not be integrated at the factory. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

Embedded Management	HP iLO Advanced	
	HP iLO Advanced including 1yr 24x7 Technical Support and Updates Single Server License	S12485-B21
	HP iLO Advanced 1 Server License with 3yr 24x7 Tech Support and Updates	BD505A
	HP iLO Advanced including 1yr 24x7 Technical Support and Updates E-LTU	E6U59ABE
	HP iLO Advanced including 3yr 24x7 Technical Support and Updates E-LTU	E6U64ABE
	HP iLO Essentials	
	HP Integrated Lights-Out Essentials including 3yr 24x7 Tech Support and Updates Single Svr License	BD774A
	HP Integrated Lights-Out Essentials including 1yr 24x7 Tech Support and Updates Single Svr License	BD775A
	HP Integrated Lights-Out Essentials including 3yr 24x7 Technical Support and Updates E-LTU	E6U61ABE
	HP Integrated Lights-Out Essentials including 1yr 24x7 Technical Support and Updates E-LTU	E6U62ABE
	HP iLO Scale-out	
	HP Integrated Lights-Out Scale-Out 3yr 24x7 Tech Support and Updates Flex Quantity License	BD776A
	HP Integrated Lights-Out Scale-Out including 3yr 24x7 Tech Support and Updates Flex Qty E-LTU	BD776AAE
	HP Integrated Lights-Out Scale-Out including 3yr 24x7 Tech Support and Updates Tracking License	BD777A
	HP Integrated Lights-Out Scale-Out 1yr 24x7 Tech Support and Updates Flex Quantity License	BD778A
HP Integrated Lights-Out Scale-Out including 1yr 24x7 Tech Support and Updates Flex Qty E-LTU	BD778AAE	
HP Integrated Lights-Out Scale-Out including 1yr 24x7 Tech Support and Updates Tracking License	BD779A	

HP Converged Infrastructure Management Software	HP OneView Advanced (with HP iLO Advanced)	
	HP OneView incl 3yr 24x7 Supp Phys 1 Svr Lic	ESY34A
	HP OneView incl 3yr 24x7 Supp Flex Qty E-LTU	ESY35AAE
	HP OneView for ProLiant DL Server incl 3yr 24x7 Supp FIO Bundle Physical 1 Svr Lic	ESY43A
	HP OneView Advanced (without HP iLO Advanced)	
	HP OneView w/o iLO including 3yr 24x7 Support 1 Server LTU	P8B24A
	HP OneView w/o iLO including 3yr 24x7 Support Flex Quantity E-LTU	P8B26AAE
	HP OneView w/o iLO including 3yr 24x7 Support FIO 1 Server LTU	P8B31A
	HP OneView w/o iLO Adv incl 3yr 24x7 Supp Phys 1 Svr Lic	ESY38A
	HP OneView w/o iLO Adv incl 3yr 24x7 Supp Flex Qty E-LTU	ESY39AAE
	HP OneView Media Kit Phys No Lic	ESY37A
	HP Operations Analytics for HP OneView LTU	K8G29A
	HP Operations Analytics for HP OneView E-LTU	K8G29AAE
	NOTE: Full licenses of HP OneView Advanced also provide the right-to-use HP Insight Control without additional charge.	
	NOTE: Server provisioning (via 'HP Insight Control server provisioning') is licensed as part of HP OneView Advanced and provides multi-server OS and driver provisioning. Media kit #B0883A can be ordered for a physical copy of this software (USB flash drive).	

Qui

Additional Options

NOTE: Licenses ship without media. The HP OneView Media Kit can be ordered separately, or can be downloaded at: <http://www.hp.com/go/oneview>.
NOTE: Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key.

High Performance Clusters	HP Cluster Management Utility	
	HP Insight Cluster Management Utility 1yr 24x7 Flexible License	QL803B
	HP Insight Cluster Management Utility 3yr 24x7 Flexible License	BD476A
	NOTE: These part numbers can be used to purchase one certificate for multiple licenses and support with a single activation key. Each license is for one node (server). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key. Customer also will receive a support agreement.	
	HP Insight Cluster Management Utility Media	BD477A
	NOTE: For additional license kits please see the QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12612_div/12612_div.html .	
HP PCIe Workload Accelerator Options	Value Endurance (VE) PCIe Workload Accelerators	
	HP 6.4TB FH/HL Value Endurance (VE) PCIe Workload Accelerator	763840-B21
	HP 3.2TB HH/HL Value Endurance (VE) PCIe Workload Accelerator	763838-B21
	HP 1.6TB HH/HL Value Endurance (VE) PCIe Workload Accelerator	763836-B21
	HP 1.3TB HH/HL Value Endurance (VE) PCIe Workload Accelerator	763834-B21
	Light Endurance (LE) PCIe Workload Accelerators	
	HP 5.2TB FH/HL Light Endurance (LE) PCIe Workload Accelerator	775672-B21
	HP 2.6TB HH/HL Light Endurance (LE) PCIe Workload Accelerator	775670-B21
	HP 1.3TB HH/HL Light Endurance (LE) PCIe Workload Accelerator	775668-B21
	HP 1.0TB HH/HL Light Endurance (LE) PCIe Workload Accelerator	775666-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/14528_div/14528_div.html (Worldwide)	

HP ProLiant DL180 Generation9 (Gen9)

Security

HP 2U Security Bezel Kit	666988-B21
NOTE: Quick Release Ear option kit (P/N 725579-B21) is required for installing security bezel.	
HP DL180 Gen9 Thumbscrew Ear FIO Kit	782641-B21
NOTE: Thumbscrew ears are available on SFF models only.	
HP Quick-release Latch Rack Ears FIO Kit	725579-B21
NOTE: Quick-release Latch ears are available on both SFF and LFF models. For 12LFF Models Quick Release Ears are Mandatory.	
NOTE: Quick-release latch ears upgrades front USB from USB 2.0 to USB 3.0-It also supports Security Bezel Kit.	
HP Trusted Platform Module Option	488069-B21
NOTE: The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 has not been tampered with while the offline. For more information about TPM, including a white paper, go to: http://www.hp.com/go/TPM . Not OS pre-installed units will come with the partition required for TPM deployment.	

QuickSpecs

Additional Options

HP ProLiant DL180 Generation9 (Gen9)

NOTE: The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.

HP Storage Controllers	SAS Controllers	
	HP Smart Array Controllers	
	HP Smart Array P440/2GB FBWC 12Gb 1-port Int SAS Controller	820834-B21
	HP Smart Array P440/4GB FBWC 12Gb 1-port Int SAS Controller	726821-B21
	HP Smart Array P840/4GB FBWC 12Gb 2-ports Int SAS Controller	726897-B21
	HP Smart Array P841/4GB FBWC 12Gb 4-ports Ext SAS Controller	726903-B21
	HP Smart Array P441/4GB FBWC 12Gb 2-ports Ext SAS Controller	726825-B21
	HP Smart Array P440/4GB FBWC 12Gb 1-port Int FIO SAS Controller	761872-B21
	NOTE: Includes the HP Smart Storage Battery.	
	HP Smart Array P840/4GB FBWC 12Gb 2-ports Int FIO SAS Controller	761874-B21
	NOTE: Includes the HP Smart Storage Battery.	
	HP Smart Host Bus Adapters	
	HP H240 12Gb 2-ports Int Smart Host Bus Adapter	726907-B21
	HP H240 12Gb 2-ports Int FIO Smart Host Bus Adapter	761873-B21
	HP H241 12Gb 2-ports Ext Smart Host Bus Adapter	726911-B21
	HP Cable Options	
	HP DL180 Gen9 8LFF Smart Array Cable Kit	725577-B21
	HP DL180 Gen9 8SFF Smart Array Cable Kit	725578-B21
	HP DL180 Gen9 8LFF Hot Plug FIO Cable Kit	774868-B21
	HP DL180 Gen9 8LFF Non-hot Plug FIO Cable Kit	774869-B21
	HP DL180 Gen9 8SFF Hot Plug FIO Cable Kit	774870-B21
	HP DL180 Gen9 4LFF Non-hot Plug FIO Cable Kit	776447-B21
	NOTE: One of the above cables is required to be selected depending on the combination of chassis and storage controller. Cable option kit descriptions include the right chassis and storage controllers names.	
	NOTE: FIO indicates that this option is only available as a factory installable option. Please select FIO option if you want the option to be factory installed.	
	NOTE: NHP server chassis (Mod-x) includes SATA cables required to connect drives to embedded B140i SATA controller.	
	Optional Upgrades	
	HP 96W Smart Storage Battery with 145mm Cable for DL/ML/SL Servers	727258-B21
	NOTE: This option is mandatorily required with HP Smart Array controllers. One server can accommodate only 1 Smart Storage Battery that would suffice the requirement of all HP Smart Array controllers.	
	HP SmartCache No Media 24x7 Technical Support 1 Svr License	D7526A
	HP SmartCache No Media 24x7 Technical Support Flexible License	D7527A
	HP SmartCache No Media 24x7 Technical Support Electronic License	D7527AAE
	HP Secure Encryption No Media Flexible License per Drive	D8S84A
	HP Secure Encryption No Media E-LTU per Drive	D8S85AAE

HP Tape Backup	NOTE: For the complete range of tape drives, autoloaders, libraries and media see: http://www.hp.com/go/tape . For hardware and software compatibility of HP tape backup products see: http://www.hp.com/storage/SPOCK and http://www.hp.com/go/ebs . NOTE: For Internal drives to be connected to DL servers please make sure that you order rack mount kit as well.	
	Tape Libraries	
	HP MSL2024 0-Drive Tape Library	AK379A
	HP MSL4048 0-Drive Tape Library	AK381A

QuickSp

P ProLiant DL180 Generation9 (Gen9)

Additional Options

Tape Drives

HP StoreEver LTO-6 Ultrium 6650 SAS External Tape Drive	EH964A
HP StoreEver LTO-6 Ultrium 6250 External Tape Drive	EH970A
HP StoreEver LTO-5 Ultrium 3000 SAS External Tape Drive	EH958B
HP StoreEver LTO-5 Ultrium 3280 SAS External Tape Drive	EH900B
HP StoreEver LTO-4 Ultrium 1760 SAS External Tape Drive	EH920B
HP StoreEver LTO-3 Ultrium 920 SAS External Tape Drive	EH848B

HP Tape Storage Systems

HP StoreEver 1U SAS Rack-mount Kit	AE459B
HP StoreEver LTO-4 Ultrium 1760 SAS (1) in 1U Rack-mount Kit	EH946C
HP StoreEver LTO-5 Ultrium 3280 SAS Tape Drive in 3U Rack-mount	EJ013B
HP StoreEver LTO-5 Ultrium 3000 SAS Tape Drive in 1U Rack-mount	EJ014B
HP StoreEver LTO-6 Ultrium 6250 Tape Drive in 1U Rack-mount Kit	COL99A
HP StoreEver 1/8 G2 LTO-6 Ultrium 6250 FC Tape Autoloader	COH19A
HP StoreEver MSL6480	
HP StoreEver MSL6480 Scalable Base Module	QU625A
HP StoreEver MSL6480 Scaleable Expansion Module	QU626A

HP Disk Backup

HP RDX Removable Disk Backup System	
HP RDX320 USB3.0 External Disk Backup System	B7B63A
HP D3700 Enclosure	QW967A
HP D3600 Enclosure	QW968A
HP RDX+ 500GB External Backup System	B7B66B
HP RDX+ 1TB External Backup System	B7B69B
HP RDX+ External Docking System	C8507B
HP RDX 2TB USB3.0 External Disk Backup System	E7X53B

HP Storage Options

Emulex Fibre Channel HBAs	
HP 81E 8Gb 1-port PCIe Fibre Channel Host Bus Adapter	AJ762B
HP 82E 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AJ763B
HP StoreFabric SN1100E 16Gb Single Port Fibre Channel Host Bus Adapter	C8R38A
HP StoreFabric SN1100E 16Gb Dual Port Fibre Channel Host Bus Adapter	C8R39A
QLogic Fibre Channel HBAs	
HP 82Q 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AJ764A
HP 81Q 8Gb 1-port PCIe Fibre Channel Host Bus Adapter	AK344A
HP StoreFabric SN1000Q 16Gb 1-port PCIe Fibre Channel Host Bus Adapter	QW971A
HP StoreFabric SN1000Q 16Gb 2-port PCIe Fibre Channel Host Bus Adapter	QW972A
Converged Network Adapter	
HP StoreFabric CN1200E 10Gb Converged Network Adapter	E7Y06A
HP StoreFabric CN1100R Dual Port Converged Network Adapter	QW990A

je Disk Enclosures

HP D6000 D13740 Module Disk Enclosure	QQ695A
HP D6000 w/35 4TB 6G SAS 7.2K LFF Dual Port MDL HDD 140TB Bundle	E7W30A
HP D6000 w/70 4TB 6G SAS 7.2K LFF Dual Port MDL HDD 280TB Bundle	E7W31A
HP D6000 w/70 3TB 6G SAS 7.2K LFF Dual port MDL HDD 210TB Bundle	QQ700A
HP D6000 w/70 2TB 6G SAS 7.2K LFF Dual port MDL HDD 140TB Bundle	QQ698A
HP D6000 w/35 3TB 6G SAS 7.2K LFF Dual port MDL HDD 105TB Bundle	QQ699A
HP D6000 w/35 2TB 6G SAS 7.2K LFF Dual port MDL HDD 70TB Bundle	QQ697A

QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Additional Options

HP D2600 w/12 4TB 6G SAS 7.2K LFF Dual Port MDL HDD 48TB Bundle	E7W32A
HP D6000 w/70 8TB 12G SAS 7.2K LFF (3.5in) Dual Port MDL HDD 560TB Bundle	MOT59A
HP D6000 w/70 6TB 12G SAS 7.2K LFF (3.5in) Dual Port MDL HDD 420TB Bundle	MOT57A
HP D6000 w/35 8TB 12G SAS 7.2K LFF (3.5in) Dual Port MDL HDD 280TB Bundle	MOT58A

HP Data Center Racks

HP 11000 G2 Series Racks	
HP 11648 1075mm Pallet Universal Rack	H6J87A
HP 11648 1075mm Shock Universal Rack	H6J88A
HP 11642 1075mm Pallet Universal Rack	H6J65A
HP 11642 1075mm Shock Universal Rack	H6J66A
HP 11642 1200mm Pallet Universal Rack	H6J67A
HP 11642 1200mm Shock Universal Rack	H6J68A
HP 11636 1075mm Pallet Universal Rack	H6J77A
HP 11636 1075mm Shock Universal Rack	H6J78A
HP 11622 G2 1075mm Pallet Universal Rack	H6J83A
HP 11622 G2 1075mm Shock Universal Rack	H6J84A
HP 11614 1075mm Shock Universal Rack	H6J82A

NOTE: Please see the HP 11000 G2 Series Racks QuickSpecs for information on additional racks options and rack specifications.

HP Intelligent Series Rack

HP 647 1075mm Pallet Intelligent Series Rack	BW911A
HP 647 1075mm Shock Intelligent Series Rack	BW912A
HP 647 1200mm Pallet Intelligent Series Rack	BW913A
HP 647 1200mm Shock Intelligent Series Rack	BW914A
HP 642 1075mm Pallet Intelligent Series Rack	BW903A
HP 642 1075mm Shock Intelligent Series Rack	BW904A
HP 642 1200mm Pallet Intelligent Series Rack	BW907A
HP 642 1200mm Shock Intelligent Series Rack	BW908A
HP 636 1075mm Pallet Intelligent Series Rack	BW895A
HP 636 1075mm Shock Intelligent Series Rack	BW896A
HP 842 1075mm Pallet Intelligent Series Rack	BW917A
HP 842 1075mm Shock Intelligent Series Rack	BW918A

NOTE: Please see the HP Intelligent Series Racks QuickSpecs for information on additional racks options and rack specifications.

HP Value Series Rack

HP V142 1075mm deep Pallet 100 series Rack	AF046A
--	--------

NOTE: Please see the HP Value Series Rack QuickSpecs for information on additional racks options and rack specifications.

HP Power Distribution Units (PDUs)

HP Basic Power Distribution Unit (bPDU)	
HP 1.9kVA 120 Volt LS-20 Input (12xNEMA 5-20R) NA/JP Basic PDU	H5M54A
HP 2.8kVA 120 Volt LS-30 Input (18xNEMA 5-20R) NA/JP Basic PDU	H5M55A
HP 3.6kVA 200-240 Volt Detachable C20 Input (12x13) WW Basic PDU	H5M56A
HP 3.6kVA 200-240 Volt Detachable C20 Input (18x13) WW Basic PDU	H5M57A
HP 4.9kVA 208 Volt L6-30 Input (20x13) NA/JP Basic PDU	H5M58A
HP 7.3kVA 230 Volt IEC309 32A Input (20x13) INTL Basic PDU	H5M68A
HP 8.6kVA 208 Volt L15-30 3-Phase Input (18x13) NA/JP Basic PDU	H5M61A
HP 4.9kVA 208 Volt L6-30 Input (24x13/6x19) NA/JP Basic PDU	H5M59A
HP 7.3kVA 230 Volt IEC309 32A Input (24x13/6x19) INTL Basic PDU	H5M70A
HP 8.3kVA 208 Volt CS8265C Input (30x13/6x19) NA/JP Basic PDU	H5M60A

QuickSpecs

Additional Options

HP ProLiant DL180 Generation9 (Gen9)

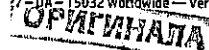
HP 11kVA 230 Volt IEC309 63A Input (30xC13/6xC19) INTL Basic PDU	H5M71A
HP Hardwired 200-240 Volt Input (30xC13/6xC19) WW Basic PDU	H5M75A
HP 5.7kVA 208 Volt L21-20 3-Phase Input (24xC13/3xNEMA 5-20R) NA/JP Basic PDU	H5M63A
HP 8.6kVA 208 Volt L21-30 3-Phase Input (24xC13/3xC19/3xNEMA 5-20R) NA/JP Basic PDU	H5M64A
HP 8.6kVA 208 Volt L15-30 3-Phase Input (24xC13/6xC19) NA/JP Basic PDU	H5M62A
HP 11kVA 400 Volt IEC309 16A 3-Phase Input (30xC13/6xC19) INTL Basic PDU	H5M72A
HP 11kVA 400 Volt IEC309 16A 3-Phase Input (36xC13/6xC19) INTL Basic PDU	H5M73A
HP 11kVA 400 Volt IEC309 30A 3-Phase Input (36xC13/6xC19) NA Basic PDU	H5M67A
HP 19.9kVA 480 Volt IEC309 30A 3-Phase Input (30 Outlet) NA Basic PDU	H3X08A
HP 800VA - 277V Input / 230V Output NA Rack Mount Transformer	H3X09A
HP 2.8kVA 24A Low Voltage NA/JP Modular Power Distribution Unit	252663-D71
HP 4.9kVA 24A High Voltage NA/JP Core Modular Power Distribution Unit	252663-D74
HP 8.3kVA 40A High Voltage NA/JP Core Modular Power Distribution Unit	252663-D75
HP 7.3kVA 32A High Voltage INTL Core Modular Power Distribution Unit	252663-B33
HP 9.2kVA 40A High Voltage INTL Core Modular Power Distribution Unit	252663-B34
HP 8.6kVA 24A Three Phase NA/JP Modular Power Distribution Unit	AF512A
HP 11kVA 16A Three Phase INTL Modular Power Distribution Unit	AF513A
HP 14.4kVA 40A Three Phase NA/JP Modular Power Distribution Unit	AF519A
HP 17.3kVA 48A Three Phase NA/JP Modular Power Distribution Unit	AF511A
HP 22kVA 32A Three Phase INTL Core Modular Power Distribution Unit	AF518A
NOTE: To learn more about HP Basic Power Distribution Units (bPDU), please visit the HP website at http://www.hp.com/go/pdu .	
HP Monitored Power Distribution Units (mPDU)	
HP 2.8kVA 120 Volt L5-30 Input (12xNEMA 5-20R)NA/JP Monitored PDU	D9N43A
HP 3.6kVA 200-240 Volt Detachable C20 Input (12xC13) WW Monitored PDU	D9N46A
HP 4.9kVA 208 Volt L6-30 Input (12xC13) NA/JP Monitored PDU	D9N44A
HP 3.6kVA 200-240 Volt Detachable C20 Input (16xC13) WW Monitored PDU	D9N45A
HP 4.9kVA 208 Volt L6-30 Input (12xC13) NA/JP Monitored PDU	G9Z05A
HP 7.3kVA 230 Volt IEC309 32A Input (12xC13) INTL Monitored PDU	G9Z06A
HP 4.9kVA 208 Volt L6-30 Input (20xC13/4xC19) NA/JP Monitored PDU	D9N47A
HP 7.3kVA 230 Volt IEC309 32A Input (20xC13/4xC19) INTL Monitored PDU	D9N48A
HP 8.6kVA 208 Volt L15-30 3-Phase Input (18xC13/3xC19) NA/JP Monitored PDU	D9N51A
HP 5.7kVA 208 Volt L21-20 3-Phase Input (18xC13/3xNEMA 5-20R) NA/JP Monitored PDU	D9N52A
HP 8.6kVA 208 Volt L21-30 3-Phase Input (20xC13/3xC19/3xNEMA 5-20R) NA/JP Monitored PDU	D9N53A
HP 11kVA 400 Volt IEC309 16A 3-Phase Input (18xC13/3xC19) INTL Monitored PDU	D9N55A
HP 8.3kVA 208 Volt CS8265C Input (30xC13/3xC19) NA Monitored PDU	D9N49A
HP 7.3kVA 230 Volt IEC309 32A Input (32xC13/4xC19) INTL Monitored PDU	D9N50A
HP 11kVA 400 Volt IEC309 16A 3-Phase Input (30xC13/3xC19) INTL Monitored PDU	D9N57A
HP 14.4kVA 208 Volt CS8365C 3-Phase Input (12xC13/12xC19)NA Monitored PDU	D9N58A
HP 16.6kVA 400 Volt IEC309 30A 3-Phase Input (30xC13/3xC19) NA Monitored PDU	D9N61A
HP 16.6kVA 400 Volt IEC309 30A 3-Phase Input (12xC13/12xC19) NA Monitored PDU	D9N62A
HP 17.3kVA 208 Volt IEC309 60A 3-Phase Input (24xC13/3xC19) NA/JP Monitored	D9N54A

QuickSpecs

Additional Options

HP ProLiant DL180 Generation9 (Gen9)

HP 17.3kVA 208 Volt IEC309 60A 3-Phase Input (12xC13/12xC19) NA/JP Monitored PDU	D9N59A
HP 17.3kVA 208 Volt IEC309 60A 3-Phase Watertight Input (12xC13/12xC19) NA/JP Monitored PDU	G9Z07A
HP 19.9kVA 480 Volt 3-Phase (30 Outlet) NA Monitored PDU	D9N63A
HP 22kVA 400 Volt IEC309 32A 3-Phase Input (30xC13/3xC19) INTL Monitored PDU	D9N56A
HP 22kVA 400 Volt IEC309 32A 3-Phase Input (12xC13/12xC19) INTL Monitored PDU	D9N60A
HP 22kVA 400 Volt IEC309 32A 3-Phase Watertight Input (12xC13/12xC19) INTL Monitored PDU	G9Z08A
HP Environmental Sensor for Remote Monitored and Managed PDUs	
NOTE: Please see the HP Monitored Power Distribution Units QuickSpecs for information on additional options and product specifications.	E2D53A
HP Intelligent Power Distribution Units (iPDU)	
HP 4.9kVA 24A Single Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF520A
HP 8.3kVA 40A Single Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF521A
HP 8.6kVA 24A Three Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF522A
HP 17.3kVA 48A Three Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF523A
HP 11.4kVA 16A 415V Three Phase L22-20 NA Core Intelligent Power Distribution Unit	AF900A
HP 17.3kVA 24A 415V Three Phase IEC309 NA Core Intelligent Power Distribution Unit	AF901A
HP 7.3kVA 32A Single Phase INTL Core Intelligent Modular Power Distribution Unit	AF525A
HP 11kVA 16A Three Phase INTL Core Intelligent Modular Power Distribution Unit	AF526A
HP 22kVA 32A Three Phase INTL Core Intelligent Modular Power Distribution Unit	AF527A
HP 17.3kVA 48A 208V Three Phase 12 Outlet Core NA/JP Intelligent Power Distribution Unit	AF535A
HP 17.3kVA 24A 415V Three Phase 12 Outlet Core NA/JP Intelligent Power Distribution Unit	AF537A
HP 22kVA 32A 400V Three Phase 12 Outlet Core INTL Intelligent Power Distribution Unit	AF538A
HP 4.9kVA 24A Single Phase NA/JP Intelligent Modular Power Distribution Kit	AF531A
HP 8.6kVA 24A Three Phase NA/JP Intelligent Modular Power Distribution Kit	AF532A
HP 14.4kVA 40A Three Phase NA/JP Intelligent Modular Power Distribution Unit	AF533A
HP 7.3kVA 32A Single Phase INTL Intelligent Modular Power Distribution Kit	AF534A
HP 5xC13 Intelligent PDU Extension Bar G2 Kit	AF547A
HP 5xC13 Outlets Power and UID LEDs Pair Standard Extension Bar	AF528A
NOTE: Please see the HP Intelligent Power Distribution Units QuickSpecs for information on additional options and product specifications.	
HP Managed Power Distribution Units (mPDU)	
HP 2.8kVA 120 Volt L5-30 Input (24x NEMA 5-20) NA/JP Managed PDU	H8B48A
HP 3.6kVA 200-240 Volt Detachable C20 Input (7xC13/1xC19) WW Managed PDU	H8B49A
HP 4.9kVA 208 Volt L6-30 Input (20xC13/4xC19) NA/JP Managed PDU	H8B50A
HP 7.3kVA 200-240 Volt IEC309 32A Input (20xC13/4xC19) INTL Managed PDU	H8B51A
HP 8.6kVA 208 Volt L15-30 3 Phase Input (18xC13/6xC19) NA/JP Managed PDU	H8B52A
HP 8.6kVA 208 Volt L21-30 3 Phase Input (20xC13/3xC19/1x NEMA 5-20) NA/JP Managed PDU	H8B53A



QuickSpecs

ProLiant DL180 Generation9 (Gen9)

Additional Options

HP 11kVA 400 Volt IEC309 16A 3 Phase Input (21xC13/3xC19) INTL Managed PDU	HBB54A
HP 14.4kVA 208V C58365C 3 Phase Input (12xC13/12xC19) NA/JP Managed PDU	HBB55A
HP 17.3kVA 208V IEC309 60A 3 Phase Input (12xC13/12xC19) NA/JP Managed PDU	HBB56A

NOTE: Please see the HP Managed Power Distribution Units (mAPDU) for information on additional options and product specifications.
NOTE: To learn more, please visit the HP Uninterruptible Power Systems (UPS) web page.

HP Rack Mount Consoles, KVM Switches, and Keyboards

HP Location Discovery Services	
HP Location Discovery Services LCD8500 Kit	TL052A
NOTE: Please see the HP Location Discovery Services QuickSpecs for information on additional options and product specifications.	
HP Rack Mount Consoles	
HP LCD8500 1U US Rackmount Console Kit	AF630A
HP LCD8500 1U UK Rackmount Console Kit	AF631A
HP LCD8500 1U DE Rackmount Console Kit	AF632A
HP LCD8500 1U FR Rackmount Console Kit	AF633A
HP LCD8500 1U JP Rackmount Console Kit	AF642A
HP LCD8500 1U RU Rackmount Console Kit	AF643A
HP LCD8500 1U INTL Rackmount Console Kit	AF644A
HP LCD8500 1U US TAA Rackmount Console Kit	AF645A
HP KVM Switches	
HP 0x2x16 G3 KVM Console Switch	AF652A
HP TAA 0x2x16 G3 KVM Console Switch	AF653A
HP USB Remote Access Key for G3 KVM Console Switches	AF650A
HP KVM Console USB Interface Adapter	AF628A
HP 0x2x16 KVM Server Console Switch G2 with Virtual Media CAC Software	AF618A
HP 0x2x32 KVM Server Console Switch G2 with Virtual Media CAC Software	AF619A
HP KVM Console USB 2.0 Virtual Media CAC Interface Adapter	AF629A
HP 1x4 USB/PS2 KVM Console Switch	AF611A
HP 1x1Ex8 KVM IP Console Switch G2 with Virtual Media CAC Software	AF620A
HP 2x1Ex16 KVM IP Console Switch G2 with Virtual Media CAC Software	AF621A
HP 4x1Ex32 KVM IP Console Switch G2 with Virtual Media CAC Software	AF622A
NOTE: To learn more, please visit the HP KVM Switches web page.	
HP USB Keyboard and Mouse	
HP USB BFR with PVC Free US Keyboard/Mouse Kit	631341-B21
HP USB BFR with PVC Free Intl Keyboard/Mouse Kit	672097-B33
HP 1U INT Rackmount Keyboard with USB	AG086A
HP 1U US Rackmount Keyboard with USB	AG072A
NOTE: Please see the HP USB Keyboard and Mouse QuickSpecs for information on additional options and product specifications.	
Rail Kits	
HP 2U Small Form Factor Easy Install Rail Kit	733660-B21
NOTE: This applies for both LFF & SFF models and it does not include cable management arm.	
HP 2U Cable Management Arm for Easy Install Rail Kit	733664-B21
HP Other Options	
HP Rack LED Light Kit	BW939A
HP Kit LCD 1.83m Latch Display Port Cable	G7T29A

QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Additional Options

HP Uninterruptible Power Systems (UPS)	HP DirectFlow Three Phase UPS Power Unit (1U UPS)	
	HP R12000 DirectFlow - 1U Rackmount Uninterruptible Power System	G9Y75A
	HP R12000 DirectFlow - POD 1U Rackmount Uninterruptible Power System	AF478A
	Input/Output Module Options for 1U UPS	
	HP 32A 400-415 Volt Three Phase INTL R12000 DirectFlow UPS IEC309 Input/Output Module	AF488A
	HP 30A 400-415 Volt Three Phase NA R10000 DirectFlow UPS IEC309 Input/Output Module	AF489A
	HP 32A 380 Volt Three Phase China R12000 DirectFlow UPS Unterminated Input/Output Module	AF490A
	HP 30A 480 Volt Three Phase NA R12000 DirectFlow UPS L22-30 Input/Output Module	AF491A
	HP 30A 480 Volt Three Phase NA R12000 DirectFlow UPS IEC309 Input/Output Module	AF492A
	HP 30A 400-415 Volt Three Phase NA R12000 DirectFlow UPS IEC309 Input/Output Module	G9Y76A
	Power Unit (2U UPS)	
	HP R18000 DirectFlow - 2U Rackmount Uninterruptible Power System	AF479A
	Input/Output Module Options for 2U UPS	
	HP 32A 400-415 Volt Three Phase INTL R18000 DirectFlow UPS IEC309 Input/Output Module	AF483A
	HP 30A 380 Volt Three Phase China R18000 DirectFlow UPS Unterminated Input/Output Module	AF485A
	HP 30A 480 Volt Three Phase NA R18000 DirectFlow UPS IEC309 Input/Output Module	AF486A
	HP 30A 480 Volt Three Phase NA R18000 DirectFlow UPS IEC309 Input/Output Module	AF487A
	HP 30A 400 Volt Three Phase NA R18000 DirectFlow UPS IEC309 Input/Output Module	D9Q02A
	HP 30A 400-415V Three Phase NA R18000 DirectFlow UPS 1:1 IEC309 Input/Output Module	AF484A
	NOTE: All Input/Output Modules support dual output outlets except the AF484A.	
	Battery Pack Options	
	HP DirectFlow UPS - 1U Rackmount Lithium-ion Battery Pack	AF480A
	HP DirectFlow UPS - 3U Rackmount VRLA Battery Pack	AF482A
	HP WW DirectFlow Secondary Battery Cable	AF497A
	NOTE: Please see the HP DirectFlow Three Phase Uninterruptible Power System QuickSpecs for information on additional options and product specifications.	
	HP Tower UPS	
	HP T750 G4 UPS Models	
	HP T750 G4 NA/JP Uninterruptible Power System	J2P85A
	HP T750 G4 INTL Uninterruptible Power System	J2P88A
	HP T1000 G4 UPS Models	
	HP T1000 G4 NA/JP Uninterruptible Power System	J2P86A
	HP T1000 G4 INTL Uninterruptible Power System	J2P89A
	HP T1500 G4 UPS Models	
	HP T1500 G4 NA/JP Uninterruptible Power System	J2P87A
	HP T1500 G4 INTL Uninterruptible Power System	J2P90A
	HP Rack/Tower UPS	
	HP R/T2200 G4 UPS Models	
	HP R/T2200 G4 NA/JP Uninterruptible Power System	J2R00A

QuickSpecs

Additional Options

HP ProLiant DL180 Generation9 (Gen9)

HP R/T3000 G4 UPS Models

HP R/T3000 G4 Low Voltage NA/JP Uninterruptible Power System	J2R01A
HP R/T3000 G4 High Voltage NA/JP Uninterruptible Power System	J2R02A
HP R/T3000 G4 High Voltage INTL Uninterruptible Power System	J2R04A

R1500 G4 Models

HP R1500 G4 NA Uninterruptible Power System	J2Q99A
HP R1500 G4 JP/TWN Uninterruptible Power System	J2R05A
HP R1500 G4 INTL Uninterruptible Power System	J2R03A

R7000 Uninterruptible Power System (UPS)

HP R7000 4U 50A High Voltage NA/JP Uninterruptible Power System	AF462A
HP R7000 4U IEC-32A High Voltage INTL Uninterruptible Power System	AF463A

R5000 Uninterruptible Power System (UPS)

HP R5000 3U L630 High Voltage NA/JP Uninterruptible Power System	AF460A
HP R5000 3U IEC309-32A High Voltage INTL Uninterruptible Power System	AF461A

HP UPS Options

HP R/T2200 G4 Extended Runtime Module	J2R09A
HP R/T3000 G4 Extended Runtime Module	J2R10A
HP 2U Rack/Tower UPS Shipping Kit	L4Q11A

NOTE: To learn more, please visit the HP Uninterruptible Power Systems (UPS) web page.

HP USB and SD Options

HP Flash Media Kits for USB Drives

HP 32GB microSD Enterprise Mainstream Flash Media Kit	700139-B21
HP 8GB microSD Enterprise Mainstream Flash Media Kit	726116-B21
HP Dual 8GB microSD Enterprise Midline USB Kit	741279-B21

HP Care Pack Services

Foundation Care

HP 3 year 24x7 DL180 Gen9 Foundation Care Service	U7AT3E
HP 3 year 24x7 with Defective Media Retention DL180 Gen9 Foundation Care Service	U7AT4E
HP 3 year 24x7 with Comprehensive Defective Material Retention DL180 Gen9 Foundation Care Service	U7AT5E

Proactive Care

HP 3 year 24x7 DL180 Gen9 Proactive Care Service	U7AT6E
HP 3 year 24x7 with Defective Media Retention DL180 Gen9 Proactive Care Service	U7AT7E
HP 3 year 24x7 with Comprehensive Defective Material Retention DL180 Gen9 Proactive Care Service	U7AT8E

Installation & Start-up Services

HP Installation ProLiant DL180/DL380e Service	UG6B1E
HP Startup ProLiant DL180/DL380e Service	UG6B3E

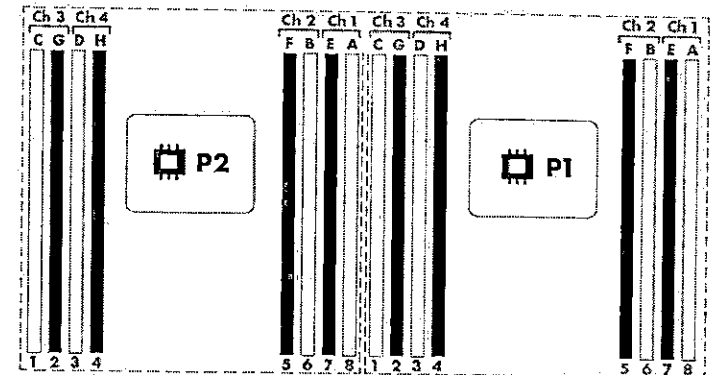
QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Memory

Memory Subsystem Architecture Each Intel® Xeon® E5-2600v3 family processor socket contains four memory channels per installed processor with two DIMMs per channel for a total of eight (8) DIMMs or a grand total of sixteen (16) DIMMs for the server.

Memory Population guidelines



General Memory Population Rules and Guidelines:

- Install DIMMs only if the corresponding processor is installed.
- If only one processor is installed in a two processor system, only half of the DIMM slots are available.
- To maximize performance, it is recommended to balance the total memory capacity between all installed processors and load the channels similarly whenever possible.
- When two processors are installed, balance the DIMMs across the two processors.
- White DIMM slots denote the first slot to be populated in a channel.
- Place the DIMMs with the highest number of ranks in the white slot when mixing DIMMs of different ranks on the same channel.
- Do not mix RDIMMs or LRDIMMs.
- Quad rank RDIMMs are not supported in HP ProLiant DL180 Gen9 servers.
- Quad rank LRDIMMs are capable of up to two DIMMs per channel.
- DIMMs of different speeds may be mixed in any order; the server will select a common optimal speed.
- The maximum memory speed is a function of the memory type, memory configuration, and processor model.
- The maximum memory capacity is a function of the memory type and number of installed processors.
- To realize the performance memory capabilities listed in this document, HP SmartMemory is required.

Intel Gen9 Supported Memory Bandwidth for HP ProLiant Gen9 Intel® Xeon® E5-2600v3 Series Processor Family

Memory Bandwidth and Capacity

[DIMM Type]	Registered DIMMs (RDIMMs)				Load Reduced (LRDIMMs)	
	Single Rank	Dual Rank		Quad Rank		
DIMM Capacity	4GB	8GB	16GB	32GB	16GB	32GB

QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Memory

DIMM Native Speed (MT/s)	2133					
Voltage	Std Voltage 1.2V					
SLOTS THAT CAN BE POPULATED						
16 slot servers	16					
MAXIMUM CAPACITY (GB)						
	64	128	256	512	256	512
1 DIMM Per Channel						
	2133					
2 DIMM Per Channel						
	2133					
3 DIMM Per Channel						
	1600			1856		

DIMM slot and configuration diagram

DIMM slot and configuration diagrams

Basic memory slot & population diagram

- Population order; start with "A" first, "B" second, "C" third, etc.
- When one processor is installed, install DIMMs in sequential alphabetic order: A, B, C, D, E, F ...
- When two processors are installed, install DIMMs in sequential alphabetic order: CPU1-A, CPU2-A, CPU1-B, CPU2-B, CPU1-C, CPU2-C

CPU #1 IS PROCESSOR ON RIGHT - LOOKING FROM FRONT OF SERVER

	CPU 1		CPU 2	
	Slot #	population order	Slot #	population order
Chnl 3	1	C	1	C
	2	G	2	G
Chnl 4	3	D	3	D
	4	H	4	H
Chnl 5	5	F	5	F
	6	B	6	B
Chnl 1	7	E	7	E
	8	A	8	A

QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Memory

Memory Speed by Processor Model	Processor Models	Supported Memory Speeds
	E5-2609v3, E5-2603v3,	1600MHz
	E5-2640v3, E5-2630v3, E5-2630Lv3, E5-2620v3, E5-2623v3,	1866MHz
	E5-2660v3, E5-2650v3, E5-2650Lv3,	2133MHz

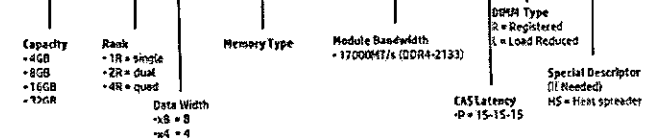
Standard and Maximum Memory Capacity (Pre-configured Models)	Pre-Configured Models	Standard Memory	Maximum Memory Plus Optional Memory	Standard Memory Replaced with Optional Memory
	E5-2603v3, E5-2609v3,	8GB (1x8GB)	488GB (15x32GB, 1x8GB)	512GB (16x32GB)
	E5-2623v3,	16GB (2x8GB)	464GB (14x32GB, 2x8GB)	512GB (16x32GB)
	E5-2630v3,	32GB (2x16GB)	480GB (14x32GB, 2x16GB)	512GB (16x32GB)

DDR4 memory options part number decoder

NOTE: Capacity references are rounded to the common gigabyte (GB) values.

- 2GB = 2,048MB
- 4GB = 4,096MB
- 8GB = 8,192MB
- 16GB = 16,384MB
- 32GB = 32,768MB
- 64GB = 65,536MB

HP ggggg eRxff DDR4 wwwwm a bb-ccd Kit

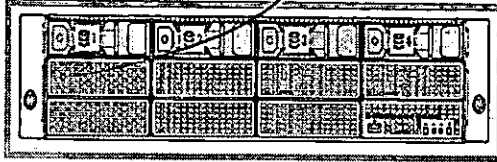


QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Storage

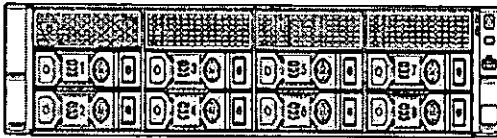
4-bay LFF non-hot-plug drive model



1-4

4 x LFF SATA Non-Hot Pluggable Hard Drive Bays

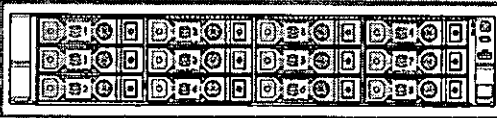
8-bay LFF hot-plug drive model



1-8

8 x LFF SATA/SAS/SDD Hot Pluggable Hard Drive Bays

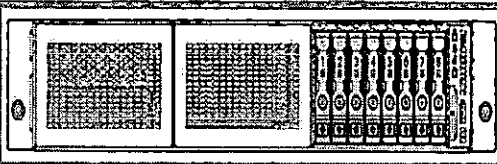
12-bay LFF hot-plug drive model



1-12

12 x LFF SATA/SAS/SDD Hot Pluggable Hard Drive Bays

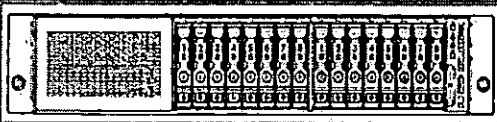
8-bay SFF hot-plug drive model



1-8

8 x SFF SATA/SAS/SDD Hot Pluggable Hard drive bays

16-bay SFF hot-plug drive model



1-16

16 x SFF SATA/SAS/SDD Hot Pluggable Hard drive bays

QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Technical Specifications

System Unit

Dimensions (with bezel)	SFF Drives: 3.44 x 17.54 x 23.9 in (8.75 x 44.55 x 60.7 cm) LFF Drives: 3.44 x 17.54 x 23.9 in (8.75 x 44.55 x 60.7 cm)
Weight (approximate)	Maximum: 47/6 lb (21.59 kg)

	(all hard drives: front + rear, full power supply, and processor installed)
Minimum:	36.58 lb (16.59 kg)
	(one SFF hard drive, single power supply, and processor installed. HDD not installed)

Input Requirements	Rated Line Voltage	100 to 240 VAC
	Rated Input Current	For 550W Power Supply: 6.7 A (at 100 VAC) 3.3 A (at 200 VAC)
	Rated Input Frequency	47 to 63 Hz

	Rated Input Power	For 550 W Power Supply: < 670 W (at 100 VAC), < 660 W (at 200 VAC),
BTU Rating	Maximum	For 550 W Power Supply: 2201 BTU/hr (at 100 VAC), 2153 BTU/hr (at 200 VAC)

Power Specifications To review typical system power ratings use the Power Advisor which is available via the online tool located at URL: <http://www.hp.com/go/proliant-energy-efficient> or <http://www.hp.com/go/hppoweradvisor> - Click on the system of interest. Example: DL180 Gen9- Follow the instructions of the next screens.

Power Supply Output	Rated Steady-State Power	For 550 W Power Supply: 550 W (at 100 VAC), 550 W (at 200 VAC),
	Maximum Peak Power	For 550 W Power Supply: 550 W (at 100 VAC), 550 W (at 200 VAC),

System Inlet Temperature	Standard Operating Support	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 20°C/hr (36°F/hr). The upper limit and rate of change may be limited by the type and number of options installed. System performance during standard operating support may be reduced if operating with a fan fault or above 30°C (86°F).
---------------------------------	-----------------------------------	---

Extended Ambient Operating Support For approved hardware configurations, the supported system inlet range is extended to be: 5° to 10°C (41° to 50°F) and 35° to 40°C (95° to 104°F) at sea level with an altitude derating of 1.0°C per every 175 m (1.8°F per every 574 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the URL:

000072

ИРИС ОРИГИНАЛ

QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Technical Specifications

<http://www.hp.com/servers/ashrae>

For approved hardware configurations, the supported system inlet range is extended to be: 40° to 45°C (104° to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1.8°F per every 410 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the URL:

<http://www.hp.com/servers/ashrae>

System performance may be reduced if operating in the extended ambient operating range or with a fan fault.

NOTE: Supports A3 and A4 extended ambience.

Relative Humidity	Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
	Operating	Minimum to be the higher (more moisture) of -12°C (10.4°F) dew point or 8% relative humidity. Maximum to be the lower (less moisture) of 24°C (75.2°F) dew point or 90% relative humidity.
Altitude	Non-operating	5% to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
	Operating	3048 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
Acoustic Noise	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Operating	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).
	Idle	
	LWAd	Entry: 5.4 B Base: 5.5 B Storage: 6.3 B Energy Star: 5.5 B
	LpAm	Entry: 39 dBA Base: 39 dBA Storage: 46 dBA Energy Star: 38 dBA
	Operating	
	LWAd	Entry: 5.5 B Base: 5.6 B Storage: 6.3 B Energy Star: 5.5 B
	LpAm	Entry: 40 dBA Base: 40 dBA Storage: 46 dBA Energy Star: 38 dBA

NOTE: The listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels.

QuickSpecs

HP ProLiant DL180 Generation9 (Gen9)

Technical Specifications

Emissions Classification (EMC)

FCC Rating Normative Standards

Class A

CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS14336-1; CNS13438; GB4943; GB9254; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1

NOTE: Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.

NOTE: The listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels.

HP Dynamic Smart Array B140i Controller	Number of PCI links	Four
	PCI link rate	4 Gb/s
	Storage protocol support	SATA
	SAS/SATA peak data transfer rate	6 Gb/s
	Number of SAS/SATA links	10 links
	SAS/SATA connectivity	2x4 connectors; 2x1 connectors
	Expander support	No
	Drives supported (max)	Up to 10 Internal Drives
	RAID support	0, 1, 10, 5 SATA
	Software management	HP SSA, SMH, SIM
	Warranty	Server warranty
	HP Secure Encryption license	Not Supported
	HP SmartCache License	Not Supported
HP Smart Storage Administrator	Supported	
HP Embedded Dual Port 361i Adapter	Network Interface	10Base-T/100Base-TX/1000Base-TX
	Compatibility	IEEE 802.3 10Base-T IEEE 802.3ab 1000Base-T IEEE 802.3u 100Base-TX IEEE 1588, IEEE 802.1AS IEEE 802.3az - Energy Efficient Ethernet (EEE)
	Data Transfer Method	PCI Express v 2.0, 5.0 GT/s, two lanes (x2)
	Controller	Intel I350 Powerville
	Network Transfer Rate	10Base-T (Half-Duplex) 10 Mb/s per port, 40 Mb/s combined 10Base-T (Full-Duplex) 20 Mb/s per port, 80 Mb/s combined

**Hewlett Packard
Enterprise**

HPE ProLiant DL360 Gen9 Server

Dense performance for multi-workload
compute in the data center



Uniquely optimized system design and architecture

- Dense and flexible high-performance compute power—up to 24 HPE DDR4 SmartMemory DIMM slots and up to 3.0 TB of memory with built-in intelligence improve performance and reduce downtime and energy costs, resulting in up to 23 percent better throughput performance.³
- Industry-leading energy efficiency for lower power consumption—supports improved ambient temperature ASHRAE A3 and A4 standards, helping you reduce cooling expenses.
- Agile infrastructure management for accelerating IT service delivery—software-defined management for automation simplicity across servers, storage, and networking with HPE OneView.

Purpose-built for dense performance

World-renowned for supporting dense general-purpose computing needs, the HPE ProLiant DL360 Server just got better. The Gen9 release of this industry-leading server platform¹ delivers increased performance with the best memory and I/O expandability—packed in a dense 1U/2-socket rack design.

Continuing its legacy of reliability, serviceability, and continuous availability, the ProLiant DL360 Gen9 Server is the ideal choice for:

- **Compute-intensive applications**—Such as Big Data, analytics, seismic discovery, and more
- **Dynamic workloads**—Such as high-performance computing, databases, and virtualized private and public cloud; all of these workloads require a top-rate balance of performance, energy efficiency, and density
- **Low-latency and transactional applications**—Such as those used in the financial services industry
- **Space-constrained server environments**—Such as those used by small-to medium-sized businesses (SMBs) and service providers

Higher performance, extended support

Designed with performance in mind, the HPE ProLiant DL360 Gen9 Server leverages the latest Intel® Xeon® E5-2600 v3 and v4 processors to offer up to 21 percent performance gains.²

You can manage your HPE ProLiant DL360 Gen9 Server in any IT environment. The server supports the most essential server lifecycle management tasks—deploy, update, migrate, and retire. And to support your heterogeneous IT environment, the DL360 Gen9 server supports Windows® and Linux® operating systems, as well as VMware® and Citrix® virtual

¹ G3315 IDC Server Tracker.

² Intel® performance testing, intel.com/performance comparing measurements on platform with two E5-2600 v3 vs E5-2600 v4, November 2015.

³ Up to 23% better performance is based on similar capacity DIMM running on HPE server compared to a non HPE server with DDR4. HPE internal labs estimate, March 2016.

0000073

HPHOC CDR/MS/ATP

Handwritten signature or initials.

Data sheet

Technical specifications

In the following table, **bold** text denotes new features or functions, as compared to the HPE ProLiant DL360p Gen8 Server.

HPE ProLiant DL360 Gen9 Server	
Compute	Up to two Intel Xeon E5-2600 v3 or v4 series, 4/6/8/10/12/ 14/16/18/20/22 cores, PCIe 3.0, up to three available slot(s)
Memory	HPE SmartMemory (24) DDR4 , up to 2,400 MHz (3.0 TB max)
Persistent Memory ¹	Up to (16) 8 GB NVDIMM option (128 GB max)
Flash-backed write cache (FBWC)	2 GB DDR3-1, 866 MHz, 72-bit wide bus at 14.9 GB/s on P440ar
Battery	HPE DL/ML/SL 96 W Smart Storage Battery
HPE SmartDrive	8 + 2 SFF/4 LFF max, HDD/SSD, M.2 enabled and optional 6 NVMe PCIe SSD support
Networking	4 x 1GbE embedded + FlexibleLOM slot + Standup card
VGA/serial/USB ports/SD	Front VGA opt, rear VGA standard, and serial opt. , 5 USB 3.0; 2 USB 2.0 optional, Dual microSD option
GPU support	Up to two single-wide and active to 9.5" in length
System ROM	UEFI and Legacy BIOS
Converged management	HPE OneView with HPE iLO Advanced
Support management	HPE Insight Online with enhanced mobile app
Embedded management	HPE iLO 4, Intelligent Provisioning, Smart Update Manager (SUM), RESTful Interface Tool, Scripting Tools for Microsoft Windows Server² PowerShell
Power and cooling	Up to 96 percent efficient (Titanium) with HPE Flexible Slot Power Supplies with optional HPE Battery Backup Hot plug fans with full N+1 redundancy, optional high performance fans
Industry compliance	ASHRAE³ A3 and A4 , lower idle power, and ENERGY STAR [®]
Power discovery services	Supported
Location discovery services	Optional
Form factor/Chassis depth	Rack (1U), 27.5" (SFF), 29.5" (LFF)
Serviceability—easy install rails	Standard
Warranty	3/3/3

¹ NVDIMM Availability Q2-Q3 2016

² See hpe.com/servers/ASHRAE for details.

View the QuickSpecs at:

hpe.com/servers/DL360gen9/qs



hpe.com/servers/DL360gen9



Sign up for updates

HPE Services

Let HPE help guide you to the New Style of Business. HPE Technology Services delivers confidence, reduces risk, and helps you realize greater agility and stability.

- Our **consulting** services provide advice and guidance to safely move your workloads to newer technologies.
- HPE implementation and installation services enable faster, more reliable startup of your new ProLiant Gen9 servers, and our support portfolio allows you to get connected and get back to business fast.
- HPE **Foundation Care** provides a choice of coverage levels and response times for hardware and software support.
- We recommend HPE **Proactive Care** for ProLiant Gen9 servers to prevent issues and resolve problems quickly and efficiently.
- HPE **Datacenter Care** enables you to operate and evolve your IT environment at a lower cost and with more agility, including our **Flexible Capacity Service** to acquire IT without impacting capital budget.
- Our support technology lets you tap into the knowledge of millions of devices and thousands of experts to stay informed and in control, anywhere, any time.

Learn more at

hpe.com/servers/DL360gen9

© Copyright 2014–2016 Hewlett Packard Enterprise Development LP. The information contained herein is subject to change without notice. The only warranties for Hewlett Packard Enterprise products and services are set forth in the express warranty accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Hewlett Packard Enterprise shall not be liable for technical or editorial errors or omissions contained herein.

Intel Xeon are trademarks of Intel Corporation in the U.S. and other countries. Microsoft, Windows, and Windows Server are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. Citrix is a registered trademark of Citrix Systems, Inc. and/or one more of its subsidiaries, and may be registered in the United States Patent and Trademark Office and in other countries. VMware is a registered trademark or trademark of VMware, Inc. in the United States and/or other jurisdictions. Linux is the registered trademark of Linus Torvalds in the U.S. and other countries. SD and microSD are trademarks or registered trademarks of SD-3C in the United States, other countries or both. ENERGY STAR is a registered mark owned by the U.S. government.

4AA5-4085ENW, August 2016, Rev 6

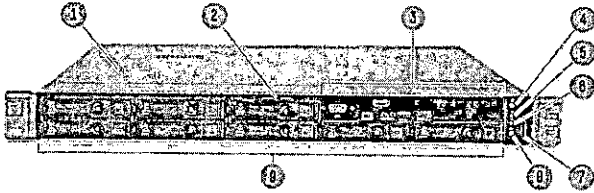

**Hewlett Packard
Enterprise**

QuickSpecs

Overview

HPE ProLiant DL360 Generation9 (Gen9)

The Hewlett Packard Enterprise leading server for dense general-purpose computing, the HPE ProLiant DL360 Gen9 Server delivers increased performance with the best memory and I/O expandability packed in a 1U dense rack design. Reliability, serviceability and always on availability, backed by a comprehensive warranty, make it ideal for the most space constrained server workloads.



Front View

1. Access Panel
3. HPE Universal Media Bay or NVMe
NOTE: Shows w/ VGA, USB 2.0 and DVD-ROM or DVD-RW option. Alternative options: NVMe HDD Kira, 2.5FF HDDs or VGA and USB 3.0.
5. Health LED
7. USB 3.0 Connector
9. SAS/SATA/SSD/NVMe Drive Bays
NOTE: B5FF Model shown can be configured:
8 SAS/SATA Drives or 10 SAS/SATA drives
4 SAS/SATA (Drive 1-4) + 6 NVMe (Drive 5-10)
3 SAS/SATA + Universal Media Bay
4 LFF Models are also available
2. Serial Label Pull Tab
4. Power On/Standby button and system power LED button
6. NC Status LED
8. Unit Identification Button & LED

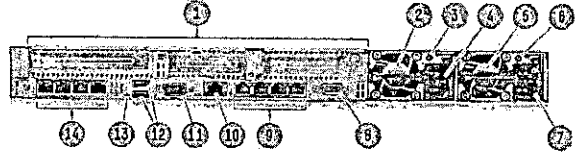
Hewlett Packard
Enterprise

Gen9

QuickSpecs

HPE ProLiant DL360 Generation9 (Gen9)

Overview



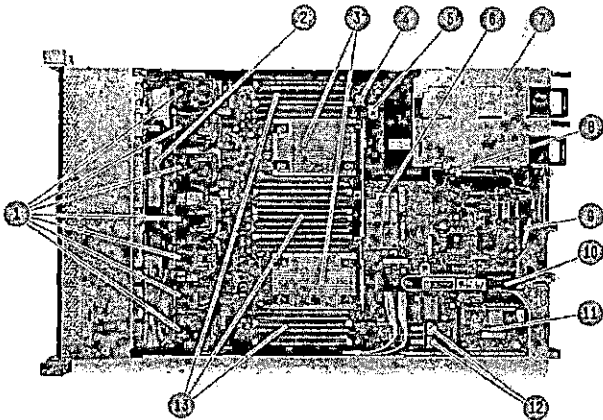
Rear View

1. PCIe 3.0 Slots 1-3
NOTE: Slot 1 and 2 Riser Ships Standard, Slot 3 Optional one FH/ 1/2 length and two Low Profile slots available (shown) or two FH/ 1/2 length slots
3. Power Supply 2 Status LED
5. HPE Flexible Slot Power Supply Bay 1
7. Power Supply 1 C13 Connection
9. Embedded 4x1GbE Network Adapter
11. Serial Port Connector (Optional)
13. Unit Identification LED
2. HPE Flexible Slot Power Supply Bay 2
4. Power Supply 2 C13 Connection
6. Power Supply 1 Status LED
8. Video Connector
10. Dedicated iLO 4 connector
12. USB 3.0 Connectors (2)
14. FlexibleLOM bay (Optional)
NOTE: Shows 4x1GbE.

QuickSpecs

HPE ProLiant DL360 Generation9 (Gen9)

Overview



Internal View

1. 5 Standard Fans Ship for 1P and 7 Standard Fans Ship for 2P
NOTE: High Performance Fans also available as an option
3. 2 Processors with HPE Smart Socket Guide
5. Dual Internal USB 3.0 connector
7. 2 HPE Flexible Slot Power supplies
NOTE: Optional Micro UPS option
9. Embedded 4x1GbE NIC
11. FlexibleLOM Bay (Optional)
13. DDR4 DIMM slots. Shown fully populated in 24 slots (12 per processor)
2. HPE Smart Socket
4. MicroSD card
NOTE: Optn
6. HPE Flexible Slot
NOTE: H24
8. Secondary Fan
10. Primary PCI
12. Embedded iLO

QuickSpecs

HPE ProLiant DL360 Generation9 (Gen9)

Standard Features

NOTE: For more information regarding Intel Xeon processors, please see the following <http://www.intel.com/xeon>

Processor Up to two of the following depending on model:

Model	CPU frequency	Cores	L3 Cache	Power	GPI	DDR4 Hz
ES-2699v3	2.3GHz	18	45MB	145W	9.6GT/s	2133
ES-2698v3	2.3GHz	16	40MB	135W	9.6GT/s	2133
ES-2697v3	2.6GHz	14	35MB	145W	9.6GT/s	2133
ES-2695v3	2.3GHz	14	35MB	120W	9.6GT/s	2133
ES-2690v3	2.6GHz	12	30MB	135W	9.6GT/s	2133
ES-2687Wv3	3.1GHz	10	25MB	160W	9.6GT/s	2133
ES-2683v3	2.0GHz	14	35MB	120W	9.6GT/s	2133
ES-2680v3	2.5GHz	12	30MB	120W	9.6GT/s	2133
ES-2670v3	2.3GHz	12	30MB	120W	9.6GT/s	2133
ES-2667v3	3.2GHz	8	20MB	135W	9.6GT/s	2133
ES-2660v3	2.6GHz	10	25MB	105W	9.6GT/s	2133
ES-2650v3	2.3GHz	10	25MB	105W	9.6GT/s	2133
ES-2650Lv3	1.8GHz	12	30MB	65W	9.6GT/s	2133
ES-2643v3	3.4GHz	6	20MB	135W	9.6GT/s	2133
ES-2640v3	2.6GHz	8	20MB	90W	8.0GT/s	1866
ES-2637v3	3.5GHz	4	15MB	135W	9.6GT/s	2133
ES-2630v3	2.4GHz	8	20MB	85W	8.0GT/s	1866
ES-2630Lv3	1.8GHz	8	20MB	55W	8.0GT/s	1866
ES-2623v3	3.0GHz	4	10MB	105W	8.0GT/s	1866
ES-2620v3	2.4GHz	6	15MB	85W	8.0GT/s	1866
ES-2609v3	1.9GHz	6	15MB	85W	8.4GT/s	1600
ES-2603v3	1.6GHz	6	15MB	85W	8.4GT/s	1600
ES-2699v4	2.2GHz	22	55MB	145W	9.6GT/s	2400
ES-2698v4	2.2GHz	20	50MB	135W	9.6GT/s	2400
ES-2697v4	2.3GHz	18	45MB	145W	9.6GT/s	2400
ES-2697Av4	2.6GHz	16	40MB	145W	9.6GT/s	2400
ES-2695v4	2.1GHz	18	45MB	120W	9.6GT/s	2400
ES-2690v4	2.6GHz	14	35MB	135W	9.6GT/s	2400
ES-2687Wv4	3.0GHz	12	30MB	160		
ES-2683v4	2.1GHz	16	40MB	120		
ES-2680v4	2.4GHz	14	35MB	120		
ES-2667v4	3.2GHz	8	25MB	135		
ES-2660v4	2.0GHz	14	35MB	105		
ES-2650v4	2.2GHz	12	30MB	105		
ES-2650Lv4	1.7GHz	14	35MB	65		
ES-2643v4	3.4GHz	6	20MB	135		
ES-2640v4	2.4GHz	10	25MB	90		
ES-2637v4	3.5GHz	4	15MB	135		

000074

Standard Features

Model	Processor	Cache	Memory	Power	Power Supply	Part Number
E5-2630v4	2.2GHz	10	25MB	85W	80GT/s	2133
E5-2630Lv4	1.8GHz	10	25MB	55W	80GT/s	2133
E5-2623v4	2.6GHz	4	10MB	85W	80GT/s	2133
E5-2620v4	2.1GHz	8	20MB	85W	80GT/s	2133
E5-2609v4	1.7GHz	8	20MB	85W	64GT/s	1866
E5-2603v4	1.7GHz	6	15MB	85W	64GT/s	1866
E5-2699Av4	2.4 GHz	22	55MB	145W	96GT/s	2400

NOTE: Mixing of E5-2600 v3 and E5-2600 v4 processors is not supported.
 NOTE: All processors support Hyper-Threading except E5-2609 v3/v4 and E5-2603 v4/v3.
 NOTE: Processors consuming up to 120W ship with standard heat sink.
 • Processors consuming over 120W ship with a High Performance heat sink as standard.
 • A High Performance heat sink can be added to help reduce power consumption (795235-821).

Chipset Intel® C610 Series Chipset
 Intel® E5-2600v3 Processor Family
 Intel® E5-2600v4 Processor Family
 NOTE: For more information regarding Intel® chipsets, please see the following URL: <http://www.intel.com/products/server/chipsets/>

On System Management Chipset HPE iLO (Firmware HPE iLO4 2.0 or later) 4GB NAND
 NOTE: iLO USB user space configurable via UEFI and accessible via iLO. Read and learn more in the iLO QuickSpecs

Memory Type: HPE SmartMemory
 One of the following depending on model: DDR4 Registered (RDIMM) or Load Reduced (LRDIMM)
 DIMM Slots Available: 24 (12 DIMM slots per processor, 4 channels per processor, 3 DIMMs per channel)
 Maximum Capacity (LRDIMM): 3TB (24 x 128GB LRDIMM)
 Maximum Capacity (RDIMM): 768GB (24 x 32GB RDIMM)
 Maximum Capacity (NVDIMM): 128GB (16 x 8GB NVDIMM)
 NVDIMM support only with the E5-2600v4 processors, and RDIMMs only
 • 128GB DIMMs cannot be mixed with any other size DIMMs.
 • NVDIMMs cannot be used with LRDIMMs.
 • A maximum of 16 NVDIMMs can be supported.
 • NVDIMMs are only supported on factory configured servers with E5-2600 v4 processors, not supported on servers upgraded from E5-2600 v3 to E5-2600 v4 processors.

Memory Protection Advanced ECC: Advanced ECC uses single device data correction to detect and correct single and all multibit error that occurs within a single DRAM chip.
 Online Spare: Memory online spare mode detects a rank that is degrading and switches operation to the spare rank.

Standard Features

Expansion Slots	Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Form Factor	Notes
Primary Riser	1	PCIe 3.0	X16	X16	7	Full-height, ¾ length (up to 9.5") Slot	Proc 1
	2	PCIe 3.0	x8	x8	10	Low profile	Proc 1
Secondary Riser	3	PCIe 3.0	X16	X16	16	Full-height, full-length slot Low profile	Proc 2
	3	PCIe 3.0	X16	X16	20	Full-height, ¾ length (up to 9.5") slot	Proc 2

NOTE: Bus Width indicates the number of physical electrical lanes running to the connector.
 NOTE: If secondary FH Kit C867249-821 is installed, then primary PCIe Slot 2 cannot be used. Only 2 FH slots are supported max.

Storage Controller Entry Models: HPE Dynamic Smart Array B140i Controller
 HPE H240a Smart Host Bus Adapter
 NOTE: For E5-2600v3 Entry models, the embedded B140i will operate in UEFI mode only.
 • For legacy mode support an additional controller will be needed.
 • For CTO orders please also select "HPE Legacy FIO Mode Setting", 758959-821.
 NOTE: The embedded B140i defaults to AHCI off the chipset. HPE Dynamic Smart Array Controller needs to be enabled on the SATA only models if needed.
 Base Models: HPE Flexible Smart Array P440ar/2GB
 Performance Models: HPE Flexible Smart Array P440ar/2GB

Internal Storage Devices One of the following depending on model:
 Optical Drive: 8 SFF with optional Universal Media Bay
 Option Kit 764632-821 VGA, SFF DVD-RW USB Kit
 Option Kit 818213-821 VGA, SFF DVD-ROM USB Kit
 4 LFF
 Option Kit 726536-821 - HPE 9.5mm SATA DVD-ROM, Jb Gen9 Kit
 Option Kit 726537-821 - HPE 9.5mm SATA DVD-RW, Jb Gen9 Kit
 NOTE: Optical cable kit Required for optical drives: 766203-821.
 Hard Drives: None ship standard
 Hard Drive Bays: 8 SFF with optional Universal Media Bay or NVMe drive support
 4 LFF
 10 SFF, 8 SFF Model with optional 2 SFF SAS/SATA kit: 764630-821
 NOTE: HPE ProLiant DL360 Servers offer both SFF and LFF models.
 NOTE: Pre-configured models come populated with some hard drive blanks.
 To order additional (single) hard drive blanks, use either:
 P/N 666987-821: HPE SFF Hard Drive Blank Kit or
 P/N 666986-821: HPE LFF Hard Drive Blank Kit.
 NOTE: The 2SFF kit comes with cable for internal B140i SATA controller.
 For SAS an alternate storage controller and cable kit are required.

Standard Features

Maximum Internal Storage	CAPACITY	CONFIGURATION
Hot Plug SFF SAS SSD	153.0TB	10 x 15.3TB
Hot Plug SFF SATA SSD	38.4TB	10 x 3.84TB
Hot Plug SFF SAS	20.0TB	10 x 2.0TB
Hot Plug SFF SATA	20.0TB	10 x 2.0TB
Hot Plug LFF SAS SSD	6.4TB	4 x 1.6TB
Hot Plug LFF SATA SSD	15.36TB	4 x 3.84TB
Hot Plug LFF SAS	48.0TB	4 x 12TB
Hot Plug LFF SATA	48.0TB	4 x 12TB
Hot Plug SFF NVMe PCIe SSD	27.36TB	6 x 2.0TB NVMe + 4 x 3.84TB SFF SSD

Power Supply HPE 500W Flex Slot Platinum Hot Plug Power Supply
 NOTE: Available in 94% efficiency.
 HPE 800W Flex Slot Platinum Hot Plug Power Supply
 NOTE: Also available in 96%.
 NOTE: Also available in -48VDC and 227VAC/380VDC power inputs 726480-821 and 726484-821 Universal PSU.

Flex Slot Platinum Pks Hot Plug Power Supply
 In 94% efficiency.
 Battery Backup Unit Kits
 Battery Backup provides 750W output and 500W in parallel configuration.
 (Flex Slot) Power Supplies share a common electrical and physical design that allows for installation into HPE ProLiant Gen9 Performance Servers. Flex Slot power supplies are in efficiency operation and offer multiple power output options, allowing users to "right-size" for specific server configurations. This flexibility helps to reduce power waste, lower overall and avoid "trapped" power capacity in the data center.

ed servers ship with a standard 6-foot IEC C-13/C-14 jumper cord (A0K02A). This jumper used with each standard AC power supply option kit. If a different power cord is required, e ProLiant Power Cables web page.

Power requirements for your selected system, please use the HPE Power Advisor Tool located at <http://www.hpe.com/info/hppoweradvisor>.

Power specifications and technical content for all HPE server power supplies can be found at <http://www.hpe.com/info/proliant/power-supply>.

System Fans	Non-redundant	Redundant
1P model	N/A	5 fans
2P model	Non-redundant	Redundant
	N/A	7 fans

NOTE: The second processor option kit contains two fans.
 NOTE: High Performance Fan Kit, 766201-821, is available to meet some extended ambient operating temperatures above 35° C. Qualifications for extended ambient configurations are detailed at: <http://www.hpe.com/servers/ashras>.

Standard Features

Interfaces	Serial	1
	NOTE: Serial Cable Option Kit: 764644-821	
	Video	1 rear (Standard) 1 front (Optional)
	NOTE: Front VGA options available for 8SFF and 4LFF models. See Core Options section of this QuickSpecs for more details.	
	Network RJ-45 (Ethernet)	Embedded 4x1GbE + Flexible LOM bay
	NOTE: Both the SFF and LFF chassis have an embedded 4x1GbE NIC and Flexible LOM bay. See HPE Networking section below for more details.	
	HPE iLO Remote Management Network Port	1 Gb Dedicated
	SD Connector	1 micro SD internal
	NOTE: The Micro SD slot is not a hot-pluggable device. Customers should not attempt to plug a SD card into the SD slot while the server is powered.	
	USB 3.0	5 total: 2 rear, 1 front, 2 internal

Operating Systems and Virtualization Software Support for ProLiant Servers
 Microsoft Windows Server
 Red Hat Enterprise Linux (RHEL)
 SUSE Linux Enterprise Server (SLES)
 Canonical Ubuntu
 Oracle Linux
 CentOS
 VMware
 Citrix XenServer
 Oracle Solaris
 Wind River Linux
 NOTE: For more information on Hewlett Packard Enterprise Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server including how to purchase from Hewlett Packard Enterprise, please visit our OS Support Site at: <http://www.hpe.com/info/ossupport> and our [driver download page](#).

Upgradeability Upgradeable to 2 processors (44 Cores)
 Up to 24 DIMM slots available for higher memory capacity
 Up to 10 SFF Hard Drive Bays, or 4 LFF Hard Drive Bays
 Flexible LOM slot for 1GbE or 10GbE or QDR/FDR InfiniBand Networking Options
 Optional 3 slot riser (x16, x16, x8), or 2 slot primary riser (x16, x8)
 3 PCIe 3.0 I/O slots for additional communications and storage expansion
 NOTE: Slot 1 and 2 Riser Shipped Standard. Slot 3 Optional 1 FH, 1 LFF and 2 Low Profile slots available or two FH, ¾ length slots.
 Redundant Power Supplies
 Optical Drive supported via Universal Media Bay
 8SFF Chassis with:
 Option Kit 764632-821 VGA, SFF DVD-RW U
 Option Kit 818213-821 VGA, SFF DVD-ROM
 4LFF Chassis with:
 Option Kit 726536-821 - HPE 9.5mm SATA

Standard Features

	Option Kit 726537-B21 - HPE 9.5mm SATA DVD-RW Jb Gen9 Kit NOTE: Optical cable kit Required for optical drives, z667111-B21.
Industry Standard Compliance	ACPI 2.0b Compliant PCIe 3.0 Compliant PXE Support WOL Support Microsoft Logo certifications USB 3.0 Support Energy Star ASHRAE A3/A4 NOTE: The DL360 Gen9 is now one of the first HPE ProLiant Gen9 Servers with Extended Ambient Support up to 45C for data center infrastructures designed for better energy efficiency. For additional technical thermal details regarding ambient temperatures, humidity and features support please visit http://www.hpe.com/servers/ashrae
Graphics	Integrated Matrox G200 video standard with 16MB of Video RAM <ul style="list-style-type: none"> 1280 x 1024 (32 bpp) 1920 x 1200 (16 bpp)
HPE Server UEFI/Legacy ROM	Unified Extensible Firmware Interface (UEFI) is an industry standard that provides better manageability and more secured configuration than the legacy ROM while interacting with your server at boot time. HPE ProLiant Gen9 platform defaults to UEFI and can be factory or field configured for Legacy BIOS Boot Mode. NOTE: The UEFI System Utilities function is analogous to the HPE ROM-Based Setup Utility (RBSU) of legacy BIOS. For more information, please visit http://www.hpe.com/servers/uefi . UEFI enables numerous new capabilities specific to HPE ProLiant servers such as: <ul style="list-style-type: none"> Secure Boot Operating system specific functionality Support for > 2.2 TB (using GPT) boot drives USB 3.0 Stack Embedded UEFI Shell Mass Configuration Deployment Tool using RESTful API for iLO 4 PXE boot support for IPv6 networks Boot support for option cards that only support a UEFI option ROM Network Stack configurations NOTE: For UEFI Boot Mode, boot environment and OS image installations should be configured properly to support UEFI. NOTE: UEFI F10 Setting (75:895:9-622) can be selected to configure the system in Legacy mode in the factory for your HPE ProLiant Gen9 Server

Standard Features

HPE Insight Online	HPE Insight Online, available at no additional cost as part of your Hewlett Packard Enterprise warranty or contractual support agreement with Hewlett Packard Enterprise, is a personalized dashboard for simplified tracking of IT operations and support information from anywhere, anytime. Learn more at http://www.hpe.com/info/insightonline/explorer
Security	Power-on password Keyboard password QuickLock Network Server Mode Serial interface control Administrator's password iLO 4 (Integrated Lights-Out 4) has 12 customizable user accounts and SSL encryption iLO 4 can be disabled via a Global Setting Integrated Lights-Out can be disabled via a Global Setting iLO Advanced supports directory services integration TPM 2.0 UEFI
Warranty	This product is covered by a global limited warranty and supported by Hewlett Packard Enterprise Services and a worldwide network of Hewlett Packard Enterprise Authorized Channel Partners resellers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HPE Pointnext operational services or customized service agreements. Hard

Standard Features

Form Factor	1U Rack form factor One of the following depending on model 8 SFF Drive Bay Version and 10 SFF Drive Bay Version 1.7' (43.2cm) Height x 17.11" (43.47cm) Width x 27.5" (69.85cm) Length 4 LFF Drive Bay Version 1.7' (43.2cm) Height x 17.11" (43.47cm) Width x 29.5" (74.67cm) Length NOTE: Dimensions without bezel.
Embedded Management	HPE Integrated Lights-Out (iLO) Monitor your servers for ongoing management, service alerting, reporting and remote management with HPE iLO. Learn more at http://www.hpe.com/info/iLO UEFI Configure and boot your servers securely with industry standard Unified Extensible Firmware Interface (UEFI). Learn more at http://www.hpe.com/servers/uefi RESTful API RESTful API for iLO 4 is Redfish 1.0 conformance for simplified server management such as configuration and maintenance tasks based on modern industry standards. Learn more at http://www.hpe.com/info/restfulapi Intelligent Provisioning Hassle free server and OS provisioning for 1 or few servers with Intelligent Provisioning. Learn more at http://www.hpe.com/servers/intelligentprovisioning Embedded Remote Support The Hewlett Packard Enterprise embedded remote support, when used with Insight Online direct connect or HPE Insight Remote Support, allows HPE ProLiant servers to transmit hardware events directly to Hewlett Packard Enterprise or a Hewlett Packard Enterprise Authorized Partner for automated phone home support. Learn more at http://www.hpe.com/info/insightonline/explorer
Server Utilities	Smart Update Optimize firmware and driver updates with Smart Update solutions including Smart Update Manager (SUM) and Service Pack for ProLiant (SPP). Learn more at http://www.hpe.com/servers/smartupdatemanager HPE Systems Insight Manager (HPE SIM) HPE SIM allows you to monitor the health of your HPE ProLiant Servers and HPE Integrity Servers, and also provides you with basic support for non-Hewlett Packard Enterprise servers. HPE SIM also integrates with Smart Update Manager to provide quick and seamless firmware updates. Learn more at http://www.hpe.com/servers/hpsim Scripting Tool Kit and Windows PowerShell Provision 1 to many servers using your own scripts to discover and deploy them with Scripting Tool Kit (STK) for Windows and Linux or Scripting Tools for Windows PowerShell. Learn more at http://www.hpe.com/servers/proliant/stk or http://www.hpe.com/servers/powershell RESTful Interface Tool RESTful Interface tool is a scripting tool to provision using RESTful API for iLO 4 to discover and deploy servers at scale. Learn more at http://www.hpe.com/info/resttool HPE iLO Mobile Application Enables the ability to access, deploy, and manage your server anytime from anywhere from select smartphones and mobile devices. For additional information please visit: http://www.hpe.com/info/iLO/mobileapp

Optional Features

Server Management	HPE Insight Control HPE Insight Control lets you deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. For more information, see http://www.hpe.com/info/insightcontrol HPE Insight Cluster Management Utility (CMU) HPE Insight Cluster Management Utility is a HyperScale management framework that includes software for the centralized provisioning, management and monitoring of nodes and infrastructure. Learn more at http://www.hpe.com/info/cmu
Rack and Power Infrastructure	HPE Rack and Power Infrastructure products and services create highly efficient and intelligent solutions for existing or new IT data centers. HPE Rack and Power Infrastructure solutions – rack infrastructure, power protection and management, performance optimized data centers (PODs) – are the foundation you are looking for to help secure your long-term IT success. These products are designed to help you react to changes in the industry. They deliver efficient, easy-to-use capabilities to manage, monitor, deploy and provision infrastructure from entry to enterprise. As an industry leader, Hewlett Packard Enterprise is uniquely positioned to address the key concerns of power, cooling, cable management and system access. Learn more at HPE Rack and Power Infrastructure
High Performance Clusters	HPE Insight Cluster Management Utility (CMU) HPE Insight Cluster Management Utility is a HyperScale management framework that includes software for the centralized provisioning, management and monitoring of nodes and infrastructure. Learn more at http://www.hpe.com/info/cmu
HPC Interconnects	NOTE: High Performance Computing (HPC) Interconnect technologies are available for this server under the HPE Cluster Platform product portfolio. These high-speed interconnects are fully supported by Hewlett Packard Enterprise when they are part of these configurations to create clusters. Solutions can be defined with a lot of flexibility with the help of configuration tools. Please visit the following URL to configure HPEC Clusters with InfiniBand Interconnects: http://www.hpe.com/info/hpec/solutions
Storage Software	Whether you need to solve a specific data protection, archiving, or storage command and control challenge, or deliver on strategic consolidation, compliance, or continuity initiatives, look no further than Hewlett Packard Enterprise storage software. Our storage software helps you reduce costs, simplify storage infrastructure, protect vital assets and respond faster to business opportunities. Storage software that gets the job done: <ul style="list-style-type: none"> Data Protection and Recovery Software Whether you're a large enterprise or a smaller business, Hewlett Packard Enterprise data protection and recovery software will cost-effectively protect you against disaster and ensure business continuity. Data Archive and Migration Software Hewlett Packard Enterprise storage software enables you to comply with data retention and retrieval requirements, improve application performance, and reduce costs by efficiently migrating infrequently accessed or less valuable data to lower cost storage. Storage Resource Management Hewlett Packard Enterprise storage software provides the command and control of your physical and virtual environment.

000075

Optional Features

- Data Replication Software**
Hewlett Packard Enterprise offers array-based and host-based replication software for use in disaster recovery, testing, application development and reporting.
- Storage Device Management Software**
Maximize your investment in Hewlett Packard Enterprise storage and networking with software that enables hardware-specific configuration, performance tuning and connectivity management.
- HPE StoreVirtual VSA**
Enable highly available and clustered storage in your HPE ProLiant servers with virtualized storage. Add StoreVirtual VSA to multiple servers, manage it as a single pool of shared storage capacity, and scale it to match your evolving needs. To simplify deployment, Hewlett Packard Enterprise offers StoreVirtual Ready Nodes, pre-defined reference configurations for converged vSphere and Hyper-V virtualization solutions. You also have the option to install free 1TB-capacity StoreVirtual VSA software during server setup within Intelligent Provisioning. HPE ProLiant Gen9 servers include a 3-year limited license for this HPE software-defined storage at no extra cost. More information, instructional videos, and free management software are available at <http://www.hpe.com/storage/storevirtual>

NOTE: For more information about Storage Software including QuickSpecs, please see <https://www.hpe.com/us/en/solutions/hpc-high-performance-computing/hpc-software.html>

One Config Simple (SCE)

SCE is a guided self-service tool to help sales and non-technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes. If you require "custom" rack configuration or configuration for products not available in SCE, please contact Hewlett Packard Enterprise Customer Business Center or an Authorized Partner for assistance. <http://ocsc.ext.hpe.com/>

Service and Support

HPE Support Services
HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to Hewlett Packard Enterprise to help prevent problems and solve issues faster. HPE Support Services enable you to choose the right service level, length of coverage and response time as you purchase your new server, giving you full entitlement to the support for need for your IT and business.

Connect your devices
Unlock all of the benefits of your technology investment by connecting your products to Hewlett Packard Enterprise. Achieve up to 77% reduction in down time, near 100% diagnostic accuracy and a single consolidated view of your environment. By connecting, you will receive 24x7 monitoring, pre-failure alerts, automatic call logging, and automatic parts dispatch. HPE Proactive Care Service and HPE Datacenter Care Service customers will also benefit from proactive activities to help prevent issues and increase optimization. All of these benefits are already available to you with your server storage and networking products, securely connected to Hewlett Packard Enterprise support.
L-DC 3-HPE-DC-10000-381A-3015

Recommended Support
Standard: HPE Proactive Care* with 24x7 coverage, three year Support Service
HPE Proactive Care gives customers an enhanced call experience. When your products are connected to Hewlett Packard Enterprise, Proactive Care helps prevent problems and maintains IT stability by utilizing personalized proactive reports with recommendations and advice. This service combines three years proactive reporting and advice with our 24x7 coverage, four hour hardware response time when there is a problem. This service also includes collaborative software support for independent Software Vendors (ISVs), (Red Hat, VMware, Microsoft, etc) running on your Hewlett Packard Enterprise servers.
<https://www.hpe.com/h20195/v2/GetPDF.aspx/4AA3-9B55ENW.pdf>

Optimized HPE Proactive Care* with 6 hour call-to-repair commitment, three year Support Service
HPE Proactive Care gives customers an enhanced call experience. When your products are connected to Hewlett Packard Enterprise, Proactive Care helps prevent problems and maintains IT stability by utilizing personalized proactive reports with recommendations and advice. This service combines three years proactive reporting and advice with our highest level of hardware support - Hewlett Packard Enterprise 24x7, six hour hardware call-to-repair. Hewlett Packard Enterprise is the only leading manufacturer who makes this level of coverage available as a standard service offering for your most valuable servers. This service also includes collaborative software support for independent Software Vendors (ISVs), (Red Hat, VMware, Microsoft, etc) running on your Hewlett Packard Enterprise servers.
<https://www.hpe.com/h20195/v2/GetPDF.aspx/4AA3-9B55ENW.pdf>

Parts and Materials
Hewlett Packard Enterprise will provide Hewlett Packard Enterprise-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product QuickSpecs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction.

Related Services
HPE Server Hardware Installation
Provides for the basic hardware installation of Hewlett Packard Enterprise branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner.
<https://www.hpe.com/h20195/v2/GetPDF.aspx/5981-9354EN.pdf>

Service and Support

HPE Installation and Startup Service
Provides for the installation and startup of Hewlett Packard Enterprise technology including BladeSystems, C-Class enclosure, HPE ProLiant c-Class and Integrity server blades, storage blades, SAN switch blades, HPE Virtual Connect modules (Ethernet and Fibre Channel), Ethernet network interconnects, and InfiniBand, as well as the installation of one supported operating system type (Windows* or Linux).

HPE Technology Services Support Credits
Offer flexible services and technical skills to meet your changing IT demands. With a menu of service that is tailored to suit your needs, you get additional resources and specialist skills to help you maintain peak performance of your IT. Offered as annual credits, you can plan your budgets while proactively responding to your dynamic business.

HPE Education Services
Keep your IT staff trained making sure they have the right skills to deliver on your business outcomes. Book on a class today and learn how to get the most from your technology investment. <http://www.hpe.com/www/learn>

HPE Support Center
The HPE Support Center is a personalized online support portal with access to information, tools and experts to support Hewlett Packard Enterprise business products. Submit support cases online, chat with Hewlett Packard Enterprise experts, access support resources or collaborate with peers.

Learn more <http://www.hpe.com/support/hpecc>

The Hewlett Packard Enterprise Support Center Mobile App* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime.

HPE Insight Remote Support and HPE Support Center are available at no additional cost with a Hewlett Packard Enterprise warranty, HPE Support Service or Hewlett Packard Enterprise contractual support agreement.

*HPE Support Center Mobile App is subject to local availability.

For more information: <http://www.hpe.com/services>

Pre-configured Models

For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

1. Pre-configured models ship with the configurations below. Options can be selected from the Core or Additional options section of this QuickSpecs.
2. Hewlett Packard Enterprise does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.
3. If you desire a custom configuration please see "Configuration Information - Factory Integrated Models" section of this QuickSpecs.

NOTE: All Pre-configured Models come populated with some hard drive blanks installed. Should the customer need additional hard drive blanks, they can order more using either HPE SFF Hard Drive Blank Kit (666997-8211) or HPE LFF Hard Drive Blank Kit (666996-8211).

NOTE: All pre-configured servers ship with a standard 4-pin IEC C-13/C-14 jumper cord (A0K02A). This jumper cord is also included with each standard AC power supply option kit. If a different power cord is required, please direct the [ProLiant Power Cables](#) web page.

CAUTION: Hewlett Packard Enterprise recommends that a minimum of two people are required for all Rack Server installations. Please refer to your installation instructions for proper tools and number of people to use for any installation.

[SKU Number]	Entry Models		Base Models	
	818207-821	818208-B21	848730-B21	848730-B21
Model Name	HPE ProLiant DL360 Gen9 E5-2603v4 1P 8GB-R H240r 8SFF 500W PS Entry SAS Server	HPE ProLiant DL360 Gen9 E5-2630v4 1P 16GB-R P440r 8SFF 500W PS Base SAS Server	HPE ProLiant DL360 Gen9 E5-2640v4 1P 16GB-R P440r 8SFF 500W PS Base Server	HPE ProLiant DL360 Gen9 E5-2640v4 1P 16GB-R P440r 8SFF 500W PS Base Server
Processor	Intel® Xeon® E5-2603v4	Intel® Xeon® E5-2630v4	Intel® Xeon® E5-2640v4	Intel® Xeon® E5-2640v4
Number of Processors	One			
Memory	8GB (1x8GB Registered DIMMs, 2400 MHz)	16GB (1x16GB Registered DIMMs, 2400 MHz)	16GB (1x16GB Registered DIMMs, 2400 MHz)	16GB (1x16GB Registered DIMMs, 2400 MHz)
	NOTE: With E5-2603 v4 Processor, the actual DIMM speed will operate at 1866 MHz depending on DIMM configuration.	NOTE: With E5-2630 v4 Processor, the actual DIMM speed will operate at 2133 MHz depending on DIMM configuration.	NOTE: With E5-2640 v4 Processor, the actual DIMM speed will operate at 2133 MHz depending on DIMM configuration.	NOTE: With E5-2640 v4 Processor, the actual DIMM speed will operate at 2133 MHz depending on DIMM configuration.
Network Controller	HPE Embedded 1Gb Ethernet 4-port 331i Adapter			
Storage Controller	HPE H240r Smart Host Bus Adapter	HPE Flexible Smart Array P440r/2GB		
Hard Drive	None ship standard			
Internal Storage	8 SFF HDD Bays			
Optical Drive Bay	Optional via Universal Media Bay			
PCI-Express Slots	2 Standard (1-FH/X L, 1-L) PCIe 3.0			
Power Supply	(1) HPE 500W Flex Slot Platinum Power Supply			
Fans				
Management	iLO Management			
Form Factor				
Warranty	Server Warranty			

ght Control
day response

Pre-configured Models

	Performance Models	High Performance Models
(SKU Number)	B18209-B21	851937-E21
Model Name	HPE ProLiant DL360 Gen9 ES-2650v4 2P 32GB-R P440ar 8SFF 800W RPS Perf SAS Server	HPE ProLiant DL360 Gen9 ES-2660v4 2P 64GB-R P440ar 8SFF 800W RPS Perf2 SAS Server
Processor	Intel® Xeon® ES-2650v4	Intel® Xeon® ES-2660v4
Number of Processors	Two	
Memory	32GB (2x16GB Registered DIMMs, 2400 MHz) NOTE: With ES-2650 v4 Processor, the actual DIMM speed will operate at 2400 MHz depending on DIMM configuration.	64GB (4x16GB Registered DIMMs, 2400 MHz) NOTE: With ES-2660 v4 Processor, the actual DIMM speed will operate at 2400 MHz depending on DIMM configuration.
Network Controller	HPE Embedded 4x1Gb, plus 2x10Gb-T Flexible LOM	HPE Embedded 4x1Gb, plus 2x10Gb SFP+ Flexible LOM
Storage Controller	HPE Flexible Smart Array P440ar/2GB	HPE Smart Array P440ar/2G Controller
Hard Drive	None ship standard	
Internal Storage	8 SFF HDD Bays	
Optical Drive Bay	Optional via Universal Media Bay	
PCI-Express Slots	2 Standard (1-FH/XL, 1-LP) PCIe 3.0	3 Standard (1-FH/HL, 2-LP) PCIe 3.0
Power Supply	(2) HPE 800W Flex Slot Platinum Power Supply	
Fans	7 standard hot plug fans, redundant	
Management	iLO Management (standard), Intelligent Provisioning (standard), iLO Advanced (standard), HPE OneView (optional)	
Energy Star	Meets Energy Star requirements	
Form Factor	Rack (1U), HPE Easy Install Rails	
Warranty	Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response.	

Smart Buy Models

	ES-2600v4 Series Smart Buys			
(SKU Number)	850266-S01	861540-S01	850367-S01	873831-S01
Model Name	HPE ProLiant DL360 Gen9 ES-2680v4 2P SFF US Sw/S-Buy	HPE ProLiant DL360 Gen9 ES-2697v4 SFF US Sw/S-Buy	HPE ProLiant DL360 Gen9 ES-2690v4 SFF US Sw/S-Buy	HPE ProLiant DL360 Gen9 ES-2609v4 8SFF US Sw/S-B
Processor	Intel® Xeon® ES-2680v4	Intel® Xeon® ES-2697v4	Intel® Xeon® ES-2690v4	Intel® Xeon® ES-2609v4
Number of Processors	Two		One	
Memory	64GB (4x16GB Registered DIMMs, 2400 MHz) NOTE: DIMMs will operate at 2400MHz with this processor.	32GB (2x16GB Registered DIMMs, 2400 MHz) NOTE: DIMMs will operate at 2400MHz with this processor.	8GB (1x8GB) Registered DIMMs, 2400MHz NOTE: DIMMs will operate at 1866MHz with this processor.	
Network Controller	HPE Embedded 1Gb Ethernet 4-port 331i Adapter + HPE 533FLR-T 10GbE 2-port	HPE Embedded 1Gb Ethernet 4-port 331i Adapter	HPE Embedded 1Gb Ethernet 4-port 331i Adapter + HPE 533FLR-T 10GbE 2-port	HPE Embedded 1Gb Ethernet 4-port 331i Adapter
Storage Controller	HPE Flexible Smart Array P440ar/2GB + Smart Storage Battery		HPE H240ar Dynamic Smart Array	
Hard Drive	None ship standard			
Internal Storage	8 SFF SATA/SAS Bays			
Optical Drive Bay	None included. (Optional: DVD-ROM, DVD-RW via Universal Media Bay)			
PCI-Express Slots	Three (3) Standard (1-FH/HL, 2-LP) PCIe 3.0		Two (2) Standard (1-FH/XL, 1-LP) PCIe 3.0	
Power Supply	Two (2) HPE 800W Flex Slot Platinum Power Supplies	Two (2) HPE 500W Flex Slot Platinum Power Supplies	Two (2) HPE 800W Flex Slot Platinum Power Supplies	One (1) HPE 500W Flex Slot Platinum Power Supply
Fans	Seven (7) Standard hot plug fans, redundant		Five (5) Standard hot plug fans, redundant	
Management	Standard: iLO Management Optional: iLO Advanced, Insight Control, HPE OneView			
Form Factor	Rack (1U), HPE Easy Install Rails			
Warranty	3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response			

Smart Buy Models

	ES-2600v4 Series Smart Buys			
(SKU Number)	B50365-S01	867446-S01	867447-S01	B49455-S01
Model Name	HPE ProLiant DL360 Gen9 ES-2643v4 SFF US Sw/S-Buy	HPE ProLiant DL360 Gen9 ES-2640v4 SFF US Sw/S-Buy	HPE ProLiant DL360 Gen9 ES-2620v4 SFF US Sw/S-Buy	HPE ProLiant DL360 Gen9 ES-2620v4 SAS US Sw/S-Buy
Processor	Intel® Xeon® ES-2643v4	Intel® Xeon® ES-2640v4	Intel® Xeon® ES-2620v4	
Number of Processors	One			
Memory	32GB (2x16GB Registered DIMMs, 2400 MHz) NOTE: DIMMs will operate at 2400MHz with this processor.	16GB (1x16GB Registered DIMMs, 2400 MHz) NOTE: DIMMs will operate at 2133MHz with this processor.	16GB (2x8GB) Registered DIMMs, 2400 MHz NOTE: DIMMs will operate at 2133MHz with this processor.	
Network Controller	HPE Embedded 1Gb Ethernet 4-port 331i Adapter			
Storage Controller	HPE Flexible Smart Array P440ar/2GB + Smart Storage Battery		HPE H240ar Smart Host Bus Adapter	
Hard Drive	None ship standard			
Internal Storage	8 SFF SATA/SAS Bays			
Optical Drive Bay	None included. (Optional: DVD-ROM, DVD-RW via Universal Media Bay)			
PCI-Express Slots	Two (2) Standard (1-FH/XL, 1-LP) PCIe 3.0			
Power Supply	Two (2) HPE 500W Flex Slot Platinum Power Supplies	(1) HPE 500W Flex Slot Platinum Power Supplies		
Fans	Five (5) Standard hot plug fans, redundant			
Management	Standard: iLO Management Engine Optional: iLO Advanced, Insight Control, HPE OneView			
Form Factor	Rack (1U), HPE Easy Install Rails			
Warranty	3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response			

Configuration Information - Factory Integrated Models

This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, Hewlett Packard Enterprise recommends the use of an Hewlett Packard Enterprise approved configurator. Contact your local sales representative for information on configurable product offerings and requirements.

1. Factory Integrated Models must start with a CTO Server.
2. FIO Indicates that this option is only available as a factory installable option.
3. All Factory Integrated Models will be populated with sufficient hard drive blanks based on the number of initial hard drives ordered with the server.
4. Some options may not be integrated at the factory. Contact your local sales representative for additional information.

Step 1: Base Configuration (choose one of the following configurable models)

CTO Server	HPE ProLiant DL360 Gen9 4LFF Configure-to-order Server	HPE ProLiant DL360 Gen9 8SFF Configure-to-order Server
SKU Number	755259-B21	755258-B21
Processor	2 (optional) x HPE Smart Socket Guide	
DIMM Slots	24 DIMM slots for RDIMM, LRDIMM, DDR4 Memory	
Storage Controller	HPE Dynamic Smart Array B140i	
PCIe	2 PCIe 3.0 Slots: Slot 1, FH / X Length; Slot 2, Low Profile	
Drive Cage	4LFF Hot Plug	8SFF Hot Plug
Network Controller	HPE Embedded 1Gb Ethernet 4-port 331i Adapter	
Fans	5 standard hot plug fans, redundant	
Management	iLO Management (standard), Intelligent Provisioning (standard)	
Ears	1 front, 2 internal, 2 rear	
	HPE Quick Release Ears	

NOTE: 4LFF CTO Server includes 1 SATA Cable (762213-B21), which attaches to the B140i controller.
NOTE: 8SFF CTO Server includes two 4 x Mini-SAS Cables (762209-B21), which attach to an optional HPE Smart HBA H240ar or H-PE Smart Array P440ar controller.

Step 2: Choose Required Options (only one of the following from each list unless otherwise noted)

HPE Processors	ES-2600v4 series Processors	
HPE DL360 Gen9 Intel® Xeon® ES-2630Lv4 (1.8GHz/10-core/25MB/55W) FIO Processor Kit		818164-L21 Kit
HPE DL360 Gen9 Intel® Xeon® ES-2650Lv4 (1.7GHz/14-core/35MB/65W) FIO Processor Kit		818166-L21 Kit
HPE DL360 Gen9 Intel® Xeon® ES-2603v4 (1.7GHz/6-core/15MB/85W) FIO Processor Kit		818168-L21 Kit
NOTE: This processor does not support Hyper-Threading.		
HPE DL360 Gen9 Intel® Xeon® ES-2609v4 (1.7GHz/6-core/15MB/85W) FIO Processor Kit		818170-L21 Kit
NOTE: This processor does not support Hyper-Threading.		
HPE DL360 Gen9 Intel® Xeon® ES-2609v4 (1.7GHz/6-core/15MB/85W) FIO Processor Kit		818170-L21 Kit
HPE DL360 Gen9 Intel® Xeon® ES-2609v4 (1.7GHz/6-core/15MB/85W) FIO Processor Kit		818170-L21 Kit
HPE DL360 Gen9 Intel® Xeon® ES-2609v4 (1.7GHz/6-core/15MB/85W) FIO Processor Kit		818170-L21 Kit
HPE DL360 Gen9 Intel® Xeon® ES-2609v4 (1.7GHz/6-core/15MB/85W) FIO Processor Kit		818170-L21 Kit

000007

Configuration Information - Factory Integrated Models

Table listing HPE ProLiant DL360 Gen9 processor configurations with columns for model number and processor specifications.

- NOTES: If two processors are desired, select one xxxxxx-L21 and one corresponding xxxxxx-B21.
NOTE: Up to two processors supported. Mixing different processor models is not supported.
NOTE: DDR4 speed is the minimum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.
NOTE: v4 Processors require PC4-21300T Memory Kits.
NOTE: For the Intel® C600 Chipset E5-2600 Series, the letter preceding the model number indicates the Product Line (E3, E5, E7), 2e00x vs. 2 number of CPUs in a Node, 0 is socket/segment designation, (0)=Processor SKU, x=L for Low Power SKUs and v4 for v4 (not yet designated)=version number.
NOTE: Select one or more memory kits from below.
NOTE: LRDIMM, RDIMM are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen9 servers support LRDIMM and RDIMM.
NOTE: HPE memory from previous generation servers are not qualified or warranted with the HPE ProLiant Server. HPE SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen9.
NOTE: If only one processor is installed, only half of the total DIMM slots are available. When populating with two processors, all DIMM slots are available.
NOTE: Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: http://www.hp.com/go/proliant-energy-efficient
NOTE: Depending on the memory configuration and processor model, the memory speed may run at 2400MHz, 2133MHz, 1866MHz, 1600MHz or 1333MHz. Please see Memory Population Table or the Online Memory Configuration Tool at http://www.hp.com/go/dsl4solutions

Configuration Information - Factory Integrated Models

- NOTE: Flex Slot Battery Backup provides 750W output and 500W in parallel configuration.
NOTE: Only one Battery Backup module per server, and a Flex Slot Power Supply needed in parallel.

Step 3: Choose Additional Factory Integratable Options (only one of the following from each list unless otherwise noted)

Table listing factory integratable options for HPE ProLiant DL360 Gen9, including HPE Storage Controllers, HPE Smart Array Controllers, HPE Smart Host Bus Adapters, HPE Cable Options, BIOS Mode, Controller State, and HPE Insight Software.

Configuration Information - Factory Integrated Models

Table listing Registered DIMMs (RDIMMs) for E5-2600v4 Series, including HP 8GB, HP 16GB, HP 32GB, and HP 128GB configurations.

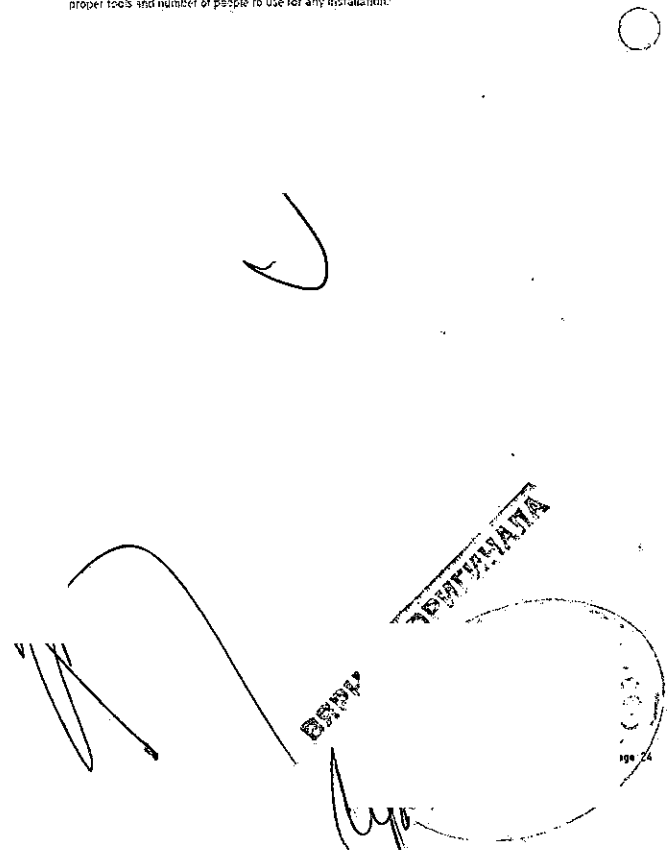
HPE Power Supplies

- NOTE: 128GB DIMMs cannot be mixed with any other size DIMMs.
HPE Persistent Memory (NVDIMM)
NOTE: The following memory is supported by the E5-2600v4 series Processor only.
HPE 8GB NVDIMM Single Rank x4 DDR4-2133 Module 782692-B21
NOTE: A maximum of 16 NVDIMMs can be supported. NVDIMMs cannot be used with LRDIMMs.
NOTE: NVDIMMs only supported on factory configured servers with E5-2600 v4 processors, not supported on servers upgraded from E5-2600 v3 to E5-2600 v4 processors.
NOTE: Prior to selecting a power supply option, it is highly recommended that you review your server configuration in the HPE Power Advisor tool to determine the right size power supply for your server configuration. The HPE Power Advisor is located at: http://www.hp.com/go/hpepoweradvisor
NOTE: Mixing of power supplies in the same server is not supported. All power supplies must be of the same input voltage, output rating, and efficiency rating. If non-matching power supplies are installed, you may receive an error message and/or experience operational issues with your server.
NOTE: Support for HPE Power Discovery Services is included with the 1400W Flex Slot option. Power specifications and technical content for all HPE Server power supplies can be found at: http://www.hp.com/go/proliant/powersupply
NOTE: Maximum of two (2) Flex Slot Power Supplies per platform.
HPE Flex Slot Hot-Plug Power Supplies
HP 500W Flex Slot Platinum Hot Plug Power Supply Kit 720478-B21
NOTE: Flex Slot Platinum power supplies support power efficiency of up to 94% and include a standard C-14 power inlet connector.
HP 800W Flex Slot Platinum Hot Plug Power Supply Kit 720479-B21
NOTE: Flex Slot Platinum power supplies support power efficiency of up to 94% and include a standard C-14 power inlet connector.
HP 800W Flex Slot Titanium Hot Plug Power Supply Kit 720482-B21
NOTE: Flex Slot Titanium power supplies support power efficiency of up to 96% and include a standard C-14 power inlet connector.
HP 800W Flex Slot Universal Hot Plug Power Supply Kit 720484-B21
NOTE: Flex Slot Universal power supplies support power efficiency of up to 94% and support both 277VAC/380VDC power inputs.
HP 800W Flex Slot 48VDC Hot Plug Power Supply Kit 720480-B21
NOTE: Flex Slot 48VDC power supplies support power efficiency of up to 94%.
HP 1400W Flex Slot Platinum Plus Hot Plug Power Supply Kit 720620-B21
NOTE: Flex Slot Platinum Plus power supplies support power efficiency of up to 94% and include a C-14 power inlet connector that can support HPE Power Discovery Services (DMS connector).
HP 750W Flex Slot Hot Plug Battery Backup Module 738024-B21

Configuration Information - Factory Integrated Models

Step 4: Choose Additional Options for Factory Integration from Core and Additional Options Sections below.

CAUTION: Hewlett Packard Enterprise recommends that a minimum of two people are required for all Rack Server installations. Please refer to your installation instructions for proper tools and number of people to use for any installation.



QuickSpecs

Core Options

HPE ProLiant DL360 Generation9 (Gen9)

NOTE: Some options may not be integrated at the factory. To ensure only valid configurations are ordered, Hewlett-Packard Enterprise recommends the use of an HPE ProLiant Enterprise-approved configurator. Contact your local sales representative for additional information.

Table with columns for HPE Unique Options and HPE DL360 Gen9 configurations. Includes options for SAS/SATA Universal Media Bay Kit, DVD-RW/USB Universal Media Bay Kit, SFF DVD/USB Universal Media Bay Kit, and various processor and memory configurations.

QuickSpecs

Core Options

HPE ProLiant DL360 Generation9 (Gen9)

NOTE: The PCIe card in this enablement kit can only be populated in slot 1 of primary rack.

Table with columns for HPE Processors and HPE DL360 Gen9 configurations. Lists various Intel Xeon processors (E5-2600v4 series) and their corresponding processor kits.

QuickSpecs

Core Options

HPE ProLiant DL360 Generation9 (Gen9)

Table listing HPE DL360 Gen9 configurations with Intel Xeon processors (E5-2680v3, E5-2690v3, E5-2683v3, E5-2695v3, E5-2677v3, E5-2667v3, E5-2677v3, E5-2699v3, E5-2650v3, E5-2699v3).

HPE Memory

Table listing HPE memory configurations including Registered DIMMs (RDIMMs) for E5-2600v4 Series and Load Reduced DIMMs (LRDIMMs) for E5-2600v4 Series.

QuickSpecs

Core Options

HPE ProLiant DL360 Generation9 (Gen9)

Table listing HPE DL360 Gen9 configurations with optical drives (DVD-ROM, DVD-RW, LFF Optical Cable) and various SAS hard drive configurations (12G SAS 10K Hot Plug SFF, 12G SAS 12G Enterprise, 12G SAS 15K Hot Plug SFF).

000077

Core Options

Table listing core options for HPE ProLiant DL360 Gen9, including SAS and SATA configurations with part numbers and descriptions.

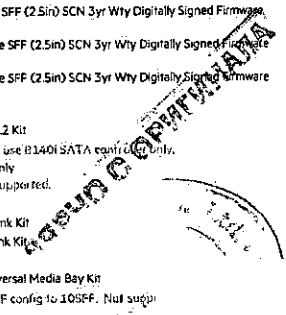
Table listing core options for HPE ProLiant DL360 Gen9, including SAS and SATA configurations with part numbers and descriptions.

Core Options

Table listing core options for HPE ProLiant DL360 Gen9, including SATA configurations, NVMe drives, and RAID controllers.

Core Options

Table listing core options for HPE ProLiant DL360 Gen9, including SATA configurations, NVMe drives, and RAID controllers.



Core Options

<p>HP DL360 Gen9 NVMe 2 Solid State Drive Express Bay Enablement Kit</p> <p>NOTE: This option provides support for up to 2 NVMe drives in SFF slots. This option cannot be used with the Universal Media Bay Kit.</p> <p>NOTE: The HPE DL360 Gen9 High Performance Fan Kit (766201-B21) is required with the NVMe kit.</p> <p>NOTE: The PCIe card can only be used in slot 1 of primary riser or slots of secondary optional FH riser.</p>	<p>764628-B21</p>
<p>HP DL360 Gen9 6 NVMe + 4 SAS/SATA Express Bay Enablement Kit</p> <p>NOTE: This option provides support for up to 6 NVMe drives in SFF only. Adding NVMe drives renders support for Universal Media Bay.</p> <p>NOTE: The PCIe card in this enablement kit can only be populated in slot 1 of primary riser.</p>	<p>817676-B21</p>

HPE Networking 25 Gigabit Ethernet adapters

<p>HPE Ethernet 4x25Gb 1-port 620QSFP28 Adapter</p> <p>HPE Ethernet 10/25Gb 2-port 640SFP28 Adapter</p> <p>10 Gigabit Ethernet adapters</p> <p>HPE Ethernet 10Gb 2-port 562SFP+ Adapter</p> <p>HPE Ethernet 10Gb 2-port 561T Adapter</p> <p>HPE Ethernet 10Gb 2-port 560SFP+ Adapter</p> <p>HPE Ethernet 10Gb 2-port 546SFP+ Adapter</p> <p>HPE Ethernet 10Gb 2-port 530SFP Adapter</p> <p>HPE Ethernet 10Gb 2-port 530T Adapter</p>	<p>817762-B21</p> <p>817753-B21</p>
---	---

NOTE: The DL360 Gen9 chassis ships with 4x1Gb Embedded.

NOTE: A minimum of two Gigabytes (2 GB) of server memory is required per each adapter.

NOTE: Direct Attach Cable (DAC) for copper environments or fiber transceivers and cables for fiber-optic environments must be purchased separately.

NOTE: Please see NIS QuickSpecs for Technical Specifications and additional information: <http://www.hpe.com/server/ProLiant/NIS>.

1 Gigabit Ethernet adapters

<p>HPE Ethernet 1Gb 4-port 366T Adapter</p> <p>HPE Ethernet 1Gb 4-port 331T Adapter</p> <p>HPE Ethernet 1Gb 2-port 361T Adapter</p> <p>HPE Ethernet 1Gb 2-port 332T Adapter</p> <p>FlexibleLOM Adapters</p> <p>HPE Ethernet 10/25Gb 2-port 640FLR-SFP28 Adapter</p> <p>HPE Ethernet 10Gb 2-port 562FLR-SFP+ Adapter</p> <p>HPE Ethernet 10Gb 2-port 561FLR-T Adapter</p> <p>HPE Ethernet 10Gb 2-port 560FLR-SFP+ Adapter</p> <p>HPE FlexFabric 10Gb 2-port 550FLR-SFP+ Adapter</p> <p>HPE Ethernet 10Gb 2-port 546FLR-SFP+ Adapter</p> <p>HPE FlexFabric 10Gb 4-port 536FLR-T Adapter</p> <p>HPE FlexFabric 10Gb 2-port 534FLR-SFP+ Adapter</p> <p>HPE FlexFabric 10Gb 2-port 533FLR-T Adapter</p> <p>HPE Ethernet 1Gb 4-port 366FLR Adapter</p>	<p>811546-B21</p> <p>647594-B21</p> <p>652497-B21</p> <p>615732-B21</p>
---	---

Core Options

<p>HPE Ethernet 1Gb 4-port 331FLR Adapter</p> <p>NOTE: The DL360 Gen9 chassis ships with 4x1Gb Embedded.</p> <p>NOTE: Only one FlexibleLOM can be added to the server as an upgradeable option.</p>	<p>629135-B22</p>
--	--------------------------

HPE InfiniBand

<p>HPE InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+QSFP Adapter</p> <p>HPE InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+FLR-QSFP Adapter</p> <p>HPE InfiniBand QDR/Ethernet 10Gb 2-port 544-FLR-QSFP Adapter</p> <p>HPE InfiniBand EDR 100Gb 1-port 8410SFP28 Adapter</p> <p>HPE InfiniBand EDR/Ethernet 100Gb 1-port 8400SFP28 Adapter</p> <p>HPE InfiniBand EDR/Ethernet 100Gb 2-port 8400SFP28 Adapter</p> <p>HPE 100Gb 1-port QP101 OSFP28 x16 PCIe Gen3 with Intel® Omni-Path Architecture Adapter</p>	<p>764284-B21</p> <p>764285-B21</p> <p>764286-B21</p> <p>872725-B21</p> <p>825110-B21</p> <p>825111-B21</p> <p>829335-B21</p>
---	--

NOTE: For additional InfiniBand information: <https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04154440>.

HPE I/O Expansion Options

<p>HP DL360 Gen9 Low Profile PCIe Slot CPU2 Kit</p> <p>NOTE: This option kit requires a second CPU and will add an additional Low Profile PCIe 3.0 slot.</p> <p>HP DL360 Gen9 2P Full Height PCIe Slot 2 GPU Enablement Kit</p> <p>NOTE: The enablement kit can support more than one Full Height GPU card.</p> <p>NOTE: This option kit requires a second CPU and will add an additional FH / XL Length PCIe 3.0 slot.</p> <p>NOTE: This kit includes GPU power cable and bracket; when this option kit is installed the Low Profile PCIe 3.0 riser is not usable.</p> <p>NOTE: It is not possible to convert a unit with the Full height kit back to dual Low Profile brackets.</p>	<p>764642-B21</p> <p>867249-B21</p>
---	---

HPE Power Supplies

<p>HPE Flex Slot Platinum Hot-plug Power supplies</p> <p>HPE 1400W Flex Slot Platinum Plus Hot Plug Power Supply Kit</p> <p>NOTE: Flex Slot Platinum Plus power supplies support power efficiency of up to 94%. Includes a C-14 power inlet (blue) connector that can support HPE Power Discovery Services.</p> <p>HPE 500W Flex Slot Platinum Hot Plug Power Supply Kit</p> <p>NOTE: Flex Slot Platinum power supplies support power efficiency of up to 94%. Includes a C-14 power inlet connector.</p> <p>HPE 800W Flex Slot Platinum Hot Plug Power Supply Kit</p> <p>NOTE: Flex Slot Platinum power supplies support power efficiency of up to 94%. NOTE: Also available in -48VDC and 227VAC / 380VDC power inputs. 720480 and 720484.</p> <p>HPE 800W Flex Slot Titanium Hot Plug Power Supply Kit</p> <p>NOTE: Flex Slot Titanium power supplies support power efficiency of up to 94%. Includes a C-14 power inlet connector.</p> <p>HPE 800W Flex Slot Universal Hot Plug Power Supply Kit</p> <p>NOTE: Flex Slot Universal power supplies support power efficiency of up to 94% and support both 277VAC / 380VDC power inputs.</p> <p>HPE 800W Flex Slot -48VDC Hot Plug Power Supply Kit</p> <p>NOTE: Flex Slot -48VDC power supplies.</p>	<p>720620-B21</p> <p>720478-B21</p> <p>720479-B21</p> <p>720482-B21</p> <p>720484-B21</p>
---	--

Core Options

NOTE: Maximum of 2 Flex Slot power supplies per platform.

NOTE: All power supplies must be of the same input voltage, output rating, and efficiency rating. If non-matching power supplies are installed, you may receive an error message and/or experience operational issues with your server.

NOTE: Mixing different power supplies in the same server may limit or disable some power supply features including support for power redundancy. To ensure access to all available features, all power supplies within the same server should have the same output and efficiency ratings.

NOTE: Prior to selecting a power supply option, it is highly recommended that you review your server configuration in the HPE Power Advisor tool to determine the right size power supply. The HPE Power Advisor is located at: <http://www.hpe.com/info/hppoweradvisor>.

NOTE: Support for HPE Power Discovery Services is included with the 1400W Flex Slot option. Power specifications and technical content for all HPE server power supplies can be found at: <http://www.hpe.com/info/proliant/powersupply>.

<p>HPE Computation and Graphics Accelerators</p> <p>HPE NVIDIA Tesla P4 8GB Computational Accelerator</p> <p>NOTE: Max of 2 cards can be ordered (Slots 1 and 3).</p> <p>NOTE: If 2 cards are installed, then 867249-B21 (HPE DL360 Gen9 2P PCIe GPU Enablement Kit) is required.</p> <p>HPE NVIDIA Tesla M4 4GB Computational Accelerator</p> <p>NOTE: Max of 2 cards can be ordered (Slots 1 and 3).</p> <p>NOTE: If 2 cards are installed, then 764642-B21 (HPE DL360 Gen9 Low Profile PCIe Slot CPU2 Kit) is required.</p> <p>HPE NVIDIA Quadro M2000 Graphics Accelerator</p> <p>NOTE: Max of 2 cards can be ordered (Slots 1 and 3).</p> <p>NOTE: If 2 cards are installed, then 867249-B21 (HPE DL360 Gen9 2P PCIe GPU Enablement Kit) is required.</p> <p>300 Graphics Accelerator card</p> <p>NOTE: Supports Linux and Windows operating systems. The supported bare metal and Windows Server 2012 R2 configurations (10SFF and extended ambient operating) configurations are:</p>	<p>Q0V79A</p> <p>P0U9DA</p> <p>P8Y48A</p> <p>Q0V78A</p> <p>766199-B21</p> <p>766201-B21</p>
---	---

NOTE: This kit increases power consumption, to reduce power performance heat sinks (779E235-B21).

Additional Options

NOTE: Some options may not be integrated at the factory. To ensure only valid configurations are ordered, Hewlett-Packard Enterprise recommends the use of an Hewlett-Packard Enterprise approved configurator. Contact your local sales representative for additional information.

<p>HPE Insight Software</p>	<p>HPE Insight Control</p> <p>HPE Insight Control including 1yr 24x7 Technical Support and Updates 1-server LTU</p> <p>HPE Insight Control including 1yr 24x7 TSU E-LTU</p> <p>HPE Insight Control Upgrade from iLO Advanced including 1yr 24x7 Support E-LTU</p> <p>NOTE: Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key.</p> <p>NOTE: Customer will receive a license entitlement certificate. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation keys(s). Includes one year of 24x7 HPE Software Technical Support and Update Service.</p> <p>NOTE: Licenses ship without media. The HPE Insight Control Media Kit can be ordered separately, or can be downloaded at: https://www.hpe.com/info/insightmanagement.</p> <p>NOTE: For additional license options please see the QuickSpecs at: https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04173394</p>	<p>C6N27A</p> <p>C6N28ABE</p> <p>C6N38ABE</p>
<p>HPE Converged Infrastructure Management Software</p>	<p>HPE OneView Advanced (with HPE iLO Advanced)</p> <p>HPE OneView including 3yr 24x7 Support Physical 1-server LTU</p> <p>HPE OneView including 3yr 24x7 Support Flexible Quantity E-LTU</p> <p>HPE OneView Advanced (without HPE iLO Advanced)</p> <p>HPE OneView w/o iLO including 3yr 24x7 Support 1-server LTU</p> <p>HPE OneView w/o iLO including 3yr 24x7 Support Track 1-server LTU</p> <p>HPE OneView w/o iLO including 3yr 24x7 Support Flexible Quantity E-LTU</p> <p>HPE OneView Physical Media Kit LTU</p>	<p>ESY34A</p> <p>ESY35AAE</p> <p>P8B24A</p> <p>P8B25A</p> <p>P8B26AAE</p> <p>ESY37A</p>

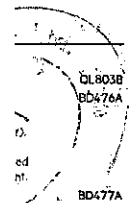
NOTE: Full licenses of HPE OneView Advanced also provide the right-to-use HPE Insight Control without additional charges.

NOTE: Server provisioning (via HPE Insight Control server provisioning) is licensed as part of HPE OneView Advanced and provides multi-server and driver provisioning.

NOTE: Licenses ship without media. The HPE OneView Physical Media Kit can be ordered separately, or can be downloaded at: <http://www.hpe.com/info/oneview>.

NOTE: Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single OneView Media Kit at: <http://www.hpe.com>.

<p>High Performance Clusters</p>	<p>HPE Cluster Manager</p> <p>HPE Insight Cluster</p> <p>HPE Insight Cluster</p> <p>NOTE: These part licenses and support. Customer will receive certificate via physical online in order to obtain HPE Insight Cluster</p>
---	--



000078

Additional Options

NOTE: For additional license, key please see the HPE Insight Cluster Management Utility QuickSpecs

Table with 2 columns: HPE PCIe Workload Accelerator Options and HPE Read Intensive PCIe Workload Accelerator. Includes HPE Mixed Use PCIe Workload Accelerator and HPE 1.6TB PCIe x8 Lanes Mixed Use HH-HL 3yr Why Digitally Signed Firmware Card.

Table with 2 columns: HPE Security and HPE 1U Security Bezel Kit, HPE Trusted Platform Module 2.0 Kit. Includes HPE Trusted Platform Module Option.

Table with 2 columns: HPE Storage Controllers and SAS Controllers. Includes HPE Smart Array Controllers (P841/4GB FBWC, P840/4GB FBWC, DL360 Gen9 Smart Array P840 SAS Card) and HPE Smart Array P840ar/2GB FBWC 12Gb 2-port Internal SAS Controller.

Additional Options

NOTE: The Smart Array P840ar SAS controller will require the P840ar Cable Kit 843234-B21

Table with 2 columns: HPE Smart Array P441/4GB FBWC 12Gb 2-ports Ext SAS Controller, HPE Smart Array P440/4GB FBWC 12Gb 1-port Int SAS Controller, HPE Smart Array P440ar/2GB FBWC 12Gb 2-ports Int SAS Controller, HPE DL360 Gen9 Smart Array P440ar Controller for 2 GPU Configurations.

NOTE: This controller is specific for the DL240 Gen9 with 2 CPUs installed. It has a unique height that will allow the 2nd GPU to fit.

NOTE: When ordering controllers, see HPE Cable Options below for required cables.

Table with 2 columns: HPE Smart Host Bus Adapters (H241, H240, H240ar) and HPE Cable Options (DL360 Gen9 Smart Array P840ar Cable Kit, DL360 Gen9 SFF Embedded SATA Cable).

NOTE: When ordering controllers, see HPE Cable Options below for required cables.

Table with 2 columns: HPE Cable Options (DL360 Gen9 Smart Array P840ar Cable Kit, DL360 Gen9 SFF Embedded SATA Cable).

NOTE: Needed only when attaching drive bays to the B140i controller in an 8 SFF model.

Table with 2 columns: HPE DL360 Gen9 SFF Smart Array P440/H240 SAS Cables.

NOTE: Required for use with the HPE Smart Array P440 (PCIe Controllers) 726821-B21 or 726877-B21, the option kit documentation details out cable placement with the HPE Smart Array P440 in PCIe 3.0 Slots 1 or 2 connecting to the B5FF backplane or the 2 SFF SAS/SATA option kit.

Table with 2 columns: HPE DL360 Gen9 SFF Smart Array P440ar/H240ar SAS Cable, HPE DL360 Gen9 LFF Embedded SATA Cable, HPE DL360 Gen9 LFF Smart Array P440/H240 SAS Cables.

NOTE: Required for use with the HPE Smart Array P440 (PCIe Controllers) 726821-B21 or 726877-B21, the option kit documentation details out cable placement with the HPE Smart Array P440 in PCIe 3.0 Slots 1 or 2 connecting to the 4LFF backplane.

Table with 2 columns: HPE DL360 Gen9 LFF Smart Array P440ar/H240ar SAS Cable.

NOTE: Required for an upgrade from a B140i SATA controller to a HPE Smart HBA 240ar or HPE Smart Array P440ar.

NOTE: Options noted "DL360 Gen9 SFF" are supported on the 8 SFF model only. Options noted "DL360 Gen9 LFF" are supported on the 4 LFF model only.

Table with 2 columns: Optional Software (Smart Array SR SmartCache, Smart Array SR SmartCache E-LTU).

NOTE: HPE SmartCache is supported when one of the supported Smart Array controllers is installed in the server.

NOTE: HPE SmartCache comes standard (no licensing is required) if the HPE Smart Array P840 Controller is installed in the server.

Table with 2 columns: Optional Upgrades (HP 96W Smart Storage Battery with 145mm Cable for DL/ML/SL Servers).

Additional Options

NOTE: For the complete range of tape drives, autoloaders, libraries and media see: http://www.hpe.com/storage/storerever. For hardware and software compatibility of HPE tape backup products: http://www.hpe.com/storage/BURAcompatibility

Rack-Mount Tape Solutions

Table with 2 columns: Tape Drives (HPE StoreEver LTO-7, LTO-6, LTO-5, LTO-4) and HPE Tape Storage Systems (HPE StoreEver MSL6480, MSL6480 Scaleable Expansion Module, MSL6480 Scaleable Base Module, MSL2024 O-drive Tape Library, MSL4048 O-drive Tape Library).

NOTE: Please see the HPE StoreEver MSL6480 Tape Library QuickSpecs for Technical Specifications and additional information.

Table with 2 columns: HPE Disk Backup (HPE RDX Removable Disk Backup System, HPE RDX 4TB USB 3.0 External Disk Backup System, HPE RDX 3TB USB 3.0 Internal Disk Backup System, HPE RDX+ 3TB USB 3.0 External Disk Backup System, HPE RDX 2TB USB 3.0 External Disk Backup System, HP RDX+ 1TB External Backup System, HP RDX+ 500GB External Backup System, HPE RDX+ External Docking System).

NOTE: For the complete range of RDX drives and media see: http://www.hpe.com/us/en/product-catalog/storage/disk-based-backup-systems.html

For hardware and software compatibility of HPE disk backup products see: http://www.hpe.com/storage/ssack

NOTE: Please see the HPE RDX Removable Disk Backup System QuickSpecs for additional part numbers, Technical Specifications, and additional information.

Table with 2 columns: HPE Data Center Racks (HPE Advanced Series Racks, HPE Enterprise Series Racks).

NOTE: Please see the HPE Advanced Series Rack additional rack options and rack specifications.

NOTE: Please see the HPE Enterprise Series Rack additional rack options and rack specifications.

NOTE: Please see the HPE Enterprise Series Rack additional rack options and rack specifications.

Additional Options

NOTE: The following is a list of all Fibre Channel Host Bus Adapters for Windows and Linux. For detailed compatibility information please see: http://www.hpe.com/us/en/product-catalog/storage/storage-adapters.html

Emulex Fibre Channel HBAs

Table with 2 columns: HPE StoreFabric SN1600E 32Gb Single Port Fibre Channel Host Bus Adapter, HPE StoreFabric SN1600E 32Gb Dual Port Fibre Channel Host Bus Adapter, HPE StoreFabric SN1200E 16Gb Single Port Fibre Channel Host Bus Adapter, HPE StoreFabric SN1200E 16Gb Dual Port Fibre Channel Host Bus Adapter, HPE StoreFabric SN1100E 16Gb Dual Port Fibre Channel Host Bus Adapter, HPE StoreFabric SN1100E 4-port 16Gb Fibre Channel Host Bus Adapter, HPE StoreFabric SN1100E 16Gb Single Port Fibre Channel Host Bus Adapter, HPE StoreFabric 8x4 4-port 8Gb Fibre Channel Host Bus Adapter, HPE 82E 8Gb 2-port PCIe Fibre Channel Host Bus Adapter, HPE 81E 8Gb 1-port PCIe Fibre Channel Host Bus Adapter.

QLogic Fibre Channel HBAs

Table with 2 columns: HPE StoreFabric SN1600Q 32Gb Single Port Fibre Channel Host Bus Adapter, HPE StoreFabric SN1600Q 32Gb Dual Port Fibre Channel Host Bus Adapter, HPE StoreFabric SN1100Q 16Gb Single Port Fibre Channel Host Bus Adapter, HPE StoreFabric SN1100Q 16Gb Dual Port Fibre Channel Host Bus Adapter, HPE StoreFabric SN1000Q 16Gb 1-port PCIe Fibre Channel Host Bus Adapter, HPE StoreFabric SN1000Q 16Gb 2-port PCIe Fibre Channel Host Bus Adapter, HPE StoreFabric 8x4 4-port 8Gb Fibre Channel Host Bus Adapter, HPE 82Q 8Gb 2-port PCIe Fibre Channel Host Bus Adapter, HPE 81Q 8Gb 1-port PCIe Fibre Channel Host Bus Adapter.

Converged Network Adapter

Table with 2 columns: HPE StoreFabric CN1200E 10Gb Converged Network Adapter, HPE StoreFabric CN1100R Dual Port Converged Network Adapter, HPE StoreFabric CN1200E 10GBASE-T Dual Port Converged Network Adapter, HPE StoreFabric CN1100R 10GBASE-T Dual Port Converged Network Adapter.

HPE Data Center Racks

Table with 2 columns: HPE Advanced Series Racks (HPE 42U 600mm x 1075mm Advanced Pallet Rack, HPE 42U 600mm x 1075mm Advanced Shock Rack, HPE 42U 600mm x 1200mm Advanced Pallet Rack, HPE 42U 600mm x 1200mm Advanced Shock Rack, HPE 36U 600mm x 1075mm Advanced Pallet Rack, HPE 36U 600mm x 1075mm Advanced Shock Rack, HPE 14U 600mm x 1075mm Advanced Shock Rack, HPE 22U 600mm x 1075mm Advanced Pallet Rack, HPE 22U 600mm x 1075mm Advanced Shock Rack, HPE 48U 600mm x 1075mm Advanced Pallet Rack, HPE 48U 600mm x 1075mm Advanced Shock Rack) and HPE Enterprise Series Racks (HPE 42U 600mm x 1075mm Enterprise Pallet Rack).

NOTE: Please see the HPE Advanced Series Rack additional rack options and rack specifications.

NOTE: Please see the HPE Enterprise Series Rack additional rack options and rack specifications.

Additional Options

Table listing rack options: HP 42U 600mm x 1075mm Enterprise Shock Rack, HP 42U 600mm x 1200mm Enterprise Pallet Rack, HP 47U 600mm x 1200mm Enterprise Shock Rack, HP 47U 600mm x 1075mm Enterprise Pallet Rack, HP 47U 600mm x 1075mm Enterprise Shock Rack, HP 47U 600mm x 1200mm Enterprise Pallet Rack, HP 47U 600mm x 1200mm Enterprise Shock Rack, HP 42U 800mm x 1075mm Enterprise Pallet Rack, HP 42U 800mm x 1075mm Enterprise Shock Rack.

NOTE: Please see the HPE Enterprise Series Racks QuickSpecs for information on additional rack options and rack specifications.
NOTE: Gen9 rail kits have changed significantly from prior generation rail kits. Please take a moment to review the installation documentation that comes with the server to help you with the installation of your Gen9 server.
NOTE: Rail kits are optional for DL360/380 Gen9 and is no longer standard with the server. Customers have the option to purchase their server without a rail kit.
NOTE: Full-bearing and Easy Install rail kits contain telescoping rails to allow for in-rack servicing.
NOTE: To assist in the installation of the server into the rack an optional installation tool is available by contacting your local services representative (p/n 695539-001).

CAUTION: Hewlett-Packard Enterprise recommends that a minimum of two people are required for all Rack Server installations. Please refer to your installation instructions for proper tools and number of people to use for any installation.

Table listing HPE Power Distribution Units (PDUs) with columns for PDU type, specifications, and part numbers (e.g., H3X09A, D9N44A, D9N45A).

Additional Options

Table listing various HPE modules and PDUs including Metered 3Ph 17.3kVA/60309 60A 4-wire 48A/208V Outlets, Intelligent Power Distribution Units (PDU), and Intelligent Modular PDUs.

NOTE: Please see the HPE Metered QuickSpecs for information on additional options and product specifications.
NOTE: To learn more, please visit web page.

Additional Options

Table listing HPE Rack Mount Consoles, KVM Switches, and Keyboards with columns for product name, description, and part numbers (e.g., B9W46A, B9W47A, T1052A).

NOTE: To learn more, please visit the HPE KVM Switches web page.

Table listing HPE Uninterruptible Power Systems (UPS) including DirectFlow Three Phase UPS and Tower UPS models.

Additional Options

Table listing HPE UPS and Battery Pack options including DirectFlow UPS, Tower UPS, and various battery packs.

NOTE: Please see the HPE Line Interactive Single Phase UPS QuickSpecs for information on additional options and product specifications.

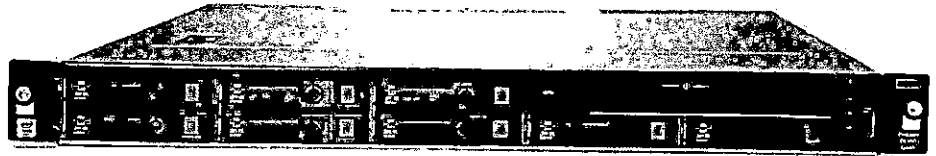
000079



**Hewlett Packard
Enterprise**

HPE ProLiant DL160 Gen9 Server

Right-size performance, storage for
space-constrained environments



Addresses the business needs of SMBs

Even though budgetary pressures force small-to medium-sized businesses (SMBs) to do more with fewer resources, many companies continue to look for new ways to grow their businesses and remain competitive in today's evolving business environment. To meet those goals, SMBs need an IT infrastructure that is quick to set up and easy to maintain. They also need scalable solutions that can grow right along with their businesses. Ideally, they want "everything IT" converged into a single platform.

SMBs can get what they need with the HPE ProLiant DL160 Gen9 Server—a fully integrated platform designed to perform and scale. Offering standard HPE Integrated Lights-Out (iLO) capabilities for simplified IT infrastructure management, 16 slots for DDR4 memory, eight drives, and two standard NIC ports, HPE ProLiant DL160 Gen9 Server offers the ideal set of features for meeting SMBs' everyday business needs. And with the DL160 Gen9 Servers' built-in virtualization features, server, and storage utilization increases, and IT infrastructure runs more efficiently at a lower cost. HPE ProLiant DL160 Gen9 Server enables SMBs to start small, and scale easily and cost-effectively, as their businesses grow.

Meets the requirements of service providers

Faced with an ever-growing customer base, service providers need an agile IT infrastructure that scales readily and consumes minimal space and energy. And to support today's mega data-centric trends—Big Data and cloud computing—service providers need to optimize their IT environments and move to a distributed computing model where servers are deployed as compute nodes, network nodes, and database nodes.

With 16 DIMM slots, 92 percent efficient power supply, ASHRAE A3/A4¹ compliance (for higher ambient temperature support), dense 2P/1U design, and optional FlexibleLOM capability, the ProLiant DL160 Gen9 Server enables service providers to minimize the operational costs of energy and space—making it a perfect match for today's hyperscale environments.

Hewlett Packard Enterprise Services

Let Hewlett Packard Enterprise help guide you and your business landscape. HPE Technology Services delivers confidence, reduces agility and stability.

¹ See hp.com/servers/ASHRAE for details.

HPE

000080

Handwritten signature or initials.

Technical specifications

HPE ProLiant DL160 Gen9 Server

Compute	Up to 2 Intel® Xeon® E5-2600 v3/v4 Series, 4/6/8/10/12/14/16/18 cores PCIe 3.0, up to 3 available slot(s)
Memory	HPE SmartMemory (16) DDR4, up to 2400 by 1 TB max at launch), support for NVDIMM (third-party)
Storage	Standard HPE Dynamic Smart Array B140i, optional HPE Smart Array Controllers, and HPE Smart HBA via PCIe stand-up cards
HPE SmartDrive	8 SFF/4 LFF max, HDD/SSD, M.2 enabled
Networking	Embedded 2x 1GbE, optional FlexibleLOM slot on riser
VGA/USB/SD ports	Rear video, 3x USB 3.0 and 1x USB 2.0 (std), 1x USB 3.0 (opt of SFF models), microSD, Dual microSD optional
System ROM	UEFI and Legacy BIOS
Converged management	HPE OneView with HPE iLO Advanced
Support management	HPE Insight Online with enhanced mobile application
Embedded management	HPE iLO 4, Intelligent Provisioning, SUM, RESTful Interface Tool, Scripting Tools for Microsoft® Windows Server® PowerShell
Power and cooling	Up to 92 percent efficient (80 PLUS gold certified) 550 W multi-output ¹ , 900 W RPS Hot swap fans with optional redundancy
Industry compliance	ASHRAE A3 and A4, ENERGY STAR®
Form factor/Chassis depth	Rack (1U), 23.9" (SFF), 23.9" (LFF)
Serviceability—easy install rails	Standard
Warranty	3/1/1

- Our **consulting** services provide advice and guidance to safely move your workloads to newer technologies.
- HPE implementation and installation services enable faster, more reliable startup of your new ProLiant Gen9 servers, and our support portfolio allows you to get connected and get back to business fast.
- We recommend HPE **Proactive Care** for ProLiant Gen9 servers to prevent issues and resolve problems quickly and efficiently.
- HPE **Foundation Care** provides a choice of coverage levels and response times for hardware.



hpe.com/qref/dl160



Sign up for updates

★ Rate this document

**Hewlett Packard
Enterprise**

enables you to operate and evolve your IT environment at a lower cost ; including our **Flexible Capacity** Service to acquire IT without impacting

ogy lets you tap into the knowledge of millions of devices and thousands ormed and in control, anywhere, any time.

Learn more at
hpe.com/servers/dl160gen9

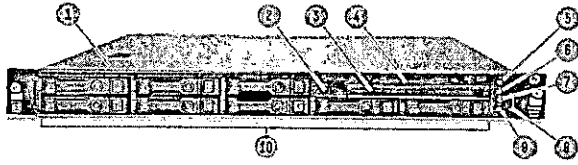
© Copyright 2014-2016 Hewlett Packard Enterprise Development LP. The information contained h notice. The only warranties for Hewlett Packard Enterprise products and services are set forth in th accompanying such products and services. Nothing herein should be construed as constituting an Hewlett Packard Enterprises hall not be liable for technical or editorial errors or omissions containe

Intel Xeon is a trademark of Intel Corporation in the U.S. and other countries. ENERGY STAR is a re government. Intel Xeon is a trademark of Intel Corporation in the U.S. and other countries. Microsof registered trademarks or trademarks of Microsoft Corporation in the United States and/or other co trademarks or registered trademarks of SD-3C in the United States, other countries or both.

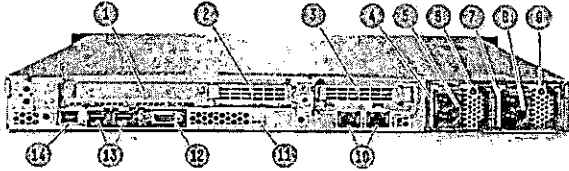
4AA5-4083ENW, March 2016, Rev. 4

HPE ProLiant DL160 Generation9 (Gen9)

The HPE ProLiant DL160 Gen9 is the next generation 2P 1U value server replacing DL360e Gen8. It delivers the right balance of performance, storage, reliability, manageability and efficiency in a dense and compact class, to meet the needs of a diverse set of customers - from SMBs and service providers with a wide range of workloads - from general purpose IT to the New Style of IT, such as, Big Data and Cloud.



- Front View**
1. Access Panel
 2. Optional USB3.0 (optional with 85FF only)
 3. Optical disk drive bay
 4. Serial label pull tab
 5. Power On/Standby button and system power LED
 6. Health LED
 7. NIC status LED
 8. USB 2.0 connector
 9. UID button/LED
 10. 85FF drive cage



- Rear view**
1. PCIe3 slot 1 (primary, associated with processor 1)
 2. PCIe3 slot 2 (primary, associated with processor 1)
 3. PCIe3 slot 3 (secondary, associated with processor 2)
 4. Power supply 1 bay
 5. Power supply 1 Power Connector (Optional)
 6. Power supply 1 LED (Optional)
 7. Video Connector
 8. Power supply 2 power connector
 9. Power Supply 2 LED
 10. Embedded 2x1GbE network adapter
 11. Unit ID LED
 12. Video Connector
 13. USB3.0 connectors
 14. Dedicated iLO connector (optional)

Hewlett-Packard Enterprise

Standard Features

NOTE: For more information regarding Intel Xeon processors, please see the following <http://www.intel.com/xeon>.

Processor One of the following depending on model	Model	CPU frequency	Cores	L3 Cache	Power	GPI	DDR4 Hz
	ES-2660v3	2.6GHz	10	25MB	105W	9.6GT/s	2133
	ES-2650v3	2.3GHz	10	25MB	105W	9.6GT/s	2133
	ES-2650Lv3	1.8GHz	12	30MB	65W	9.6GT/s	2133
	ES-2640v3	2.6GHz	8	20MB	90W	8.0GT/s	1866
	ES-2630v3	2.4GHz	8	20MB	85W	8.0GT/s	1866
	ES-2630Lv3	1.8GHz	8	20MB	55W	8.0GT/s	1866
	ES-2623v3	3.0GHz	4	10MB	105W	8.0GT/s	1866
	ES-2620v3	2.4GHz	6	15MB	85W	8.0GT/s	1866
	ES-2609v3	1.9GHz	6	15MB	85W	6.4GT/s	1600
	ES-2603v3	1.6GHz	6	15MB	85W	6.4GT/s	1600

Chipset Intel® C610 Series Chipset
One of the following depending on model Intel® ES-2600v3 Processor Family
NOTE: For more information regarding Intel chipsets, please see the following URL: <http://www.intel.com/products/server/chipsets/>

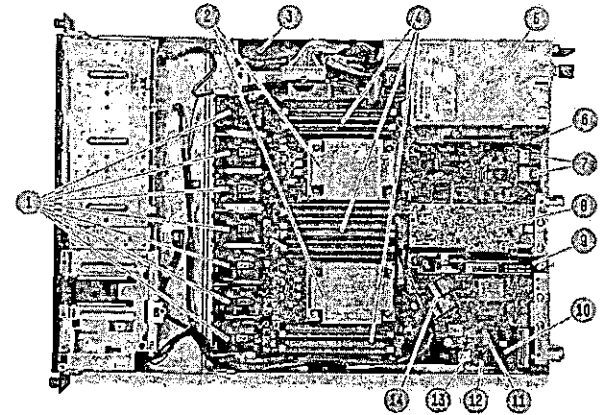
On System Management Chipset HPE iLO (Firmware HPE iLO 4 2.3) 2GB NAND
NOTE: For more information, visit: <http://www.hp.com/go/ilo>.

Memory Type: HPE SmartMemory
One of the following depending on model DDR4 RegD (LRDIMM)
DIMM Slots 16 slots per processor, 2 DIMMs
Maximum (LRDIMM)
Maximum (RDIMM)

Memory Protection Advanced ECC
One of the following depending on model Online spare
Advanced ECC uses single device data correction to detect and correct single and all multibit error that occurs within a single DRAM chip.
More online spare mode detects a rank that is degrading and switches operation to the spare rank.

Overview

7. Power supply 2 bay



- Internal View**
1. Hot Swappable fans (up to 7)
 2. Processor heat sinks (Processors with HPE Smart Sockets placed below heat sinks)
 3. HPE Smart Storage Battery (optional)
 4. DDR4 DIMM slots (up to 16)
 5. Entry level power supply bay (1x900W shown)
 6. Connector for secondary PCIe riser (associated with CPU2)
 7. Embedded 2x1GbE network adapter
 8. HPE Smart Array P440 controller (optional)
 9. Primary PCIe riser (2 PCIe3 slots associated with CPU1)
 10. Dedicated iLO module connector (optional)
 11. MicroSD card slot
 12. Internal SATA ports (one for ODD and another one reserved)
 13. Internal USB 3.0 connector
 14. Embedded B140i SATA controller (2x SATA ports for up to eight drives)

What's New

- New HDD offering.

Standard Features

Network Controller 1Gb 361i Ethernet Adapter 2 Ports per controller

Expansion Slots	Expansion Slots #	Technology	Bus Width	Connector Width	Bus Number	Device Number	Form Factor	Notes
CPU1 PCIe riser slots	1	PCIe 3.0	x16	x16			Full-height, half-length slot	Processor 1
	2	PCIe 3.0	x8	x8			Low profile slot	Processor 1
NOTE: Bus Width data indicates the number of physical electrical lanes running to the connector.								
CPU1 Flexible LOM riser slots	1	Flexible LOM	x8	x8			Flexible LOM	Processor 1 (can only be used for flexible LOMs)
	2	PCIe 3.0	x8	x8			Low profile slot	Processor 1
NOTE: This riser is mandatory for installing flexible LOMs.								
CPU2 riser PCIe slots	3	PCIe 3.0	x16	x16			Low profile slot	Processor 2
	NOTE: When populating slots on CPU2 riser, second processor must be installed. NOTE: Only one of the CPU1 PCIe risers can be selected in any given configuration. NOTE: One of the CPU 1 risers is mandatory for all configurations.							

Storage Controller
Entry Models: HPE Dynamic Smart Array B140i Controller
HPE H240 FIO Smart Host Bus Adapter
Base Models: HPE H240 FIO Smart Host Bus Adapter
Performance Models: HPE Smart Array P440/4G Controller
NOTE: B140i provides support for up to 8 SAS/SATA drives, data transmission speeds up to 6Gb/s and supports RAID 0, 1 & 5.
NOTE: H240 provides support for up to 8 SAS/SATA drives, data transmission speeds up to 12Gb/s and supports RAID 0, 1 & 5.
NOTE: P440 provides support for up to 8 SAS/SATA drives, data transmission speeds up to 12Gb/s.

Internal Storage Devices
One of the following depending on model
Optical Drives: Optional DVD-ROM, DVD-RW
Hard Drives: None ship standard
Hard Drive Bays: 8 SFF drive bays total with Optical Bay
4 LFF drive bays total with Optical Bay
NOTE: HPE ProLiant DL160 Gen9 server offers both SFF and LFF versions in CTO, T
NOTE: Drive cage
NOTE: All Pre-con

000081

Handwritten signature and date: 8/27/14

ATA

Standard Features

blanks installed. Should the customer need additional hard drive blanks, they can order more using either P/N 666987-B21: HPE SFF Gen9 Hard Drive Blank Kit or P/N 666986-B21: HPE LFF Gen9 Hard Drive Blank Kit. These part numbers for single HDD blanks below are also provided should the customer require replacement HDD blanks for their server:

Maximum Internal Storage	CAPACITY	CONFIGURATION
Hot Plug SFF SAS	16.0TB	8 x 2TB
Hot Plug SFF SATA	16.0TB	8 x 2TB
Hot Plug LFF SAS	32.0TB	4 x 8TB
Hot Plug LFF SATA	32.0TB	4 x 8TB
Hot Plug SFF SAS SSD	12.8TB	8 x 1.6TB
Hot Plug SFF SATA SSD	30.72TB	8 x 3.84TB
Hot Plug LFF SATA SSD	15.36TB	4 x 3.84TB

Power Supply HPE 550W FIO Power Supply
 One of the following depending on model HPE 800W/900W Gold AC Power Input Module
 HPE Entry-Level Power Supplies provide lower-cost options for customers trying to balance their need for enterprise class efficiency and reliability while maintaining lowest possible hardware costs. All Entry-Level power supply options have been designed specifically for HPE ProLiant Gen9 Essential Series servers.

The HPE 550W FIO Power Supply is the standard, non-redundant AC power supply option for most HPE ProLiant Gen9 Essential servers. It features Silver-level (89%) certified power efficiency with a set of features optimized for the Gen9 Essential-series rack and tower servers.

All pre-configured servers ship with a standard 6-foot IEC C-13/C-14 jumper cord (A0K02A3). This jumper cord is also included with each standard AC power supply option kit. If a different power cord is required, please check the [ProLiant Power Cables](#) web page.

To review the power requirements for your selected system, please use the HPE Power Advisor Tool located at <http://www.hp.com/go/hppoweradvisor>.

Power specifications and technical content for all HPE Server power supplies can be found at <http://www.hp.com/go/proliant/power-supply>.

System Fans	Non-redundant	Redundant
One of the following depending on model	3 fans	4 fans
	Non-redundant	Redundant
2P model	6 fans	7 fans

NOTE: Redundant fan option kit (P/N: Z75587-B20) can be bought separately if redundancy is required with 1P or 2P configurations.
 NOTE: Additional fans required with 2P configurations are included in "B21" processor option kits.

Interfaces	Video
	1 (Vaux Support)

Standard Features

HPE iLO Remote Management Network Port	1GbE (Optional)
USB	4 USB ports (standard), 1 (optional) Front: 1xUSB 2.0 std, 1xUSB3.0 optional (with 85FF models only) Rear: 2xUSB 3.0 Internal: 1xUSB 3.0
Micro SD Slot	1 Micro SD
LOM Network Ports	2xGbE network ports

NOTE: The SD slot is not a hot-pluggable device. Customers should not attempt to plug an SD card into the SD slot while the server is powered.

Operating Systems and Virtualization Software Support for ProLiant Servers
 Microsoft Windows Server
 Red Hat Enterprise Linux (RHEL)
 SUSE Linux Enterprise Server (SLES)
 Oracle Solaris VMware
 NOTE: For more information on Hewlett Packard Enterprise's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: <http://www.hp.com/go/ossupport> and our driver download page <http://www.hp.com/support/DL160Gen9>.

Upgradeability Upgradeable to two processors (24 cores)
 One of the following depending on model Up to 16 DIMM slots available
 NOTE: To take advantage of all 16 DIMMs, second processor must be installed.
 FlexibleLOM slot for 1Gigabit or 10 Gigabit Ethernet or QDR/FDR InfiniBand networking options
 Optional 2nd CPU riser slot (x16, low profile)
 NOTE: 2nd CPU must be installed if this riser is configured.
 Up to 8 SFF Hard Drive Bays or 4 LFF Hard Drive Bays
 Redundant Power Supply
 Redundant Fan
 Optical Drive Bay (8 SFF/4 LFF)

Industry Standard Compliance ACPI 2.0b Compliant
 PCIe 3.0 Compliant
 PXE Support
 WOL Support
 Microsoft Logo certifications
 USB 3.0 Support
 ASHRAE A3/A4
 NOTE: Supports A3/A4 extended ambient temperature.
 NOTE: Refer to technical specifications section for more details.

Graphics	Integrated Matrix G200e/r2 video standard
	• 1280 x 1024 (32 bpp) • 1920 x 1200 (16 bpp)

Standard Features

HPE Server UEFI/Legacy ROM
 Unified Extensible Firmware Interface (UEFI) is an industry standard that provides better manageability and more secured configuration while interacting with your server at boot time. HPE ProLiant Gen9 platform defaults to UEFI and can be factory or field configured for Legacy BIOS Boot Mode.
 NOTE: The UEFI System Utilities function is analogous to the HPE ROM-Based Setup Utility (RBSU) of legacy BIOS. For more information, please visit <http://www.hp.com/go/proliantuefi/docs>.
 UEFI enables numerous new capabilities specific to HPE ProLiant servers such as:

- Secure Boot
- Operating system specific functionality
- Support for > 22 TB (using GPT) boot drives
- USB 3.0 Stack
- Embedded UEFI Shell
- Mass Configuration Deployment Tool using HPE RESTful API
- PXE boot support for IPv6 networks
- Boot support for option cards that only support a UEFI option ROM

For more information please visit <http://www.hp.com/go/proliantuefi>.
 NOTE: For UEFI Boot Mode, boot environment and OS Image installations all properly to support UEFI.
 NOTE: HPE Legacy FIO Mode Setting (758959-B22) can be selected to configure the system in Legacy mode in the factory.

Form Factor 1U Rack form factor
 One of the following depending on model 85FF and 4LFF version:
 17" (44cm) Height x 17.1" (43.5cm) Width x 23.9" (60.8cm) Length

Embedded Management HPE Integrated Lights-Out (iLO) Monitor your servers for ongoing management, service alerting, reporting and remote management with HPE iLO. Learn more at <http://www.hp.com/go/iLO>.
 UEFI Configure and boot your servers securely with industry standard Unified Extensible Firmware Interface (UEFI). Learn more at <http://www.hp.com/go/ProLiantUEFI>.
 RESTful API A single programmatic web interface that allows you to manage and monitor your HPE ProLiant server using basic HTTP operations (GET, PUT, POST, DELETE and PATCH). RESTful API for iLO 4 conforms to the Redfish 1.0 DMTF standard (ILO firmware version v2.30 or higher required for Redfish conformance). Learn more at <http://www.hp.com/go/restfulapi>.
 Intelligent Provisioning Provision servers by discovering and deploying 1 to few servers with Intelligent Provisioning. Learn more at <http://www.hp.com/go/intelligentprovisioning>.
 Embedded Remote Support Hewlett Packard Enterprise's embedded remote support, when used with Intelligent Provisioning Online direct connect or HPE Insight Remote Support, allows HPE ProLiant

Standard Features

servers to transmit hardware events directly to HPE or an HPE Authorized Partner for automated phone home support. Learn more at <http://www.hp.com/go/insightonline/info>.
 NOTE: For more information, visit: <http://www.hp.com/go/iLO> or HPE iLO Management Engine technologies whitepaper.

Server utilities	Smart Update	Optimize firmware and driver updates with Smart Update solutions including Smart Update Manager (SUM) and Service Pack for ProLiant (SPP). Learn more at http://www.hp.com/go/smartupdate .
	HPE Systems Insight Manager (SIM)	HPE SIM allows you to monitor the health of your HPE ProLiant Servers and HPE Integrity Servers, and also provides you with basic support for non-HPE servers. HPE SIM also integrates with SUM to provide quick and seamless firmware updates. Learn more at http://www.hp.com/go/sim .
	Scripting Tool Kit and Windows PowerShell	Provision 1 to many servers using your own scripts to discover and deploy them with Scripting Tool Kit for Windows and Linux or Scripting Tools for Windows PowerShell. Learn more at http://www.hp.com/go/ProLiantSTK or http://www.hp.com/go/powershell .
	RESTful Interface Tool	Scripting tool to provision servers using iLO 4 RESTful API to discover and deploy servers at scale. Learn more at http://www.hp.com/go/resttool .
	HPE iLO Mobile Application	Enables the ability to access, deploy, and manage your server anytime from anywhere from select smartphones and mobile devices. For additional information please visit:

HPE Insight Online

Security	Power-on password Serial interface control Administrator's password TPM 1.2 UEFI
----------	--

Warranty This product is covered by a global network of Hewlett Packard Enterprise support and repair is available for setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HPE Care Pack services or customized service agreements. Hard drives have either a one, two or three year warranty; refer to the specific hard drive QuickSpecs for details.

NOTE: Server Warranty includes 3-Year Parts, 1-Year Labor, 1-Year Onsite support with 4-hour business day response. Warranty repairs may be accomplished through the use of Customer Self

Standard Features

Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have Hewlett Packard Enterprise replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at:

<http://h18004.www1.hp.com/products/servers/hp/forms/warranty/index.html>

Optional Features

Embedded Management	ILO Essentials	HPE iLO Essentials is the preferred license for small and medium business that offers full remote server management capabilities for small and medium business via the Integrated Remote Console (IRC), virtual media, and e-mail based alerts. Learn more about HPE iLO Essentials at http://www.hp.com/go/iLOessentials .
	ILO Scale-Out	HPE iLO Scale-Out is the preferred license built for web hosting, cloud service providers, and high performance computing data centers, managing massive scale out environments for the DL160. This license offers sophisticated scripting tools that provides remote access through Text Console via SSH, Dynamic power capping, Email-based Alerting and proactive notifications. For more information, visit http://www.hp.com/go/iLOscale-out .
Server Management	HPE Insight Control	HPE Insight Control lets you deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. For more information, see http://www.hp.com/go/insightcontrol . NOTE: HPE OneView support for HPE ProLiant Gen9 rack (DL) and blade (BL) servers will be available with a future version of HPE OneView to be released Early 2015. Customers may purchase HPE OneView licenses now, and will be granted rights to use HPE Insight Control software and transition to HPE OneView with a free upgrade, when available. Customers also have the option to purchase HPE Insight Control.
Rack and Power Infrastructure	HPE Rack and Power infrastructure products and services create highly efficient and intelligent solutions for existing or new IT data centers. HPE Rack and Power infrastructure solutions – rack infrastructure, power protection and management, performance optimized data centers (PODs) – are the foundation you are looking for to help secure your long-term IT success. These products are designed to help you react to changes in the industry. They deliver efficient, easy-to-use capabilities to manage, monitor, deploy and provision infrastructure from entry to enterprise. As an industry leader, Hewlett Packard Enterprise is uniquely positioned to address the key concerns of power, cooling, cable management and system access. Learn more at HPE Rack and Power Infrastructure .	
High Performance Clusters	HPE Cluster Platforms are specifically engineered, factory-integrated large-scale ProLiant clusters optimized for High Performance Computing, with a choice of servers, networks and software. Operating system options include specially priced offerings for Red Hat Enterprise Linux and SUSE Linux Enterprise Server, as well as Microsoft Windows HPEC Server. A Cluster Platform Configurator simplifies ordering. http://www.hp.com/go/clusters .	
HPC Interconnects	NOTE: High Performance Computing (HPC) Interconnect technologies are available for this server under the HPE Cluster Platform product portfolio. These high-speed interconnects are fully supported by Hewlett Packard Enterprise when they are part of these configurations to order clusters. Solutions can be defined with a lot of flexibility with the help of configuration tools. Please visit the following URL to configure HPEC Clusters with InfiniBand Interconnects: http://www.hp.com/techservers/clusters/ucp/index.html .	

Optional Features

Storage Software Whether you need to solve a specific data protection, archiving, or storage command and control challenge, or deliver on strategic consolidation, compliance, or continuity initiatives, look no further than HPE storage software. Our storage software helps you reduce costs, simplify storage infrastructure, protect vital assets and respond faster to business opportunities. Storage software that gets the job done:

- Data Protection and Recovery Software**
Whether you're a large enterprise or a smaller business, HPE data protection and recovery software will cost-effectively protect you against disaster and ensure business continuity.
- Data Archive and Migration Software**
Hewlett Packard Enterprise's storage software enables you to comply with data retention and retrieval requirements, improve application performance, and reduce costs by efficiently migrating infrequently accessed or less valuable data to lower cost storage.
- Storage Resource Management Software (SRM)**
Hewlett Packard Enterprise's storage resource management software reduces operational costs and provides the command and control foundation you need to efficiently manage and visualize your physical and virtual environments.
- Data Replication Software**
Hewlett Packard Enterprise offers array-based and host-based replication software for use in disaster recovery, testing, application development and repointing.
- Storage Device Management Software**
Maximize your investment in HPE storage and networking with software that enables hardware-specific configuration, performance tuning and connectivity management.
- HPE StoreVirtual VSA**
With HPE StoreVirtual VSA you can use the power of virtualization to create a virtual array within your host server. Manage it as a single pool of shared storage capacity, and scale it to match your evolving needs. HPE ProLiant Gen9 servers include a 3-year limited license for HPE StoreVirtual VSA software with TTB of capacity at no extra cost. Simply select to install HPE StoreVirtual VSA software during server setup within Intelligent Provisioning. More information, instructional videos, and free console management software are available at <http://www.hp.com/go/vsaiTB>.

Storage Software Including QuickSpecs, please see:

Technical and non-technical people provide customers with initial then send the configuration on for configuration help, or use in "custom" rack configuration or configuration for products. Hewlett Packard Enterprise's Customer Business Center or an <http://h12276.www2.hp.com/SimplifiedConfig/index>

One Click (SCE)

Service and Support

HPE Technology Services	HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to Hewlett Packard Enterprise to help prevent problems and solve issues faster. Our support technology lets you tap into the knowledge of millions of devices and thousands of experts to stay informed and in control anywhere, any time.
Protect your business beyond warranty with HPE Care Pack Services	HPE Care Pack Services enable you to order the right service level, length of coverage and response time as you purchase your new server, giving you full entitlement for the term you select.
Optimized Support recommendation	HPE Proactive Care – 24x7 coverage, four hour response, three year Care Pack Service Prevent problems and stabilize IT by utilizing secure, real-time, predictive analytics and proactive consultations when your products are connected to HPE. Includes enhanced escalation management. Provides collaborative software call management with two hour call back to reduce troubleshooting on industry leading software. As a leading global support provider for Microsoft, Red Hat, VMware, SUSE and other operating systems, Hewlett Packard Enterprise is able to simplify and shorten your time to resolution with one call for hardware or software questions. http://h120195.www2.hp.com/2/GetDoc?docname=4AA4-5876ENWS-cc-us6lc-en HPE ProLiant Server Hardware Installation Help ensure your new HPE ProLiant hardware is installed smoothly, efficiently and with minimal disruption to your IT and business operations. http://h120195.www2.hp.com/2/GetDoc?docname=5991-9356ENwd
Standard Support recommendation	HPE Foundation Care – 24x7 coverage, three year Care Pack Service Connect to Hewlett Packard Enterprise for faster problem resolution. Foundation Care provides hardware onsite response within four hours if needed and collaborative software call management with two hour callback for industry leading third party software. Simplify your support experience and make HPE your first call for hardware or software questions. http://h120195.www2.hp.com/2/GetDoc?docname=4AA4-5876ENWS-cc-us6lc-en HPE ProLiant Hardware Installation Help ensure your new HPE ProLiant hardware is installed smoothly, efficiently and with minimal disruption to your IT and business operations. http://h120195.www2.hp.com/2/GetDoc?docname=5991-9356ENwd
Related Services	Data Center Platform Consulting Service These services help modernize key systems, business climate and prepare you for center of the future and will serve as your

000082

BAPHO

L 1

Service and Support

Data Privacy Services

Protect your data through better media management. HPE Data privacy services help manage and protect sensitive data. <http://www.hp.com/services/dataprivacy>.

Factory Express for Servers and storage

HPE Factory Express offers configuration, customization, integration and deployment services for HPE servers and storage products. Choose how your factory solutions are built, tested, integrated, shipped and deployed. <http://www.hp.com/go/factory-express>.

Additional HPE Care Pack services can be found at: <http://www.hp.com/go/cpc>.

Parts and Materials

Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements. Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services. The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction.

Pre-configured Models

For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

1. Pre-configured models ship with the configurations below. Options can be selected from the Core or Additional options section of this QuickSpecs.
2. Hewlett Packard Enterprise does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.
3. If you desire a custom configuration please see "Configuration Information - Factory Integrated Models" section of this QuickSpecs.
4. Not all models are available in all regions. Check with your local country Hewlett Packard Enterprise offices for availability.

NOTE: All Pre-configured Models come populated with some hard drive blanks installed. Should the customer need additional hard drive blanks, they can order more using either P/N 666987-B21: HPE SFF Hard Drive Blank Kit or P/N 666986-B21: HPE LFF Hard Drive Blank Kit.

NOTE: All pre-configured servers ship with a standard 6-foot IEC C-13/C-14 jumper cord (A0DK02A). This jumper cord is also included with each standard AC power supply option kit. If a different power cord is required, please check the [ProLiant Power Cables](#) web page.

CAUTION: Hewlett Packard Enterprise recommends that a minimum of two people are required for all Rack Server installations. Please refer to your Installation Instructions for proper tools and number of people to use for any installation.

SKU Number	Entry Models		Base Models	
	769503-B21	769504-B21	769505-B21	769506-B21
Model Name	HP ProLiant DL160 Gen9 ES-2603v3 1P 8GB-R B140i 4LFF 550W PS Entry Server	HP ProLiant DL160 Gen9 ES-2603v3 1P 8GB-R H240 8SFF 550W PS Entry Server	HP ProLiant DL160 Gen9 ES-2609v3 1P 16GB-R H240 8SFF 550W PS Base Server	HP ProLiant DL160 Gen9 ES-2630v3 2P 32GB-R P440/4G 8SFF 800W RPS Perf Server
Processor	Intel® Xeon® ES-2603v3		Intel® Xeon® ES-2609v3	Intel® Xeon® ES-2630v3
Number of Processors	One			
Memory	8GB (2x8GB Registered DIMMs, 2133 MHz) NOTE: Due to processor limitation, these DDR4 DIMMs will operate at 1600 MHz in this model.		16GB (2x8GB Registered DIMMs, 2133 MHz) NOTE: Due to processor limitation, these DDR4 DIMMs will operate at 1600 MHz in this model.	32GB (2x16GB Registered DIMMs, 2133 MHz)
Network Controller	HPE Embedded Dual Port 3Gb Adapter Network Interface			
Storage Controller	HPE Dynamic Smart Array B140i	HPE H240 FIO Smart Host Bus Adapter	HPE Flexible Smart Array P440/4G FIO Controller	
Hard Drive	None ship standard			
Internal Storage	4 LFF HDD Bays		8 SFF HDD Bays	
Optical Drive Bay				

Pre-configured Models

Optical Drive	Optional Slim Optical Bay (SATA DVD-RW/ROM Optical Drive)		
PCI-Express Slots	2 Standard (1-FH/HL, 1-LP) PCIe 3.0		3 Standard (1-FH/HL, 2-LP) PCIe 3.0
Power Supply	(1) HPE 550W FIO Power Supply		HPE 800W Redundant Power Supply
Fans	3 hot swap fans, non-redundant	4 hot swap fans, redundant	7 hot swap fans, redundant
Management	iLO Management (standard), Intelligent Provisioning (standard), iLO Essentials (optional)		
Energy Star			Meets Energy Star requirements
Form Factor	Rack (1U), HPE Easy Install Rails		
Warranty	Server Warranty includes 3-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response.		

Country Code Key
 xx1 = B21 Worldwide
 xx1 = 291 Japan
 xx1 = AA1 PRC

Configuration Information - Factory Integrated Models

This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, Hewlett Packard Enterprise recommends the use of a Hewlett Packard Enterprise approved configurator. Contact your local sales representative for information on configurable product offerings and requirements.

1. Factory Integrated Models must start with a CTO Server.
2. FIO indicates that this option is only available as a factory installable option.
3. All Factory Integrated Models will be populated with sufficient hard drive blanks based on the number of initial hard drives ordered with the server.
4. Some options may not be integrated at the factory. Contact your local sales representative for additional information.

Step 1: Base Configuration (choose one of the following configurable models)

Chassis	HP ProLiant DL160 Gen9 Hot Plug 8SFF Configure-to-order Server	HP ProLiant DL160 Gen9 Hot Plug 4LFF Configure-to-order Server	HP ProLiant DL160 Gen9 Non-hot Plug 4LFF Configure-to-order Server
SKU Number	754520-B21	754521-B21	754522-B21
Processor	2 (optional) x HPE Smart Socket Guide		
DIMM Slots	16 DIMM slots for RDIMM, LRDIMM DDR4 Memory		
Storage Controller	HPE Dynamic Smart Array B140i		
PCIe	Optional (None ship standard)		
Drive Cage	8SFF Hot Plug	4LFF Hot Plug	4LFF Non Hot Plug
Network Controller	HPE Embedded Dual Port 3Gb Adapter Network Interface		
Fans	3 hot swap fans, non-redundant		
Management	iLO Management (standard), Intelligent Provisioning (standard), iLO Essentials (optional)		
USB	1 front, 1 internal, 2 rear		
Ears	HPE Thumbscrew Ears		

Step 2: Choose Required Options (only one of the following noted)

HPE Processors Select one or two processors from Core options-Pro

- If one processor is desired, select one xxxxx
- If two processors are desired, select one xxxxx
- Up to 2 processors supported. Mixing of different
- DDR4 speed is the maximum memory speed on the quantity and type of DIMMs installed

For the Intel® C600 Chipset ES-2600 Series, the letter Line (E3, E5, E7); 2600x v#, 2 = number of CPUs in Processor SKU, x = L for low power SKUs and v# (non-performance)

HPE Memory Select one or more memory from Core options-Memory section below.

- LRDIMM, RDIMM are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen9 servers support LRDIMM and RDIMM.
- HPE memory from previous generation servers are not qualified or warranted with this HPE ProLiant Server. HPE SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen9.
- If only one processor is installed, only half of the total DIMM slots are available. When populating with two processors all DIMM slots are available.
- Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: <http://www.hp.com/go/proliant-energy-efficient>.
- Depending on the memory configuration and processor model, the memory speed may run at 2133MHz, 1866MHz, 1600MHz or 1333MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: <http://www.hp.com/go/ddr4conf>.

Power Supplies - 100 series servers Select one or more power supplies from Core Options-Power Supplies section below:

- Prior to selecting a power supply option, it is highly recommended that you review your server configuration in the HPE Power Advisor tool to determine the right size power supply for your server configuration. The HPE Power Advisor is located at: <http://www.hp.com/go/hppoweradvisor>.
- By RPS Enablement Kit power options, mixing of power supplies in the same RPS enablement kit is not supported. All power supplies must be of the same input voltage, output rating, and efficiency rating. If non-matching power supplies are installed, you may receive an error message and/or experience operational issues with your server.

Step 3: Choose Additional Factory Integratable Options

HPE Unique Options Select one or more Unique options from Core options section below:

- This section may contain FIO options, please see the Unique Options section below.
- FIO indicates that this option is only available as a factory installable option.

HPE Drives Select one or more drives from Core options-HPE Drives section below:

- The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.
- Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.
- The HPE ProLiant Gen9 Smart Storage solutions are equipped with re-designed Small Form Factor (SFF 2.5 in) and Large Form Factor (LFF 3.5 in) hot plug carriers for HPE Qualified Hard Drives and Solid State Drives. These new carriers provide status and activity indicators as well as caution indicators for "Do Not Remove".

HPE Flexible LOM Select a FlexibleLOM from Core options-Networking section below:

- Only one FlexibleLOM can be added to the server. These options are upgradeable and can be changed from the original configuration after the server is shipped.
- For 10 GB adapters, a minimum of two Gigabytes (2 GB) of server memory is required per each adapter.

- Please see the QuickSpecs for Technical Specifications and additional information: <http://www.hp.com/go/proliantnics>.
- These options are upgradeable and can be changed from the original configuration after the server is shipped.
- For 10 GB adapters, a minimum of two Gigabytes (2 GB) of server memory is required per each adapter.

HPE Networking Select a standup NIC adapter from Core options-Networking section below:

HPE Storage Controllers Select one or more Storage Options from Additional options section below:

- The embedded B140i controller will operate in UEFI only mode. For legacy support an additional controller will be needed, and for CTO orders please also select the Legacy mode settings part, 758959-B22
- This section may contain FIO options, please see HPE Storage Controllers section below.
- FIO indicates that this option is only available as a factory installable option.

HPE I/O Expansion Options Select one or more Riser Kit options from Core options section below:

- To take advantage of the additional PCI slot upgrade, the second processor must be installed.
- This section may contain FIO options, please see HPE I/O Expansion Options section below.
- FIO indicates that this option is only available as a factory installable option.

HPE Cooling Options Select one or more Fan Kits from Core options section below:

- This section may contain FIO options, please see HPE Cooling Options section below.
- FIO indicates that this option is only available as a factory installable option.

HPE Rail Kits Select one type of rail kit from Additional options section below:

- Please take a moment to review the installation documentation that comes with the server to help you with the installation of your Gen9 server.
- To assist in the installation of the server into the rack, an optional installation tool is available by contacting your local services representative (ph 695530-001).
- See HPE Rack Options in Additional Options section of this QuickSpecs for more rack kit choices.

CAUTION: Hewlett Packard Enterprise recommends that a minimum of two people are required for all Rack Server installations. Please refer to your installation instructions for proper tools and number of people to use for any installation.

NOTE: Some options may not be integrated at the factory. To ensure only valid configurations are ordered, Hewlett Packard Enterprise recommends the use of a Hewlett Packard Enterprise approved configurator. Contact your local sales representative for additional information.

Unique Options	Description	Part Number
	HP DL160 Gen9 Dedicated ILO Management Port Kit	725581-B21
	HP DL160 Gen9 CPU1 Riser FIO Kit	725585-B21
	NOTE: This riser enables two PCIe3 slots. Either of this riser kit and FlexibleLOM riser kit (781844-B20) is mandatory for all configurations.	
	HP DL160 Gen9 Low Profile PCIe CPU2 Riser Kit	725564-B21
	NOTE: CPU 2 is required if this riser is to be installed, enables one PCIe3 slot.	
	HP DL160 Gen9 Quick Release Ear FIO Kit	774609-B21
	NOTE: This option kit is required for Security Bezel.	
	HP DL160 Gen9 Front USB 3.0 Enablement Kit	725594-B21
	NOTE: This kit is required to enable a front USB3.0 port on SFF models only.	
	HP DL160 Gen9 FlexibleLOM Enablement Kit	781844-B21
	NOTE: This riser kit is required when flexibleLOM is selected.	
	HP AHCI-Enable FIO Setting	801845-B21
	NOTE: This needs to be selected when Advanced Host Controller Interface mode is required on B140i controller.	

HPE Processors	Description	Part Number
	Entry Processors - ES-2600v3 series Processors	
	HP DL160 Gen9 Intel® Xeon® ES-2609v3 (1.9GHz/6-core/15MB/85W) Processor Kit	733943-B21
	HP DL160 Gen9 Intel® Xeon® ES-2609v3 (1.9GHz/6-core/15MB/85W) FIO Processor Kit	733943-L21
	HP DL160 Gen9 Intel® Xeon® ES-2603v3 (1.6GHz/6-core/15MB/85W) Processor Kit	763235-B21
	HP DL160 Gen9 Intel® Xeon® ES-2603v3 (1.6GHz/6-core/15MB/85W) FIO Processor Kit	763235-L21
	Base Processors - ES-2600v3 series Processors	
	HP DL160 Gen9 Intel® Xeon® ES-2640v3 (2.6GHz/8-core/20MB/90W) Processor	733935-B21

Kit	HP DL160 Gen9 Intel® Xeon® ES-2620v3 (2.4GHz/6-core/15MB/85W) FIO Processor Kit	733939-L21
Kit	HP DL160 Gen9 Intel® Xeon® ES-2630v3 (2.6GHz/8-core/20MB/90W) Processor	763241-B21

HP DL160 Gen9 Intel® Xeon® ES-2630v3 (1.8GHz/8-core/20MB/90W) FIO Processor Kit	763241-L21
HP DL160 Gen9 Intel® Xeon® ES-2625v3 (2.5GHz/4-core/10MB/105W) Processor Kit	779836-B21
HP DL160 Gen9 Intel® Xeon® ES-2625v3 (2.5GHz/4-core/10MB/105W) FIO Processor Kit	779836-L21
Performance Processors - ES-2600v3 series Processors	
HP DL160 Gen9 Intel® Xeon® ES-2660v3 (2.6GHz/10-core/25MB/105W) Processor Kit	733931-B21
HP DL160 Gen9 Intel® Xeon® ES-2660v3 (2.6GHz/10-core/25MB/105W) FIO Processor Kit	733931-L21
HP DL160 Gen9 Intel® Xeon® ES-2650v3 (2.3GHz/10-core/25MB/105W) Processor Kit	733933-B21
HP DL160 Gen9 Intel® Xeon® ES-2650v3 (2.3GHz/10-core/25MB/105W) FIO Processor Kit	733933-L21
HP DL160 Gen9 Intel® Xeon® ES-2650Lv3 (1.8GHz/12-core/30MB/65W) Processor Kit	763237-B21
HP DL160 Gen9 Intel® Xeon® ES-2650Lv3 (1.8GHz/12-core/30MB/65W) FIO Processor Kit	763237-L21

HPE Memory	Description	Part Number
	Registered DIMMs (RDIMMs) for ES-2600v3 Series	
	HP 4GB (1x4GB) Single Rank x8 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726770-B21
	HP 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726778-B21
	HP 8GB (1x8GB) Dual Rank x8 DDR4-2133 CAS-15-15-15 Registered Memory Kit	759934-B21
	HP 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726779-B21
	HP 32GB (1x32GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	728629-B21
	Load Reduced DIMMs (LRDIMMs) for ES-2600v3 Series	
	HP 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit	726720-B21
	HP 32GB (1x32GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit	726722-B21
	HPE Standard Memory	
	HP 4GB (1x4GB) Single Rank x8 DDR4-2133 CAS-15-15-15 Registered Standard Memory Kit	803026-B21
	HP 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Standard Memory Kit	803028-B21
	NOTE: These are standard memo	

HPE Optical Drives	HP 9.5mm SATA DVD-ROM JackB
	HP 9.5mm SATA DVD-RW JackB

HPE Drives	SAS Hot Plug SFF (2.5-Inch) LFF
	HP 12TB 7.2G SAS 10K rpm SFF C2

Core Options

Table listing various storage options for HPE ProLiant DL160 Generation9 (Gen9), including SAS and SATA configurations with their respective part numbers.

Core Options

Table listing various storage options for HPE ProLiant DL160 Generation9 (Gen9), including SAS and SATA configurations with their respective part numbers.

Core Options

Table listing various storage options for HPE ProLiant DL160 Generation9 (Gen9), including SAS and SATA configurations with their respective part numbers.

Core Options

Table listing various storage options for HPE ProLiant DL160 Generation9 (Gen9), including SAS and SATA configurations with their respective part numbers.

Handwritten mark resembling the number '10'.

Handwritten signature or initials.

HP 480GB 6G SATA Read Intensive-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816899-B21
HP 120GB 6G SATA Read Intensive-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816879-B21
6G SATA Hot Plug SFF (2.5-Inch) Enterprise Light G1 Solid State Drives	
HP 960GB 6G SATA Light Endurance SFF 2.5-in SC Enterprise Light 3yr Wty G1 Solid State Drive	756601-B21
6G SATA Hot Plug SFF Value Endurance (2.5-Inch) Enterprise Value M1 Solid State Drives	
HP 800GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty M1 Solid State Drive	764927-B21
HP 480GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty M1 Solid State Drive	764927-B21
HP 240GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty M1 Solid State Drive	764925-B21
HP 120GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty M1 Solid State Drive	764923-B21
HP 200GB 6G SATA Mixed Use-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804613-B21
HP 800GB 6G SATA Mixed Use-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804625-B21
HP 16TB 6G SATA Mixed Use-2 SFF 2.5-in SC 3yr Wty Solid State Drive	804631-B21
HP 480GB 6G SATA Mixed Use-2 SFF 2.5-in SC 3yr Wty Solid State Drive	832474-B21
HP 240GB 6G SATA Read Intensive-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816889-B21
6G SATA Hot Plug MU-3 SFF (2.5-Inch) SC Solid State Drives	
HP 192TB 6G SATA Mixed Use-3 SFF 2.5-in SC 3yr Wty Solid State Drive	817011-B21
HP 960GB 6G SATA Mixed Use-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816995-B21
HP 480GB 6G SATA Mixed Use-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816985-B21
HP 240GB 6G SATA Mixed Use-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816975-B21
HP 120GB 6G SATA Mixed Use-3 SFF 2.5-in SC 3yr Wty Solid State Drive	816965-B21
6G SATA Hot Plug SFF (2.5-Inch) Enterprise Boot Solid State Drives	
HP 120GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Boot 3yr Wty Solid State Drive	717945-B21
HP 80GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Boot 3yr Wty Solid State Drive	734360-B21
6G SATA Hot Plug LFF (3.5-Inch) Enterprise Mainstream Solid State Drives	
HP 800GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691860-B21
HP 400GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691850-B21
HP 200GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691854-B21
HP 100GB 6G SATA Mainstream Endurance LFF 3.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691852-B21
HP 200GB 6G SATA Write Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804642-B21
HP 400GB 6G SATA Write Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804668-B21
HP 800GB 6G SATA Write Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804674-B21

HP 12TB 6G SATA Write Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804680-B21
6G SATA Hot Plug LFF Value Endurance (3.5-Inch) Converter Enterprise Value G1 Solid State Drives	
HP 480GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty G1 Solid State Drive	756660-B21
HP 240GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty G1 Solid State Drive	756639-B21
HP 120GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty G1 Solid State Drive	756624-B21
HP 240GB 6G SATA Read Intensive LFF 3.5-in SC Converter 3yr Wty Solid State Drive	789137-B21
HP 480GB 6G SATA Read Intensive LFF 3.5-in SC Converter 3yr Wty Solid State Drive	789147-B21
HP 80GB 6G SATA Read Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804578-B21
HP 120GB 6G SATA Read Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804584-B21
HP 240GB 6G SATA Read Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804590-B21
HP 480GB 6G SATA Read Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804596-B21
HP 800GB 6G SATA Read Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804602-B21
HP 16TB 6G SATA Read Intensive-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804668-B21
6G SATA Hot Plug LFF (3.5-Inch) R13 SCC SSD	
HP 384TB 6G SATA Read Intensive-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816933-B21
HP 192TB 6G SATA Read Intensive-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816923-B21
HP 960GB 6G SATA Read Intensive-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816913-B21
HP 480GB 6G SATA Read Intensive-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816903-B21
HP 240GB 6G SATA Read Intensive-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816893-B21
HP 120GB 6G SATA Read Intensive-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816883-B21
6G SATA Hot Plug LFF Value Endurance (3.5-Inch) Converter Enterprise Value M1 Solid State Drives	
HP 800GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty M1 Solid State Drive	764945-B21
HP 400GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty M1 Solid State Drive	764943-B21
HP 240GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty M1 Solid State Drive	764941-B21
HP 120GB 6G SATA Value Endurance LFF 3.5-in SC Converter ENT Value 3yr Wty M1 Solid State Drive	764939-B21
HP 200GB 6G SATA Mixed Use-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804616-B21
HP 800GB 6G SATA Mixed Use-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804628-B21

HP 16TB 6G SATA Mixed Use-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	804634-B21
HP 480GB 6G SATA Mixed Use-2 LFF 3.5-in SCC 3yr Wty Solid State Drive	832472-B21
6G SATA Hot Plug LFF (3.5-Inch) MU-3 SCC SSD	
HP 192TB 6G SATA Mixed Use-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	817015-B21
HP 960GB 6G SATA Mixed Use-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816999-B21
HP 480GB 6G SATA Mixed Use-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816989-B21
HP 240GB 6G SATA Mixed Use-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816979-B21
HP 120GB 6G SATA Mixed Use-3 LFF 3.5-in SC Converter 3yr Wty Solid State Drive	816969-B21
6G SATA Hot Plug LFF (3.5-Inch) Enterprise Value Solid State Drives	
HP 800GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive	718189-B21
HP 400GB 6G SATA Value Endurance LFF 3.5-in SC Converter Enterprise Value 3yr Wty Solid State Drive	739900-B21
HP 480GB 6G SATA Value Endurance LFF 3.5-in SC Enterprise Value 3yr Wty Solid State Drive	718183-B21
HP 300GB 6G SATA Value Endurance LFF 3.5-in SC Converter Enterprise Value 3yr Wty Solid State Drive	739890-B21
Enterprise Value 3yr Wty	718177-B21
Enterprise Value 3yr Wty	718171-B21
Enterprise Boot 3yr Wty Solid	734362-B21
Enterprise Boot 3yr Wty Solid	777894-B21
Enterprise Kit for ProLiant	777894-B21
Enterprise Kit for ProLiant ML/DL	788028-B21

NOTE: M.2 drives go in PCIe slots and use B140i SATA controller only.
Hard Drive Blank Kits
 HP Large Form Factor Hard Drive Blank Kit
 HP Small Form Factor Hard Drive Blank Kit

HPE Networking 1 Gb Ethernet Adapters	
HP Ethernet 1Gb 2-port 561T Adapter	652497-B21
HP Ethernet 1Gb 4-port 366T Adapter	811546-B21

HP Ethernet 1Gb 4-port 331T Adapter	647594-B21
HP Ethernet 1Gb 2-port 332T Adapter	615732-B21
10 Gb Ethernet Adapters	
HP Ethernet 10Gb 2-port 530SFP Adapter	652503-B21
HP Ethernet 10Gb 2-port 530T Adapter	656596-B21
HP Ethernet 10Gb 2-port 560SFP+ Adapter	645249-B21
HP Ethernet 10Gb 2-port 561T Adapter	716591-B21
HP Ethernet 10Gb 2-port 546SFP+ Adapter	779793-B21
NOTE: A minimum of two Gbytes of server memory is required per each adapter. NOTE: Direct Attach Cable (DAC) for copper environments or fiber transceivers and cables for fiber-optic environments must be purchased separately. See cables/options below.	
FlexibleLOM Adapters	
HP Ethernet 1Gb 4-port 331FLR Adapter	629135-B22
HP Ethernet 1Gb 4-port 366FLR Adapter	665240-B21
HP Ethernet 10Gb 2-port 561FLR-T Adapter	700699-B21
HP FlexFabric 10Gb 2-port 534FLR-SFP+ Adapter	700751-B21
HP FlexFabric 10Gb 2-port 533FLR-T Adapter	700759-B21
HP Ethernet 10Gb 2-port 546FLR-SFP+ Adapter	779799-B21
HP Ethernet 10Gb 2-port 560FLR-SFP+ Adapter	665243-B21
NOTE: FlexibleLOM Hiser kit (P/N: 781844-B20) is required when any flexibleLOM is selected. NOTE: Please see the QuickSpec for Technical Specifications and additional information: http://www.hp.com/go/ProLiantNICs .	

HPE InfiniBand	HP InfiniBand FDR 2-port 5450SFP Adapter	702211-B21
	HP InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544-OSFP Adapter	764284-B21
	OLoG InfiniBand 4X DDR PCI-E G2 Dual Port HCA	563211-B21
	NOTE: Please see the HPE InfiniBand Options for HPE ProLiant and Integrity Servers QuickSpecs for additional information.	

HPE I/O Expansion Options	HP DL160 Gen9 CPU1 Riser FIO Kit	725585-B21
	NOTE: This riser enables two PCIe3 slots and allows of flexible I/O expansion (P/N: 781844-B20) or CPU1 riser FIO kit	
	HP DL160 Gen9 Low Profile PCIe CPU	
	NOTE: CPU 2 is required if this riser.	
	HP DL160 Gen9 FlexibleLOM Enabler	
	NOTE: This enablement kit is required	

HPE Power Supplies	HPE Entry-Level Power Supplies HP 550W FIO Power Supply Kit
	NOTE: Mixing of power supplies in the same input voltage, output ratings, or you may receive an error message on

000084

Core Options

NOTE: Prior to selecting a power supply option, it is highly recommended that you review your server configuration in the HPE Power Advisor tool to determine the right size power supply for your server configuration. The HPE Power Advisor is located at: <http://www.hp.com/go/poweradvisor>.

HPE Cooling Options	HPE DL160 Gen9 Redundant Fan Kit NOTE: This kit includes one fan and is required for enabling fan redundancy with 1P and 2P configurations.	7Z5S87-821
---------------------	--	------------

Additional Options

	HP Integrated Lights-Out Scale-Out including 3yr 24x7 Tech Support and Updates Flex Qty E-LTU	BD776AAE
	HP Integrated Lights-Out Scale-Out 1yr 24x7 Tech Support and Updates Flex Qty License	BD778A
	HP Integrated Lights-Out Scale-Out including 1yr 24x7 Tech Support and Updates Flex Qty E-LTU	BD778AAE
	HP Integrated Lights-Out Scale-Out including 1yr 24x7 Tech Support and Updates Tracking License	BD779A

HPE Converged Infrastructure Management Software	HPE OneView	
	HP OneView incl 3yr 24x7 Supp Phys 1 Svr Lic	ESY34A
	HP OneView incl 3yr 24x7 Supp Flex Qty E-LTU	ESY35AAE
	HP Operations Analytics for HP OneView LTU	K8G29A
	HP Operations Analytics for HP OneView E-LTU	K8G29AAE
	HP OneView w/o ILO including 3yr 24x7 Support 1 Server LTU	P8B24A
	HP OneView w/o ILO including 3yr 24x7 Support Flex Qty E-LTU	P8B25AAE
	HP OneView w/o ILO including 3yr 24x7 Support FIO 1 Server LTU	P8B31A
	HP OneView w/o ILO including 3yr 24x7 Support Track 1 Server LTU	P8B25A
	HP OneView for ProLiant DL Server incl 3yr 24x7 Supp FIO Bundle Physical 1 Svr Lic	ESY43A

NOTE: Full licenses of HPE OneView Advanced also provide the right-to-use

provisioning is multi-server OS and a physical copy of

rdia kit can be www.hp.com/go/oneview to purchase

High Performance Clusters	nse	OL803B
	nse	BD475A

and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key. Customer also will receive a support agreement.

HP Insight Cluster Management Utility Media
NOTE: For additional license kits please see the HPE Insight Cluster Management Utility QuickSpecs.

Additional Options

NOTE: Some options may not be integrated at the factory. To ensure only valid configurations are ordered, Hewlett Packard Enterprise recommends the use of a Hewlett Packard Enterprise approved configurator. Contact your local sales representative for additional information.

HPE Insight Software	HPE Insight Control	
	HP Insight Control including 1yr 24x7 Technical Support and Updates Single Server License	C6N27A
	HP Insight Control including 1yr 24x7 Technical Support and Updates Electronic License	C6N28ABE
	HP Insight Control Server Provisioning Media Kit	BD883A
	HP Insight Management Media Kit	C6N31A
	HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO License	C6N36A

HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle FIO Electronic License

NOTE: Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key.

NOTE: Customer will receive a license entitlement certificate. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HPE Software Technical Support and Update Service.

NOTE: Licenses ship without media. The HPE Insight Control Media Kit can be ordered separately, or can be downloaded at: <http://www.hp.com/go/insightupdates>.

NOTE: For additional license options please see the HPE Insight Control QuickSpecs.

Embedded Management	HPE iLO Advanced	
	HP iLO Advanced including 1yr 24x7 Technical Support and Updates Single Server License	512485-821
	HP iLO Advanced 1 Server License with 3yr 24x7 Tech Support and Updates	BD505A
	HP iLO Advanced including 1yr 24x7 Technical Support and Updates E-LTU	E6U59ABE
	HP iLO Advanced including 1yr 24x7 Technical Support and Updates E-LTU	E6U64ABE
	HPE iLO Essentials	
	HP Integrated Lights-Out Essentials including 3yr 24x7 Technical Support and Updates E-LTU	E6U61ABE
	HP Integrated Lights-Out Essentials including 3yr 24x7 Tech Support and Updates Single Svr License	BD774A
	HP Integrated Lights-Out Essentials including 1yr 24x7 Tech Support and Updates Single Svr License	BD775A
	HP Integrated Lights-Out Essentials including 1yr 24x7 Technical Support and Updates E-LTU	E6U62ABE
	HPE iLO Scale-out	
	HP Integrated Lights-Out Scale-Out 3yr 24x7 Tech Support and Updates Flex Qty License	BD776A
HP Integrated Lights-Out Scale-Out including 3yr 24x7 Tech Support and Updates Tracking License	BD777A	

Additional Options

HPE PCIe Workload Accelerator Options	Value Endurance (VE) PCIe Workload Accelerators	
	HP 6.4TB FH/HL Value Endurance (VE) PCIe Workload Accelerator	763840-821
	HP 3.2TB HH/HL Value Endurance (VE) PCIe Workload Accelerator	763838-821
	HP 1.6TB HH/HL Value Endurance (VE) PCIe Workload Accelerator	763836-821
	HP 1.3TB HH/HL Value Endurance (VE) PCIe Workload Accelerator	763834-821
	HPE 1.3TB Read Intensive-2 HH/HL PCIe Workload Accelerator	831735-821
	HPE 1.6TB Read Intensive-2 HH/HL PCIe Workload Accelerator	831735-821
	HPE 3.2TB Read Intensive-2 HH/HL PCIe Workload Accelerator	831737-821
	HPE 6.4TB Read Intensive-2 FH/HL PCIe Workload Accelerator	831739-821
	Light Endurance (LE) PCIe Workload Accelerators	

HP 5.2TB FH/HL Light Endurance (LE) PCIe Workload Accelerator

HP 2.6TB HH/HL Light Endurance (LE) PCIe Workload Accelerator

HP 1.3TB HH/HL Light Endurance (LE) PCIe Workload Accelerator

HP 1.0TB HH/HL Light Endurance (LE) PCIe Workload Accelerator

NOTE: Please see the HPE PCIe Workload Accelerators for ProLiant Servers QuickSpecs for Technical Specifications and additional information.

HPE Security	HP iJ Security Bezel Kit	664918-821
	NOTE: Quick Release Ear option kit (P/N 774609-820) is required for installing security bezel.	
	HP DL160 Gen9 Quick Release Ear FIO Kit	774609-821
	NOTE: Quick Release Ear option kit is required for installing security bezel.	
	HP Trusted Platform Module Option	488069-821

HPE Storage Controllers	SAS Controllers	
	HPE Smart Array Controllers	
	HP Smart Array P440/4GB FBWC 12Gb 1-port Int SAS Controller	726821-821
	HP Smart Array P440/2GB FBWC 12Gb 1-port Int SAS Controller	820834-821
	NOTE: Includes the HPE Smart Storage Battery.	
	HP Smart Array P441/4GB FBWC 12Gb 2-ports Ext SAS Controller	726825-821
	HP Smart Array P440/4GB FBWC 12Gb 1-port Int FIO SAS Controller	761872-821
	NOTE: Includes the HPE Smart Storage Battery.	
	HPE Smart Host Bus Adapters	
	HP H240 12Gb 2-ports Int Smart Host Bus Adapter	
HP H240 12Gb 2-ports Int FIO Smart Host Bus Ada		
HP H241 12Gb 2-ports Ext Smart Host Bus Adapter		
HPE Cable Options		
HP DL160 Gen9 4LFF Smart HBA H240 SAS Cable		
HP DL160 Gen9 8SFF Smart HBA H240 SAS Cable		
HP DL160 Gen9 4LFF Smart Array P440 SAS Cabl		
HP DL160 Gen9 8SFF Smart Array P440 SAS Cabl		
HP DL160 Gen9 4LFF Smart Array B140i SATA Cal		
HP DL160 Gen9 8SFF Smart Array B140i SATA Cal		

High Performance Clusters

and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key. Customer also will receive a support agreement.

HP Insight Cluster Management Utility Media
NOTE: For additional license kits please see the HPE Insight Cluster Management Utility QuickSpecs.

CVT

Additional Options

NOTE: One of the above cables is required to be selected depending on the combination of chassis and storage controller. Cable option kit descriptions include the right chassis and storage controllers names.

NOTE: FIO Indicates that this option is only available as a factory installable option. Please select FIO option if you want the option to be factory installed.

NOTE: HPE server chassis (Mod-x) Includes SATA cables required to connect drives to embedded B160 SATA controller.

Optional Software

Table with 2 columns: Software Name, Part Number. Includes HP SmartCache No Media 24x7 Technical Support 15v License (D7526A), HP SmartCache No Media 24x7 Technical Support Flexible License (D7527A), HP SmartCache No Media 24x7 Technical Support Electronic License (D7527AAE).

NOTE: HPE SmartCache is supported when one of the supported Smart Array Controllers is installed in the server.

NOTE: HPE SmartCache comes standard (no licensing is required) if the HPE Smart Array P840 Controller is installed in the server.

Optional Upgrades

Table with 2 columns: Upgrade Name, Part Number. Includes HP 96W Smart Storage Battery with 145mm Cable for DL/ML/SL Servers (727259-021).

HPE Tape Backup

NOTE: For the complete range of tape drives, autoloaders, libraries and media see: http://www.hp.com/go/tape. For hardware and software compatibility of HPE tape backup products see: http://www.hp.com/go/tape/compat and http://www.hp.com/go/tape.

NOTE: For internal drives to be connected to DL servers please make sure that you order rack mount kit as well.

Tape Drives

SAS Rack-Mount Tape Solutions

Table with 2 columns: Tape Drive Name, Part Number. Lists various LTO-6, LTO-5, LTO-4, and LTO-3 drives and autoloaders.

Additional Options

Table with 2 columns: Option Name, Part Number. Includes HPE MSL2024 D-Drive Tape Library (AK379A), HPE MSL4048 Tape Library (AK381A), HPE StoreEver MSL6480 (OJ626A, OJ625A).

HPE Disk Backup

Table with 2 columns: Backup System Name, Part Number. Lists RDX and StoreOnce backup systems and enclosures.

HPE Storage Options

Table with 2 columns: Storage Option Name, Part Number. Lists Emulex Fibre Channel HBAs, QLogic Fibre Channel HBAs, and Converged Network Adapters.

HPE Disk Storage Systems

Table with 2 columns: Storage System Name, Part Number. Lists various disk storage bundles and dual port MDL HDDs.

Additional Options

Table with 2 columns: Storage System Name, Part Number. Lists HP D6000 w/35 3TB 6G SAS 7.2K LFF Dual port MDL HDD 105TB Bundle (OQ699A), HP D6000 w/70 2TB 6G SAS 7.2K LFF Dual port MDL HDD 140TB Bundle (OQ988A), HP D6000 w/70 3TB 6G SAS 7.2K LFF Dual port MDL HDD 210TB Bundle (OQ700A).

HPE Data Center Racks

Table with 2 columns: Rack Name, Part Number. Lists HPE T1000 G2 Series Racks (H6J87A to H6J82A) and HPE Intelligent Series Rack (BW911A to BW913A).

NOTE: Please see the HPE T1000 G2 Series Racks QuickSpecs for information on additional racks options and rack specifications.

HPE Intelligent Series Rack

Table with 2 columns: Rack Name, Part Number. Lists HPE Intelligent Series Rack models (BW911A to BW913A).

NOTE: Please see the HPE Intelligent Series Racks QuickSpecs for information on additional racks options and rack specifications.

HPE Value Series Rack

Table with 2 columns: Rack Name, Part Number. Lists HPE Value Series Rack (V42 1075mm deep Pallet 100 series Rack).

NOTE: Please see the HPE Value Series Rack QuickSpecs for information on additional racks options and rack specifications.

HPE Power Distribution Units (PDUs)

Table with 2 columns: PDU Name, Part Number. Lists HPE Basic Power Distribution Units (BPDU) models (HSM54A to HSM68A).

Additional Options

Table with 2 columns: PDU Name, Part Number. Lists HPE 8kVA 208 Volt L15-30 3-Phase Input (2xNEMA 5-20R) NA/JP Basic PDU (HSM61A to HSM63A).

Table with 2 columns: PDU Name, Part Number. Lists HPE 8kVA 208 Volt L21-30 3-Phase Input (2xNEMA 5-20R) NA/JP Basic PDU (HSM64A).

Table with 2 columns: PDU Name, Part Number. Lists HPE 8kVA 208 Volt L15-30 3-Phase Input (2xNEMA 5-20R) NA/JP Basic PDU (HSM62A).

Table with 2 columns: PDU Name, Part Number. Lists HPE 11kVA 400 Volt EC309 16A 3-Phase Input (3xNEMA 5-20R) INTL Basic PDU (HSM72A).

Table with 2 columns: PDU Name, Part Number. Lists HPE 11kVA 400 Volt EC309 16A 3-Phase Input (3xNEMA 5-20R) INTL Basic PDU (HSM73A).

Table with 2 columns: PDU Name, Part Number. Lists HPE 11kVA 400 Volt EC309 30A 3-Phase Input (3xNEMA 5-20R) NA Basic PDU (HSM67A).

Table with 2 columns: PDU Name, Part Number. Lists HPE 800VA -277V Input / 230V Output NA Rack Mount Transformer (HSM09A).

Table with 2 columns: PDU Name, Part Number. Lists HPE 28kVA 240V Low Voltage NA/JP Modular Power Distribution Unit (252663-071).

Table with 2 columns: PDU Name, Part Number. Lists HPE 4.9kVA 24A High Voltage NA/JP Core Modular Power Distribution Unit (252663-074).

Table with 2 columns: PDU Name, Part Number. Lists HPE 8.3kVA 40A High Voltage NA/JP Core Modular Power Distribution Unit (252663-075).

Table with 2 columns: PDU Name, Part Number. Lists HPE 7.3kVA 32A High Voltage INTL Core Modular Power Distribution Unit (252663-835).

Table with 2 columns: PDU Name, Part Number. Lists HPE 9.2kVA 40A High Voltage INTL Core Modular Power Distribution Unit (252663-836).

Table with 2 columns: PDU Name, Part Number. Lists HPE 8kVA 24A Three Phase NA/JP Modular Power Distribution Unit (AF512A).

Table with 2 columns: PDU Name, Part Number. Lists HPE 11kVA 16A Three Phase INTL Modular Power Distribution Unit (AF513A).

Table with 2 columns: PDU Name, Part Number. Lists HPE 16.4kVA 40A Three Phase NA/JP Modular Power Distribution Unit (AF519A).

Table with 2 columns: PDU Name, Part Number. Lists HPE 17.3kVA 48A Three Phase NA/JP Modular Power Distribution Unit (AF511A).

Table with 2 columns: PDU Name, Part Number. Lists HPE 22kVA 32A Three Phase INTL Core Modular Power Distribution Unit (AF518A).

NOTE: To learn more about HPE Basic Power Distribution Units (BPDU), please visit the HPE website at http://www.hp.com/go/bpu.

Monitored Power Distribution Units (MPDU)

Table with 2 columns: PDU Name, Part Number. Lists HPE 120 Volt L15-30 Input (2xNEMA 5-20R) NA/JP Monitored PDU (D9N43A).

Table with 2 columns: PDU Name, Part Number. Lists HPE 28kVA 200-240 Volt Detachable C20 Input (12xNEMA 5-20R) WW Monitored PDU (D9N46A).

Table with 2 columns: PDU Name, Part Number. Lists HPE 4.9kVA 208 Volt L6-30 Input (12xNEMA 5-20R) NA/JP Monitored PDU (D9N44A).

Table with 2 columns: PDU Name, Part Number. Lists HPE 3.6kVA 200-240 Volt Detachable C20 Input (12xNEMA 5-20R) WW Monitored PDU (D9N45A).

Table with 2 columns: PDU Name, Part Number. Lists HPE 4.9kVA 208 Volt L6-30 Input (12xNEMA 5-20R) NA/JP Monitored PDU (GZ05A).

Table with 2 columns: PDU Name, Part Number. Lists HPE 7.3kVA 230 Volt EC309 32A Input (20xNEMA 5-20R) INTL Monitored PDU (GZ06A).

Table with 2 columns: PDU Name, Part Number. Lists HPE 4.9kVA 208 Volt L6-30 Input (20xNEMA 5-20R) NA/JP Monitored PDU (D9N47A).

000085

Additional Options

Table listing various power distribution units (PDU) and intelligent power distribution units (IPDU) for the HPE ProLiant DL160 Generation9 (Gen9). Includes models like HP 11kVA 400 Volt IEC309 16A 3-Phase Input and HP 4.9kVA 24A Single Phase NA/JP Core Intelligent Modular Power Distribution Unit.

Additional Options

Table listing various rack mount consoles, switches, and keyboards for the HPE ProLiant DL160 Generation9 (Gen9). Includes models like HPE Rack Mount Consoles, HPE Location Discovery Services, and HPE Rack Mount Consoles.

Additional Options

Table listing various uninterruptible power supply (UPS) options for the HPE ProLiant DL160 Generation9 (Gen9). Includes models like HP 164 USB/PS2 KVM Console Switch and HP 30A 480 Volt Three Phase NA R12000 DirectFlow UPS IEC309 Input/Output Module.

Additional Options

Table listing various uninterruptible power supply (UPS) options for the HPE ProLiant DL160 Generation9 (Gen9). Includes models like HP 30A 380 Volt Three Phase China R18000 DirectFlow UPS Unit terminated Input/Output Module and HP 30A 480 Volt Three Phase NA R18000 DirectFlow UPS IEC309 Input/Output Module.

Handwritten signature or mark on the right side of the page.

Handwritten signature or mark at the bottom right of the page.

QuickSpecs
Additional Options

HP ProLiant DL160 Generation Gen9

HPE UPS Options	
HP R772000 G4-E	Module
HP R775000 G4-Extended Runtime Module	J2839A
HP ZU Rack/Tower UPS Shipping Kit	J2810A
NOTE: Please see the HPE Link, http://www.hp.com/go/ups/quickstarts , for information on additional options and product specifications.	L401A
NOTE: To learn more, please visit the HPE Undermiddle Power Systems (UPS) webpage.	
HP USB and SD Options	
HP eSATA/USB Enterprise Mainstream Flash Media Kit for Memory Cards	Z2818-B21
HP eSATA/USB Enterprise Mainstream Flash Media Kit	Z4179-B21
HP DL160 Gen9 Front USB 3.0 Enablement Kit	Z3594-B21
NOTE: This enablement kit is required to enable front USB3.0 port with 6SFF models.	

HP Care Pack Services	
Foundation Care	
HP 3 year Foundation Care 2x47 DL160 Gen9 Service	UFAZ7E
HP 3 year Foundation Care 2x47 WDMR DL160 Gen9 Service	UFAZ8E
HP 3 year Foundation Care 2x47 WDMR DL160 Gen9 Service	UFAZ9E
Proactive Care	
HP 3 year 2x47 DL160 Gen9 Proactive Care Service	URBA6E
HP 3 year 2x47 with Predictive Media Prevention DL160 Gen9 Proactive Care Service	URBA7E
HP 3 year 2x47 with Comprehensive Predictive Media Prevention DL160 Gen9 Proactive Care Service	URBA8E
Installation & Start-up Services	
HP Installation PreLiant DL160/DL350e Service	UAB7E
HP Start-up PreLiant DL160/DL350e Service	UAB7E

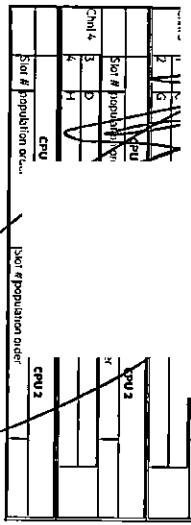
QuickSpecs
Memory

HP ProLiant DL160 Generation Gen9

DIMM Rank	Single Rank	Single Rank	Dual Rank	Dual Rank	Dual Rank	Dual Rank	Dual Rank
OPIM Capacity	4GB	8GB	8GB	16GB	32GB	16GB	32GB
IMM Max/Min Speed (MHz)	2133	2133	2133	2133	2133	2133	2133
Voltage	1V/1.8V	1V/1.8V	1V/1.8V	1V/1.8V	1V/1.8V	1V/1.8V	1V/1.8V

SLOTS/TH	16 slots/16V
MAXIMUM	
POPULATE	
1 DIMM Per Channel	
2 DIMM Per Channel	
3 DIMM Per Channel	

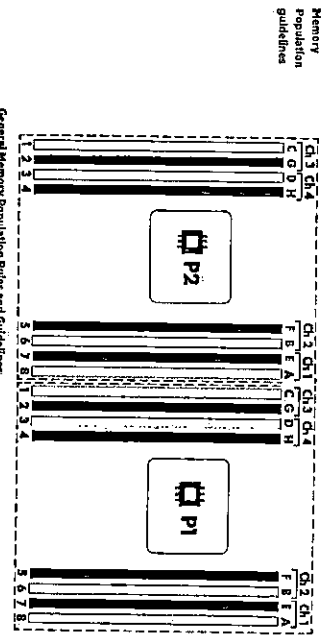
Dimm slot / configuration diagram



A, B, C, D, E, F
for CPU1-A, CPU2-D

QuickSpecs
Memory

HP ProLiant DL160 Generation Gen9



- General Memory Population Rules and Guidelines:**
- Install DIMMs only if the corresponding processor is installed.
 - If only one processor is installed in a two-processor system, only half of the DIMM slots are available.
 - To maximize performance, it is recommended to balance the total memory capacity between all installed processors and load the channels similarly whenever possible.
 - When two processors are installed, balance the DIMMs across the two processors.
 - Place the DIMMs with the highest number of ranks in the white slot when mixing DIMMs of different ranks on the same channel.
 - Do not mix RDIMMs or LRDIMMs.
 - Quad rank RDIMMs are not supported in HPE ProLiant DL160 Gen9 servers.
 - Quad rank LRDIMMs are capable of up to two DIMMs per channel.
 - DIMMs of different speeds may be mixed in any order; the server will select a common optimal speed.
 - The maximum memory speed is a function of the memory type, memory configuration, and processor model.
 - The maximum memory capacity is a function of the memory type and number of installed processors.
 - To reduce the performance memory capabilities listed in this document, HPE SmartMemory is required.

Memory Bandwidth and Capacity	
Channel Type	Registered DIMMs G10

QuickSpecs
Memory

Memory Gen9

Channel	Slot # population order	Slot # population order
Chnl 2	5, 6, F, B	5, 6, B, F
Chnl 1	7, 8, E, A	7, 8, A, E

Processor Models	Supported Memory Speeds
ES-2609V3, ES-2603V3	1600MHz
ES-2640V3, ES-2630V3, ES-2620V3, ES-2630, v1.1	1866MHz
ES-2629V3	
ES-2660V3, ES-2650V3, ES-2650L V3	2133MHz

Standard and Maximum Memory Capacity (Pre-configured Models)	Standard Memory	Maximum Memory Plus Optional Memory	Standard Memory Replaced with Optional Memory
ES-2603V3	8GB (1x8GB)	48GB (6x8GB)	512GB (16x32GB)
ES-2609V3	16GB (2x8GB)	44.4GB (4x12GB, 2x8GB)	512GB (16x32GB)
ES-2630V3	32GB (4x8GB)	40GB (4x12GB, 2x8GB)	512GB (16x32GB)

NOTE: Capacity references are rounded to the common gigabyte (GB) values.
DDR4 memory option part number decoder:

- 2GB = 2A08H8
- 4GB = 4A08H8
- 8GB = 8A08H8
- 16GB = 16A8H8
- 32GB = 32A8H8
- 48GB = 6A58H8

HP ggggg eRxf f DDR4 www



000086

HP ProLiant DL160 Generation Gen9



1-8 8 x SFF SATA/SAS/SSD Hot Pluggable Hard Drive Bays



1-4 4 x LFF SATA/SAS/SSD Hot Pluggable Hard Drives Bays

System Unit	Dimensions (H x W x D)	8 SFF - 16.9 x 17.11 x 23.92 inches (4.29 x 43.46 x 60.76 cm) 4 LFF - 17 x 17.1 x 23.9 inches (4.29 x 43.46 x 60.76 cm)
	Weight (approximate)	Maximum: 33.04 lb (15kg) (all hard drives, power supplies, and processors installed) Minimum: 22.03 lb (10kg) (one hard drive, power supply, and processor installed)
Input Requirements (for Standard 460W PSU, see power specifications tables for detail on 460W, 750W and 1200W power supplies)	Rated Line Voltage	100 to 240 VAC
	Rated Input Current	For 550W Power Supply: 6.7 A (at 100 VAC) 3.3 A (at 100 VAC)
BTU Rating	Rated Input Frequency	47 to 63 Hz
	Rated Input Power	For 550 W Power Supply: 1 670 W (at 100 VAC), 1 680 W (at 200 VAC), For 550 W Power Supply: 2201 BTU/hr (at 100 VAC), 2153 BTU/hr (at 200 VAC)
Power Specifications	To review typical system power ratings use the Power Advisor which is available via the online tool located at URL: http://www.hp.com/go/proliant-energy-efficient or http://www.hp.com/go/hppoweradvisor - Click on the system of interest. Example: DL160 Gen9 - Follow the instructions of the next screens.	
	Rated Steady-State Power	For 550 W Power Supply: 550 W (at 100 VAC), 550 W (at 200 VAC), Maximum Peak Power: 550 W (at 100 VAC), 550 W (at 200 VAC).
System Inlet Temperature	Standard Operating Support: 10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 20°C/hr (36°F/hr). The upper limit and rate of change may be limited by the type and number of options installed. System performance during standard operating support may be reduced if operating with a fan fault or above 30°C (86°F).	

Extended Ambient Operating Support	For approved hardware configurations, the supported system inlet range is extended to be 5° to 10°C (41° to 50°F) and 35° to 40°C (95° to 104°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the URL: http://www.hp.com/go/proliant	
	For approved hardware configurations, the supported system inlet range is extended to be 10° to 45°C (50° to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1.8°F per every 410 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the URL: http://www.hp.com/go/proliant	
Relative Humidity	Non-operating	System performance may be reduced if operating in the extended ambient operating range or with a fan fault.
	Operating	NOTE: Supports A3 and A4 extended ambient. -30° to 60°C (-22° to 140°F), Maximum rate of change is 20°C/hr (36°F/hr). Minimum to be the higher (more moisture) of -12°C (10.4°F) dew point or 8% relative humidity. Maximum to be the lower (less moisture) of 24°C (75.2°F) dew point or 90% relative humidity.
Altitude	Non-operating	5% to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
	Operating	3048 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
Acoustic Noise	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Operating	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).
Idle	LWAd	Entry 53 B Base 52 B Performance 50 B
	LpAm	Entry 34.2 dBA Base 35.9 dBA Performance 34.9 dBA
Operating	LWAd	Entry 53 B

Emissions Classification (EMC)	FCC Rating	Base 53 B Performance 56 B Entry 36.3 dBA Base 36.2 dBA Performance 39.7 dBA
	Normative Standards	Class A
Emissions Classification (EMC)	NOTE: Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.	CSPR 22; EN55022; EN55024; FCC CFR 47, Pt 15, ICES-003; CNS13338; GB9254; K22; K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1 IEC 60950-1
	Number of PCI Links	Four
HPE Dynamic Smart Array B1400 Controller	PCI link rate	4 Gb/s
	Storage protocol SATA support	SAS/SATA peak 6 Gb/s data transfer rate
Number of SAS/SATA links	SAS/SATA connectivity	10 links
	Expander support	2x4 connectors; 2x1 connectors
RAID support	Drives supported (max)	No
	Software management	Up to 10 Internal Drives
Warranty	RAID support	0, 1, 10, 5 SATA
	Software management	HPE SSA, SMH, SIM
Warranty	Server warranty	

[Handwritten signature and stamp]

Windows Server Catalog



- Home
- Software
- Hardware
- SVVP

[Home](#)
[Server](#)

Software

- [Business Management](#)
- [Business Solutions](#)
- [Communications, Internet & Collaboration](#)
- [Engineering](#)
- [Enterprise Solutions](#)
- [Financial Applications](#)
- [Infrastructure Solutions](#)
- [Security](#)
- [Vertical Applications](#)
- [Other](#)

Hardware

- [Audio](#)
- [Bus Controllers and Ports](#)
- [Cameras, Video Capture and Streaming](#)
- [Graphics](#)
- [Input Devices](#)
- [Modems](#)
- [Monitors](#)
- [Networking](#)
- [Printers](#)
- [Scanners](#)
- [Security and File System Software](#)
- [Servers](#)
- [Storage](#)
- [Windows Server Compatible Hardware](#)



ProLiant DL160 Gen9
by Hewlett Packard Enterprise Company

Compatible with the following versions of Microsoft Windows

	Windows Server 2016 x64	Certified for Windows • Hardware Assurance
	Windows Server 2012 R2 x64	Certified for Windows
	Windows Server 2012 x64	Certified for Windows
	Windows Server 2008 R2 x64	Certified for Windows

Feedback

Submission Details

Baseboard manufacturer	HP
Baseboard product name	ProLiant DL180 Gen9
Firmware manufacturer	HP
Firmware release date	05/05/2016
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	2048 GB (2147483648 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	896 GB (961936478208 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2623 v4 @ 2.60GHz
Tested processor speed	2597 MHz
Submission	1152921504626686617 (Sep 9 2016 10:27AM)
<hr/>	
Baseboard manufacturer	HP
Baseboard product name	ProLiant DL160 Gen9
Firmware manufacturer	HP
Firmware release date	12/27/2015
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	1024 GB (1073741824 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	1024 GB (1099241213952 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2623 v4 @ 2.60GHz
Tested processor speed	2597 MHz
Submission	11529215046266895770 (Feb 21 2016 9:58PM)
<hr/>	
Baseboard manufacturer	HP
Baseboard product name	ProLiant DL160 Gen9
Firmware manufacturer	HP
Firmware release date	12/27/2015
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	1024 GB (1073741824 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	1024 GB (1099233361920 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2623 v4 @ 2.60GHz
Tested processor speed	2600 MHz
Submission	11529215046266895752 (Feb 21 2016 9:56PM)
<hr/>	
Baseboard manufacturer	HP
Baseboard product name	ProLiant DL180 Gen9
Firmware manufacturer	HP

000087

1

()



104

Firmware release date	05/05/2016
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	2048 GB (2147483648 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	896 GB (961936478208 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2623 v4 @ 2.60GHz
Tested processor speed	2597 MHz
Product and support URL	http://www.hpe.com
Submission	<u>1892683</u> (Sep 9 2016 10:27AM)

Submission	<u>1814122</u> (Feb 21 2016 9:58PM)

Product and support URL	http://www.hpe.com
Submission	<u>1814120</u> (Feb 21 2016 9:56PM)

Baseboard manufacturer	
Baseboard product name	ProLiant DL180 Gen9
Firmware manufacturer	HP
Firmware release date	08/26/2014
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	1024 GB (1073741824 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	512 GB (54948972928 bytes)
Tested memory speed during certification	2133 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2623 v3 @ 3.00GHz
Tested processor speed	1198 MHz
Product and support URL	http://www.hp.com
Submission	<u>1686159</u> (Nov 3 2015 1:46PM)

Baseboard manufacturer	
Baseboard product name	ProLiant DL160 Gen9
Firmware manufacturer	HP
Firmware release date	08/26/2014
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	1024 GB (1073741824 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	512 GB (549479120896 bytes)
Tested memory speed during certification	2133 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2623 v3 @ 3.00GHz
Tested processor speed	3000 MHz
Product and support URL	http://www.hp.com
Submission	<u>1686143</u> (Nov 3 2015 1:40PM)

Feedback

Merchandise pictures and descriptions are provided by the manufacturers of the merchandise. Microsoft makes no representations or warranties regarding the merchandise, manufacturers or compatibility of the merchandise depicted or described. Check system requirements before you purchase any merchandise or download any software described on this site. Use of all software is governed by the end user license agreement, if any, which accompanies or is included with the software.

010088

MP

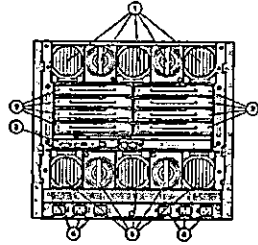
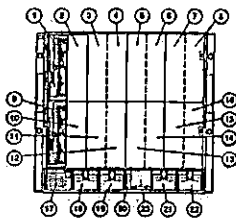
()

ALMA

127

Overview

HPE BladeSystem c7000 Enclosure



HPE BladeSystem c7000 Enclosure - Front View

- 1-16. Device Bays 1-16
- 17-22. Power Supply Bays 1-6
- 23. Insight Display

HPE BladeSystem c7000 Enclosure - Rear View

- 1. Active Cool 200 Fans and Fan Bays
- 2. Interconnect Module Bays
- 3. BladeSystem Onboard Administrator (left) and optional redundant Onboard Administrator (right)
- 4. Power inputs (Single-phase 200-240V AC model shown)

Standard Features

HPE BladeSystem c-Class c7000 Enclosure

An HPE BladeSystem solution starts with either a BladeSystem c7000 or c3000 enclosure. For the c7000 enclosure, key enclosure options include hot-plug power supplies, power input module, hot-plug HPE Active Cool Fans, and an optional redundant BladeSystem Onboard Administrator module. Once the enclosure and its key components have been selected, the following components can be added: interconnect modules, HPE ProLiant or Integrity server blades, expansion blades, and HPE OnView or Insight Control management software. For information on these options please visit: <https://www.hpe.com/us/en/integrated-systems/blade-system.html>

NOTE: Insight Control is not supported with Gen10 server blades.

A BladeSystem c7000 Enclosure holds up to 16 server blades and up to 8 compute, storage or workstation blades plus redundant network and storage interconnects. It includes a shared, multi-terabit high-speed midplane for wire-once connectivity of server blades to network and shared storage. Power is delivered through a pooled power backplane that ensures the full capacity of the redundant hot-plug power supplies is available to all system components.

Each c7000 enclosure is built with the following functions:

- Up to 16 half-height server blades, 8 full-height server blades, and/or 8 expansion blades per enclosure (not exceeding 16 total blades).
- NOTE: For information on mixing half-height server blades, full-height server blades, and expansion blades, please see the section titled "Device Bay and Fan Bay Numbering and Population Guidelines" later in this document.
- Up to 4 redundant interconnect I/O fabrics (Ethernet, Fibre Channel, InfiniBand, iSCSI SAS, etc.) supported simultaneously within the enclosure.
- Choice of single-phase high-line AC, three-phase high-line AC, single-phase high voltage AC, -48V DC, or high voltage DC power options for flexibility in connecting to datacenter power.
- HPE Thermal Logic technology to minimize power consumption and reduce cooling.
- A minimum of four hot-plug HPE Active Cool 200 Fans. For additional capacity, redundancy, and improved power consumption and acoustics, Active Cool 200 Fan kits can be added for a maximum of 10 fans.
- Redundant hot-plug cooling, redundant hot-plug power supplies, redundant connections, redundant interconnect modules, and optional redundant BladeSystem Onboard Administrator management module.

An BladeSystem Onboard Administrator management module is built in to the enclosure with the following functions:

- Robust, multiple enclosure setup and control.
- Reports asset and inventory information for the devices in the enclosure.
- Reports thermal and power information, including real-time actual power usage per server and per enclosure.
- Front-mounted Insight Display for easy management within the datacenter.
- Integrated access to all server blade iLOs from a single cable.
- Provides integrated access to interconnect bay device management ports from the single BladeSystem Onboard Administrator cable.
- Single sign-on capability for all devices in the enclosure.
- Role-based security locally and/or with LDAP directory services.
- Provides a wizard-based initial

A BladeSystem c7000 enclosure provides:

- With local and remote hardware managed as easily as one server.
- Management and network inter resources to be pooled and shared.

Standard Features

- Accommodates multiple server and network designs in one enclosure.
- Lower costs per server in comparison to rack-mounted servers.
- Lower power consumption in comparison to rack-mounted servers.
- Lower airflow requirements in comparison to rack-mounted servers.
- Reduced and simplified cabling in comparison to rack-mounted servers.
- Investment protection supporting G1 through Gen9 server blades.

HPE BladeSystem c-Class c3000 Enclosure For customers that need a smaller blade system, the HPE BladeSystem c-Class c3000 Enclosure is the perfect solution. Supporting up to 8 blades and 4 Interconnects, the c3000 enclosure provides an ideal solution for small and medium businesses and remote sites. For more information please visit: <https://www.hpe.com/us/en/integrated-systems/blade-system.html>

HPE ProLiant & Integrity Server Blades Delivering best-in-class performance, choice and reliability on Intel® Xeon® and Intel® Itanium® processors for Windows, Linux, Solaris, OpenVMS or HP-UX based servers; the HPE portfolio of server blades supports a variety of application requirements for scale-out architectures. Hewlett Packard Enterprise offers one-, two-, four-, or eight processor server blades, with the widest range of performance, and form factors. For more information please visit: <https://www.hpe.com/us/en/integrated-systems/blade-system.html>

HPE D220sb Storage Blade Do you need a direct attached or shared storage solution within your BladeSystem enclosure?
Direct attached storage
 The D220sb Storage Blade delivers direct attached storage for c-Class Gen8 and greater server blades with support for up to twelve hot plug small form factor (SFF) SAS or SATA Midline hard disk drives or SAS/SATA SSDs. The enclosure backplane provides a PCI Express connection to an adjacent c-Class server blade and enables high performance storage access without any additional cables. The D220sb Storage Blade features an onboard Smart Array P420i controller with 2GB flash-backed write cache for improved performance and data protection. Up to eight D220sb storage devices can be supported in a single BladeSystem c7000 Enclosure for up to 115.2 TB of capacity.

Two ways to create shared storage with the D220sb
 Use HPE StoreVirtual VSA software to turn the D220sb into an iSCSI/SAN for use by all servers in the enclosure and any server on the network. HPE VSA software is installed in a virtual machine on a VMware ESX host server adjacent to the D220sb. HPE StoreVirtual VSA turns the D220sb into a scalable and robust iSCSI/SAN, featuring storage clustering for scalability, network RAID for storage failover, thin provisioning, snapshots, remote replication, and cloning. Expand capacity within the same enclosure or enclosures by adding additional D220sb Storage Blades and HPE VSA licenses. A cost-effective D220sb Storage Blade and a HPE StoreVirtual VSA license makes purchasing convenient. Increase, add HPE P4300 or P4500 systems externally and manage everything via a single console.

The HPE StoreEasy 3830 and 3840 Gateway Storage Blades are flexible storage server solutions for BladeSystem environments. Combine the StoreEasy 3830 or 3840 with the D220sb Storage Blade to enable file serving and iSCSI shared storage inside the BladeSystem enclosure.
 NOTE: The D220sb requires a c7000 Enclosure configuration with 10 fans.
 NOTE: The D220sb is compatible only with Gen8 and Gen9 server blades.

For more information, please visit: <https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c0411399>

HPE Ultrium Tape Blades Tape blades are ideal for HPE BladeSystem c-Class customers who need a data protection solution but are not connected into a storage area network (SAN). They provide direct attach data protection for the adjacent server and network backup protection for all other data within the enclosure. The HPE tape blades are the industry's first bladed tape drives and are developed exclusively for the BladeSystem c-Class enclosures.

Standard Features

For more information, please visit: <https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c0415444>

Dynamic Power Capping HPE Dynamic Power Capping is the industry's first power capping solution that lets you reclaim trapped power and cooling capacity without putting electrical infrastructure or server performance at risk. The enclosure Dynamic Power Cap will be shared amongst all of the installed devices and individual server caps will be changed to match the server load. This will optimize the performance of the servers while ensuring that the enclosure stays below the cap value. See more in your Onboard Administrator documentation.

Rack Airflow Requirements **Rack 10000 G2 series cabinets**
 The increased power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The G2 10000 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors.
 NOTE: For operation with the -48VDC input modules, the G2 1000 Series Rack Extension is required to allow DC power cabling to be installed.
 CAUTION: For the complete list of installation requirements, please see the "HPE BladeSystem c-Class Site Planning Guide" at <http://www.hpe.com/support/hspx>.

- Third-party racks**
 CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:
- Front and rear doors: If your server rack includes closing front and rear doors, you must have a minimum of 5% free area compared to the total area of the door evenly distributed from top to bottom to permit adequate airflow.
 - Front door: The clearance from face of rack to inside of the front door must be a minimum of 77 mm (3 in).
 - Rear door: The clearance between the rear of the enclosure and the rear rack door must be a minimum of 175 mm (6.9 in) to accommodate system cabling.
 - Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 70 mm (2.75 in).
 - Width: 483 mm (19 in).
 - Depth: Maximum clearance between front and rear RETMA rails is 864 mm (34 in). Minimum clearance for round-hole racks is 627 mm (24.7 in). Minimum clearance for square-hole racks is 635 mm (25 in).

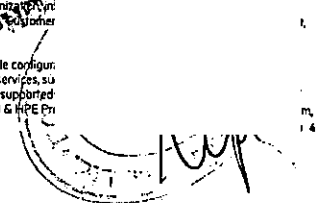
rack rails that are shipped with each enclosure:

empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in airflow blocking that can lead to thermal damage.
 CAUTION: For the complete list of installation requirements, please see the "HPE BladeSystem c-Class Site Planning Guide" at <http://www.hpe.com/support/hspx>

Factory Express Portfolio for Servers and Storage

HPE Factory Express offers configuration, customization, and testing services for HPE ProLiant servers and storage products. Our products are factory tested, integrated, shipped and deployed.
 Factory Express offers service packages for simple configuration and design services as well as individual factory services, such as packaging, Hewlett Packard Enterprise products supported servers and storage. HPE Integrity, HPE ProLiant & HPE Pro

000089



HP BladeSystem c7000 Enclosure

HP OneView Software
The HP OneView architecture combines server, storage, and networking with control of datacenter environment for a single, integrated management platform.

HP OneView Management Software
Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex datacenter.

HP Insight Management Software
The HP Insight Control product option delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, manage, control and optimize your IT environment.

HP Insight Control
The HP Insight Control product option delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, manage, control and optimize your IT environment.

HP Insight Control
The HP Insight Control product option delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, manage, control and optimize your IT environment.

HP Insight Control
The HP Insight Control product option delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, manage, control and optimize your IT environment.

HP Insight Control
The HP Insight Control product option delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, manage, control and optimize your IT environment.

HP Insight Control
The HP Insight Control product option delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, manage, control and optimize your IT environment.

HP Insight Control
The HP Insight Control product option delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, manage, control and optimize your IT environment.

HP Insight Control
The HP Insight Control product option delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, manage, control and optimize your IT environment.

HP Insight Control
The HP Insight Control product option delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, manage, control and optimize your IT environment.

HP Insight Control
The HP Insight Control product option delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, manage, control and optimize your IT environment.

HP Insight Control
The HP Insight Control product option delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, manage, control and optimize your IT environment.

HP Insight Control
The HP Insight Control product option delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, manage, control and optimize your IT environment.

HP Insight Control
The HP Insight Control product option delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, manage, control and optimize your IT environment.

HP Insight Control
The HP Insight Control product option delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, manage, control and optimize your IT environment.

HP Insight Control
The HP Insight Control product option delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, manage, control and optimize your IT environment.

HP Insight Control
The HP Insight Control product option delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, manage, control and optimize your IT environment.

HP Insight Control
The HP Insight Control product option delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, manage, control and optimize your IT environment.

HP BladeSystem c7000 Enclosure

HP OneView Software
The HP OneView architecture combines server, storage, and networking with control of datacenter environment for a single, integrated management platform.

HP OneView Management Software
Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex datacenter.

HP OneView Management Software
Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex datacenter.

HP OneView Management Software
Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex datacenter.

HP OneView Management Software
Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex datacenter.

HP OneView Management Software
Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex datacenter.

HP OneView Management Software
Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex datacenter.

HP OneView Management Software
Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex datacenter.

HP OneView Management Software
Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex datacenter.

HP OneView Management Software
Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex datacenter.

HP OneView Management Software
Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex datacenter.

HP OneView Management Software
Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex datacenter.

HP OneView Management Software
Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex datacenter.

HP OneView Management Software
Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex datacenter.

HP OneView Management Software
Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex datacenter.

HP OneView Management Software
Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex datacenter.

HP OneView Management Software
Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex datacenter.

HP OneView Management Software
Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex datacenter.

HP OneView Management Software
Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex datacenter.

Outspec

HP BladeSystem c7000 Enclosure

Standard Features

HP Power Advisor is available at: http://www.hp.com/go/bladeadvisor

Warranty

Warranty - This product is covered by a global limited warranty and supported by HP's Services and a worldwide network of Hewlett-Packard Enterprise Authorized Channel Partners.

Service and Support

HP's Technology Services for Industry Standard Servers helps customers realize agility and stability. HP's Technology Services delivers confidence, reduces risk and helps customers realize agility and stability.

Connect your devices to HPE

Unlock all of the benefits of your technology investment by connecting your products to HPE. Achieve up to 77% reduction in down time, near 100% diagnostic accuracy and a single consolidated view of your environment.

HP Support Center

Personalized online support portal with access to information, tools and experts to support Hewlett Packard Enterprise business products. Submit support cases online, chat with Hewlett Packard Enterprise experts.

Parts and Materials

Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

For more information

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-spec, or the technical product data sheet will not be provided as part of the standard warranty.



Pre-configured Models

HPE BladeSystem c-Class Server Blade Enclosures NOTE: Hewlett Packard Enterprise does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.

NOTE: If you desire a custom configuration, please see the "Custom Configuration Information" section of this QuickSpecs.

NOTE: Each BladeSystem c7000 Enclosure holds up to 16 half-height server blades or full-height server blades, and/or 8 expansion blades per enclosure (not exceeding 16 total blades).

HPE BLc7000 Platinum Enclosure with 1 Phase 6 Power Supplies 10 Fans ROHS 16 OneView Licenses 763850-B21

NOTE: The c7000 Platinum Enclosure 763850-B21 includes sixteen (16) HPE OneView licenses, six (6) 2400W Platinum hot-plug power supplies each with a worldwide 250V C19 - C20 2.0m jumper cord, a single-phase 200-240V AC Intelligent Power Module, ten (10) hot-plug Active Cool 200 Fans, an Onboard Administrator with KVM, and the following blanking panels: 15 device bay, 7 interconnect module bay, and 1 redundant Onboard Administrator module bay.

HPE BLc7000 Platinum Enclosure with 1 Phase 6 Power Supplies 10 Fans ROHS 16 Insight Control LTU 681842-B21

NOTE: Insight Control is not supported with Gen10 server blades.

NOTE: The c7000 Platinum Enclosure 681842-B21 includes sixteen (16) HPE Insight Control licenses, six (6) 2400W Platinum hot-plug power supplies each with a worldwide 250V C19 - C20 2.0m jumper cord, a single-phase 200-240V AC Intelligent Power Module, ten (10) hot-plug Active Cool 200 Fans, an Onboard Administrator with KVM, and the following blanking panels: 15 device bay, 4 power supply bay, 8 fan bay, 7 interconnect module bay, and 1 redundant Onboard Administrator module bay.

HPE BLc7000 Platinum Enclosure w/ 1 Phase 2 Power Supplies 4 Fans ROHS Trial Insight Control License 681840-B21

NOTE: Insight Control is not supported with Gen10 server blades.

NOTE: The c7000 Platinum Enclosure 681840-B21 includes sixteen (16) HPE Insight Control trial licenses, two (2) 2400W Platinum hot-plug power supplies each with a worldwide 250V C19 - C20 2.0m jumper cord, a single-phase 200-240V AC Intelligent Power Module, four (4) hot-plug Active Cool 200 Fans, an Onboard Administrator with KVM, and the following blanking panels: 15 device bay, 4 fan bay, 7 interconnect module bay, and 1 redundant Onboard Administrator module bay.

Related Options

NOTE: This section lists some of the required and optional steps to configure a Factory Integrated Model. To ensure only valid configurations are ordered, Hewlett Packard Enterprise recommends contacting your local sales representative for information on Factory Integrated Model product offerings and requirements. For a configuration of the HPE BladeSystem, please do the following:

Step 1: Select desired model, configuration, and quantity of HPE ProLiant server and expansion blades per enclosure (required)

NOTE: Each BladeSystem c7000 Enclosure holds up to 16 half-height server blades, 8 full-height server blades, and/or 8 expansion blades per enclosure (not exceeding 16 total blades).

Step 2: Determine the HPE BladeSystem c-Class Enclosure(s) and choose required options (One of the following from each list unless otherwise noted)

Select the base server blade enclosure configuration (required)

HPE BladeSystem BLc7000 c-Class Server Blade Enclosures NOTE: The enclosures listed below include an Onboard Administrator with KVM and four (4) hot-plug Active Cool 200 Fans. The power module, power supply kits, power cables, interconnects, additional fans, etc. are added per the steps below.

NOTE: The enclosures listed below include the required blanking panels (device bay, interconnect module, fan, power, and redundant OA module) as required per the ordered configuration. If the configuration is modified at a later date, additional blanking panels (ordered separately) may be required.

HPE BLc7000 Configure-to-order Platinum Enclosure with ROHS Trial Insight Control License 681844-B21

HPE Integrity BLc7000 CTO Enclosure AD3610

NOTE: The AD3610 enclosure is suggested for configurations primarily used with Integrity blades.

NOTE: The TAA-compliant enclosure listed below includes two (2) Onboard Administrators with KVM, six (6) hot-plug power supplies, and ten (10) hot-plug Active Cool 200 Fans. Additional components are added per the steps below.

HPE BLc7000 TAA-compliant Configure-to-order Platinum Enclosure with 2x Onboard Admin 6x PS 10x Fans 681844-B22

NOTE: HPE offers multiple Trade Agreement Add (TAA) compliant configurations to meet the needs of US Federal Government customers. These products are either manufactured or substantially transformed in a designated country.

Select the enclosure power and cooling options (required)

HPE c-Class Power Systems HPE BLc7000 Special/Prorated Enclosure 677595-B21

NOTE: This power module is for single phase, high-line 200-240VAC applications and has six (6) IEC-320 C20 power connectors that accept IEC C19-C20 power cables.

NOTE: The blue power connectors indicate HPE Power Discovery Services capability. HPE Power Discovery Services are enabled when used with a HPE Power Discovery Services-enabled power system including an Intelligent Power Distribution Unit (iPDU), C19-C20 iPDU cables, and the Platinum power supply kits 733460-B21, 733459-B21, 517521-B21, or 586603-B21. See the iPDU, iPDU cable, c-Class Power Supply sections below for these options.

NOTE: Also accepts standard (non-iPDU) C19 to C20 power cables, but HPE Power

Related Options

Discovery Services are disabled. One WW 250V C19-C20 2.0m (non-iPDU) cable is included per supported power supply. Supported power supplies are listed here.

NOTE: This power module may be used with the power supply kits 733460-B21, 733459-B21, 517521-B21, 586603-B21, 517521-B21, or 499243-B21. See the "c-Class Power Supply" section below for the power supply kits.

HPE BLc7000 1 PH FIO Power Module Option 413379-B21

NOTE: This power module is for single phase, high-line 200-240VAC applications and has six (6) IEC-320 C20 power connectors that accept IEC C19-C20 power cables. One WW 250V C19-C20 2.0m (non-iPDU) cable is included per supported power supply. Supported power supplies are listed here.

NOTE: This power module may be used with the power supply kits 733460-B21, 733459-B21, 517521-B21, 586603-B21, 517521-B21, or 499243-B21. See the "c-Class Power Supply" section below for the power supply kits.

NOTE: This power module enables HPE Power Discovery Services.

HP BLc7000 3 PH N/A/P FIO Power Module Option 413380-B21

NOTE: This power module is for three phase, high-line 200-208VAC applications and has two (2) 3.05m (10 ft) power cables with IEMA L15-50P connectors.

NOTE: This power module may be used with the power supply kits 733460-B21, 733459-B21, 517521-B21, 586603-B21, 517521-B21, or 499243-B21. See the "c-Class Power Supply" section below for the power supply kits.

NOTE: This power module enables HPE Power Discovery Services.

NOTE: This power module requires a minimum of 3 power supply option kits. For full redundancy, 6 power supply option kits are required.

AH333A

applications and has 4SDG 4AWG 1/4 1250V -48VDC Hot Plug Power section below for the power supply

very Services.

753623-B21

XC replications and has six APP Self-reversal Hot Plug Power Supply Kits per Supply" section below for the

separately see cable options J6X01A, J6X09A, J6X00A (277V) or

very Services.

if Advisor tool to ensure the number support your blade system

configuration and to review maximum system power ratings for facilities planning

supplies. HPE Power Advisor is available at <http://www.hpe.com/info/hp-poweradvisor>

NOTE: Each enclosure must include only one type of power supply. Mixing of power supplies is not supported, except during hot-swaps to different level or higher efficient power supplies. The Onboard Administrator tool exhibits a mismatch error due to mixed power supplies until all power supplies are mismatched.

NOTE: If a three phase power module is selected (413380-B21), a minimum of 3 power supply option kits is required. For full redundancy, 6 power supply option kits are required.

NOTE: HPE c7000 enclosure AC power supplies meet 80 PLUS Platinum or Gold power efficiency requirements: Platinum (94%) and Gold (92%). The 80 PLUS program is a unique forum that unites electric utilities, the computer industry, and consumers in an effort to

Related Options

bring energy efficient technology solutions to the marketplace. 80 PLUS Independently Test power supply efficiency and publicly posts the results on <http://plgloadsolution.com/HP/PowerSupplies.aspx>. (OC power supplies are not eligible for 80 PLUS testing; efficiency is per HPE internal testing.)

HPE 6X 2650W Performance Platinum Hot Plug FIO Power Supply Kit 733460-B21

NOTE: This power supply kit enables HPE Power Discovery Services when used with the HPE BLc7000 Single Phase FIO Intelligent Power Module 677595-B21. See the "c-Class Power Modules" section above for the power modules.

NOTE: Includes a quantity of 6 HPE 2650W Platinum 94% power supplies so a full enclosure can be configured with a single part number.

NOTE: Includes six WW 250V C19 - C20 2.0m Jumper Cords.

NOTE: This power supply kit meets multiple energy efficiency initiatives: 2650W, 94%; Climate Savers Computing Initiative PLATINUM and ECOS Consulting 80 PLUS Platinum.

HPE 2650W Performance Platinum Hot Plug Power Supply Kit 733459-B21

NOTE: This power supply kit enables HPE Power Discovery Services when used with the HPE BLc7000 Single Phase FIO Intelligent Power Module 677595-B21. See the "c-Class Power Modules" section above for the power modules.

NOTE: Includes one WW 250V C19 - C20 2.0m Jumper Cord.

NOTE: This power supply kit meets multiple energy efficiency initiatives: 2650W, 94%; Climate Savers Computing Initiative PLATINUM and ECOS Consulting 80 PLUS Platinum.

HPE 6X 2400W Performance Platinum Hot Plug FIO Power Supply Kit 517521-B22

NOTE: This power supply kit enables HPE Power Discovery Services when used with the HPE BLc7000 Single Phase FIO Intelligent Power Module 677595-B21. See the "c-Class Power Modules" section above for the power modules.

NOTE: Includes a quantity of 6 HPE 2400W Platinum 94% efficient power supplies so a full enclosure can be configured with a single part number.

NOTE: Includes six WW 250V C19 - C20 2.0m Jumper Cords.

NOTE: This power supply kit meets multiple energy efficiency initiatives: 2400W, 94%; Climate Savers Computing Initiative PLATINUM and ECOS Consulting 80 PLUS Platinum.

HPE 2400W Performance Platinum Hot Plug Power Supply Kit 586603-B21

NOTE: This power supply kit enables HPE Power Discovery Services when used with the HPE BLc7000 Single Phase FIO Intelligent Power Module 677595-B21. See the "c-Class Power Modules" section above for the power modules.

NOTE: Includes one WW 250V C19 - C20 2.0m Jumper Cord.

NOTE: This power supply kit meets multiple energy efficiency initiatives: 2400W, 94%; Climate Savers Computing Initiative PLATINUM and ECOS Consulting 80 PLUS Platinum.

HPE 2650W Performance Universal Hot Plug Power Supply Kit 753618-B21

NOTE: This power supply kit enables HPE Power Discovery Services when used with the HPE BLc7000 Single Phase FIO Intelligent Power Module 677595-B21. See the "c-Class Power Modules" section above for the power modules.

NOTE: Includes a quantity of 6 HPE 2650W Universal 94% efficient power supplies so a full enclosure can be configured with a single

000090

Handwritten signature and date: 11/11/12

Related Options

Table listing related options for BladeSystem c7000 Enclosure, including HPE 2650W Performance -48VDC Platinum Hot Plug Power Supply Kit (789934-B21) and HPE 6X 2650W Performance -48VDC Hot Plug FIO Power Supply Kit (789935-B21).

Step 3: Select a software bundle (optional)
If nothing is selected the enclosure will ship with 16 Insight Control Trial Licenses)

Table listing software options, including HPE OneView Advanced with iLO Advanced (c7000 enclosure required on same purchase order) and HPE OneView including 3yr 24x7 Support Enclosure FIO Bundle 16-server LTU (E5Y41A).

Step 4: Select a redundant BladeSystem Onboard Administrator (optional)

Table listing HPE c-Class options, including HPE BL7000 Onboard Administrator with KVM Option (456204-B21) and HPE BL7000 Onboard Administrator (OA) supporting the mixing with the HPE c7000 OA with KVM.

Related Options

BladeSystem Onboard Administrator is required for a c7000 enclosure. NOTE: HPE BladeSystem c7000 and c7000 Enclosures support G1 through Gen9 ProLiant and Integrity server blades, subject to support requirements of the Onboard Administrator...

Step 5: Select 1 or more Interconnect modules for each enclosure (required)

The following is a list of various HPE BladeSystem c-Class interconnect modules (Virtual Connect, Ethernet, Fibre Channel InfiniBand, and SAS interconnects). A pair of interconnects must be ordered if redundancy is required. For detailed interconnect options, consult the specific interconnect QuickSpecs...

Table listing HPE BladeSystem c-Class Network Interconnects, including HPE Virtual Connect FlexFabric-20/40 F8 Module for c-Class BladeSystem (691367-B21) and HPE Virtual Connect FlexFabric-20/40 F8 Module for c-Class BladeSystem with TAA (691367-B22).

Related Options

Table listing related options for HPE BladeSystem c7000 Enclosure, including HPE Virtual Connect FlexFabric 10Gb/24-port Module for c-Class BladeSystem (571956-B21) and HPE 6Gb SAS Switch Single Pack for HPE BladeSystem c-Class (BK763A).

HPE SAS Switch NOTE: The HPE 6Gb SAS switches are supported on c7000 enclosures with the following SKUs: 5XXXXX-B21, 6XXXXX-B21, and 7XXXXX-B21.

Related Options

Table listing related options for HPE BladeSystem c7000 Enclosure, including HPE Data Center Racks (HPE Location Discovery Services) and HPE Power Distribution Units (PDUs) (HPE Remote Monitoring Power Distribution Units (MPDU)).

HPE NOTE: Additional HPE Interconnects are available on c7000 enclosures with the following SKUs: 5XXXXX-B21, 6XXXXX-B21, and 7XXXXX-B21.

Handwritten signature or mark in the bottom right corner.

Related Options

Table with 2 columns: Option Name and Part Number. Includes Uninterruptible Power Systems (UPS) like HPE R5000 and HPE R7000.

Table with 2 columns: Option Name and Part Number. Includes HPE Intelligent Power Distribution Units (HPE C19 to C20) and HPE Power Distribution Units (HPE C19 to C20).

Table with 2 columns: Option Name and Part Number. Includes HPE Power Distribution Units (HPE C19 to C20) and Additional HPE Power Cords.

Table with 2 columns: Option Name and Part Number. Includes Additional HPE Power Cords (HPE C19 - Nema L6-30P) and HPE High Voltage Power Cords (277V AC, 380V DC).

Related Options

Table with 2 columns: Option Name and Part Number. Includes HPE Enclosure Options (HPE BLc7000 Onboard Administrator), HPE c-Class BladeSystem Miscellaneous Blanks, and HPE c-Class BladeSystem Bay Blank with Coupler Option.

Table with 2 columns: Option Name and Part Number. Includes HPE Power Supplies (HPE BLc7000 Onboard Administrator) and HPE Power Supplies (HPE BLc7000 Onboard Administrator).

Related Options

Table with 2 columns: Option Name and Part Number. Includes HPE 2650W Performance Platinum Hot Plug Power Supply Kit, HPE 2400W Performance Platinum Hot Plug Power Supply Kit, and HPE 2650W Performance Universal Hot Plug Power Supply Kit.

Table with 2 columns: Option Name and Part Number. Includes HPE c-Class Active Cool Fan, HPE BLc7000 Enclosure HP Single Active Cool Fan Option Kit, and HPE 2650W Performance -48VDC Platinum Hot Plug Power Supply Kit.

Table with 2 columns: Option Name and Part Number. Includes HPE BladeSystem c-Class SAN Interconnects (HPE BLc7000 Enclosure HP Single Active Cool Fan Option Kit).

Related Options

Table with 2 columns: Option Name and Part Number. Includes HPE Virtual Connect FlexFabric-20/40 F8 Module, HPE Virtual Connect FlexFabric-20/40 F8 Module for c-Class BladeSystem with TAA, HPE Virtual Connect FlexFabric-10/100 Module Enterprise Edition, and HPE Virtual Connect FlexFabric 10Gb/24-port Module.

Table with 2 columns: Option Name and Part Number. Includes HPE BladeSystem c-Class SAN Interconnects (HPE BLc7000 Enclosure HP Single Active Cool Fan Option Kit).

000091

Related Options

supported on all c7000 enclosures
 NOTE: HPE Fibre Channel interconnect switches and modules supporting up to an 8Gbps internal port downlink speed (connection speed from the server blades to the interconnect) (SKUs 466482-B21, 572016-B21, AJ820C, AJ821C, AJ922C, AW563A, and AW564A) are supported on all c7000 enclosures
 NOTE: HPE Fibre Channel interconnect switches and modules supporting up to a 16Gbps internal port downlink speed (connection speed from the server blades to the interconnect) (SKUs C8545A, C8546A, C8547A, 751455-B21, and 778720-B21) are supported on c7000 enclosures with the following SKUs: 530000-021, 6XXXXX-B21, and 7XXXXX-B21. A c7000 Platinum enclosure (SKUs 630004-B21 and 730000-021) is required to permit the 16Gbps speed on the internal ports. A c7000 enclosure with SKU 530000-B21 will operate the internal ports up to 4Gbps.

HPE Virtual Connect 16Gb 24-port Fibre Channel Module for c-Class BladeSystem	751455-B21
HPE Virtual Connect 16Gb 24-port Fibre Channel TAA Module for c-Class BladeSystem	778720-B21
HPE Virtual Connect 8Gb 24-port Fibre Channel Module for c-Class BladeSystem	466482-B21
HPE 4Gb Fibre Channel Pass-thru Module for c-Class BladeSystem	403626-B21
Brocade 8/12c SAN Switch for BladeSystem c-Class	AJ820C
Brocade 8/24c SAN Switch for BladeSystem c-Class	AJ821C
Brocade 8/24c Power Pack+ SAN Switch for BladeSystem c-Class	AJ822C
Brocade 16Gb/28 SAN Switch for BladeSystem c-Class	C8546A
Brocade 16Gb/16 SAN Switch for BladeSystem c-Class	C8545A
Brocade 16Gb/28 SAN Switch Power Pack+ for BladeSystem c-Class	C8547A
Brocade 8/16Gb Embedded FC Switch 12-port Upgrade L7U	T5517A

NOTE: If licensed per switch.
 NOTE: Installed on DCN4 Server, each license can be assigned to only one switch.

HPE SAS Switch NOTE: For detailed interconnect options, consult the specific interconnect QuickSpecs <https://www.hpe.com/h20195/v2/getpdf.aspx?cid=428404&docname=04123380>
 NOTE: Options to specific c-Class interconnects are NOT included in the list below. Consult the individual interconnect QuickSpecs to obtain part numbers for interconnect options such as cables, SFPs, etc.
 NOTE: Interconnect Bay 3 must contain one of the Ethernet capable interconnect modules.
 NOTE: The HPE BladeSystem c-Class interconnects ship as single units unless otherwise noted. Interconnects must be ordered in quantities of two for redundancy support.
 NOTE: The HPE 6Gb SAS switches are supported on c7000 enclosures with the following SKUs: 6XXXXX-B21, 6XXXXX-B21, and 7XXXXX-B21.
 HPE 6Gb SAS Switch Single Pack for HPE BladeSystem c-Class EK763A
 HPE 6Gb SAS Switch Dual Pack for HPE BladeSystem c-Class BK764A

HPE BladeSystem InfiniBand Interconnects NOTE: For detailed interconnect options, consult the specific interconnect QuickSpecs <https://www.hpe.com/h20195/v2/getpdf.aspx?cid=428404&docname=04123380>
 NOTE: Options to specific c-Class interconnects are NOT included in the list below. Consult the individual interconnect QuickSpecs to obtain part numbers for interconnect options such as cables, SFPs, etc.
 NOTE: Interconnect Bay 3 must contain one of the Ethernet capable interconnect modules.
 NOTE: The HPE BladeSystem c-Class interconnects ship as single units unless otherwise noted. Interconnects must be ordered in quantities of two for redundancy support.
 NOTE: The HPE QDR InfiniBand Switches are supported on c7000 enclosures with the following SKUs: 5XXXXX-B21, 6XXXXX-B21, and 7XXXXX-B21.
 NOTE: The HPE FDR InfiniBand Switches are supported on c7000 enclosures with the following SKUs: AB6610-B21, 6B6611-B21, and 7XXXXX-B21.
 HPE 4X FDR InfiniBand Managed Switch for BladeSystem c-Class 648311-B21

Related Options

HPE 4X FDR InfiniBand Switch for BladeSystem c-Class	648311-B21
HPE OneView Software	HPE OneView Physical Media Kit L7U HPE OneView Advanced licenses for bundling with BladeSystem enclosures HPE OneView Advanced with ILO Advanced (c7000 enclosure required on same purchase order) NOTE: The following HPE OneView part numbers can only be used when ordered on the same order as a BladeSystem c7000 enclosure HPE OneView including 3yr 24x7 Support Enclosure Bundle Track 16-server L7U NOTE: Server provisioning (via HPE Insight Control server provisioning) is licensed as part of HPE OneView Advanced and provides multi-server OS and driver provisioning. Media Kit #B0083A can be ordered for a physical copy of this software (USB flash drive). ESY37A ESY42A
HPE Insight Software	Insight Control NOTE: Insight Control is not supported with Gen10 server blades. NOTE: Licenses ship without media. The Insight Management Media Kit can be ordered separately, or can be downloaded at: http://www.hpe.com/info/insightmanagement . NOTE: Customer will receive a license entitlement certificate, which must be performed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HPE Software Technical Support Service. NOTE: For additional license kits, please see the QuickSpecs at: https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=04123380 NOTE: HPE Insight Control 7.2 introduced Insight Control server provisioning, a new capability ideal for multi-server OS and firmware provisioning to ProLiant and BladeSystem servers. Insight Control server provisioning is included and licensed as part of HPE Insight Control A media kit. HPE Insight Control server provisioning USB media kit (#BDR83A), including a USB, is available for customers who require a physical copy of the media loaded with Insight Control server provisioning software. Please note that this media kit is separate and in addition to the HPE Insight Management DVD Media Kit (#B6N33A).
HPE ILO Advanced for BladeSystem License	HPE ILO Advanced for BladeSystem 8-server License with 3yr Support on ILO Licensed Features 512489-B21
HPE Virtual Connect Enterprise Manager	HPE Virtual Connect Enterprise Manager including 3yr 24x7 Support Single c7000 Enclosure L7U HPE BladeSystem c-Class 4x10G QSFP+ MPO SR4 100m Transceiver NOTE: This license (459864-B21) allows One BL-c7000 enclosure to be managed with VCEM. Customer will receive a license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax to obtain the license activation key(s). Includes one year of 24 x 7 HPE Software Technical Support and Update Service. NOTE: For additional license kits, please visit: https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=04123380 (Worldwide) 459864-B21 805755-B21
HPE c-Class	HPE D2220sb Build-to-order Storage Blade QW917A

Related Options

Storage Blades NOTE: Includes 3yr NBD Parts-Only Warranty Service
 HPE D2220sb Configure-to-order Storage Blade QW918A
 NOTE: Includes 3yr NBD Parts-Only Warranty Service
 NOTE: The D2220sb requires a c7000 Enclosure configuration with 10 fans
 NOTE: Please see the HPE D2220sb Storage Blade QuickSpecs for technical specifications and additional information at: <https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=04111329>.

HPE Expansion Blades HPE BLc PCI Expansion Blade 448018-B21
 NOTE: Please see the QuickSpecs for Technical Specifications and additional information: <https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=04123380>

HPE Tape Backup NOTE: For the complete range of tape drives, autoloaders, libraries and media see: <http://www.hpe.com/storage/storage> For hardware and software compatibility of HPE tape backup products see: <http://www.hpe.com/storage/compat>
 HPE StoreEver LTO-6 Ultrium 6250 Tape Drive in a 1U Rack Mount Kit COL99A
 HPE StoreEver LTO-6 Ultrium 6250 Internal Tape Drive EH969A
 HPE StoreEver LTO-6 Ultrium 6250 External Tape Drive EH970A

HPE Rack Options NOTE: For additional information regarding Rack Options, please see the following URL: <http://www.hpe.com/info/rackandpower>
 HPE TPT7600 G2 KVM Console and Monitor
 NOTE: For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: <http://www.hpe.com/server/kvm>

HPE Server Console Switch G2 with Virtual Media & CAC
 HP 0x2x16 KVM Server Console Switch G2 with Virtual Media CAC Software AF618A
 HP 0x2x32 KVM Server Console Switch G2 with Virtual Media CAC Software AF619A

HPE IP Console Switch G2 with Virtual Media & CAC
 HP 1x1Ex8 KVM IP Console Switch G2 with Virtual Media CAC Software AF620A
 HP 2x1Ex16 KVM IP Console Switch G2 with Virtual Media CAC Software AF621A
 HP 4x1Ex32 KVM IP Console Switch G2 with Virtual Media CAC Software AF622A

HPE KVM Interface Adapters
 HP KVM Console USB Interface Adapter AF628A
 HP KVM Console USB 2.0 Virtual Media CAC Interface Adapter AF629A
 HP KVM Console Serial/Power G2 Interface Adapter AF625A

HPE Packaged Support (Care Pack) Services NOTE: Some options, including Fibre Channel and InfiniBand switches for the HPE c-Class BladeSystem, are not covered under the c7000 enclosure Care Packs and carry separate Care Packs. Care Pack service level support for these options should always be updated to match existing storage or server service level. Please view the option QuickSpecs or contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized ServiceOne partner for Care Pack information.
 NOTE: Additional HPE Packaged Support (formerly Care Pack) services can be found at: <https://www.hpe.com/us/en/services/it-support.html>

Proactive Care Services

Related Options

HPE 3 year Proactive Care 24x7 c7000 Enclosure Service	USC33E
HPE 3 year Proactive Care Call to Repair c7000 Enclosure Service	USC36E
HPE 3 year Proactive Care 24x7 c7000 Enclosure with Insight Control Service	USP10E
HPE 3 year Proactive Care Call to Repair c7000 Enclosure with Insight Control Service	USP13E

NOTE: Insight Control is not supported with Gen10 server blades.

Installation & Start-up Services
 HPE BladeSystem c7000 Infrastructure Startup Service UE602E
 HPE BladeSys c7000 Encd Network Startup Service UE603E
 HPE Hardware Install c-Class Enclosure and Server Blade Service UE494E
 HPE Installation during Non Standard Hours c7000 Enclosure + Blade Service US870E

HPE Flexible Care Pack Services for your Integrity BladeSystem Enclosure
 NOTE: Please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized ServiceOne partner for additional Flexible Care Pack information.

Mission Critical Services
 Integrity Blade svr enclosure HW Support HA111A3#606
 Integrity Blade svr enclosure HW Support HA112A3#606

Installation & Start-up Services
 HPE Support - 01860c Enclosure Inst SVC HA114A1#57A
 HP Startup BladeSys c-Class Encd Ntwk SVC HA124A1#56H

Power Input Module and Power Supply Specifications

NOTE: HPE highly recommends using the HPE Power Advisor tool to ensure the number of power supply options you have selected can fully support your BladeSystem configuration and to review maximum system power ratings for facilities planning purposes. HPE Power Advisor is available at: <http://www.hpe.com/info/hppoweradvisor>.

Power Input Module Specifications						
Power Input Module ¹	Power Connection	HPE Power Discovery Services	Rated Input Voltage	Input Frequency	Supported Power Supply Kits ²	Supported c7000 Enclosures ^{3,4}
HPE BLc7000 Special/Promotional Enclosure (677595-B21)	6x IEC-320 C20 blue power connectors ^{11a}	Supported ⁷	200-240 VAC			
HPE BLc7000 1 PH FIO Power Module Option (423379-B21)	6x IEC-320 C20 power connectors ⁹	Not supported	200-208 VAC line to line, 3-phase delta	50-60 Hz	2650W Platinum ^{11a} , 2400W Platinum ^{11b} , 2400W Gold ^{11c} , 2250W ^{11d}	400000-B21, 400000-B22, 400000-B23, 500000-B21, 600000-B21, 700000-B21
Three Phase AC N/A/1PH (413380-B21) ⁸	Two 3.05m (10 ft) power cables with NEMA L15-30p connectors					
HPE BLc7000 -48V DC Power Input Module (AH331A)	4SDG 4AWG 1/4 2H terminal lugs		40-60 VDC	N/A	2250W -48VDC (AH332A)	
HPE HVDC 1PH AC Power Module BLc FIO Option (753623-B21)	6x APP Saf-D-Grid receptacle connectors ¹²		277 VAC, 380 VDC	50-60 Hz (AC), N/A (DC)	2650W Universal (753618-B21 and 753619-B21)	

1. See the "Technical Specifications" section for additional power specifications. The blue power connectors indicate HPE Power Discovery Services capability. HPE Power Discovery Services are enabled when used with an Intelligent Power Distribution Unit (IPDU), IPDU cables, and the Platinum power supply kits 733460-B21, 733459-B21, 517521-B21, or 588603-B21. See the IPDU, IPDU cable, and c-Class Power Supply sections for these options. Accept IEC C19-C20 and C19-C20 Intelligent Power Distribution Unit (IPDU) power cables. One WW 250W C19-C20 2.0m (non-IPDU) power cable is included per supported power supply. IPDU power cables are ordered separately. Accept IEC C19-C20 power cables. One WW 250W C19-C20 2.0m power cable is included per supported power supply. Rated 220 to 240 VAC line-to-neutral. The enclosure will not operate from higher line-to-line voltage with the WYE wall plug configuration. This power input module is configured to provide 220 to 240 VAC to the power supplies. Each enclosure must include only one type of power supply. Mixing of power supplies is not supported, except during hot swaps to different level or higher efficient power supplies. The Onboard Administrator will exhibit a mismatch error due to mixed power supplies until all power supplies are matched. The three-phase power input module (413380-B21) requires a minimum of 6 fans and 3 power supplies. For full redundancy, 6 power supplies are required. Supported HPE power supply kits include 2650W Platinum: 733460-B21 (6-pack) and 733459-B21 (single); 2400W Platinum: 517521-B21 (6-pack) and 588603-B21 (single); 2400W Gold: 517521-B21 (6-pack) and 499243-B21 (single); 2250W: 412138-B21 (single). The Onboard Administrator firmware must be at least the minimum version that supports all components installed within the enclosure. Power cables with APP Saf-D-Grid connectors are ordered separately.

Power Input Module and Power Supply Specifications

Power Supply Specifications					
HPE 2650 Watt Platinum Hot Plug Power Supply					
Part Number	733459-B21 (single), 733460-B21 (6-pack)				
Input Voltage Range (Vrms)	200-240				
Frequency Range (Nominal) (Hz)	50 / 60				
Nominal Input Voltage (Vrms)	200	208	220	230	240
Maximum Rated Output Wattage (Watts)	2650				
Nominal Input Current (Arms)	14.5	13.9	13.1	12.5	12.0
Maximum Rated Input Wattage (Watts)	2898	2901	2904	2887	2884
Maximum Rated VA (Volt-Amp)	2896	2888	2887	2882	2878
Efficiency (%) at Maximum Rated Output Wattage	91.2	91.3	91.4	91.8	91.9
Power Factor (Minimum)	0.98				
Leakage Current (mA)	0.97	1.01	1.06	1.11	1.16
Maximum Inrush Current (A peak)	100				
Maximum Inrush Current duration (mS)	10				
Maximum British Thermal Unit Rating (BTU/Hr)	9888	9899	9910	9850	9840
HPE 2400 Watt Platinum Hot Plug Power Supply					
Part Number	588603-B21 (single), 517521-B21 (6-pack)				
Input Voltage Range (Vrms)	200-240				
Frequency Range (Nominal) (Hz)	50 / 60				
Nominal Input Voltage (Vrms)	200	208	220	230	240
Maximum Rated Output Wattage (Watts)	2450				
Nominal Input Current (Arms)	13.9	13.4	12.6	12.0	11.4
Maximum Rated Input Wattage (Watts)	2692	2692	2678	2678	2663
Maximum Rated VA (Volt-Amp)	2778	2778	2762	2762	2747
Efficiency (%) at Maximum Rated Output Wattage	91	91	91.5	91.5	92
Power Factor (Minimum)	0.98				
Leakage Current (mA)	0.97	1.01	1.06	1.11	1.16
Maximum Inrush Current (A peak)	100				
Maximum Inrush Current duration (mS)	10				
Maximum British Thermal Unit Rating (BTU/Hr)	9186	9186	9136	9136	9086
HPE 2400 Watt Gold Hot Plug Power Supply					
Part Number	499243-B21 (single), 517521-B21 (6-pack)				
Input Voltage Range (Vrms)	200-240				
Frequency Range (Nominal) (Hz)	50 / 60				
Nominal Input Voltage (Vrms)	200	208	220	230	240
Maximum Rated Output Wattage (Watts)	2450				
Nominal Input Current (Arms)	14.15	13.58	12.81	12.23	11.70
Maximum Rated Input Wattage (Watts)	2742	2737	2730	2724	2720
Maximum Rated VA (Volt-Amp)	2830	2825	2817	2812	2807
Efficiency (%) at Maximum Rated Output Wattage	87.5	87.7	87.9	88.1	88.2
Power Factor (Minimum)	0.98				
Leakage Current (mA)	0.97	1.01	1.06	1.11	1.16

Power Input Module and Power Supply Specifications

Maximum Inrush Current (A peak)	100				
Maximum Inrush Current duration (mS)	5				
Maximum British Thermal Unit Rating (BTU/Hr)	9356	9338	9313	9295	9280

HPE 2250 Watt -48VDC Hot Plug Power Supply	
Part Number	AH332A (single)
Input Voltage Range (V DC)	40-60
Frequency Range (Nominal) (Hz)	N/A
Nominal Input Voltage (Vrms)	48
Maximum Rated Output Wattage (Watts)	2250
Nominal Input Current (Arms)	53.15
Maximum Rated Input Wattage (Watts)	2523
Maximum Rated VA (Volt-Amp)	2523
Efficiency (%) at Maximum Rated Output Wattage	89.2
Power Factor (Minimum)	1.00
Leakage Current (mA)	N/A
Maximum Inrush Current (A peak)	200
Maximum Inrush Current duration (mS)	5
Maximum British Thermal Unit Rating (BTU/Hr)	8607

HPE 2650 Watt Universal Hot Plug Power Supply		
Part Number	753618-B21 (single), 753619-B21 (6-pack)	
Input Voltage Range (Vrms)	277 VAC, 380 VDC	
Frequency Range (Nominal) (Hz)	50 / 60 (AC), N/A (DC)	
Nominal Input Voltage (Vrms)	277 VAC	380 VDC
Maximum Rated Output Wattage (Watts)	2650	
Nominal Input Current (Arms)	10.40	7.51
Maximum Rated Input Wattage (Watts)	2868	2853
Maximum Rated VA (Volt-Amp)	2881	2853
Efficiency (%) at Maximum Rated Output Wattage	92.4	92.9
Power Factor (Minimum)	0.996 (AC), 1.000 (DC)	
Leakage Current (mA)	1.16	N/A
Maximum Inrush Current (A peak)	100	
Maximum Inrush Current duration (mS)	10	
Maximum British Thermal Unit Rating (BTU/Hr)	9785	9735

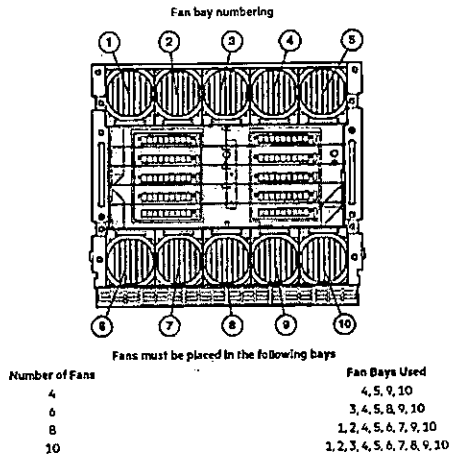
HPE 2650 Watt -48VDC Hot Plug Power Supply			
Part Number	789934-B21 (single), 753619 (6-pack)		
Input Voltage Range (V dc)	-40 to -72		
Frequency Range (Nominal) (Hz)	N/A		
Nominal Input Voltage (V dc)	-40	-48	-72
Maximum Rated Output Wattage Rating	2650	2650	2650
Nominal Input Current (A)	-72.74	-60.18	-39.96
Maximum Rated Input Wattage Rating (Watts)	2909	2889	2877
Maximum Rated input VA Rating (Volt-Amp)	2909	2889	2877
Efficiency (%)	91.1	91.7	92.1

Power Input Module and Power Supply Specifications

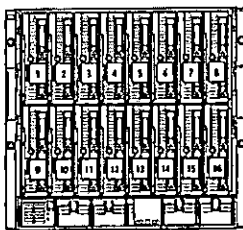
Power Factor (Minimum)	1.000	1.000	1.000
Leakage Current (mA)	N/A		
Maximum Inrush Current (A peak)	200		
Maximum Inrush Current duration (mS)	5		
Maximum British Thermal Unit Rating (BTU/Hr)	9927	9857	9817
Hold Up Time (ms)	05	05	05

000092

Fan Bay and Device Bay Numbering and Population Guidelines



Half-height device bay numbering



- 1. Device Bay 1
- 2. Device Bay 2
- 3. Device Bay 3
- 4. Device Bay 4
- 9. Device Bay 9
- 10. Device Bay 10
- 11. Device Bay 11
- 12. Device Bay 12

Fan Bay and Device Bay Numbering and Population Guidelines

The following device bays are located in each zone:

Zone	Half-Height Device Bays	Full-Height Device Bays
1	1, 9, 2, 10	1, 2
2	3, 11, 4, 12	3, 4
3	5, 13, 6, 14	5, 6
4	7, 15, 8, 16	7, 8

Expansion blades

Expansion blades consist of storage blades, tape blades, and the PCI Expansion Blade. Up to 8 expansion blades are supported per HPE BladeSystem c-Class c7000 Enclosure. Expansion blades may be installed in the same zone as half-height and full-height, single-wide server blades. Expansion blades are not supported with full-height, double-wide server blades. An expansion blade is installed directly adjacent to a server blade, also known as a partner server blade. Expansion blade population rule best practices are detailed below. For additional expansion blade rules and guidelines, please see the documentation that ships with the enclosure and expansion blade. Hewlett Packard Enterprise recommends consulting your Hewlett Packard Enterprise sales representative to confirm the validity of any configuration.

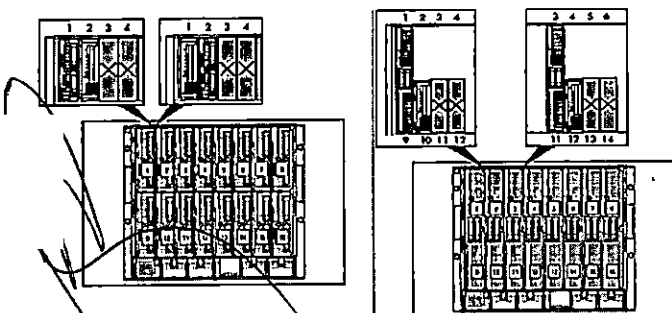


Figure 1 Installing an expansion blade adjacent to a half-height server blade. Figure 2 Installing a single expansion blade adjacent to a full-height, single-wide server blade.

Expansion blade population best practices for half-height server blades

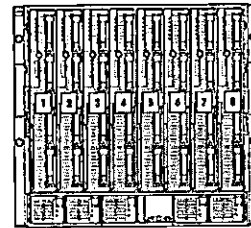
- One half-height partner server blade supports one expansion blade (Figure 1).
- Identify the partner server blade to be installed with the expansion blade. The two blades always occupy a pair of slots as follows: 1 & 2, 3 & 4, 5 & 6, 7 & 8, 9 & 10, 11 & 12, 13 & 14, 15 & 16.
- If the partner server blade is installed in an odd-numbered bay, the expansion blade is installed in the adjacent even-numbered bay to the right.
- If the partner server blade is installed in an even-numbered bay, the expansion blade is installed in the adjacent odd-numbered bay to the left.
- Each c7000 zone contains a removable divider that is used to support half-height devices. This divider is remains installed whether the half-height devices are server or expansion blades.

Expansion blade population best practices for full-height, single-wide server blades:

Fan Bay and Device Bay Numbering and Population Guidelines

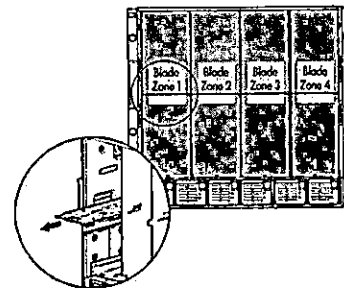
- 5. Device Bay 5
- 6. Device Bay 6
- 7. Device Bay 7
- 8. Device Bay 8
- 13. Device Bay 13
- 14. Device Bay 14
- 15. Device Bay 15
- 16. Device Bay 16

Full-height device bay numbering



- 1. Device Bay 1
- 2. Device Bay 2
- 3. Device Bay 3
- 4. Device Bay 4
- 5. Device Bay 5
- 6. Device Bay 6
- 7. Device Bay 7
- 8. Device Bay 8

Full-height and half-height blade mixed configurations



The c7000 enclosure is divided into 4 zones by the vertical support metalwork. Within each zone a removable divider is used to support half height devices. To install a full-height blade in any zone this divider must be removed. As a consequence a zone can only contain either full-height server blades or half-height server blades. NOTE: Expansion blades can be installed in the same zone as both full-height, single-wide and half-height blades. For more information, please see the "Expansion blades" later in this document.

Fan Bay and Device Bay Numbering and Population Guidelines

- One full-height, single-wide partner server blade supports one or two expansion blades. Figure 2 shows installation of one expansion blade.
- Identify the partner server blade to be installed with the first expansion blade. The two blades always occupy a pair of slots, as follows: 9 & 10, 11 & 12, 13 & 14, 15 & 16.
- The partner server blade is installed in an odd-numbered bay. The first expansion blade is installed on the lower row of the enclosure in an even-numbered bay (slots 10, 12, 14 or 16) adjacent to the partner server blade.
- If only a single expansion blade is installed:
 - A half-height server blade may be installed in the empty bay directly above the expansion blade, this server blade cannot be partnered with the expansion blade. A coupler bracket is installed on the expansion blade. A coupler bracket is not installed on the server blade. A coupler bracket is included with each expansion blade.
 - If no device is desired in the empty bay above the expansion blade, a device bay blank is installed.
 - The upper half-height server blade or device bay blank must be removed before removing the lower expansion blade.
- If a second expansion blade is installed:
 - It is always located directly above the first installed expansion blade. A coupler bracket is installed on the lower expansion blade. A coupler bracket is not installed on the upper expansion blade. A coupler bracket is included with each expansion blade.
 - Two storage blades, two tape blades, two PCI Expansion Blades, or a mixture of any two. For a mixed configuration that contains a storage blade, the storage blade is installed on the bottom bay and the tape blade or PCI Expansion Blade is installed on the top bay.
 - The upper expansion blade must be removed before removing the lower expansion blade.
- When partnering an expansion blade with a ProLiant BL620c G7 Server Blade, an HPE PCI Express Mezzanine Pass-Thru Card for BladeSystem c-Class (431043-821) is required. This card is installed in the mezzanine 3 connector in the server blade for a lower bay expansion blade installation and a second card is installed in mezzanine 2 connector if a second expansion blade is required.
- The HPE ProLiant BL680c G7 Server Blade is a full-height, double-wide device. It does not support expansion blades.

Device bay and fan population guidelines

The device bay and fan bay population rule best practices are provided below. Hewlett Packard Enterprise recommends consulting your Hewlett Packard Enterprise sales representative to confirm the validity of any configuration.

Summary:

Configuration	Supported Device Bays		Minimum Number of Fans	Supported Fan Bays
	Half-Height Bays	Full-Height Bays		
No more than 1 full-height or 2 half-height device bays occupied	1, 9, 2, 10	1, 2	4	4, 5, 9, 10
No more than 4 full-height or 8 half-height device bays occupied	1, 9, 2, 10, 3, 11, 4, 12	1, 2, 3, 4	6	3, 4, 5, 8, 9, 10
At least 5 full-height or 9 half-height device bays occupied	All	All	8	1, 2, 4, 5, 6, 7, 9, 10

NOTE: Ten fans are strongly recommended in all configurations for maximum cooling efficiency and redundancy, reduced power consumption, and reduced noise.
NOTE: Please see the complete detailed list below of device bay and fan bay population rule best practices.

Details:

- Half-height devices are populated from top and bottom from left to right from the front of the enclosure. So the first two half-height devices would be placed in bays 1 & 9. The second two half-height devices would be placed in bays 2 & 10. Please refer to the above section "half-height" device information.
- Full-height servers are populated from left to right. Please see the above section "Full-height" for additional information.
- An enclosure zone can only contain either full-height server blades or half-height servers. A zone is not allowed except when connecting an expansion blade to a server part.

Fan Bay and Device Bay Numbering and Population Guidelines

- sections "Full-height and half-height blade mixed configurations" and "Expansion blades" for more information.
- The type and number of installed blade devices and interconnect modules determine the number of required fans.
 - The enclosure supports a minimum of 4 Active Cool 200 Fans to a maximum of 10 Active Cool 200 Fans. Ten fans are strongly recommended for maximum cooling efficiency and redundancy; reduced power consumption, and reduced noise.
 - For proper operation, fans and blades must be installed in the correct bays. The Onboard Administrator will ensure that fans and blades are correctly placed before allowing systems to power on.
 - A minimum of 4 fans are required for a configuration that occupies 2 half-height device bays. Examples include up to 2 half-height, single-wide server blades, 1 half-height, double-wide server blade, 1 full-height, single-wide server blade, or 1 half-height, single-wide server blade and 1 expansion blade. The blades are installed in zone 1 (device bays 1, 9, 2, and/or 10). The fans are installed in fan bays 4, 5, 9, and 10.
 - A minimum of 6 fans are required for a configuration that occupies up to 8 half-height device bays. Examples include up to 8 half-height, single-wide server blades, 4 half-height, double-wide server blades, or 2 full-height, double-wide server blades. The blades are installed in zones 1 and 2 (device bays 1, 9, 2, 10, 3, 11, 4, and/or 12). The fans are installed in fan bays 3, 4, 5, 8, 9, and 10.
 - A minimum of 8 fans are required for a configuration that occupies at least 9 half-height device bays. The blades can be installed in any device bays. The fans are installed in fan bays 1, 2, 4, 5, 6, 7, 9, and 10.
 - Ten fans support all device bays. The blades can be installed in any device bays. The fans are installed in all fan bays.
 - Device bay blanks and fan bay blanks are installed in all unoccupied bays.
 - In addition to the above, please observe the following:
 - A minimum of 6 fans are required for any enclosure configured with a three-phase power input module. The fans are installed in fan bays 3, 4, 5, 8, 9, and 10.
 - A minimum of 8 fans are required if at least one switch module is installed in interconnect bay 1, 3, 5, or 7 and at least one switch module is installed in interconnect bay 2, 4, 6, or 8. This does not apply to pass-thru modules. The fans are installed in fan bays 1, 2, 4, 5, 6, 7, 9, and 10.
 - Ten fans are required for a configuration with:
 - One or more HPE Virtual Connect FlexFabric-20/40 F8 Modules.
 - One or more D2220sb Storage Blades.
 - More than half of the enclosure device bays are occupied and any quantity of D2200sb Storage Blades are present.
 - Nine or more BL460c G1 and/or BL460c G5 Server Blades.

Technical Specifications

HPE BladeSystem c7000 Server Blade Enclosure	Dimensions	Height	17.4 in (442 mm)
	Width		17.6 in (447.04 mm)
	Depth		32 in (813 mm)
	Shipping Dimensions	Height	29.88 in (759 mm)
		Width	23.88 in (607 mm)
		Depth	39.88 in (1013 mm)
	Enclosure Weight	Unboxed	148 lb (67 kg)
		Shipping	191 lb (87 kg)
NOTE: The enclosure weight above includes only an empty enclosure - servers, the power input module, power supplies, fans, interconnect modules, and Onboard Administrator(s) are not included. The weight for the power input module, power supplies, fans, and Onboard Administrator(s) is listed below. Please see the specific server blade and interconnect module QuickSpecs for their respective weight.			
	Power Input Module Weight (minimum 1, maximum 1)	3 lbs (1.4 kg)	
	Power Supply Weight (minimum 1, maximum 6)	6 lbs (2.7 kg)	
	HPE Active Cool 200 Fan Weight (minimum 4, maximum 10)	4 lbs (1.8 kg)	
	Onboard Administrator Weight (minimum 1, maximum 2)	3 lbs (1.4 kg)	
	Maximum Enclosure Weight (approximate)	Unboxed	482 lb (219 kg)
		Shipping	525 lb (238 kg)
NOTE: The approximate maximum enclosure weight above includes 16 server blades fully configured, the power input module, six power supplies, ten fans, eight interconnect modules, and two Onboard Administrators.			
	Temperature Range	Operating	50° to 95° F (10° to 35° C)
		Non-Operating	-22° to 140° F (-30° to 60° C)
	Relative Humidity	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
		Non-Operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
NOTE: Operating temperature has an altitude derating of 1.8° F (1° C) per 1000 ft (304.8 m). No direct sunlight. Upper operating limit is 20,000 ft (3,048 m) or 70 kPa/10.1 psia. Upper non-operating limit is 39,000 ft (9,144 m) or 30.5 kPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 kPa.			

Technical Specifications

NOTE: For detailed environmental and other installation requirements, please see the "HPE BladeSystem c-Class Site Planning Guide" at <http://www.hpe.com/support/hpscc>.

Power

NOTE: HPE highly recommends using the HPE Power Advisor tool to ensure the number of power supply options you have selected can fully support your BladeSystem configuration and to review maximum system power ratings for facilities planning purposes. HPE Power Advisor is available at <http://www.hpe.com/info/hppoweradvisor>.

Power connection	677595-B21: 6x IEC-320 C20 blue power connectors	413379-B21: 6x IEC-320 C20 power connectors
Single Phase AC Power Input Module (413379-B21)		
Single Phase AC Intelligent Power Input Module (677595-B21)		
Rated input voltage	200 to 220 VAC	
Rated input frequency	50 to 60 Hz	
Number of power supplies supported	Minimum: One (1) Maximum: Six (6)	
2250W Power Supply (412138-B21)	Maximum output (per power supply)	2250W
	Maximum output (total for six power supplies)	13,050W
	Maximum input current (per power supply)	13.1 A at 200 VAC 12.6 A at 208 VAC 11.9 A at 220 VAC
	Maximum input power (per power supply)	2621 VA
2400W Gold Power Supply (517521-B21, 6-pack) (499243-B21, single)	Maximum output (per power supply)	2450W
	Maximum output (total for six power supplies)	14,210W
	Maximum input current (per power supply)	13.9 A at 200 VAC 13.3 A at 208 VAC 12.6 A at 220 VAC
	Maximum input power (per power supply)	2780 VA
2400W Platinum Power Supply (517521-B22, 6-pack) (588603-B21, single)	Maximum output (per power supply)	2450W
	Maximum output (total for six power supplies)	14,210W
	Maximum input current	13.2 A at 200 VAC

Technical Specifications

Power connection	Two 305m (10 ft) power cables with NEMA L15-30p connectors	
(per power supply)	12.7 A at 208 VAC 12.2 A at 220 VAC	
Maximum input power (per power supply)	2640 VA	
2650W Platinum Power Supply (733440-B21, 6-pack) (733459-B21, single)	Maximum output (per power supply)	2650W
	Maximum output (total for six power supplies)	15,370W
	Maximum input current (per power supply)	14.4 A at 200 VAC 13.8 A at 208 VAC 13.1 A at 220 VAC
	Maximum input power (per power supply)	2880 VA
Three Phase AC NA/JPN Power Input Module (413380-B21)	Rated input voltage	200 to 208 VAC line to line 3-phase delta
	Rated input frequency	50 to 60 Hz
	Number of power supplies supported	Minimum: Three (3) Maximum: Six (6)
2250W Power Supply (412138-B21)	Maximum output (per power supply)	2250W
	Maximum output (total for six power supplies)	13,050W
	Maximum input current per line cord	22.8 A at 200 VAC 21.8 A at 208 VAC
	Maximum input power per line cord	7863 VA
2400W Gold Power Supply (517521-B21, 6-pack) (499243-B21, single)	Maximum output (per power supply)	2450W
	Maximum output (total for six power supplies)	14,210W
	Maximum input current per line cord	24.2 A at 200 VAC 23.2 A at 208 VAC
	Maximum input power per line cord	8352 VA
2400W Platinum Power Supply (517521-B22, 6-pack) (588603-B21, single)	Maximum output (per power supply)	2450W
	Maximum output (total for six power supplies)	14,210W
	Maximum input current per line cord	13.2 A at 200 VAC

000093

WARRANTY

WYU

Technical Specifications

2650W Platinum Power Supply (753400-B21, 6-pack) (753459-B21, single)	Maximum output (per power supply)	2650W
	Maximum output (total for six power supplies)	15,370W
-48VDC Power Input Module (AH331A)	Power connection	Terminal lug: 4SDG 4AWG 1/4 2H Two-hole lug 45 degree bend 0.25in. (6.4mm) stud hole size 0.63in. (16mm) hole spacing
	Rated input voltage	40 to 60 VDC
	Number of power supplies supported	Minimum: One (1) Maximum: Six (6)
2250W -48VDC Power Supply (AH332A)	Maximum output (per power supply)	2250W
	Maximum output (total for six power supplies)	13,050W
	Maximum input current (per power supply)	75A
2650W -48VDC Power Supply (789934-B21)	Maximum input power per power supply	2700W
	Maximum output (per power supply)	2650W
	Maximum output (total for six power supplies)	15,370W
	Maximum input current (per power supply)	73A
High Voltage Power Input Module (753623-B21)	Power connection	6x APP Saf-D-Grid receptacle connectors NOTE: Power cables with APP Saf-D-Grid connectors are ordered separately.
	Rated input voltage	277 VAC, 360 VDC
	Rated input frequency	50 to 60 Hz (AC), N/A (DC)
	Number of power supplies supported	Minimum: One (1) Maximum: Six (6)

Technical Specifications

2650W Universal Power Supply (753619-B21, 6-pack) (753618-B21, single)	Maximum output (per power supply)	2650W
	Maximum output (total for six power supplies)	15,370W
Acoustic Noise	Maximum input current (per power supply)	10.5 A at 277 VAC 7.6 A at 380 VDC
	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109)	
	Idle	LWAd: 7.1 Bels LpAm: 54 dBA
Option Kits	Fan Option Shipping Dimensions	Height: 8.75 in (223 mm) Width: 8.63 in (219 mm) Depth: 35.13 in (892 mm) Weight: 8.5 lbs (3.85 kg)
	BladeSystem Onboard Administrator Option Shipping Dimensions	Height: 2.50 in (63.5 mm) Width: 9.88 in (251 mm) Depth: 13.50 in (343 mm) Weight: 4.0 lbs (1.8 kg)
	Fan Option Shipping Dimensions	Height: 8.75 in (223 mm) Width: 9.75 in (248 mm) Depth: 15.88 in (403 mm) Weight: 4.0 lbs (1.8 kg)

Environmental-friendly Products and Approach
End-of-life Management and Recycling
Hewlett Packard Enterprise offers end-of-life Hewlett Packard Enterprise product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to <http://www.hpe.com/info/recycle>. To recycle your product, please go to <http://www.hpe.com/info/recycle> or contact your nearest Hewlett Packard Enterprise sales office. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard Enterprise web site at <http://www.hpe.com/info/recycle>. These instructions may be used by recyclers and other WEEE treatment facilities as well as Hewlett Packard Enterprise OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.

Summary of Changes

Date	Version History	Action	Description of Change
05-Feb-2018	From Version 73 to 74	Added	SKU added in Configuration Information Integrated Models section: 689638-B21
		Removed	Obsolete SKUs were deleted: S72018-B21, T5169A, TA804A, TC367A, H6J66A, H6J68A, H6J68A, H6J70A, BW90CA, BW912A, BW947A
06-Nov-2017	From Version 72 to 73	Changed	Standard Features section was updated.
		Removed	Obsolete SKUs were deleted: B8W99A, BW945A, H5M59A, H5M62A, H5M64A, C6N31A
23-Oct-2017	From Version 71 to 72	Changed	Care Pack naming and Service and Support-Parts and Materials updated.
25-Sep-2017	From Version 70 to 71	Changed	Configuration Information Factory Integrated Models section was updated.
17-Jul-2017	From Version 69 to 70	Changed	Standard Features, Pre-Configured Models, Configuration Information Factory Integrated Models, and Related Options sections were updated.
		Removed	Obsolete SKUs were deleted: H5M70A, Z5263-074
12-Jun-2017	From Version 68 to 69	Added	SKU added in Configuration Information Integrated Models section: 854194-B22
		Removed	Obsolete SKUs were deleted: C6N33ABE, C6N32ABE, 689638-B21
03-Apr-2017	From Version 67 to 68	Changed	URLs in document were updated.
		Removed	Obsolete SKUs were deleted: 431643-B21, EH963A, EH964A
13-Feb-2017	From Version 66 to 67	Changed	Information in QuickSpecs was updated.
		Removed	Obsolete SKUs were deleted: 517571-B21, 689243-B21, AH332A, 516733-B21, AW563A, AW564A, 505959-B21, AF537A, 499243-B21, AH332A, 516733-B21, AW563A, AW564A, 505959-B21, BD883A, BS580B
25-Mar-2016	From Version 65 to 66	Changed	SKUs updated in Configuration Information - Factory Integrated Models and Related Options, from: AJ820B, AJ821B, AJ822B, to: AJ820C, AJ821C, AJ822C.
		Removed	Obsolete SKU was deleted: 489184-B21
From Version 64 to 65		Changed	Overview and Related Options sections were updated.
		Added	Added two OneView option SKUs E5Y41A and E5Y42A.
From version 63 to 64		Removed	Obsolete SKUs deleted: 451438-B21, AP880A, E7X08A.
		Changed	Configuration Information Factory Integrated Models and Related Options sections were updated.
From version 62 to 63		Added	SKU added in Related Options section: 813874-B21, 805755-B21
		Removed	Obsolete SKUs were deleted: E5Y41AAE, AZ871A, AZ878A, AF616A, 505958-B21, AZ872A, AZ879A, AF617A, TC317A, AZ873A, AZ880A, U6W98E, QW914A, AZ874A, AZ881A, AZ870A, QW915A, AZ875A, AZ883A, AZ877A, AO697B, AZ876A, AZ884A, AZ885A, AZ870A
9-Feb-2015	From Version 61 to 62	Changed	What's New was updated with HPE 2650W -48VDC Power Supply Kit for BladeSystem c7000 Enclosure. Service and Support section was revised. Configuration Information Factory Integrated Models, Related Options, Power Input Module and Power Supply Specifications, and Technical Specifications were revised.
		Changed	Overview, Service and Support, Configuration Information Factory

Summary of Changes

Date	Version History	Action	Description of Change
19-Dec-2014	From Version 60 to 61	Added	Integrated Models and Related Options sections were updated. SKUs Added on HPE BladeSystem c-Class Network Interconnects: 753445-B21, 78720-B21, 466482-B21
		Removed	Obsolete SKUs removed: AF536A, AT120A
21-Nov-2014	From Version 59 to 60	Changed	Notes were updated throughout the QuickSpecs. Sub-Header was added: Fan Bay and Device Bay Numbering Populating Guidelines. Device bay and fan population guidelines were updated.
7-Nov-2014	From Version 58 to 59	Changed	Overview, Pre-configured Models and Configuration Information Factory Integrated Models sections were updated.
25-Sep-2014	From Version 57 to 58	Changed	Changes were made throughout the QuickSpecs.
9-Sep-2014	From Version 56 to 57	Changed	Changes were made throughout the QuickSpecs.
18-Aug-2014	From Version 55 to 56	Changed	Overview, Related Options and Technical Specifications sections were updated.
		Added	SKUs added on configuration Information Factory Integrated Models section: 753623-B21, 753618-B21, 753619-B21, C6N33ABE, SKUs added on related options section: J6W98A, J6W99A, J6X00A, J6X01A, J6X02A, J6X03A. Power Input Module and Power Supply Specifications section added.
24-Jun-2014	From Version 54 to 55	Changed	Overview, Configuration Information Factory Integrated Models, Related Option, Device Bay and Fan Bay Numbering and Population Guidelines, Technical Specifications sections were updated.
10-Jun-2014	From Version 53 to 54	Added	SKU 691380-B21 was deleted, HPE Power Distribution Units SKUs were added.
		Removed	SKU 691380-B21 was deleted, HPE Power Distribution Units SKUs were added.
31-Mar-2014	From Version 52 to 53	Added	HPE OneView Software was added.
10-Dec-2013	From Version 51 to 52	Changed	Changes were made throughout the QuickSpecs.
11-Oct-2013	From Version 50 to 51	Changed	Changes made to Step 5 & 6 of Configuration Information and to the Related Options section.
13-Sep-2013	From Version 49 to 50	Changed	Models, Configuration Information - Factory Integrated Models, and Related Options were revised.
30-Aug-2013	From Version 48 to 49	Changed	Changes made in the Configuration Information, Related Options and Technical Specifications sections.
14-Jun-2013	From Version 47 to 48	Changed	2650 Watts Platinum Hot Plug Power Supply was added. HPE BladeSystem Power Sizer was removed.
10-Jun-2013	From Version 46 to 47	Changed	Change Service Config-Related Change Config-Related TC277
28-Mar-2013	From Version 45 to 46	Changed	Change Config-Related Change Config-Related TC277
15-Mar-2013	From Version 44 to 45	Changed	Change Config-Related Change Config-Related TC277
1-Mar-2013	From Version 42 to 44	Removed	Added Intel 2400W Single f Location
19-Feb-2013	From Version 41 to 42	Added	Added Intel 2400W Single f Location

MA

LUY

Summary of Changes

		Changed	Support for HPE Insight Control 7.2 and higher releases Changed name of product throughout document. Changed name of HPE DS8400c Storage Blade to HPE D2200sb Storage Blade throughout document. Completely revised the Service and Support sections. Changes made in the HPE Insight Management software, Configuration Information Steps 2 - 7 and Related Options sections.
14-Dec-2012	From Version 40 to 41	Changed	Changed SB40c to D2200sb throughout the QuickSpecs. Changes made to Insight Management section. Completely revised the Service and Support sections. Changes made throughout the Configuration Information and Related Options sections
24-Sep-2012	From Version 39 to 40	Changed	Changes were made in HPE BladeSystem c-Class Overview, Configuration Information Factory Integrated Models and Related Options sections
31-Aug-2012	From Version 38 to 39	Changed	Changes made throughout the QuickSpecs.
14-May-2012	From Version 37 to 38	Changed	Changes made in the Related Options section.
26-Mar-2012	From Version 36 to 37	Changed	Changes made to the HPE Optical Drives.
6-Mar-2012	From Version 35 to 36	Added	Added in the reference to GB.
9-Jan-2012	From Version 34 to 35	Removed	Removed a reference to GB.
14-Nov-2011	From Version 33 to 34	Changed	Insight Management and HPE Insight Foundation were revised in HPE Insight management software Optimized, Standard and Basic Care Packages were updated in Service and Support HPE Tape Backup was revised in Related Options Note was added to Power Cords
29-Sep-2011	From Version 32 to 33	Changed	Revisions made in the Configuration Information and Related Options sections
26-Sep-2011	From Version 31 to 32	Changed	Power Supplies, Cisco MDS 9124e Fabric Switch for HPE c-Class BladeSystem, HPE Ultrium Tape Blades and HPE Pointnext operational services were revised
30-Aug-2011	From Version 30 to 31	Changed	Power Distribution Units were revised in Configuration Information Factory Integrated Models Product descriptions were revised throughout Related Options
29-Jun-2011	From Version 29 to 30	Changed	Changes were made within North America and Canada only.
24-Jun-2011	From Version 28 to 29	Changed	Changes were made throughout, including removing HPE SAS Switches from Related Options and adding HPE USB Keyboard and Mouse to HPE Rack Options.
13-Jun-2011	From Version 27 to 28	Changed	Link was corrected in Service and Support.
1-Jun-2011	From Version 26 to 27	Changed	Changes were made within North America and Canada only.
1-Apr-2011	From Version 25 to 26	Changed	Changes made to revise the Service and Support section along with other changes to the Overview, Configuration Information and Related Options sections.
14-Feb-2011	From Version 24 to 25	Changed	HPE BladeSystem BLc7000 c-Class Server Blade Enclosures, HPE Insight Software, HPE Virtual Connect Enterprise Manager, HPE Uninterruptible Power Systems, HPE Rack Series and HPE Tape Backup product descriptions were revised HPE Virtual Connect FlexFabric 10/24 Enterprise Edition for BladeSystem c7000 and HPE Virtual Connect FlexFabric 10Gb/24-port Module for c-Class BladeSystem were added to HPE BladeSystem c-Class Network Interconnects HPE SB40c with (4) 300GB SAS SFF Bundle was added to HPE c-Class Storage Blades TF17600 Rackmount Keyboard Monitor, USB Interface Adapter - 1 Pack, USB Virtual Media Interface Adapter and Serial Interface Adapter - 1 pack with power supply were removed from HPE Rack

Page 41

Summary of Changes

		Options	
8-Oct-2010	From Version 23 to 24	Changed	HPE Tape Backup and HPE Pointnext operational services were revised Service and Support was added HPE Optical Drives was added to Related Options 10642G2 and 10647G2 1700 mm Shock Racks were added to HPE Rack Series HPE TF17600 G2 KVM Console Rackmount Keyboard Monitors were added to HPE Rack Options HPE 1/10Gb Virtual Connect Ethernet Module for c-Class BladeSystem was removed from HPE BladeSystem c-Class Network Interconnects 2x1x16 IP Console Switch with Virtual Media was removed from HPE KVM Switch Options HPE Disk Backup was removed from Related Options
2-Jul-2010	From Version 22 to 23	Removed	HPE Virtual Connect FlexFabric 10/24 Enterprise Edition for BladeSystem c7000 was removed from HPE BladeSystem c-Class Network Interconnects.
25-Jun-2010	From Version 21 to 22	Removed	Removed a reference to an unavailable product.
21-Jun-2010	From Version 20 to 21	Changed	HPE BLc Virtual Connect FlexFabric 10Gb/24-port Module Option and HPE Virtual Connect FlexFabric 10/24 Enterprise Edition for BladeSystem c7000 were added and HPE BladeSystem c-Class Virtual Connect 1Gb SX SFP Option Kit and RJ-45 SFP Option Kit, HPE GbE2c Layer 2/3 Ethernet Blade Switch Advanced Functionality Software, HPE 1.10 GbE BLc Advanced Functionality Software, HPE 10Gb Ethernet BLc Switch and HPE 10GbE BLc Advanced Functionality Software were removed from HPE BladeSystem c-Class Network Interconnects HPE 6X 2400W Platinum Efficiency FPO Power Supply and HPE 2400W Platinum Hot-Plug Power Supply were added to HPE Power Supplies NOTE was added to Step 4 HPE 4Gb Virtual Connect Fibre Channel Module for c-Class BladeSystem, HPE Brocade 4/12 SAN Switch and 4/12 SAN Switch Upgrade LTU and HPE Brocade 4/24 SAN Switch and 4/24 SAN Switch Power Pack were removed HPE Insight Control No Media 1-Server License including 1 year of 24x7 Technical Support and Updates was removed from HPE Insight Software HPE StorageWorks MSL2024 2 LTO-2 Ultrium 448 SCSI Drive Library, HPE StorageWorks MSL4048 1 LTO-3 Ultrium 960 SCSI Drive Library and 960 4 GB FC Library and HPE StorageWorks Virtual Library Systems were removed from HPE Tape Backup HPE Power Supplies, HPE Insight Control, HPE Enclosure, HPE Cooling Options, HPE Uninterruptible Power Systems, HPE Tape Backup and HPE Disk Backup were revised throughout the QuickSpecs.
25-Nov-2009	From Version 18 to 19	Changed	Minor edits were made within the QuickSpecs.
16-Nov-2009	From Version 17 to 18	Changed	Changes were made throughout the QuickSpecs.
2-Oct-2009	From Version 16 to 17	Changed	Changes made throughout the QuickSpecs except for the Storage and Technical Specifications sections.
14-Aug-2009	From Version 15 to 16	Changed	Revised Step 5 of the Configuration Information Factory Integrated Models section Added a NOTE for HPE c7000 Onboard Administrator with KVM to Step 4 of the Configuration Information Factory Integrated Models section and c7000 Enclosure

Summary of Changes

			section Removed HPE c7000 Redundant Onboard Administrator Options from Step 4 of the Configuration Information Factory Integrated Models section and c7000 Enclosure Options in the Related Options section
17-Jul-2009	From Version 14 to 15	Changed	Revisions were made in the HPE BladeSystem c-Class Overview section, Configuration Information Factory Integrated Models section and to the Related Options section
3-Jul-2009	From Version 13 to 14	Changed	Corrected Part Number for HPE BLc7000 Insight Control suite for Linux 16 License in Step 3 of the Configuration Information Factory Integrated Models section.
2-Jun-2009	From Version 12 to 13	Added	All c7000 enclosures support both models of Onboard Administrator to NOTE in Step 4 of the Configuration Information Factory Integrated Models section Part numbers starting with 507 to NOTE in HPE BladeSystem InfiniBand Interconnects in Step 5 of the Configuration Information Factory Integrated Models section NOTE to HPE c7000 Redundant Onboard Administrator Options for c7000 Enclosure Options in the Related Options section
		Changed	Updated HPE BladeSystem Power Sizer in the HPE BladeSystem c-Class Overview section Tape Blades were changed to HPE Ultrium Tape Blades in the Related Options section
29-Apr-2009	From Version 11 to 12	Changed	Changes affected the North America and Canada versions only. Just the date and version were changed in the Worldwide version.
27-Apr-2009	From Version 10 to 11	Changed	Changes were made throughout the QuickSpecs.
30-Mar-2009	From Version 9 to 10	Added	Active Cool 200 Fan and HPE ProLiant Onboard Administrator throughout the QuickSpecs HPE StorageWorks 3Gb SAS BL Switch and HPE 4x ORD IB Switch Module for HPE c-Class BladeSystem to Step 5 of the Configuration Information Factory Integrated Models section and Related Options section HPE 14.4 kVA Modular PDU to Step 6 of the Configuration Information Factory Integrated Models section
		Changed	Completely revised Insight Control Suites throughout the QuickSpecs and Server Management Stand Alone Products in the HPE BladeSystem c-Class Overview and Related Options sections and Core Infrastructure Management and URL for HPE BladeSystem Power Sizer in the HPE BladeSystem c-Class Overview section Revisions were made throughout Step 2 of the Configuration Information section Removed NOTE from HPE BladeSystem c-Class c7000 Enclosure in the HPE BladeSystem c-Class Overview section and 10642 G2 (42U) Rear Extension Kit and HPE Modular Cooling System from the Related Options section
26-Jan-2009	From Version 8 to 9	Added	NOTE for HPE 2400W High Efficiency Hot Plug Power Supply in Step 2 of the Configuration Information Factory Integrated Models and Related Options sections HPE StorageWorks SB920c Tape Blade to HPE c-Class Tape Blades in the Related Options section HPE Airflow Optimization section to the Related Options
		Changed	HPE Insight Control Environment for Linux section of HPE Insight Control Environment for BladeSystem Management Suites in the Related Options section Updated HPE Rack 10000 G2 Series in the Related Options section

Page 43

Summary of Changes

			Minor formatting and grammatical changes were made within Step 5 of the Configuration Information Factory Integrated Models and the Technical Specifications sections
17-Nov-2008	From Version 7 to 8	Changed	Changes were made to the following sections: Overview What's New At A Glance HPE BladeSystem c-Class Overview Rack Airflow Requirements Server Management Stand Alone Software Configuration Information Factory Integrated Models Step Two Step Five Step Six Related Options Changes were made throughout this section Technical Specifications HPE Blade System Power
15-Sep-2008	From Version 6 to 7	Added	SAS Enterprise drives have a 3 year warranty regardless of the system in which they are installed to the Warranty section of the At A Glance HPE 1.10 GbE BLc Advanced Functionality Software HPE 10Gb Ethernet BLc Switch HPE GbE2c Layer 2/3 Ethernet Blade Switch Advanced Functionality Software
		Changed	Server Management Stand Alone Software Product NOTES section for the following: HPE Insight Control Environment for BladeSystem Management Suite HPE Virtual Connect Enterprise Manager HPE PCI Expansion Blades HPE c-Class Tape Blades HPE StorageWorks All-in-One Storage Systems Rack 10000 G2 Series Tape Libraries Power Cords Completely revised the Uninterruptible Power Systems - Rack Width Dimension for the HPE BladeSystem c7000 Server Blade Enclosure
8-Aug-2008	From Version 5 to 6	Added	2m/6ft IEC C20-C19 Jumper cord to the c-Class Power Supply section in Step 2 of the Configuration Information Factory Integrated Models and to the c7000 Power Options section of the Related Options HPE 173 kVA Modular PCU and HP222 kVA Modular PDU to the HPE Modular Power Distribution Units section in Step 6 of the Configuration Information Factory Integrated Models-48V DC Power to Power Cords in the Power section of the Technical Specifications
		Changed	Power Cords section in the Related Options HPE Single Phase and 3-Phase UF
14-Jul-2008	From Version 4 to 5	Changed	Changes were made to the following: HPE BladeSystem c-Class Overview HPE BladeSystem Management Suites HPE BladeSystem c-Class Server Management Stand Alone Software Product At A Glance

000094

REPHOTO

Summary of Changes

			Configuration Information Factory Integrated Models/HPE BladeSystem c-Class SAN Interconnects Configuration Information Factory Integrated Models/PDU cords Related Options/HPE BladeSystem c-Class SAN Interconnects Related Options/HPE Insight Control Environment for BladeSystem Management Suite Related Options/Server Management Stand Alone Software Product - ProLiant Essentials Related Options/Power Cords
		Removed	Options were removed from the following sections: Related Options/Tape Libraries Related Options/HPE KVM Switch Options Technical Specifications/Power
12-May-2008	From Version 3 to 4	Changed	Changes were made throughout the Overview, HPE BladeSystem c-Class Overview, Configuration Information and Related Options sections.
11-Feb-2008	From Version 2 to 3	Changed	Changes were made throughout the QuickSpecs.
05-Oct-2007	From Version 1 to 2	Changed	Updated the description for part number AF916A.

Sign up for updates

© Copyright 2018 Hewlett Packard Enterprise Development LP. The information contained herein is subject to change without notice. The only warranties for Hewlett Packard Enterprise products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Hewlett Packard Enterprise shall not be liable for technical or editorial errors or omissions contained herein.

Microsoft and Windows NT are US registered trademarks of Microsoft Corporation.
Intel, the Intel logo, Xeon and Xeon Inside are trademarks of Intel Corporation in the US and other countries.

Hewlett Packard Enterprise

c04128339 - 12810 - North America - V74 - 5-February-2018

HP

Product Highlights

HPE D2000 Disk Enclosures

Manage your small and midrange business growing storage needs by deploying the next generation 6Gb SAS low cost, flexible tiered external storage system. Ideal for small application environments in SMBs, remote offices and departmental locations as well as tier 2 or 3 storage for enterprise customers. The new 6Gb SAS enclosures - Large Form Factor (LFF) D2600 with 12 drive bays and Small Form Factor (SFF) D2700 with 25 drive bays - offer modular solutions to simplify capacity expansion of HPE ProLiant server environments to external storage without having to make the full move to SAN or NAS. This allows you to buy what is needed today and purchase additional capacity as data storage needs grow.

The D2000 enclosures support direct attach storage to ProLiant Servers with the HPE Smart Array P411, P212, P812, P222, P421, P431, P441, P822 or the P841 Controllers. On HPE ProLiant and Integrity servers Dual Domain support is available for the HPE Smart Array P411, P421, P431, P441, P822 or the P841 Controllers attached to a D2600/D2700. (Single initiator environment only.) (For Dual Domain - HPE Smart Array Advanced Pack 2.0 No Media 1 Server 1yr 24x7 Support Software is required with the P421 Controller). HPE UX 111v3 and Windows 2008 R2 OS supported for HPE Integrity servers (single initiator environment only). Blade 6Gb SAS connectivity is enabled using a HPE Smart Array P711m, P721m, P731m, P741m Controllers, 6Gb SAS BL Switches and the D2000 disk enclosures. HPE H221, H222 and the H241 Host Bus Adapters are also supported with the D2600/D2700 Disk Enclosures.

NOTE: HPE Integrity servers that are supported include: rx2600, rx6600, rx2600s, rx2600s2, rx7640, rx8640, Superdome (only the versions that support PCIe cards)

Total support can grow as needed to up to 96 LFF drives or 200 SFF drives.

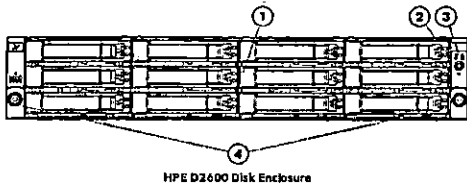
The D2700 is also supported when attached to a HPE P2000 G3 Modular Smart Array System family.

What's New

- Adding Support for:
 - HPE Smart Array P841/4GB FBWC 12Gb 4-ports Ext SAS Controller
 - HPE Smart Array P741m/2GB FBWC 12Gb 4-ports Ext Mezzanine SAS Controller

Models

D2000 Disk Enclosures	HPE D2700 Disk Enclosure	AJ941A
-----------------------	--------------------------	--------



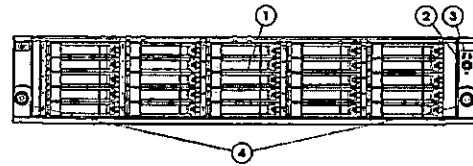
HPE D2600 Disk Enclosure

At a Glance

- Affordable, low cost Storage**
 - Purchase only what you need today and avoid up-front costs. Modular platform provides investment protection and by purchasing only what is needed today, allows for growth as storage requirements evolve. Buying storage only when needed simplifies planning and relieves budget pressures.
 - D2700: Maximum storage capacity of 30 TB SAS (1.2 TB SAS), 25 TB SAS MDL (1TB SAS MDL) or SATA (1TB SATA MDL) per enclosure scalable to 240 TB SAS, 200 TB SAS MDL or SATA (dependent on the Smart Array Controller). D2700 also supports SAS SLC and MLC Solid State Drives (SSD). Number of Solid State drives is limited to twenty five (25) SSDs per controller.
 - D2600: Maximum storage capacity of 72 TB SAS (600GB SAS) or 72 TB SAS MDL or SATA MDL (4TB SAS or SATA HDD) per enclosure scalable to 576 TB SAS, or 576 TB SAS MDL or SATA MDL.
 - Enterprise-class dual port SAS or archival-class SATA drives as the need and budget dictates
- Flexible/Scalable**
 - Grow storage capacity easily by attaching up to four D2600 enclosures from a single Controller port, for expansion of up to 8 enclosures or 96 drives, allowing for room to grow as storage demands increase
 - Grow storage capacity easily by attaching up to two D2700 enclosures from a single Controller port, for expansion of up to 4 enclosures or 100 drives, allowing for room to grow as storage demands increase. (Smart Array Controllers P411 & P812)
 - With the new Smart Array P421, P431, P441, P822, P841 Controllers grow your storage capacity easily by attaching up to four (4) D2700 enclosures from a single Controller port, for expansion of up to eight (8) enclosures or 200 drives, allowing for room to grow as storage demands increase
 - Smart Array Controllers P421, P431, P441, P822, P841 support the mixing of the D2600 and the D2700 for expansion. Supports four (4) D2600 and four (4) D2700 (4xLFF and 4xSFF) allowing for expansion up to 148 drives. Flexibility to mix and match SAS and SATA drives in the same enclosure
- Easy to Manage**
 - Hassle free expansion - little IT expertise required
 - Compatible with the latest HPE Smart Array SAS controllers (P812, P411, P212, P222, P421, P431, P441, P822, P841, P711m, P721m, P731m, P741m)
 - Compatible with HPE H221, H222 and H241 Host Bus Adapters (HBAs)
 - Familiar ProLiant management tools provided via the Smart Controller - SPM, ACU, ORCA.
 - Easy removal of parts provides better serviceability.
- High performance 6Gb SAS host connectivity**
 - 6Gb SAS host connectivity enables a higher data transfer rate.
 - End-to-end 6Gb SAS connectivity ensures a high performance storage solution using a P212, P411, P812, P222, P421, P431, P441, P822, P841, P711m, P721m, P731m or the P741m Smart Array controller and the D2000 enclosures. D2600/D2700 is also supported with the HPE H221, H222 or the H241 Host Bus adapters (HBA)
 - SAS disk enclosure support for c-Class BladeSystem utilizing the recently introduced HPE 6Gb SAS BL Switch with the P211m, P221m, P731m, P741m Smart Array Controllers.
 - Since storage is contained within the rack, latency is reduced as data does not travel over large distances.

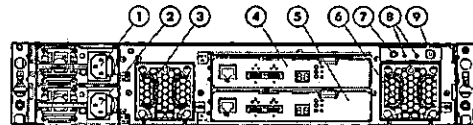
Product Highlights

- Front panel LEDs and buttons
1. Disk drives
 2. UID push button and LED
 3. Enclosure LEDs
 4. Rack-mounting thumb screw



HPE D2700 Disk Enclosure

- Front panel LEDs and buttons
1. Disk drives
 2. UID push button and LED
 3. Enclosure LEDs
 4. Rack-mounting thumb screw



Rear Panel components

1. Power Supply 1
2. Power Supply 2
3. Fan 1
4. I/O Module A
5. I/O Module B
6. Fan 2
7. Rear UID push button
8. Enclosure LEDs
9. Power on/standby button

At a Glance

- HPE reliability**
 - Deploy with confidence. Hewlett Packard Enterprise offers a complete end-to-end storage solution including the D2000 storage enclosures, Smart Array P212, P411, P812, P222, P421, P431, P441, P822, P841, P711m, P721m, P731m, P741m Controllers and HPE ProLiant Servers
 - Familiar Smart Array technology of the P212, P411, P812, P222, P421, P431, P441, P822, P841, P711m, P721m, P731m or the P741m Controllers enable support for RAID levels 0, 1, 1+0, 5 and RAID 6 with ADG, 50 and 60. Optional battery-backed write cache.
 - Advanced Data Guarding (RAID 6): This is the highest level of fault tolerance. It allocates two sets of parity data across drives and allows simultaneous write operations. This level of fault tolerance can withstand two simultaneous drive failures without downtime or data loss.
 - Distributed Data Guarding (RAID 5): This allocates parity data across multiple drives and allows simultaneous write operations.
 - Receive pre-failure alerts with HPE SIM. When drives installed in D2000 disk enclosures are used in conjunction with the P212, P411, P812, P222, P421, P431, P441, P822, P841, P711m, P721m, P731m or the P741m Smart Array Controller and Systems Insight Manager, the Smart Array firmware in HPE hard drives enables extensive fault prediction capabilities. If potential problems develop in one of the drives, the Smart Array Controller, Systems Insight Manager and/or Smart hard disk drive lets you know in advance so you can have the drive replaced, before it fails, under warranty.
 - Remove / replace / add components when system is running without service disruption with hot Plug drives, power and cooling
 - Redundant power and cooling provides increased reliability as failure of a power supply or fans does not interrupt system functioning
 - Dual domain SAS creates redundant pathways from servers to storage devices. The redundant paths created by these configurations reduce or eliminate single points of failure within the storage network. This provides increased levels of high availability with redundant paths from the controller to the drives. Dual domain SAS implementations make it possible to bus adapter (HBA) failure, external cable failure, expander failure, failure in a (JBOD) environments.

D2000 Enclosure Components

HPE D2000 Disk Enclosures The HPE D2000 Disk Enclosures (hereafter referred to as "D2000") is a family of disk drive storage enclosure with 6 Gb/s SAS host connectivity. The D2000 is a 2U direct attach, external storage solution designed for small to medium size deployments or remote locations. These enclosures deliver industry-leading availability, storage density, and upgradeability to meet customer's demanding and growing storage needs. The D2000 delivers the ideal mix of low-cost and high capacity, for minimum I/O workloads such as reference data, archival, and disk-to-disk backup.

High Levels of Storage Density, Data Protection, and Functionality

- Storage Capacity** - The SFF D2700 disk enclosure supports up to 25 (twenty five) 6GB SFF SAS drives for a maximum capacity of 30 TB with 6 G 1.2 TB SAS drives or 25 TB with 1 TB 6G SAS MDL or 1 TB 3G SATA MDL drives. D2700 also supports SAS SLIC and MLC Solid State Drives. Number of Solid State drives is limited to twenty five (25) per controller. The LFF D2600 disk enclosure supports up to 12 (twelve) 6G LFF SAS drives for a maximum capacity of 72 TB with 6G 600GB SAS drives or 72 TB with 6G 6 TB SAS MDL or 3G 4TB SATA MDL drives.
- Data Protection** - D2000 is designed for a high level of data protection. It includes redundant fans and power supplies (standard), and supports various RAID levels including RAID6 with ADG, 50 & 60 (depending upon the Smart Array Controller used)
- Storage Manageability** - The D2000 features fan/far configuration and management tools such as Array Configuration Utility (ACU) and HPE Systems Insight Manager (SIM). Online Management Features include: Online Capacity Expansion, Online RAID Level Migration, Online Stripe Size Migration, Online Spares (Global)
- Choice of Computing Platform** - The D2000 is designed and qualified for HPE ProLiant servers
- Advanced Data Guarding (RAID 6 with ADG)**
- Fault Tolerance** - It allocates two sets of parity data across drives and allows simultaneous write operations. This level of fault tolerance can withstand two simultaneous drive failures without downtime or data loss.

Low Total Cost of Ownership The modular, scalable design of the D2000 disk enclosure family provides an extremely flexible platform. You can buy what you need today and purchase additional capacity as your data storage needs grow, instead of making a large up-front investment. Additional drives and enclosures can be easily added as your needs dictate.

- Cascading** - The D2700 has the unique capability of cascading up to two (2) enclosures behind a single SAS port (depends on the Smart Array Controller). The D2600 has the capability of cascading up to four (4) enclosures behind a single SAS port (depends on the Smart Array Controller).
- Pre-Failure Warranty** - Drives installed in either the D2600 or the D2700 and monitored under HPE Systems Insight Manager are supported by a Pre-Failure (replacement) Warranty (3 years for SAS drives). Pre-Failure Warranty allows for the replacement of designated drives in the D2600 or the D2700 before they actually fail when using HPE Systems Insight Manager on HPE ProLiant servers.
NOTE: Some operating systems may not support all of these features.
- Integrated Configuration and Management Tools** - The D2000 family utilizes the standard, integrated set of Smart Array management and utility software for HPE ProLiant Servers. These tools consistently lower the cost of ownership by reducing training and technical expertise necessary to install and maintain HPE server storage.

D2000 Disk Enclosures D2600 Disk Enclosure The 2U array houses up to twelve (12) 3.5 inch Universal hot pluggable

Page 5

D2000 Enclosure Components

SAS drives

Each D2600 includes the following standard components:

- D2600 base enclosure with redundant power supplies and fan modules
- Two (2) integrated 6Gb SAS IO Modules
- Rack mounting hardware kit
- Two (2) 0.5m mini-SAS cables
- Two (2) PDU interconnect cords

D2700 Disk Enclosure The 2U array houses up to twenty five (25) 2.5 inch Universal hot pluggable SAS drives.

Each D2700 includes the following standard components:

- D2700 base enclosure with redundant power supplies and fan modules
- Two (2) integrated 6Gb SAS IO Modules
- Rack mounting hardware kit
- Two (2) 0.5m mini-SAS cables
- Two (2) PDU interconnect cords

Smart Array P411 Features

- The HPE Smart Array P411 is HPE's PCI Express (PCIe) Serial Attached SCSI (SAS) RAID controller
- Low profile, half height card has 8 ports and utilizes DDR2-800 memory
- The P411 is ideal for RAID 0/1, 5, 1+0 & 5+0 and can be upgraded with the 512MB battery-backed write cache (BBWC) module and Smart Array Advanced via license key for RAID 6 & 6+0, 50 and 60
- For more information see: <https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111712>

Smart Array P212 Features

- The HPE Smart Array P212 is HPE's entry level PCI Express (PCIe) Serial Attached SCSI (SAS) RAID controller
- The Low Profile, Half height card has 8 ports and utilizes DDR2-266 memory
- The P212 is ideal for RAID 0/1, 1+0 and can be upgraded with the 256MB battery-backed write cache (BBWC) module for RAID 5, 5+0
- For more information see: <https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111625>

Smart Array P812 Features

- The HPE Smart Array P812 provides superior RAID performance, while delivering high levels of connectivity, reliability, and many advanced features
- Increased connectivity with 8 internal ports and 16 external ports.
- 1 G 72-bit wide DDR2-800 flash-backed write cache (FBWC).
- Smart Array Advanced Pack (SAAP) license key included standard
- For more information see: <https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111607>

Smart Array P222 • Second Generation 6Gb/s SAS Controllers

Page 6

D2000 Enclosure Components

Features

- Eight (8) SAS physical links distributed across 1 internal x4/1 external x4 wide port connectors
- Read ahead caching
- Flash Backed Write-back Cache
- For more information see: <https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111574>

Smart Array P421 Features

- Second Generation 6Gb/s SAS Controllers
- The SA-P421 Controller supports up to 200 drives
- Eight (8) SAS physical links distributed across 2 external x4 miniSAS connectors
- Write-back caching (with FBWC)
- For more information see: <https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111533>

Smart Array P431 Features

- The SA-P431 Controller supports up to 200 physical drives
- The SA-P431 Controller supports the HPE D2600/D3600 and the HPE D2700/D3700 Disk Enclosure (up to 8 daisy chained). Seamless upgrades to current or next generation HPE high performance and high capacity Serial Attached SCSI Smart Array controllers.
- 12 Gb/s SAS technology delivers high performance and data bandwidth and contains full compatibility with 6 Gb/s SATA technology
- PCI Express Gen3 x8 link width delivers high performance and data bandwidth up to 8GT/s theoretical maximum bandwidth
- 2 GiB Flash Backed Write Cache (FBWC) provides read ahead caching and write back caching with indefinite write cache data retention in the case of unexpected power outage
- Standard on the P431 are RAID 0, RAID 60, RAID 1 ADM, Capacity Expansion, mirror split, recombine, and rollback in Online Mode, Drive Erase, Performance Optimization-Degraded Reads and Read Coalescing, Move/Delete any individual LUNs
- The HPE SSD Smart Path feature included in the Smart Array software stack improves SSD reads for all RAID levels and RAID 0 write operations by optimizing the path to each SSD attached to the controller
- The HPE SmartCache feature (HPE Smart Cache license is required on P431) is a controller-based read caching solution in a DAS environment that caches the most frequently accessed data ("hot" data) onto lower latency SSDs to dynamically accelerate application workloads
- Mix-and-match SAS and SATA hard drives lets you deploy drive technology as needed to fit your computing environment
- For more information see: <https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111365>

HPE Smart Array P441 Features

- The SA-P441 Controller supports up to 200 physical drives
- The SA-P441 Controller supports the MSA2040 (Shared storage), HPE D3600 Disk Enclosure and HPE D3700 Disk Enclosure (up to 8 daisy chained in dual domain configuration). Seamless upgrades to current or next generation HPE high performance and high capacity Serial Attached SCSI Smart Array controllers.
- 12Gb/s SAS technology delivers high performance and data bandwidth and contains full compatibility with 6Gb/s SATA technology
- PCI Express Gen3 x8 link width delivers high performance and data bandwidth up to 8GT/s theoretical maximum bandwidth
- 4 GiB Flash Backed Write Cache kit (FBWC) provides read ahead caching and write back caching with indefinite write cache data retention in the case of unexpected power outage
- Supports legacy and UEFI boot operation on Gen9 servers
- Standard on the P441 are RAID 6, RAID 60, RAID 1, ADM, Capacity Expansion, mirror split,

Page 7

D2000 Enclosure Components

recombine, and rollback in Online Mode, Drive Erase, Performance Optimization-Degraded Reads and Read Coalescing, Move/Delete any individual LUNs

- The HPE SSD Smart Path feature included in the Smart Array software stack improves SSD reads for all RAID levels and RAID 0 write operations by optimizing the path to each SSD attached to the controller
- The HPE SmartCache feature (HPE Smart Cache license is required on P441) is a controller-based read and write caching solution in a DAS environment that caches the most frequently accessed data ("hot" data) onto lower latency SSDs to dynamically accelerate application workloads
- HPE Secure Encryption is a Smart Array controller-based data encryption solution for ProLiant Gen9 servers that protects sensitive, mission critical data.
- Mix-and-match SAS and SATA hard drives lets you deploy drive technology as needed to fit your computing environment
- Software consistency on most current shipping Smart Array products: HPE Smart Storage Administrator (HPE SSA), HPE Systems Insight Manager, and HPE Intelligent Provisioning. The HPE Smart Storage Administrator configures and manages a host of Smart Array controllers and other storage devices using a single interface. It replaces the HPE Array Configuration Utility (ACU) with an updated design and configuration enhancements
- Low-profile PCI Express form factor - ships with a full size (attached) and a low profile bracket for deployment flexibility based on slot availability
- Rapid rebuild
- HBA or RAID mode
- Power efficiency
- For more information see: [HPE Smart Array P441 Controller \(QuickSpecs/c04111533.pdf\)](https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111533)

Smart Array P822 Features

- Second Generation 6Gb/s SAS Controllers
- The SA-P822 Controller supports up to 200 drives
- PCIe 3.0 with DDR3-1333 cache
- Write-back caching (with FBWC)
- For more information: <https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111513>

Smart Array P711m Features

- Storage Interface (SAS/SATA)
- Recovery ROM protects against ROM corruption.
- Smart Array PCIe mezzanine card that connects to a HPE 6Gb/s SAS BL Switch through the C-Class enclosure high-speed mid-plane supporting shared SAS storage.
- Eight (8) 6Gb/s SAS or 6Gb/s SAS switches
- For more information see: <https://www.hpe.com>

Smart Array P721m Features

- 6 Gb/s SAS technology
- Smart Array PCIe mezzanine enclosure high-speed
- Four (4) 6Gb/s SAS per 6Gb/s SAS switches
- Two (2) 6Gb/s SAS per 6Gb/s SAS HDDs
- Software consistency a Systems Insight Manager
- For more information see: <https://www.hpe.com>

Page 8

D2000 Enclosure Components

https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111449

Smart Array P731m Features
Eight (8) 6 Gb/s SAS physical links distributed equally across 4 external 2x ports to support up to four 6 Gb/s SAS Switches
6 Gb/s SAS technology delivers up to 600 MB/s theoretical bandwidth per physical lane
RAID 0, 1, 10, 5, 50, 6, 60, 1, ADM, 10 ADM
Recovery ROM protects against ROM corruption
HPE Smart Cache (HPE Smart Cache license is not required on P731m with 2 GiBytes FBWC)
HPE SSD Smart Path
PCI Express Gen3 x8 link
2 GiBytes Flash Backed Write Cache (FBWC) provides read ahead caching and write back caching with indefinite write cache data retention in the case of unexpected power outage.
For more information see: https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111381

HPE H221 Host Bus Adapter
SAS technology delivers high performance and data bandwidth up to 6 Gb/s per physical link
Mix-and-match SAS and SATA hard drives; deploy drive technology as needed
PCIe x8 (4 GB/s bandwidth)
PCIe 2.0 x8 capable
For more information see: https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111475

HPE H221 Host Bus Adapter
SAS technology delivers high performance and data bandwidth up to 6 Gb/s per physical link
Mix-and-match SAS and SATA hard drives; deploy drive technology as needed
PCIe x8 (4 GB/s bandwidth)
PCIe 2.0 x8 capable on H221 model, PCIe 3.0 x 8 capable on H211 PCIe 3.0 model
For more information see: https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111475

HPE H221 Host Bus Adapter
SAS technology delivers high performance and data bandwidth up to 6 Gb/s per physical link
Mix-and-match SAS and SATA hard drives; deploy drive technology as needed
PCIe x8 (8 GB/s bandwidth)
PCIe 3.0 x8 capable
For more information see: https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111516

HPE H241 Host Bus Adapter
SAS technology delivers high performance and data bandwidth up to 12Gb/s per physical link
Mix-and-match SAS and SATA hard drives; deploy drive technology as needed
PCIe 3.0 x8 (8GB/s bandwidth)
For more information see: HPE H241 Smart Host Bus Adapter (QuickSpecs/c04375840.pdf)

6Gb SAS BL Switch
Hot Pluggable 6Gb/s SAS Switch for HPE c-Class BladeSystem
Sixteen internal blade bay ports containing 2x 6Gb/s SAS links
Eight external Mini-SAS ports containing 4x 6Gb/s SAS links
Use the embedded Virtual SAS Manager GUI or CLI interface to zone switch ports or drive

D2000 Enclosure Components

bays to server bays
Supported by c3000 and c7000 c-Class BladeSystem enclosures
For more information see: https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111376

RAID
Several fault tolerant configurations keep data available and servers running while drives are being replaced - RAID levels that offer fault tolerance include:
RAID 50 (RAID 5+0) protects against failure of one drive (and failure of particular multiple drives). RAID 50 is a nested RAID method that uses RAID 0 striping across RAID 5 arrays. RAID 50 tolerates one drive failure in each spanned array without loss of data. RAID 50 requires less rebuild time than single RAID 5 arrays. RAID 50 requires a minimum of six drives.
RAID 60 (RAID 6+0) allows administrators to split the RAID 6 storage across multiple external boxes. RAID 60 requires a minimum of eight drives. RAID 60 is a nested RAID method that uses RAID 0 block-level striping across multiple RAID 6 arrays with dual distributed parity. With the inclusion of dual parity, RAID 60 will tolerate the failure of two disks in each spanned array without loss of data.
RAID 6 with ADG: Allocates the equivalent of two parity drives across multiple drives and allows simultaneous write operations. Distributed Data Guarding (RAID 5): Allocates parity data across multiple drives and allows simultaneous write operations. Drive Mirroring (RAID 1 and 1+0 Striped Mirroring): Allocates half of the drive array to data and the other half to mirrored data, providing two copies of every file.

Dual Domain
Dual domain SAS creates redundant pathways from servers to storage devices. The redundant paths created by these configurations reduce or eliminate single points of failure within the storage network. This provides increased levels of high availability with redundant paths from the controller to the drives. Dual domain SAS implementations make it possible to tolerate external cable failure, expander failure, failure in a spanned disk (JBOD) environments. Requires FW v.3x

Common Slot Power Supply
The D2000 Disk enclosures use the 460W Common Slot Power supply.
HPE's Common Slot Power supplies meet multiple Energy Efficiency initiatives:
460W, 92%: Climate Savers Computing initiative GOLD and ECOS Consulting 80PLUS GOLD

NOTE: The 80 PLUS program is a unique forum that unites electric utilities, the computer industry, and consumers in an effort to bring energy efficient technology solutions to the marketplace. 80 Plus independently tests power supply efficiency and publicly posts the results on 80Plus.org.

D2000 Disk Enclosure - Software Components

UTILITIES
The D2000 disk enclosure family utilizes a single, consistent set of utility software for storage and RAID management, setup, configuration and troubleshooting. This consistency reduces the cost of ownership by reducing the training and technical expense necessary to install and maintain your HPE server storage solution.
Configuration UTILITIES
Array Configuration Utility (ACU) [On-line for Microsoft and Linux, Remote Web-Based & Off-line]
Option ROM Configuration for Arrays (ORCA), NetWare ACU CPOONLIN (only online support no Web based support)
Management/Health UTILITIES
HPE Systems Insight Manager
Array Configuration Utility (ACU)
Provides a graphical view of HPE drive array configurations.
Easy to use Wizards for configuration.
Web Based ACU supports On-Line, Remote Web Based and Off-line configuration.
Supports on-line configuration for Microsoft, NetWare and Linux.
HPE Systems Insight Manager (SIM)
Powerful storage, server and server option management tool.
Monitor storage from a remote central location.
Browser based Insight Manager 7 provides full access from anywhere on the Intranet, eliminating the need for a dedicated Insight Manager console.

Supported Operating Systems
HPE ProLiant Servers
NOTE: For information on supported Operating Systems, see the following Smart Array QuickSpecs:
P211: https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111425
P411: https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111712
P812: https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111607
P222: https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111474
P421: https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111533
P431: https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111365
P441: HPE Smart Array P441 Controller (QuickSpecs/c04346300.pdf)
P872: https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111511
P841: http://www8.hp.com/us/en/products/isa-controllers/product-detail.html?tid=6995463#tab=features
H221: https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111675
H222: https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111514
H241: HPE H241 Smart Host Bus Adapter (QuickSpecs/c04375840.pdf)
HPE P2000 G3 FC Modular Smart Array System
NOTE: For up to date compatibility, see the following URL for complete Smart Array Controller compatibility and support information:
http://h18904.www1.hp.com/products/servers/proliantstorage/arraycontrollers/index.html
HPE Integrity Servers
HP-UX 11v3
Microsoft Windows 2008 R2
NOTE: HPE Integrity Servers supported: rx2600, rx6600, rx7600, rx7800/2, rx7640, rx8640.

D2000 Disk Enclosure - Software Components

Supernote (only the versions that support PCIe cards)
HPE BladeSystem Servers
NOTE: For information on Supported Operating Systems, see the following Smart Array QuickSpecs:
P711m: https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111558
P721m: https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111449
P731m: https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111381
P741m: http://www8.hp.com/us/en/products/isa-controllers/product-detail.html?tid=7797716#tab=features

000096

HP/WH/ATA

634

Handwritten signature or mark

Service and Support, HPE Care Pack, and Warranty Information

Warranty
 Three-year limited parts only warranty, including hardware diagnostic support, pre-failure warranty (coverage of hard drives, memory and processors). The warranty is fully supported by HPE Services and a worldwide network of resellers and service providers. In addition 90-day's getting started software telephone support may be covered under the warranty as available for an additional fee. Enhancements to warranty services are available through HPE Pointnext operational services.
 NOTE: The D2600 family has a limited 3 year parts only warranty. SAS and Solid State drives have 3 year warranty. SAS MDL and SATA MDL Drives have 1 year warranty.
 The D2600/D2700 has been designed with customer self-reparable parts to minimize repair time and provide greater flexibility in performing defective parts replacement. Refer to The Hewlett Packard Enterprise Limited warranty Statement and parts replacement instructions for further details.
<http://h18006.www1.hp.com/products/storage/works/warranty.html>

Service and Support
 Services to accelerate time to results
 HPE Storage Services bring you a rich portfolio of consulting and support services designed to add value to our core storage products and solutions. We have the know-how and experience to put storage technology to work for you. We work closely with you as your strategic partner, leveraging our full services portfolio to make sure that everything works to optimize your enterprise. Choose from services aligned to our storage product offerings and lifecycle. From mission-critical on-site services to innovative web-based remote support, you choose the precise level of attention and support your business demands.

Discover, plan, and design
 Choose from a rich portfolio of services to make the most of HPE D2000 Disk Enclosures (Rockford - PL LL), so you can efficiently and affordably consolidate, manage, and extract value from unstructured data
 HPE Services can help you discover needs and create a plan for simplifying the environment, reducing risk, and maximizing your storage investments
 HPE Storage Efficiency Analysis - The HPE Storage Efficiency Analysis provides customers with a view of their storage infrastructure and operating environment, highlighting recommendations for improvements. The report provides extensive insight about the existing storage environment, opportunities for efficiency gains, asset aging and replacement through interaction with key decision makers
<https://www.hp.com/h20195/v2/getpdf.aspx/aa3-0717enw.pdf>

HPE Storage Impact Analysis (SIA) - The HPE Storage Impact Analysis service provides a 2-4 week discovery engagement with executive summary presentation. The goal of this service is to help provide customers guidance on storage related issues and develop remediation plans.
<https://www.hp.com/h20195/v2/getpdf.aspx/aa3-1174enw.pdf>
HPE Storage Modernization Service - The HPE Storage Modernization service is a 4-6 week service that defines the customer's envisioned target storage environment based on a proven solution design methodology. Hewlett Packard Enterprise architects will quickly perform tool-assisted automatic discovery and facilitate a two-day strategy workshop with all key stakeholders involved in the storage infrastructure initiative
<https://www.hp.com/h20195/v2/getpdf.aspx/aa3-4670enw.pdf>

Deploy and Integrate
 We can help you configure, set up, and efficiently use your HPE D2000 Disk Enclosures (Rockford - PL LL), as well as help migrate data, improve capacity utilization, and establish

Service and Support, HPE Care Pack, and Warranty Information

Information management standards used across backup, replication, and archiving needs.

HPE MSA/P2000 Family Disk Array Installation and Startup Service - Implement right from the start, as HPE experts install, test, and configure your hardware and software onsite. We deliver a tailored storage deployment properly integrated into your environment.

HPE Storage Data Migration Services - End-to-end data migration service providing seamless discovery, assessment, planning, and design, completely customizable to your organization's storage area network or network attached storage environment and using innovative software to help you migrate to HPE storage quickly and efficiently.
<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-0774ENW.pdf>

HPE Storage and Data Resiliency Service - Strategic augmentation of your current environment with HPE resources who become your trusted advisor to provide answers that are right for your storage and backup environment. <http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-9481ENW.pdf>

HPE Proactive Select - A flexible way to purchase services to fit your environment with an extensive menu of HPE Proactive Select event and technical services, such as onsite firmware upgrades, health checks, assessments, and education. <http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-3841ENW.pdf>

Operate and support
 Choose the right support to maximize uptime, free up your resources, and achieve improved value as you get the most out of the existing IT assets while accelerating time-to-revenue.

HPE Proactive Care 24x7 - Hardware and software support services designed specifically for your technology with rapid access to Advanced Solution Center Specialists plus firmware and software management and best practice advice. <https://www.hp.com/h20195/v2/getpdf.aspx/aa3-8855enw.pdf>

HPE Proactive Care Personalized Support - An option-if you have HPE Proactive Care - to bring increased personalization of the Proactive Care support experience through the assignment of an Account Service Manager (ASM) who provides IT best practice advice to help address IT issues and projects. <https://www.hp.com/h20195/v2/getpdf.aspx/aa3-3446enw.pdf>

HPE Foundation Care 24x7 Service - HPE Foundation Care 24x7 connects you to Hewlett Packard Enterprise 24 hours a day, seven days a week for assistance on resolving issues - hardware onsite response within four hours and software call back within two hours after opening your case. Three years' coverage recommended with HPE Care Pack Service.

HPE Education Services - Comprehensive training for new, as well as experienced, storage administrators designed to expand your skills and keep you up to speed with the latest storage and virtualization technology from HPE Storage. <http://education.hp.com/cwp-storage.htm>

Optimized Care - Delivers the highest levels of performance and stability through deployment and proactive management practices
 Choose from three levels of operate and support care
HPE Proactive Care 24x7-Plus, 20 credits per year
 Additional options - 4 HPE Proactive Care Personalized Support (once per Proactive Care support new environment), an additional day of HPE Personalized Support, and 10 additional HPE Proactive Select credits per year

Standard Care -

Service and Support, HPE Care Pack, and Warranty Information

maintains high level of uptime, along with expert help to cut the cost and complexity of implementation and support
Additional options - HPE Proactive Care Personalized Support (once per Proactive Care support new environment), an additional day of HPE Personalized Support, and 10 additional HPE Proactive Select credits per year

Basic Care - Minimum recommended support
HPE Support Plus 24-Plus, 10 credits per year
Additional options - 10 HPE Proactive Select credits per year

Remote Support Automation
 HPE Automation provides 24x7 coverage, proactive problem prevention, accurate problem diagnosis and faster problem resolution, as well as interactive support portals and tools. This is an integral, and cost-free, part of your HPE support relationship and we are continually investing in additional cutting-edge capabilities to make it better.

For more information
<http://www.hp.com/services/storage>
 To learn more on HPE Storage Services, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner
 HPE Pointnext operational services are sold by HPE and Hewlett Packard Enterprise Authorized Service Partners:

- Services for customers purchasing from HPE or an enterprise reseller are quoted using HPE order configuration tools.
- Customers purchasing from a commercial reseller can find HPE Pointnext operational services at: <http://www.hp.com/go/teckupool>

Parts and Materials
 Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.
 Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.
 The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction.

Configuration Information

Step 1: Base Configuration

Model	Model Description	Part Number
D2700	HPE D2700 Disk Enclosure	AJ941A

Configure to Order Program Information

The D2600/D2700 models and options may or may not be factory installed in a rack with add-on controllers, and hard drives. The D2600/D2700 enclosures may be integrated with ProLiant servers or as standalone storage.

Model	Model Description	Part Number
D2600	HPE D2600 Disk Enclosure	AJ940A-00D1
D2700	HPE D2700 Disk Enclosure	AJ941A-00D1

Step 2: Array Controllers

Smart Array Controllers Supported (Single Domain)	Description	Part Number
	HPE ProLiant Servers	
	HPE Smart Array P222/S12 FBWC 6Gb 1-port Int/1-port Ext SAS Controller	631667-B21
	HP Smart Array P411/1GB FBWC 6Gb 2-ports Ext SAS Controller	631673-B21
	HPE Smart Array P841/4GB FBWC 12Gb 4-ports Ext SAS Controller	762903-B21

NOTE: Firmware version 2.0 or higher required on the listed Smart Array Controllers
 NOTE:

- Smart Array Controller P421 supports up to 200 drives for D2700 only
 - Up to eight (8) D2600 can be cascaded for the P421 with a depth of 4 on each chain for a total of 70 drives
 - Up to eight (8) D2700 can be cascaded for the P421 with a depth of 4 on each chain for a total of 200 drives
- Smart Array Controller P421 supports the mixing of the D2600 and the D2700 for expansion
 - 5
 - 0

Smart Array Controllers Supported (Single Domain)
 HPE Integrity Ser
 HPE Integrity Sma
 HPE Integrity Sma

NOTE: Supported Superdome on HP and Microsoft Win

Smart Array Controllers Supported (Dual Domain)
 HPE ProLiant & It
 HPE Smart Array F

HP Smart Array P421/1GB F	631673-821
HPE Smart Array P431/2GB FBWC 4Gb 2-ports Ext SAS Controller	698531- B21
HPE Smart Array P431/4GB FBWC 6Gb 2-ports Ext SAS Controller	698532- B21
HPE Smart Array P441/4GB FBWC 12Gb 2-ports Ext SAS Controller	726825-821
HPE Integrity Smart Array P812/1GB PCIe SAS Controller	AM312A

NOTE:

- Requires DP SAS or SAS DP HDL drives
- Up to eight (8) D2600 or four (4) D2700 enclosures can be cascaded in a dual domain configuration behind a P421 or P812 Smart Array Controller.
- Dual Domain configuration with
 - P411 - Requires HPE Smart Array Advanced Pack Including 1yr 24x7 Technical Support and Updated Single Server License (G16471-02 L)
- Even though the P812 has two additional ports the number of drives supported by the Smart Array controller is limited to 108 Drive count is per controller, so behind the P812 even though there are 4 ports the maximum enclosure supported in a Dual Domain configuration is (8) D2600 - 96 drives or (4) D2700 - 108 drives
- Up to eight (8) D2600 or eight (8) D2700 enclosures can be cascaded in a dual domain configuration behind a P421, P822 or P341 Smart Array Controller
- Drive count is per controller, so behind the P421, P431, P441, P822 and the P841 HPE Smart Array Controller the maximum enclosure supported in a Dual Domain configuration is (8) D2600 - 96 drives or (8) D2700 - 108 drives
- Smart Smart Array Controllers P421, P431, P441, P822 and the P841 support the mixing of the D2600 and the D2700 for expansion
 - Supports four (4) D2600 and four (4) D2700 (4xLFH and 4xSH) allowing for expansion up to 168 drives.
- Integrity Servers - Supported for rx2660, rx2800i2, rx3600, rx6600, rx7640, rx8640 and Superdome on HP-UX11iV3, Microsoft Windows Server 2003 SP2 for Integrity and Microsoft Windows Server R2 for Integrity

HPE Host Bus Adapters (HBAs)	HPE H221 PCIe 3.0 SAS Host Bus Adapter	729552-821
	HPE H241 12Gb 2-ports Ext Smart Host Bus Adapter	726911-821

Smart Array Controllers / Switches	BladeSystem Servers	
	HPE Smart Array P741m/2GB FBWC 12Gb 4-ports Ext Mezzanine SAS Controller	762782-821
	HPE 6Gb SAS Switch Single Pack for HPE BladeSystem c-Class	BK763A
	HPE 6Gb SAS Switch Dual Pack for HPE BladeSystem c-Class	BK764A
	NOTE: D2600/D2700 6Gb SAS BL Switch support requires Firmware version 1.34.	

Step 3: Choose HPE ProLiant Servers/MSA Arrays/HPE Integrity Servers

HPE ProLiant Server Compatibility	HPE ProLiant Servers: For up to date compatibility, see the following URL for complete Smart Array P411, P421, P431, P441, P812, P821, P211, P212, P841, P711m, P721m, P731m, P741m Controller and HBA H221, H222, H241 compatibility and support information: http://h18004.www1.hp.com/products/servers/proliantstorage/arraycontrollers/index.html
Array Compatibility	HPE P2000 G3 FC Modular Smart Array System NOTE: For up to date compatibility, see the following URL for complete Smart Array Controller compatibility and support information: http://h18004.www1.hp.com/products/servers/proliantstorage/arraycontrollers/index.html

HPE Integrity Server Compatibility	HPE Integrity Servers supported: HPE Integrity Server rx2660 with combination PCBx/PCle riser only HPE Integrity Server rx3600 with combination PCBx/PCle backplane only HPE Integrity Server rx6600 with combination PCBx/PCle backplane only HPE Integrity Server rx7640 with combination PCBx/PCle only HPE Integrity Server rx8640 with combination PCBx/PCle only HPE Integrity Server sx2000 with combination PCBx/PCle only NOTE: HPE Integrity Server homr: http://www.hp.com/products/1/serversconnectivity/support_matrix.html
---	--

HPE BladeSystem Server Compatibility - P711m Controller	HPE Blade Systems supported	BL280c/BL420c BL460c BL465c BL490c BL620c BL680c BL685c c3000 c7000 BL860 BL870 BL890
	HPE Blade Systems supported (P721m Controller) - Gen8 BladeSystems servers only	HPE ProLiant BL420c Gen8 HPE ProLiant BL460c Gen8 HPE ProLiant BL465c Gen8 HPE ProLiant BL685c Gen8

HPE BladeSystem Server Compatibility - P721m Controller	HPE Blade Systems supported (P721m Controller) - Gen8 BladeSystems servers only	HPE ProLiant BL420c Gen8 HPE ProLiant BL460c Gen8 HPE ProLiant BL465c Gen8 HPE ProLiant BL685c Gen8
	NOTE: For updated list of BladeSystem servers supported, see: https://www.hp.com/h20195/v2/gethtml.aspx?docname=c05111449 NOTE: Some servers listed above may be discontinued. NOTE: For more information on interative external connections, refer to proper blade QuickSpecs via: http://h18000.www1.hp.com/products/QuickSpecs/division/12534.html	

HPE BladeSystem Server Compatibility - P731m Controller	HPE Blade Systems supported (P721m Controller) - Gen8 BladeSystems servers only	HPE ProLiant BL420c Gen8 HPE ProLiant BL460c Gen8 HPE ProLiant BL465c Gen8 HPE ProLiant BL685c Gen8
--	--	--

NOTE:
 For BL420c Gen8 & BL460c Gen8 - P721m is a Type B mezzanine. It can only be installed on mezzanine slot 2 which requires a second processor for functionality. The BL420c, BL465c, and BL460c Gen8 can only support one Type B mezzanine.
 For BL465 Gen8 - P731m is a Type B mezzanine and can only be installed on mezzanine slot 2.
 For BL685c Gen8 - P731m is a Type B mezzanine. It can only be supported on mezzanine slot 2 and

mezzanine slot 2. The BL685c Gen8 can support up to two Type B mezzanines.
NOTE: For more information on interative external connections, please refer to proper blade QuickSpecs via: <http://h18000.www1.hp.com/products/QuickSpecs/division/12534.html>

Step 4: Choose Hard Drives

SAS Drives - LFF	D2600 - Large Form Factor (LFF)	
	HPE 300GB SAS 12G Enterprise 15K LFF (3.5in) STC 3yr Why HDD	737390-821
	HPE 450GB SAS 12G Enterprise 15K LFF (3.5in) STC 3yr Why HDD	737392-821
	HPE 600GB SAS 12G Enterprise 15K LFF (3.5in) STC 3yr Why HDD	737396-821

SAS Drives - SFF for D2700 behind MSA Arrays	D2700 - Small Form Factor (SFF) for expansion behind MSA Arrays - MSA 2040/P2000	
	NOTE: When ordering a D2700 as an expansion behind an existing P2000/MSA 2040 then order the following MSA hard drive SKUs	
	HP MSA 300GB 6G SAS 10K SFF(2.5-inch) Dual Port Ent 3yr Warranty Hard Drive	E2D55A
	HP MSA 450GB 6G SAS 10K SFF(2.5-inch) Dual Port Ent 3yr Warranty Hard Drive	E2D56A
	HP MSA 600GB 6G SAS 10K SFF(2.5-inch) Dual Port Ent 3yr Warranty Hard Drive	C8558A
	HP MSA 900GB 6G SAS 10K SFF(2.5-inch) Dual Port Ent 3yr Warranty Hard Drive	C8559A
	HP MSA 1.2TB 6G SAS 10K SFF(2.5-inch) Dual Port Ent 3yr Warranty Hard Drive	C8560A
	HP MSA 146GB 6G SAS 15K SFF(2.5-inch) Dual Port Ent 3yr Warranty Hard Drive	
	HP MSA 300GB 6G SAS 15K SFF(2.5-inch) Dual Port Ent 3yr Warranty Hard Drive	
	HP MSA 450GB 6G SAS 15K SFF(2.5-inch) Dual Port Ent 3yr Warranty Hard Drive	
	HP MSA 600GB 6G SAS 15K SFF(2.5-inch) Dual Port Ent 3yr Warranty Hard Drive	
	NOTE: When ordering a D2700 as an expansion behind an existing P2000/MSA 2040 then order the above MSA hard drive SKUs	

SAS Drives - SFF for D2700 behind ProLiant servers	D2700 - Small Form Factor (SFF) for expansion behind ProLiant server	
	NOTE: When ordering a D2700 as an expansion behind an existing P2000/MSA 2040 then order the following Hard drive SKUs	
	12G	
	HPE 1.2TB SAS 12G Enterprise 10K SFF (2.5in) 3T 3yr Why HDD	
	HPE 900GB SAS 12G Enterprise 10K SFF (2.5in) 3T 3yr Why HDD	785076-821
	HPE 600GB SAS 12G Enterprise 10K SFF (2.5in) 3T 3yr Why HDD	785071-821
6G		
HPE 300GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	507127-821	

HP 450GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	581284-821
HP 600GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	581286-821
HP 900GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	619291-821
HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	718160-821
HPE 146GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512547-821
HP 300GB 6G SAS 15K rpm SFF (2.5-inch) Hot Plug Enterprise 3yr Warranty Hard Drive	627117-821
HPE 300GB SAS 12G Enterprise 15K SFF (2.5in) ST 3yr Why HDD	785099-821
HPE 450GB SAS 12G Enterprise 15K SFF (2.5in) ST 3yr Why HDD	785101-821
HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) ST 3yr Why HDD	785103-821

NOTE: When ordering a D2700 as a standalone to attach behind a ProLiant server order the above Hard Drive SKUs	
SAS Midline (MSL) - LFF	
HPE 1TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507614-821
HPE 2TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507616-821
HP 3TB 6G SAS 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	625031-821
HP 4TB 6G SAS 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	693686-821
HP 6TB 6G SAS 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	782669-821

D2700 - Small Form Factor (SFF) for expansion behind MSA Arrays - MSA 2040/P2000	
HP MSA 1TB 6G SAS 7.2K SFF (2.5-inch) Dual Port Midline 3yr Warranty Hard Drive	C8562A
NOTE: When ordering a D2700 as an expansion behind an existing P2000/MSA 2040 then order the above MSA Hard Drive SKUs	

D2700 - Small Form Factor (SFF) for expansion behind ProLiant servers	
HPE 500GB 6G SAS 7.2K Drive	
HPE 1TB 6G SAS 7.2K rpm	
NOTE: When ordering a D2700 as an expansion behind an existing P2000/MSA 2040 then order the above Hard Drive SKUs	

Solid State Drives (SAS Performance-SFF)	HPE 200GB 12G SAS High Solid State Drive
---	--

Configuration Information

Solid State Drives (SAS ME-SFF) D2700 behind MSA 2040	D2700 - Small Form Factor (SFF) for expansion behind MSA Array - MSA 2040 NOTE: When ordering a D2700 as an expansion behind an existing MSA 2040 then order the following MSA Hard Drive SKUs	
	HPE MSA 200GB 12G ME SAS SFF (2.5in) Enterprise Mainstream 3yr Warranty Solid State Drive	K2045A
	HPE MSA 400GB 12G ME SAS 2.5in Enterprise Mainstream 3yr Why Solid State Drive	J9F37A
	HPE MSA 800GB 6G ME SAS 2.5in Enterprise Mainstream 3yr Why Solid State Drive	J9F38A
	HPE MSA 1.6TB 6G ME SAS 2.5in Enterprise Mainstream 3yr Why Solid State Drive	J9F39A
	HP MSA 800GB 6G SAS Main End SFF(2.5in) Ent Mainstream 3yr Why Solid State Drive	C8R21A
	HP MSA 400GB 6G SAS Main End SFF(2.5in) Ent Mainstream 3yr Why Solid State Drive	C8R20A
	HP MSA 200GB 6G SAS Main End SFF(2.5in) Ent Mainstream 3yr Why Solid State Drive	C8R19A
	NOTE: When ordering a D2700 as an expansion behind an existing MSA 2040 then order the above MSA Hard Drive SKUs	
Solid State Drives (SAS ME-SFF) D2700 behind ProLiant servers	D2700 - Small Form Factor (SFF) for expansion behind ProLiant servers NOTE: When ordering a D2700 as a stand-alone to attach behind a ProLiant server order the following Hard Drive SKUs	
	HPE 800GB SAS 12G Write Intensive SFF (2.5in) ST 3yr Why SSD	779170-B21
	HPE 400GB SAS 12G Write Intensive SFF (2.5in) ST 3yr Why SSD	779166-B21
	HPE 200GB SAS 12G Write Intensive SFF (2.5in) ST 3yr Why SSD	779162-B21
	NOTE: When ordering a D2700 as a stand-alone to attach behind a ProLiant server order the above Hard Drive SKUs	
	12G Solid State drives will function as 6G drives in the D2700	
	Number of drives is limited to twenty five (25) per controller.	
	Solid State Drive support in the D2700 is for direct attach storage only.	
	Solid State Drives have not yet been qualified on the MSA2000 G2 or the P2000 G3 Arrays	
	SAS Solid State drives are dual path and dual domain.	
	Cascading is supported in both single and dual domain environments	

Step 5: Choose Rack Option

Refer to the Hewlett Packard Enterprise infrastructure products page for more information on HPE racks and rack options:
<http://h18004.www1.hp.com/products/servers/platforms/rackandpower.html>

Step 6: Choose Cables

Cable Options	Cables to be used for connecting the D2600/D2700 with the HPE Smart Array P212, P411, P812, P212 & P421 Controllers and the D2700 to the P2000 G3 and MSA 2040 Modular Smart Array System	
	HPE External Mini SAS 2m Cable	407339-B21
	HPE External Mini SAS 4m Cable	432238-B21

Configuration Information

	HPE External Mini SAS 6m Cable	432239-B21
	Cables to be used for connecting D2600/D2700 with the Smart Arrays P431 & P441, P841 (HD connector)	
	HP 0.5m External Mini SAS High Density to Mini SAS Cable	691971-B21
	HPE 1.0m External Mini SAS High Density to Mini SAS Cable	716189-B21
	HPE 2.0m External Mini SAS High Density to Mini SAS Cable	716191-B21
	HPE 4.0m External Mini SAS High Density to Mini SAS Cable	716193-B21
	* #0D1 will appear after this part number on your sales order if factory integration is indicated.	
Power Cord Options	If customers require a power cord other than the included PDU style cords, they can check the power cord matrix for the appropriate SKU. See the following power cord matrix for details: http://www.hp.com/products/powercords	
	NOTE: An optional longer 2-meter PDU power cable (C14 to C13 style connectors) for customers who would like additional length for connectors to existing power distribution modules located on the right side of the rack. This is purely optional as the included 7-meter power cables will also reach the right sides of the rack. (D2700 power supplies are on the left side of the enclosure) If desired, the quantity to order is 1 A1P73A HPE RDNT 2m, 30A, C13-C14 JMIPT CORD	

Technical Specifications

LED Indicators for HDDs	On/Off (bottom)
	Drive Failure/ID (top)
LED Indicators on Front Panel	Heartbeat LED Fault LED UID button/LED
LED Indicators on Rear Panel	I/O Module LED (2) Identify/On/Fault; Port (2) Link good/ link fault UID button/LED Heartbeat LED Fault LED Power On/Standby button/system power LED Fan LED Power supply LED
Host Interface	4 x wide SAS 6 Gb/s ports
Maximum Number of Drives	Up to 12 3.5 inch (D2600) or 25 2.5 inch (D2700) SAS or SATA drives Up to 25 2.5 inch (D2700) Solid State Drives
Temperature Range	Operating 50° to 95° F (10° to 35° C) Shipping -40° to 150° F (-40° to 66° C) NOTE: Rated 1°C per 1000 feet of elevation to 10,000 ft.
Relative Humidity	Operating 10% to 90% Non-operating Up to 95%
Input Power Requirements	Rated Input Voltage 100 to 240 VAC Rated Input Frequency 50 to 60 Hz Rated Input Current 2.68A at 115 VAC typical, 4A N Input Power (max @ 280VAC) 390W (D2600)/340W (D2700)
Heat Dissipation (maximum)	1331/Btu/hr/1160/Btu/hr NOTE: standard conversion from Watts to Btu/hr = 3.412
RAID Support	See QuickSpecs for Smart Array Controllers P212, P411, P812, P212 & P421 http://h18004.www1.hp.com/products/servers/proliant/p2000g3fc P2000 G3 FC Modular Smart Array System NOTE: For up to date compatibility, see the following URL http://h18004.www1.hp.com/products/servers/proliant/storage/arraycontrollers/index.html
Upgradeable Firmware	Yes, Offline only. Firmware updates available through hp.com
Disk Drives and Enclosure Protocol Support	HPE 3.5 inch (D2600) or 2.5 inch (D2700) SAS 6 Gb/s
I/O Module	Connector Type Pass (mini-SAS) Number of Ports Two (one IN, other is OUT)
D2600/D2700 Disk Enclosure	2U Rack Form Factor Dimensions (HxWxD) 3.47 x 17.99 x 22.5 in (8.8 x 45.0 x 56.7 cm) Weight (base unit) 38 lb (17.2 kg) Weight (with all LFF drives) 59.97 lb (27.2 kg)

Technical Specifications

Weight (with all SFF drives)	54.90 lb (24.9 kg)
------------------------------	--------------------

Summary of Changes

Date	Version History	Action	Description of Change
23-Oct-2017	Version 50	Changed	Care Pack naming and Service and Support - Paris and Materials updated
14-Oct-2016	From Version 48 to 49	Changed	Rebranding Edition
20-Aug-2015	From Version 47 to 48	Changed	Changes were made throughout the QuickSpecs
29-Mar-2015	From Version 46 to 47	Changed	Added Support for: HPE Smart Array P841A/GB FBWC 12Gb 4-ports Ext SAS Controller HPE Smart Array P741m/2GB FBWC 12Gb 4-ports Ext Mezzanine SAS Controller
12-Feb-2015	From Version 45 to 46	Changed	Added the new HDDs, Obsolete SKUs removed and SKUs descriptions updated
31-Dec-2014	From Version 44 to 45	Changed	Changes were made throughout the QuickSpecs
21-Aug-2014	From Version 43 to 44	Changed	What's New, At A Glance & Affordable, low cost Storage & C D2000 maximum storage changed from 48TB to 72TB and 384TB to 576TB, D2000 enclosure components & C High Levels of Storage Density, Data Protection and Functionality & C changed 48TB to 72TB and 4TB to 6TB, Configuration Information & C Step 4 Choose Hard Drives & C added 737390-B21, 737392-B21, 737396-B21, 785099-B21, 785101-B21, 785103-B21, 782669-B21, Removed 632492-B21, 632494-B21, 690823-B21, 690821-B21, 690819-B21.
		Removed	Obsolete SKUs: 650953-B21 and 693648-B21
09-May-2014	From Version 42 to 43	Changed	Operate and Support was revised
24-Apr-2014	From Version 41 to 42	Changed	Smart Array P431 controller was revised.
17-Apr-2014	From Version 40 to 41	Changed	Product descriptions were revised.
27-Feb-2014	From Version 39 to 40	Changed	Updated the following What's New - added support for 12G SSDs; added Smart Array P431 features; added link to P431 QuickSpecs in the Supported Operating Systems section; Smart Array Controllers Supported - added 698531-B21 - Smart Array P431; Configuration Information - Step 3 added P421 and P431 to the HPE ProLiant Server Compatibility area; Added 741148-B21, 741153-B21 and 741157-B21 to the Solid State Drives (SAS Performance - SFF) area; added 741144-B21, 741140-B21 and 741136-B21 and NOTE to the Solid State Drives (SAS ME - SFF) D2700 behind ProLiant servers.
08-Dec-2013	From Version 38 to 39	Changed	Product descriptions were revised in Configuration Information.
19-Sept-2013	From Version 37 to 38	Changed	Updated the following Overview, What's New - added support for new Smart Array P731m controller; Easy to Manage, High Performance 6Gb SAS Host Connectivity; HPE Reliability, D2000 Enclosure Components - added Smart Array P731m Features; added -H222 Host Bus Adapter; Supported Operating Systems - added link to H222 and P731m QuickSpecs; Configuration Information - Smart Array Controllers Supported (Dual Domain) - removed Dual Domain note and removed P421 note; added H222 HBA to the HBA section; added P731m to

Page 26

Summary of Changes

Date	Version History	Action	Description of Change
25-Aug-2013	From Version 36 to 37	Changed	The Smart Array Controllers/Switches section; Step 3 updated HPE ProLiant Server Compatibility; added HPE BladeSystem Server Compatibility - P731m Controller section
25-Apr-2013	From Version 35 to 36	Changed	Revised Configuration Information Step 4 Changes made to the following sections: Overview - What's New, At A Glance D2000 Enclosure Components - High Levels of Storage Density, Data Protection, and Functionality Configuration Information - Step 4
11-Apr-2013	From Version 34 to 35	Changed	Configuration Information: Updated Solid State Drive (SAS MLC-SFF) section in Step 4
21-Feb-2013	From Version 33 to 34	Changed	Changes were made to the Product Highlights Section, Configuration Information and Supported Operating Systems Sections.
07-Feb-2013	From Version 32 to 33	Changed	Changes made to the What's New Section, At A Glance Section and Step 4, Choose Hard Drives Section.
06-Dec-2012	From Version 31 to 32	Changed	Changes made to Add the support for the HPE H221 Host Bus Adapter
		Removed	Removed a note from the Configuration Information section.
11-Oct-2012	From Version 30 to 31	Changed	Change made to URL in Service and Support, HPE Care Pack and Warranty Information section.
18-Aug-2012	From Version 29 to 30	Changed	Changes made throughout the QuickSpecs
14-May-2012	From Version 28 to 29	Changed	Updated the following Overview, What's New, At A Glance - added references to the Smart Array P822 Controller throughout this section; D2000 Enclosure Components - added Smart Array P822 features; Configuration Information - Step 2 - Array Controllers - added Smart Array Advanced Pack and Smart Array Advanced Pack 2.0 and Smart Array P822/2GB and NOTES.
14-May-2012	From Version 27 to 28	Changed	Changes made throughout the Product Features and Configuration sections.
05-Mar-2012	From Version 26 to 27	Changed	Updated the following Product Overview, What's New, At A Glance - affordable, low cost Storage, Flexible/Scalable, Easy to Manage, High performance 6Gb SAS host connectivity, HPE reliability Enclosure Components - added Smart Array P222 and P421 sections, Supported Operating Systems, Configuration Information - Step 2 - Array Controllers
10-Nov-2011	From Version 25 to 26	Changed	Changes made to the What's New and Configuration Information sections.
22-Sept-2011	From Version 24 to 25	Changed	Updated the following Overview, What's New, High performance 6 Gb SAS host connectivity, D2000 Enclosure components - Smart Array P711m features and 6Gb SAS BL Switch features, Supported Operating Systems, Smart Array Controllers supported, Configuration Information - HPE BladeSystem Server compatibility list added, Solid State Drives - SATA SFF (52071-B21 and 52073-B23) removed.
29-Aug-2011	From Version 23 to 24	Changed	Changes made throughout the QuickSpecs.
16-Jun-2011	From Version 22 to 23	Changed	Updated the following sections: What's New - added new

Page 26

Summary of Changes

Date	Version History	Action	Description of Change
1-Jun-2011	From Version 21 to 22	Removed	3TB SAS & SATA drives and new 200GB, 400GB and 800GB SSDs, At A Glance - affordable, low cost storage and high levels of storage density, data protection and functionality, configuration information - step 4 - choose hard drives - added new hard drive descriptions and part numbers.
7-May-2011	From Version 20 to 21	Changed	Mentions of StorageWorks were removed. Affordable, low cost Storage and High Levels of Storage Density, Data Protection and Functionality were revised
24-Apr-2011	From Version 19 to 20	Changed	HPE 900GB 6G SAS 10K rpm SFF Dual Port Enterprise Drive, HPE 1TB 6G SAS 7.2K rpm SFF Dual Port Midline Drive and HPE 1TB 3G SATA 7.2K rpm SFF Midline Drive were added to Step 4.
17-Mar-2011	From Version 17 to 19	Changed	Change made to the North America and Canada versions only.
24-Feb-2011	From Version 16 to 17	Changed	Part number for HPE StorageWorks D2700 w/10 600GB 6G SAS 10K SFF Dual Port HDD 6TB Bundle in D2700 6G SAS Dual Port drives bundle.
01-Feb-2011	From Version 15 to 16	Added	D2000 Disk Enclosures was revised in D2000 Enclosure Components.
09-Jan-2011	From Version 14 to 15	Changed	Solid State Drives were added throughout the QuickSpecs and Integrity Servers was added to Smart Array Controllers Supported in Step 2. Array Controllers and Hard Drive product descriptions were revised
15-Nov-2010	From Version 13 to 14	Changed	HPE StorageWorks D2600 w/12 1TB 6G SAS 7.2K LFF 12TB Bundles and HPE w/6 450GB 6G SAS 15K LFF Dual Port HDD 6TB Bundles were added throughout the QuickSpecs.
14-Nov-2010	From Version 12 to 13	Changed	HPE Care Pack and Warranty Information Servers in Step 2 and Step 5 added
10-Nov-2010	From Version 10 to 12	Changed	HPE 200GB 450GB 6G SAS 10K SFF B Bundle, HPE StorageWorks D2700 10K SFF Dual Port HDD 15TB StorageWorks D2700 w/10 600GB 6G SAS Dual Port HDD 6TB Bundle were added
04-Oct-2010	From Version 9 to 10	Changed	HPE 200GB 3G SATA 5.4K SFF (2.5 inch) ETY HDD was removed from SATA Drives - SFF Made a change to a Smart Buy SKU description in the North America and Canada versions only.
29-Jul-2010	From Version 8 to 9	Changed	Updated the following sections: What's New, configuration information - step 4; choose hard drives - added support for the 450 GB and 400 GB SAS 10K SFF drives
22-Jul-2010	From Version 7 to 8	Added	Note was added to Smart Array Controllers Supported (Dual Domain) and Dual Domain is supported was removed from the Smart Array Controllers Supported (Single Domain) note in Step 2. Added new Smart Buys to the Models section in the North America and Canada versions.


Page 27

Summary of Changes

Date	Version History	Action	Description of Change
20-Jun-2010	From Version 6 to 7	Added	Three (3) new D2600 + HDD fully populated (2) and one partially populated bundles HPE StorageWorks D2600 w/12 2 TB 3G SATA 7.2K LFF HDD 24 TB Bundle HPE StorageWorks D2600 w/12 2 TB 6G SAS 7.2K LFF HDD 24 TB Bundle HPE StorageWorks D2600 w/6 2 TB 6G SAS 7.2K LFF HDD 12 TB Bundle
25-Mar-2010	From Version 5 to 6	Changed	Dual Domain support for HPE Smart Array P411 & P812 Controllers for higher levels of redundancy and reliability Supported Operating Systems was completely revised
04-Mar-2010	From Version 4 to 5	Changed	Technical Specifications were updated All mentions of HPE Smart Array P812 Controller and RAID 50 and 60 were added HPE 1TB and 2TB 6G SAS 7.2K LFF Hard Drive were added to SAS Midline-LFF
14-Jan-2010	From Version 3 to 4	Added	SATA per enclosure was increased to 24TB throughout the QuickSpecs. Hard Drive descriptions were revised and HPE 2TB 3G SATA 7.2K LFF (3.5-inch) MDL Hard Drive was added.
15-Nov-2009	From Version 2 to 3	Added	D2600 - Large Form Factor (LFF) and D2700 - Small Form Factor (SFF) SATA hard drives were added throughout the QuickSpecs What's New to the Overview section
01-Oct-2009	From Version 1 to 2	Changed	HPE StorageWorks D2600 w/12 450GB 6G SAS 15K LFF Dual Port HDD 5.4TB Bundle, HPE StorageWorks D2600 w/12 600GB 6G SAS 15K LFF Dual Port HDD 7.2TB Bundle, HPE StorageWorks D2700 w/25 14.6GB 6G SAS 15K SFF Dual Port HDD 3.6TB Bundle, HPE StorageWorks D2700 w/25 300GB 6G SAS 10K SFF Dual Port HDD 7.5TB Bundle and HPE StorageWorks D2700 w/25 500GB 6G SAS 7.2K SFF Dual Port MDL HDD 12.5TB Bundle to Models Updated the following sections: D2000 Disk Enclosure Software Components - Supported Operating Systems, Configuration Information - Step 2 Array Controllers

000098

Summary of Changes

f t in 
Sign up for updates

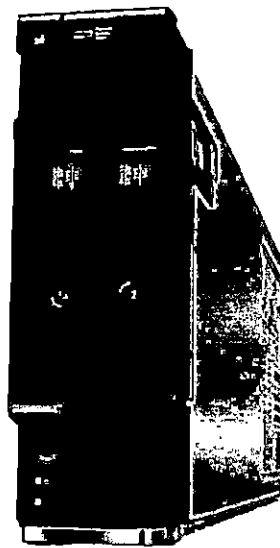
 Hewlett Packard
Enterprise

© Copyright 2017 Hewlett Packard Enterprise Development LP. The information contained herein is subject to change without notice. The only warranties for Hewlett Packard Enterprise products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Hewlett Packard Enterprise shall not be liable for technical or editorial errors or omissions contained herein.
For hard drives, 1 GB = 1 billion bytes. Actual formatted capacity is less.
c04111697 - 13404 - Worldwide - V50 - 23-October-2017


Hewlett Packard
Enterprise

HPE ProLiant BL460c Gen9 Server Blade

ProLiant Server Blades



What's new

- Industry standard support of Intel Xeon E5-2600 v4 processors, HPE 2400 MT/s DDR4 SmartMemory and 128 GB DIMMs.
- Workload acceleration with NVMe SSDs and persistent memory.
- Optional dual micro-SD, optional dual 64/120 GB M.2, and internal USB 3.0 support deliver a variety of system boot options.

Overview

Are you looking for the right server blade to be your data center workhorse for your demanding core IT and virtualization workloads? Designed for a wide range of configuration and deployment options, the HPE ProLiant BL460c Gen9 Server Blade provides the flexibility to optimize your core IT applications with right-sized storage for the right workload for a lower TCO. All of this is managed by HPE OneView, the converged management platform that accelerates IT service delivery and boosts business performance. The HPE ProLiant BL460c Gen9 Server Blade now offers Intel® Xeon® E5-2600 v4 processors with up to 21% bin-to-bin performance gain over the

000099

HP PART

previous generation, plus 2400 MT/s HPE DDR4 SmartMemory offering up to 33% higher throughput. Additional support includes tiered storage controller options, 12 Gb/s SAS, 20 Gb HPE FlexibleLOMs, support for M.2, NVMe, and HPE ProLiant Persistent Memory options.

Features

Superior Value Across Different Workloads

The HPE ProLiant BL460c Gen9 Server Blade delivers the right performance, scalability, and economics for the converged data center in the new era of compute at lower costs, faster time to value with recent innovations.

Provides the flexibility to optimize your core IT applications, with right-sized storage for the right workload lowering TCO, all managed by HPE OneView the converged management platform that accelerates IT service delivery and boosts business performance.

Increased Performance in the Data Center

The HPE ProLiant BL460c Gen9 Server Blade delivers up to 21% performance increases with Intel® Xeon® E5-2600 v4 processors [1].

HPE DDR4 Smart Memory at 2400 MT/s (up to 2 TB): delivers up to a 33% throughput increase compared to competition [2] and 35% lower power consumption than 1.5v DDR3 at the same bin speed.

High-end workload acceleration with NVMe SSDs, providing 7x better random performance and 4.5x better sequential performance [3].

Persistent memory options providing faster transactions for data management and analytics workloads.

More Versatile Than Ever Before

The HPE ProLiant BL460c Gen9 Server Blade delivers flexible embedded storage controller options (HPE Smart Array P244br, HPE H244br Smart Host Bus Adapter, or the HPE Dynamic Smart Array B140i Controller) and pass through cards (NVMe) to enable the improved TCO for a variety of workloads.

Every BL460c Gen9 Server Blade includes USB 3.0, optional dual micro-SD, and optional 64/120 GB M.2 support for a variety of system boot options.

Both Unified Extensible Firmware Interface (UEFI) and Legacy BIOS modes available for increased configuration and deployment versatility.

Transforming Business Economics by Accelerating Service Delivery

HPE OneView provides the Power of One—a single comprehensive view of the data center, managing hardware, software, firmware, and drivers.

HPE Integrated Lights-out (iLO) software features server lifecycle management advancements including iLO Federation, which remotely manages groups of servers at scale with built-in rapid discovery of all iLOs, group configurations, group health status, and ability to determine iLO licenses.

CONFIDENTIAL

Technical specifications

HPE ProLiant BL460c Gen9 Server Blade

Processor family	Intel® Xeon® E5-2600 v3 product family Intel® Xeon® E5-2600 v4 product family
Processor speed	3.5 GHz
Number of processors	2 or 1
Processor core available	4 or 6 or 8 or 10 or 12 or 14 or 16 or 18 or 20 or 22
Processor cache	10 MB L3 15 MB L3 20 MB L3 25 MB L3 30 MB L3 35 MB L3 40 MB L3 45 MB L3 50 MB L3 55 MB L3
Form factor chassis	Blade
Drive description	2 SFF SAS/SATA/SSD or 2 SFF NVMe (optional) SSD
Expansion slots	2 maximum, for detailed descriptions reference the QuickSpecs
Memory type	HPE DDR4 SmartMemory
Memory slots	16 DIMM slots
Maximum memory	2 TB, using 128 GB DIMMs
Network controller	10 Gb HPE 536FLB FlexFabric adapter, 2 ports per controller or 20 Gb HPE 650FLB FlexFabric adapter, 2 ports per controller, depending on model
Storage controller	HPE H244br Host Bus Adapter or HPE Smart Array P244br, depending on model
Power supply type	(6) Enclosure-based
System fan features	Hot plug enclosure-based
Infrastructure management	Standard: HPE iLO Management with Intelligent Provisioning Optional: HPE iLO Advanced for BladeSystems, HPE OneView Advanced, and HPE Insight Control
Warranty	3/3/3 Server Warranty includes three years of parts, three years of labor, three years of onsite support coverage. Additional information regarding worldwide limited warranty and technical support is available at: www.hpe.com/services/support . Additional Hewlett Packard Enterprise support and service coverage for your product can be purchased locally. For information on availability of service upgrades and the cost for these service upgrades, refer to www.hpe.com/services/support .

M

V

0000

000000

Additional resources

QuickSpecs

[hpe.com/h20195/v2/GetDocument.aspx?](http://hpe.com/h20195/v2/GetDocument.aspx?docname=a00008517enus)

[docname=a00008517enus](http://hpe.com/h20195/v2/GetDocument.aspx?docname=a00008517enus)

HPE Pointnext

HPE Pointnext leverages our breadth and depth of technical expertise and innovation to help to accelerate digital transformation. A comprehensive portfolio that includes—Advisory, Professional, and Operational Services is designed to help you evolve and grow today and into the future.

Operational Services

- **HPE Flexible Capacity** is a new consumption model to manage on-demand capacity, combining the agility and economics of public cloud with the security and performance of on-premises IT.
- **HPE Datacenter Care** offers a tailored operational support solution built on core deliverables. It includes hardware and software support, a team of experts to help personalize deliverables and share best practices, as well as optional building blocks to address specific IT and business needs.
- **HPE Proactive Care** is an integrated set of hardware and software support including an enhanced call experience with start to finish case management helping resolve incidents quickly and keeping IT reliable and stable.
- **HPE Foundation Care** helps when there is a hardware or software problem offering several response levels dependent on IT and business requirements.

Advisory Services includes design, strategy, road map, and other services to help enable the digital transformation journey, tuned to IT and business needs. Advisory Services helps customers on their journey to Hybrid IT, Big Data, and the Intelligent Edge.

Professional Services helps integrate the new solution with project management, installation and startup, relocation services, and more. We help mitigate risk to the business so there is no interruption when new technology is being integrated in the existing IT environment.

Call to action:

marketplace.hpe.com/category?catId=153

[51&reqCatId=3328410&catLevelMulti=15](http://marketplace.hpe.com/category?catId=153&reqCatId=3328410&catLevelMulti=15)

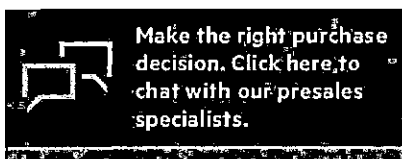
[351_3328410&country=US&locale=en](http://marketplace.hpe.com/category?catId=153&reqCatId=3328410&catLevelMulti=15&country=US&locale=en)

[1] Intel performance testing, <http://www.intel.com/performance>, comparing measurements on platform with two E5-2600 v3 vs E5-2600 v4, November 2015.

[2] Based on similar capacity DIMM running on HPE server vs a non HPE server with DDR4, July 2014.

[3] 7x better random performance and 4.5x better sequential performance compared to a 6Gb SATA SSD based on internal testing by Advanced Technology group, August 2015

[4]



Sign up for updates

Hewlett Packard Enterprise

© Copyright 2018 Hewlett Packard Enterprise Development LP. The information contained herein is subject to change without notice. The only warranties for Hewlett Packard Enterprise products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Hewlett Packard Enterprise shall not be liable for technical or editorial errors or omissions contained herein.

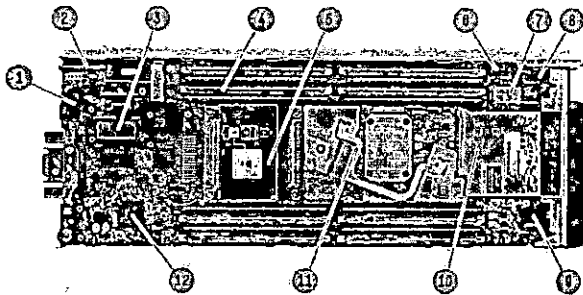
Intel® is a trademark of Intel Corporation in the U.S. and other countries; Xeon® is a trademark of Intel Corporation in the U.S. and other countries; ENERGY STAR® a registered mark owned by the U.S. govt.

Image may differ from actual product PSN7271227USEN, March 06, 2018.

STP/11/11/11

Overview

HPE ProLiant BL460c Gen9 Server Blade



HPE ProLiant BL460c Gen9 Server Blade - Internal View

1. FlexibleLOM adapter
2. NAND Flash & Micro SD
3. Mezzanine Slots (x16 PCI 3.0)
5. Up to two (2) Intel® Xeon® E5-2600 v3 or v4 family processors
6. HPE BLc 12W Smart Storage Battery connector
7. USB 3.0 and TPM
8. Embedded SATA Connector
9. Solid State Device Connector
10. Two hot-plug drive bays
11. HPE Smart Array P244br Controller with 1GB FBWC
12. iLO Management Engine

What's New

- Workload acceleration with NVMe SSDs
- Support for 2400MT/s DDR4 memory
- Support for the Intel® E5-2600 v4 Product Family

Standard Features

NOTE: This document covers the HPE ProLiant BL460c Gen9 server blade only. For information on HPE BladeSystem c-Class Enclosures and HPE BladeSystem c-Class Interconnect and Mezzanine Components, please see the following: HPE BladeSystem c-Class Enclosures QuickSpecs:

- HPE BladeSystem c7000 Enclosure QuickSpecs at <https://www.hpe.com/h20195/4/2/GetPDF.aspx/c041181340.pdf>
- HPE BladeSystem c7000 Enclosure QuickSpecs at <https://www.hpe.com/h20195/4/2/GetPDF.aspx/c04128319.pdf>
- HPE BladeSystem c-Class Interconnect and Mezzanine Components at <http://h18004.www1.hp.com/products/blades/components/c-class-interconnects.html>
- HPE BladeSystem c-Class Interconnect and Mezzanine Components at <http://h18004.www1.hp.com/products/blades/components/c-class-adapters.html>

NOTE: For optimal cooling and system performance the BL460c Gen9 Server Blade requires the c7000 enclosure to be configured with 10 fans and the c3000 enclosure to be configured with 6 fans.

NOTE: For proper BladeSystem operation, the minimum required versions of HPE OpenView Administrator and HPE Virtual Connect are required and available via the HPE Service Pack, for ProLiant, please see http://h17007.www1.hp.com/us/en/enterprise/servers/products/service_pack/sp/index.aspx

NOTE: For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

Processor ES-2600 v4 series Processors

- One of the following depending on Model:
- HPE BL460c Gen9 Intel® Xeon® E5-2690v4 (2.6GHz/14-core/35MB/135W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2680v4 (2.3GHz/16-core/40MB/120W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2680v4 (2.6GHz/14-core/35MB/120W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2680v4 (2.6GHz/14-core/35MB/105W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2680v4 (2.2GHz/12-core/30MB/105W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2650v4 (2.2GHz/12-core/30MB/105W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2650v4 (1.7GHz/14-core/35MB/65W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2640v4 (2.2GHz/10-core/25MB/90W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2630v4 (2.2GHz/10-core/25MB/85W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2630v4 (1.8GHz/10-core/25MB/55W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2630v4 (2.6GHz/14-core/35MB/85W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2620v4 (2.3GHz/8-core/20MB/85W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2620v4 (2.3GHz/8-core/20MB/85W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2620v4 (1.7GHz/8-core/20MB/85W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2613v4 (1.7GHz/6-core/15MB/85W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2609v4 (2.2GHz/12-core/35MB/145W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2698v4 (2.2GHz/20-core/50MB/135W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2697v4 (2.3GHz/18-core/45MB/145W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2697v4 (2.6GHz/16-core/40MB/145W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2695v4 (2.3GHz/18-core/45MB/120W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2667v4 (3.2GHz/8-core/25MB/135W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2643v4 (3.4GHz/6-core/20MB/135W)
 - HPE BL460c Gen9 Intel® Xeon® E5-2637v4 (3.5GHz/4-core/15MB/135W)

ES-2600 v3 series Processors

Standard Features

- HPE BL460c Gen9 Intel® Xeon® E5-2690v3 (2.6GHz/12-core/30MB/135W)
- HPE BL460c Gen9 Intel® Xeon® E5-2680v3 (2.5GHz/12-core/30MB/120W)
- HPE BL460c Gen9 Intel® Xeon® E5-2670v3 (2.3GHz/12-core/30MB/120W)
- HPE BL460c Gen9 Intel® Xeon® E5-2660v3 (2.6GHz/10-core/25MB/105W)
- HPE BL460c Gen9 Intel® Xeon® E5-2650v3 (2.3GHz/10-core/25MB/105W)
- HPE BL460c Gen9 Intel® Xeon® E5-2640v3 (2.6GHz/8-core/20MB/90W)
- HPE BL460c Gen9 Intel® Xeon® E5-2635v3 (2.0GHz/14-core/35MB/120W)
- HPE BL460c Gen9 Intel® Xeon® E5-2630v3 (2.4GHz/8-core/20MB/85W)
- HPE BL460c Gen9 Intel® Xeon® E5-2620v3 (2.4GHz/8-core/20MB/85W)
- HPE BL460c Gen9 Intel® Xeon® E5-2620v3 (3.0GHz/4-core/10MB/105W)
- HPE BL460c Gen9 Intel® Xeon® E5-2609v3 (1.9GHz/6-core/15MB/85W)
- HPE BL460c Gen9 Intel® Xeon® E5-2603v3 (1.6GHz/6-core/15MB/85W)
- HPE BL460c Gen9 Intel® Xeon® E5-2650Lv3 (1.8GHz/12-core/30MB/65W)
- HPE BL460c Gen9 Intel® Xeon® E5-2698v3 (2.3GHz/16-core/40MB/135W)
- HPE BL460c Gen9 Intel® Xeon® E5-2630Lv3 (1.8GHz/8-core/20MB/55W)
- HPE BL460c Gen9 Intel® Xeon® E5-2695v3 (2.3GHz/14-core/35MB/120W)
- HPE BL460c Gen9 Intel® Xeon® E5-2637v3 (3.5GHz/4-core/15MB/135W)
- HPE BL460c Gen9 Intel® Xeon® E5-2697v3 (2.6GHz/14-core/35MB/145W)
- HPE BL460c Gen9 Intel® Xeon® E5-2667v3 (3.2GHz/8-core/20MB/135W)
- HPE BL460c Gen9 Intel® Xeon® E5-2643v3 (3.4GHz/6-core/20MB/135W)
- HPE BL460c Gen9 Intel® Xeon® E5-2699v3 (2.3GHz/18-core/45MB/145W)

NOTE: All processors within the server must be identical.
 NOTE: DIMM slots 4 and 5 are not accessible when the E5-2699 v4, E5-2697 v4, E5-2695 v4, E5-2667 v4, E5-2643 v4, E5-2637 v4, E5-2699 v3, the E5-2677 v3, the E5-2643 v3, the E5-2637 v3, or the E5-2607 v3 is used in a 2 processor configuration, there are twelve (12) total available DIMM slots.
 NOTE: For the maximum supported memory speeds for each processor listed above, please reference the Memory Speed by Processor Model table in the Memory section of the QuickSpecs.
 NOTE: All processors support Intel® Hyper-Threading and Intel® Turbo Boost Technologies except the E5-2609 v4, E5-2603 v4, E5-2607 v3 and E5-2609 v3.
 NOTE: DDR4 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.
 NOTE: Supports 1 or 2 processor
 NOTE: For the Intel® C610 Chipset indicates the Product List (E3, E1 designation, V0 Processor SKU).
 NOTE: The BL460c Gen9 include processor slot 1 for access to the installed in processor slot 2 for ac
 NOTE: The letter "L" following the number next to the processor slot must be 2).

- Cache Memory 55MB (1x55MB) L3 cache
 One of the following depending on Model:
 50MB (1x50MB) L3 cache
 NOTE: For Twenty-core processors.
 45MB (1x45MB) L3 cache
 NOTE: For Eighteen-core processors.
 40MB (1x40MB) L3 cache



Standard Features

- NOTE: For Sixteen-core processors.
 35MB (1x35MB) L3 cache
 NOTE: For Fourteen-core processors.
 30MB (1x30MB) L3 cache
 NOTE: For Twelve-core processors.
 25MB (1x25MB) L3 cache
 NOTE: For Ten or Eight-core processors
 20MB (1x20MB) L3 cache
 NOTE: For Six, Eight, or Ten-core processors.
 15MB (1x15MB) L3 cache
 NOTE: For Quad or Six-core processors.
 10MB (1x10MB) L3 cache
 NOTE: For Quad-core processors.

Chipset	Intel® C610 Series Chipset Intel® E5-2600 v3 or v4 Processor Family NOTE: For more information regarding Intel chipsets, please see the following http://www.intel.com/content/www/us/en/chipsets/chipsets-overview.html
Upgradability	Upgradable to two (2) processors
On System Management Chipset	HPE iLO (Firmware HPE iLO 4.2.0), 4GB NAND with 1GB USB user space configurable via UEFI and accessible via ILO. Read and learn more in the ILO QuickSpecs . NOTE: For more information, visit: https://www.hpe.com/us/en/servers/integrated-lights-out-ilo.html
Memory Protection	Advanced ECC Memory Mirroring Memory Online Spare Mode (Rank Spare Mode)

Memory	Type	HPE SmartMemory
One of the following depending on Model	Standard (Pre-configured Models)	DDR4 Load Reduced (LRDIMM) or Registered (RDIMM)
		256GB (8 x 32GB) DDR4 2400MT/s LRDIMMs at 1.2V
		128GB (4 x 32GB) DDR4 2400MT/s LRDIMMs at 1.2V
		64GB (4 x 16GB) DDR4 2400MT/s RDIMMs at 1.2V
		32GB (2 x 16GB) DDR4 2400MT/s RDIMMs at 1.2V
		16GB (2 x 8GB) DDR4 2400MT/s RDIMMs at 1.2V
		128GB (4 x 32GB) DDR4 2133MT/s RDIMMs at 1.2V
		64GB (4 x 16GB) DDR4 2133MT/s RDIMMs at 1.2V
		32GB (2 x 16G)
		32GB (2 x 16G)
		16GB (2 x 8GB)
		16GB (2 x 8GB)
Maximum (LRDIMM)		2TB (16 x 128

Standard Features

Maximum (RDIMM) 512GB (16 x 32GB) up to 2133MT/s at 1.2V

NOTE: HPE memory from previous generation servers (DDR3) is not compatible with this server. HPE SmartMemory is required to reallocate memory performance improvements and enabled for all memory banks in this document for Gen9. For additional information, please see the HPE SmartMemory QuickSpecs at: https://www.hpe.com/h19195/v2/gethtml.aspx?document=0511532
NOTE: LRDIMM and RDIMM are distinct memory technologies and cannot be mixed within a server. NOTE: Depending on the memory configuration and processor model, the memory speed may run at 2400MT/s, 2133MT/s, 1866MT/s, or 1600MT/s. Please see Memory Population Table or the Online Memory Configuration Tool at: https://h22195.www2.hp.com/DDR4memoryconf/Home/SelectServer

Network Controller One of the following depending on Model

One (1) 20Gb 2-port FlexFabric FLB, 10Gb 2-port HPE FlexFabric FLB, or 10Gb 2-port Ethernet FLB
NOTE: Supports FCoE, TCP/IP offload engine, hardware-based accelerated iSCSI, iSCSI boot, and autosensing 10Gb/1Gb Ethernet.
NOTE: Each port is autosensing the speed, and can interoperate with 1Gb HPE BladeSystem c-Class interconnect components. Both ports will operate at the same speed.
NOTE: FlexFabric capabilities require the use of an HPE Virtual Connect FlexFabric or Flex10/100 module.
NOTE: FlexFabric over Ethernet (FCoE) is supported with HPE Interconnects. Learn more at: https://www.hpe.com/us/en/integrated-systems/virtual-connect.html

One (1) HPE FlexFabric 10Gb 2-port 536FLB FlexiBLOM
One (2) HPE FlexFabric 20Gb 2-port 65FLB FlexiBLOM
NOTE: FlexiBLOM are not compatible with prior generation c-Class server blades.

Standard iLO Network Controller:
One (1) 10/100 Mbps port for the HPE iLO 4 to Onboard Administrator link. The Onboard Administrator (with 10/100/1000 Mbps) to BladeSystem link is 1Gbps

Expansion Slots

Two (2) I/O expansion mezzanine slots:
• x16 PCIe 3.0 Type A (supports Type A mezzanine cards) (expansion slot 1)
NOTE: This expansion slot supports dual-port mezzanine cards, one port is routed to interconnect module bay 3 and the other to bay 4.
• x16 PCIe 3.0 Type B (supports Type A and Type B mezzanine cards) (expansion slot 2)
NOTE: This expansion slot supports dual-port and quad-port mezzanine cards. For dual-port cards, one port is routed to interconnect module bay 5 and the other to bay 6. For quad-port cards, one port is routed to interconnect module bay 5, one to bay 6, one to bay 7, and one to bay 8.
NOTE: A second processor must be installed on processor slot 2 to have access to the second expansion slot (expansion slot 2).

Mezzanine card options include:
• Dual-port 20Gb FlexFabric, Dual-port 10Gb FlexFabric, 10GbE options, and quad-port 1Gb Ethernet server adapter mezzanine options for additional network ports.
• Dual-port 16Gb Fibre Channel HBA for SAN connectivity.
• QDR and FDR InfiniBand for low latency and high bandwidth server interconnectivity.
• I/O accelerator mezzanine options for high transaction rate local storage.

HPE Server ROM

HPE ROM (read only memory) is now digitally signed using the HPE Corporate Signing Service. This signature is verified before the flash process starts, reducing accidental programming and preventing

Standard Features

malicious efforts to corrupt system ROM.

HPE ROM provides for essential initialization and validation of hardware components before control is passed to the customer-installed operating system. The ROM also provides the capability of booting from various fixed media (HDD, CD-ROM) and removable media (USB), to continue operation to the operating system.

HPE ROM performs very early configuration of the video controller, to allow monitoring of initialization progress via an attached monitor. If configuration or hardware errors are discovered during this early phase of hardware initialization, suitable messages are now displayed on the connected monitor. Additionally, these configuration or hardware errors are logged to the Integrated Management Log (iML) to assist in diagnosis. The HPE ProLiant ROM is used to configure the following:

- Processor and chipset status registers
• System memory, memory map, and memory initialization
• System hardware configuration (Integrated PCI devices and optional PCIe cards)
• Customer-specific BIOS configuration using the HPE ROM-Based Setup Utility (RBSU).

NOTE: For further information, please refer to the HPE RBSU (ROM based setup utility) user guide. https://h20564.www2.hp.com/hpsc/doc/public/display?docId=c00191707

HPE Server UEFI/Legacy ROM

Unified Extensible Firmware Interface (UEFI) is an industry standard that provides better manageability and more secured configuration while interacting with your server at boot time. HPE ProLiant Gen9 platform defaults to UEFI and can be factory or field configured for Legacy BIOS Boot Mode. NOTE: The UEFI System Utilities function is analogous to the HPE ROM-Based Setup Utility (RBSU) of legacy BIOS. For more information, please visit https://www.hp.com/go/Manual/c05398276.pdf

UEFI enables numerous new capabilities specific to HPE ProLiant servers such as:

- Secure Boot
• Operating system specific functionality
• Support for > 22 TB (using GPT) boot drives
• USB 3.0 Stack
• Embedded UEFI Shell
• Mass Configuration Deployment Tool using HPE RESTful API
• PXE boot support for IPv6 networks
• Boot support for option cards that only support a UEFI option ROM

NOTE: For more information please visit https://www.hp.com/go/Manual/c05398276.pdf

NOTE: For UEFI Boot Mode, boot environment and OS image installations should be configured properly to support UEFI.

NOTE: HPE UEFI FIO Setting (756359-B22) can be selected to configure the system in Legacy mode if the factory.

Storage Controller All BTO Models

One (1) HPE Smart Array P244br Controller with 1GB Flash-Backed Write Cache (FBWC) supporting RAID 0 and RAID 1, or HPE H244br Smart HBA.
NOTE: The 11PF Smart Array P244br, the HPE H1244br Smart HBA, and the 11PF B150 (dual SATA) support two (2) small form factor (SFF) hot plug drive bays.
NOTE: For NVMe support, please select the NVMe FIO setting (G25555-B23) available on CTO models only.

Table with 4 columns: Storage Type, Capacity, and Quantity. Rows include Hot Plug SFF SAS (4.0TB, 2 x 2.0TB), Hot Plug SFF SATA (4.0TB, 2 x 2.0TB), and Hot Plug SFF SAS SSD (7.68TB, 2 x 3.84TB).

Standard Features

Table with 4 columns: Storage Type, Capacity, and Quantity. Rows include Hot Plug SFF SATA SSD (7.68TB, 2 x 3.84TB) and Hot Plug SFF NVMe SSD (4.0TB, 2 x 2.0TB).

NOTE: The ProLiant BL460c Gen9 server includes the HPE hot plug small form factor (SFF) SmartDrive carrier for enhanced manageability and reduced maintenance errors. HPE drives from previous generation servers (prior to Gen9) are not compatible with the ProLiant BL460c Gen9 drive bays.

Interfaces

Micro SDHC Slot One (1) internal Micro Secure Digital High Capacity (Micro SDHC) card slot
USB 3.0 Port One (1) internal USB 3.0 connector for USB flash media drive keys.
NOTE: The above options are intended for integrated hypervisor virtualization environments.

Industry Standard Compliance

ACPI 2.0
Microsoft Logo certifications
USB 3.0 Support
IPMI 2.0
Secure Digital 2.0
TPM 1.2 Support
IEEE (specific IEEE standards depending on Ethernet adapter card(s) installed)
Advanced Encryption Standard (AES)
Triple Data Encryption Standard (3DES)
SNMP
SSL 2.0
DMTF Systems Management Architecture for Server Hardware Command Line Protocol (SMASH-CLP)
Active Directory v1.0
PCIe 3.0
ASHRAE A3
FPS 140-2 Level-1 certification
Energy Star
NOTE: Energy Star Family level certification covering all BL460c Gen9 ES-2600 v3 but not include the Intel Xeon ES-2699v3 processor. For more information, visit https://www.hp.com/hpinfo/global/citizenship/environment/products/data/energystar

Operating Systems and Virtualization Software Support for ProLiant Servers

Microsoft Windows Server
Red Hat Enterprise Linux (RHEL)
SUSE Linux Enterprise Server (SLES)
Canonical Ubuntu
Oracle Solaris
VMware
NOTE: For more information on the HPE Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: https://www.hp.com/us/en/products/server/management/operations-environment/sps-support-matrix.html and our driver download page: https://www.hp.com/us/en/products/proliant-servers/product-detail.html?docId=7271227

Enclosures

Hewlett Packard Enterprise offers two different c-Class server blade enclosures to meet your individual needs:
• The HPE BladeSystem c7000 rack enclosure is 10U high and holds up to sixteen (16) ProLiant BL460c Gen9 servers plugged vertically.
• The HPE BladeSystem c3000 rack enclosure is 6U high and holds up to eight (8) HPE ProLiant BL460c Gen9 servers plugged horizontally.

Standard Features

Server blades, interconnect modules, power supplies, fans, and redundant Onboard Administrator modules are all designed to fit into the c3000 and c7000 enclosures.

NOTE: For additional enclosure information, please see https://h18004.www1.hp.com/products/Blades/components/enclosures/c-class/index.html

Graphics

Integrated Matrix G200eh video controller
• 1600 x 1200 (32 bpp)
• 1920 x 1200 (16 bpp)

HPE iLO Management On System Management Memory
• 16 MB Flash Video Memory
• 256 MB DDR 3 with ECC (112 MB after ECC and video)

Form Factor

HPE ProLiant BL460c Gen9 is a half-height server blade that plugs into the HPE BladeSystem c3000 and c7000 enclosures.

Embedded Management

HPE Integrated Lights Out Monitor your servers for ongoing management, service alerting, reporting and remote management with iLO. Learn more at https://www.hp.com/us/en/server/integrated-lights-out-ilo.html

UEFI Configure and boot your servers securely with industry standard Unified Extensible Firmware Interface (UEFI). Learn more at https://www.hp.com/us/en/products/server-software/product-xyz.html?docId=4915826.

ESTful API is an application programming interface. RESTful Web Service API served by iLO's web server. https://www.hp.com/us/en/server/restful-epi.html
revision servers by discovering and deploying 1 to a few servers with intelligent provisioning. Learn more at https://www.hp.com/us/en/products/server-software/product-detail.html?docId=5119984

Optimize firmware and driver updates with HPE Smart Update solutions. Learn more at https://h17007.www1.hp.com/us/en/enterprise/server/products/service_pac/whpsum/index.aspx

Diagram showing HPE System Insight Manager (HPE SIM) and HPE SPP Integrity Enterprise solutions. Includes text: 'Scripting Tool Kit and Windows PowerShell', 'Provision HPE So PowerS', and 'HPE RESTful API'. A large handwritten 'X' is drawn over this section.

Standard Features

Interface Tool	Interface to discover and deploy servers at scale. Learn more at http://www.hpe.com/us/en/servers/restfulapi.html
HPE iLO Mobile Application	Enables the ability to access, deploy, and manage your server anytime from anywhere from select smartphones and mobile devices. For additional information please visit: http://www8.hp.com/us/en/products/servers/ilo/mobile.html
HPE Insight Online	HPE Insight Online, available at no additional cost as part of your HPE warranty, Care Pack or contractual support agreement with Hewlett Packard Enterprise, is a personalized dashboard for simplified tracking of IT operations and support information from anywhere, anytime. Learn more at http://h20566.www2.hp.com/hpsc/doc/public/display?docId=c03178991

Security	<ul style="list-style-type: none"> Power-on password Administrator's password Keyboard password (QuickLock) HPE iLO Management On System Management Chipset with: <ul style="list-style-type: none"> SSL encryption Secure Shell version 2 Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser, CLP and XML scripting interface AES and RC4 encryption of video External USB port enable/disable Network server mode Serial interface control TPM (Trusted Platform Module) 2.0 option Advanced Encryption Standard (AES) Intel® Advanced Encryption Standard-New Instructions (AES-NI) FIPS 140-2 Level-1 certification
----------	---

Availability	<p>Memory</p> <ul style="list-style-type: none"> Advanced ECC uses single device data correction (SDCC) to detect and correct single and all multi-bit error that occurs within a single DRAM chip. Both x4 and x8 SDDC are supported (x8 requires lockstep mode). Memory online spare mode (also known as rank spare mode) detects a rank that is degrading and switches operation to the spare rank. Memory demand and patrol scrubbing to prevent accumulation of correctable errors and reducing the likelihood of unplanned downtime. Failed DIMM isolation improves the service time thus improving the overall system availability. Address parity protection available on RDRAMs and LRDIMMs detects address bit errors to improve service time and overall system availability. <p>Mezzanine options and I/O</p> <ul style="list-style-type: none"> Support for one (1) FlexibleLOM, providing two (2) G.e. redundant Ethernet ports Multiple mezzanine I/O expansion slots that support a wide variety of mezzanine cards each supporting multiple data paths routed to redundant interconnect modules. Network Adapter Teaming (bonding) provides network fault tolerance, transmit load balancing, and switch-assisted load balancing. <p>Storage</p> <ul style="list-style-type: none"> Two (2) Small Form Factor hot-plug SAS/SATA HDD or SSD or NVMe SSD drive bays. Choice of the HPE Smart Array P244i Controller with 1GB FBWC, HPE Smart HBA H244i, or the HP B140i (chipset SATA) RAID 0 and 1 support for all three storage controller offerings.
--------------	---

Standard Features

- Optional dual-port Fibre Channel mezzanine card(s) for redundant SAN connections. NOTE: For NVMe support, please select the NVMe FC card (G2555-822) available on CTO models only.
- Processor/Chipset
 - Processor internal sensors & thermal control protection against over-temperature conditions.
 - Cache parity/ECC protects cache data from accidental data corruption.
 - Machine Check Architecture (MCA) detects and captures hardware errors such as system bus, memory ECC, parity, and cache, and improves service time.
 - Intel® DP/Protocol Protection allows detection of data errors using a checksum of 8-bits
 - Core Disable for FRB (fault resilient boot) allows a system to power-on despite a failing core-pair. It uses BIST (built-in self-test) results to detect a failure and disables the target core-pair upon subsequent boot.

- Server Blade Enclosure Infrastructure**
- Pooled power for true N+N power redundancy through up to six (6) hot-plug, high-efficiency, common slot enclosure-based power supplies (configuration dependent).
 - Up to ten (10) enclosure-based hot-plug HPE Active Cool fans that scale to meet future demands, optimize airflow, reduce power draw, and improve acoustic performance
 - Dual grid power providing redundant rack enclosure power feeds to the server blade enclosure.
 - HPE Dynamic Power Save Mode monitors the total enclosure power consumption in real time and automatically adjusts with change in demand for improved efficiency and reliability. HPE Dynamic Power Capping safely limits power usage without impacting performance by capping peak usage. Instead of average power usage, removes risk to electrical infrastructure with a fast-acting, hardware-based capping algorithm, and reclaims more power by dynamically controlling power limits based on workload demand.
 - Up to eight interconnect modules per server blade enclosure providing four simultaneous redundant fabrics for FlexFabric, Virtual Connect Ethernet, Fibre Channel, InfiniBand, Pass Thru Ethernet, etc.
 - Enclosure crosslinks between adjacent enclosures to provide interconnect module-to-module connections or as Virtual Connect module stacking links.
 - Optional enclosure redundant Onboard Administrator system management module.

Warranty This product is covered by a global limited warranty and supported by HPE Services and a worldwide network of Hewlett Packard Enterprise Authorized Channel Partners. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HPE Pointnext operational services or customized service agreements. Certain restrictions and exclusions apply. Hard drives have either a one year or three year warranty, refer to specific hard drive QuickSpecs for details.

NOTE: Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part. 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HPE replace optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at <http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>

Optional Features

Fibre Channel Support	Up to two (2) optional Fibre Channel mezzanine HBAs are supported on the HPE ProLiant BL460c Gen9.
Compatible SAN	HPE ProLiant BL460c Gen9 server blades are optimized for HPE MSA, EVA, SPAR and XP. HPE ProLiant BL460c Gen9 server blades are compatible with select 3rd party SANs. Please see blade storage page for more details at https://www.hpe.com/us/en/integrated-systems/blade-system.html

HPE Virtual Connect	<p>HPE Virtual Connect is an interconnect option for c-Class BladeSystem that simplifies server connectivity to data and storage networks, and reduces costs. Unique HPE Flex-IO technology makes maximum use of network bandwidths, provide dynamic tuning and enable extreme flexibility to meet individual server and infrastructure requirements by allocating up to 4 network connections per server port. Virtual Connect FlexFabric modules extend those capabilities to allocate one function per port to storage connections (FCoE).</p> <p>HPE OneView's software-defined approach to infrastructure management enables central console to administer network connections and workloads for thousands of servers, see https://www.hpe.com/us/en/integrated-systems/management-software.html</p> <p>For more information on Virtual Connect Ethernet, Fibre Channel, Converged Network and management options, see https://www.hpe.com/us/en/integrated-systems/virtual-connect.html</p>
---------------------	---

Embedded Management	<p>iLO Advanced for BladeSystem</p> <p>HPE iLO Advanced for BladeSystem licenses offer smart remote functionality compromise, for all HPE ProLiant servers. The license includes the full integrated remote console, virtual keyboard, video, and mouse (KVM), multi-user collaborative console record and replay, and GUI-based and scripted virtual media and virtual folders. You can also activate the enhanced security and power management functionality. Learn more about HPE iLO Advanced at https://www.hpe.com/us/en/servers/integrated-ilo-remote-console.html</p>
---------------------	--

Server Management	<p>HPE Insight Control</p> <p>HPE Insight Control lets you deploy, migrate, monitor, remote control, and open your IT infrastructure through a single, simple management console. For more information, see http://www8.hp.com/us/en/products/servers-software/pdetail.html?oid=331215A</p> <p>HPE OneView</p> <p>Powerful converged management of servers, storage, and network for IT serv automation and infrastructure simplicity.</p> <p>HPE Matrix Operating Environment</p> <p>The HPE Matrix Operating Environment (Matrix OE) for ProLiant and Integrity servers is an integrated command center that helps you instantly adjust to dynamic business demands. This advanced infrastructure management software lets you reduce the cost of common data center tasks by up to 40 percent while keeping pace with your changing business. The HPE Matrix OE includes the automated provisioning, optimization, and recovery management capabilities for HPE CloudSystem Matrix, the ideal platform for private cloud and infrastructure as a Service (IaaS).</p> <p>For more information, visit: http://h180192.www2.hp.com/portal/view.aspx?displayProductInfo.do?productId=UJ9R</p> <p>HPE Insight Cluster Management Utility</p> <p>HPE Insight Cluster Management Utility is a HyperScale management framework that includes software for the centralized provisioning, management and monitoring of</p>
-------------------	--

Optional Features

(CMU)	nodes and Infrastructure.
	Learn more at http://www8.hp.com/us/en/products/server-software/product-detail.html?oid=3726761

High Performance Clusters	<p>HPE Cluster Platforms</p> <p>HPE Cluster Platforms are specifically engineered, factory-integrated large-scale ProLiant clusters optimized for High Performance Computing, with a choice of servers, networks and software. Operating system options include specially priced offerings for Red Hat Enterprise Linux and SUSE Linux Enterprise Server, as well as Microsoft Windows HPC Server. A Cluster Platform Configurator simplifies ordering. http://www8.hp.com/us/en/products/servers/scalable-systems/clusterplatform.html</p> <p>HPE HPC Interconnects</p> <p>High Performance Computing (HPC) interconnect technologies are available for this server as part of the HPE Cluster Platform portfolio. These High-speed InfiniBand and GigaBit interconnects are fully supported by Hewlett Packard Enterprise when integrated within an HPE cluster.</p>
---------------------------	--

Storage Software Whether you need to solve a specific data protection, archiving, or storage command and control challenge, or deliver on strategic consolidation, compliance, or continuity initiatives, look no further than HPE storage software. Our storage software helps you reduce costs, simplify storage infrastructure, protect vital assets and recover faster to business opportunities.

- software that gets the job done:
 - Data Protection and Recovery Software** Whether you're a large enterprise or a smaller business, HPE data protection and recovery software will cost-effectively protect you against disaster and ensure business continuity.
 - Data Archive and Migration Software** The HPE storage software enables you to comply with data retention and retrieval requirements, improve application performance, and reduce costs by efficiently migrating infrequently accessed or less valuable data to lower cost storage.
 - Storage Resource Management Software (SRM)** The HPE storage resource management software reduces operational costs and provides the command and control foundation you need to efficiently manage and visualize your physical and virtual environments.
 - Data Replication Software** Hewlett Packard Enterprise offers array-based and host-based replication software for use in disaster recovery, testing, application development and reporting.
 - Storage Device Management Software** Maximize your investment in HPE storage and networking with software that enables hardware-specific configuration, performance tuning and connectivity management.
 - HPE StoreVirtual VSA** HPE StoreVirtual VSA allows you to create fully featured shared storage on a VMware vSphere or Microsoft Hyper-V virtualized server. This server model starting November 2013, includes a limited license for HPE StoreVirtual VSA software with 1TB of capacity. To download the license key and StoreVirtual VSA details, visit <http://www8.hp.com/us/en/products/storage/vsa.html>. NOTE: You will need a functional, capable

NOTE: For more information visit <http://www.hpe.com/ai>

000101

Optional Features

HPE Insight Online HPE Insight Online is part of the HPE Support Center for one stop, secure access to product and HPE support information personalized to your IT environment.

Get connected to HPE To get the most from your investment in Hewlett Packard Enterprise servers, get connected to Hewlett Packard Enterprise using our innovative remote support technology which provides system health monitoring, pre-failure alert notification and more.

Expansion Blade Support Supports one (1) optional D2220sb storage or PCI expansion blade. NOTE: Expansion blade support requires the use of either the HPE Dynamic Smart Array B140i or the HPE Smart Array P246bi controller.

Factory Express Portfolio for Servers and Storage HPE Factory Express offers configuration, customization, integration and deployment services for Hewlett Packard Enterprise servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

HPE Simple Configurator SCE is a guided self-service tool to help sales and non-technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes.

Recommended Support Services for BL460

Related Services HPE Server Hardware Installation Provides for the basic hardware installation of HPE branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner.

Data Center Care Services HPE Datacenter Care helps improve IT stability and security, increase the value of IT, and enable agility and innovation. It is a structured framework of repeatable, tested, and globally available services "building blocks."

Data Privacy Services Protect your data through better media management. HPE Data privacy services help manage and protect sensitive data to reduce the risk of unauthorized access to private information and help meet compliance requirements.

HPE Education Services Keep your IT staff trained making sure they have the right skills to deliver on your business outcomes. Book on a class today and learn how to get the most from your technology investment.

Recommended Support Services for BL460

Service and Support Protect your business beyond warranty with HPE Support Services. HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability.

Optimized Support recommendation HPE Proactive Care Advanced - 24x7 coverage, three year Support Service. This services helps achieve a higher return on your product investment with personalized support from a local assigned Account Support Manager who will share best practice advice and personalized recommendations designed to help improve availability and performance to increase stability and reduce unplanned downtime.

Standard Support recommendation HPE Proactive Care - 24x7 coverage, three year Support Service. HPE Proactive Care gives customers an enhanced call experience plus helps preventing problems and maintains IT stability by utilizing personalized proactive reports with recommendations and advice when your products are connected to Hewlett Packard Enterprise.

Parts and Materials Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction.

Models

NOTE: For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section. NOTE: Pre-configured models ship with the configurations below. Options can be selected from the Core or Additional options section of this QuickSpecs.

E5-2600 v4 series Processors

Table with 4 columns: HPE ProLiant Model, Processor(s), Cache Memory, Network Controller, Storage Controller, Hard Drive, Internal Storage, Optical Drive Bay, Expansion Slots, Management, Form Factor, Warranty.

Table with 4 columns: HPE ProLiant Model, Processor(s), Cache Memory, Network Controller, Storage Controller, Hard Drive, Internal Storage, Optical Drive Bay, Expansion Slots.

Handwritten notes and stamps at the bottom right of the page.

Models

Management	Type B mezzanine cards. HPE iLO Management (standard) Optional: HPE OneView or HPE Insight Control
Form Factor	Up to eight (8) half-height blades supported in the HPE BladeSystem c3000 Enclosure
Warranty	Up to sixteen (16) half-height blades supported in HPE BladeSystem c7000 Enclosure Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.

HPE ProLiant BL460c Gen9 ES-2640v4 1P 32GB-R Server 813194-B21	Processor(s) (1) Intel® Xeon® ES-2640 v4 (2.4GHz/10-core/25MB/8GT-s OPIV90W, DDR4-2133) Cache Memory 25MB (1x25MB) Level 3 cache Memory 32GB (2x 16GB) 2400MT/s (DDR4-2400) Registered DIMMs at 1.2V NOTE: Total of 16 DIMM slots. Network Controller HPE FlexFabric 10Gb 2-port 536FLB FlexibleLOM Storage Controller HPE Smart Array P244br Controller with RAID 0,1 Hard Drive None ship standard Supports up to two (2) HPE hot-plug SFF SAS/SATA/SDD drives NOTE: NVMe SSDs not available on this model. Internal Storage SAS: 2.0TB, SATA: 2.0TB; SAS SSD: 3.84TB, SATA SSD: 3.84TB Optical Drive Bay None Expansion Slots 2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards. Management HPE iLO Management (standard) Optional: HPE OneView or HPE Insight Control Form Factor Up to eight (8) half-height blades supported in the HPE BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HPE BladeSystem c7000 Enclosure Warranty Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.
--	---

HPE ProLiant BL460c Gen9 ES-2650v4 2P 64GB-R Server 813195-B21	Processor(s) (2) Intel® Xeon® ES-2650 v4 (2.2GHz/12-core/30MB/9.6GT-s OPIV90W, DDR4-2400) Cache Memory 30MB (1x30MB) Level 3 cache Memory 64GB (4x 16GB) 2400MT/s (DDR4-2400) Registered DIMMs at 1.2V NOTE: Total of 16 DIMM slots. Network Controller HPE FlexFabric 10Gb 2-port 536FLB FlexibleLOM Storage Controller HPE Smart Array P244br Controller with RAID 0,1 Hard Drive None ship standard Supports up to two (2) HPE hot-plug SFF SAS/SATA/SDD drives NOTE: NVMe SSDs not available on this model. Internal Storage SAS: 2.0TB, SATA: 2.0TB; SAS SSD: 3.84TB, SATA SSD: 3.84TB Optical Drive Bay None Expansion Slots 2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards. Management HPE iLO Management (standard) Optional: HPE OneView or HPE Insight Control Form Factor Up to eight (8) half-height blades supported in the HPE BladeSystem c3000 Enclosure
--	---

Models

Enclosure	Up to sixteen (16) half-height blades supported in HPE BladeSystem c7000 Enclosure
Warranty	Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.

HPE ProLiant BL460c Gen9 ES-2660v4 2P 128GB-R Server 813196-B21	Processor(s) (2) Intel® Xeon® ES-2660 v4 (2.0GHz/14-core/35MB/9.6GT-s OPIV105W, DDR4-2400) Cache Memory 35MB (1x35MB) Level 3 cache Memory 128GB (4x 32GB) 2400MT/s (DDR4-2400) Registered DIMMs at 1.2V NOTE: Total of 16 DIMM slots. Network Controller HPE FlexFabric 20Gb 2-port 650FLB FlexibleLOM Storage Controller HPE Smart Array P244br Controller with RAID 0,1 Hard Drive None ship standard Supports up to two (2) HPE hot-plug SFF SAS/SATA/SDD drives NOTE: NVMe SSDs not available on this model. Internal Storage SAS: 2.0TB, SATA: 2.0TB; SAS SSD: 3.84TB, SATA SSD: 3.84TB Optical Drive Bay None Expansion Slots 2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards. Management HPE iLO Management (standard) Optional: HPE OneView or HPE Insight Control Form Factor Up to eight (8) half-height blades supported in the HPE BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HPE BladeSystem c7000 Enclosure Warranty Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.
---	---

HPE ProLiant BL460c Gen9 ES-2680v4 2P 256GB-R Server 813197-B21	Processor(s) (2) Intel® Xeon® ES-2680 v4 (2.4GHz/14-core/35MB/9.6GT-s OPIV120W, DDR4-2400) Cache Memory 35MB (1x35MB) Level 3 cache Memory 256GB (8x 32GB) 2400MT/s (DDR4-2400) Registered DIMMs at 1.2V NOTE: Total of 16 DIMM slots. Network Controller HPE FlexFabric 20Gb 2-port 650FLB FlexibleLOM Storage Controller HPE Smart Array P244br Controller with RAID 0,1 Hard Drive None ship standard Supports up to two (2) HPE hot-plug SFF SAS/SATA/SDD drives NOTE: NVMe SSDs not available on this model. Internal Storage SAS: 2.0TB, SATA: 2.0TB; SAS SSD: 3.84TB, SATA SSD: 3.84TB Optical Drive Bay None Expansion Slots 2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards. Management HPE iLO Management (standard) Optional: HPE OneView or HPE Insight Control Form Factor Up to eight (8) half-height blades supported in the HPE BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HPE BladeSystem c7000 Enclosure
---	---

Models

Warranty	Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.
----------	--

ES-2600 v3 series Processors

NOTE: Optional HPE OneView or HPE Insight Control

HPE ProLiant BL460c Gen9 ES-2609v3 1P 16GB-R H244br Entry Server 727026-B21	Processor(s) (1) Intel® Xeon® ES-2609 v3 (1.9GHz/6-core/15MB/8.6GT-s OPIV85W, DDR4-1600) Cache Memory 15MB (1x15MB) Level 3 cache Memory 16GB (2x 8GB) PC4-2133P-R (DDR4-2133) Registered DIMMs at 1.2V NOTE: Total of 16 DIMM slots. Only eight (8) usable with single processor. Network Controller HPE FlexFabric 10Gb 2-port 536FLB FlexibleLOM Storage Controller HPE Smart HBA H244br Controller with RAID 0,1 Hard Drive None ship standard Supports up to two (2) HPE hot-plug SFF SAS/SATA/SDD drives NOTE: NVMe SSDs not available on this model. Internal Storage SAS: 2.0TB, SATA: 2.0TB; SAS SSD: 3.84TB, SATA SSD: 3.84TB Optical Drive Bay None Expansion Slots 2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards. Management HPE iLO Management (standard) Optional: HPE OneView or HPE Insight Control Form Factor Up to eight (8) half-height blades supported in the HPE BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HPE BladeSystem c7000 Enclosure Warranty Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.
---	---

HPE ProLiant BL460c Gen9 ES-2620v3 1P 16GB-R H244br Entry Server 727027-B21	Processor(s) (1) Intel® Xeon® ES-2620 v3 (2.4GHz/6-core/15MB/8.6GT-s OPIV85W, DDR4-1866, HT, Turbo2) Cache Memory 15MB (1x15MB) Level 3 cache Memory 16GB (2x 8GB) PC4-2133P-R (DDR4-2133) Registered DIMMs at 1.2V NOTE: Total of 16 DIMM slots. Only eight (8) usable with single processor. Network Controller HPE FlexFabric 10Gb 2-port 536FLB FlexibleLOM Storage Controller HPE Smart HBA H244br Controller with RAID 0,1 Hard Drive None ship standard Supports up to two (2) HPE hot-plug SFF SAS/SATA/SDD drives NOTE: NVMe SSDs not available on this model. Internal Storage SAS: 2.0TB, SATA: 2.0TB; SAS SSD: 3.84TB, SATA SSD: 3.84TB Optical Drive Bay None Expansion Slots 2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards. Management HPE iLO Management (standard) Optional: HPE OneView or HPE Insight Control Form Factor Up to eight (8) half-height blades supported in the HPE BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HPE BladeSystem c7000 Enclosure
---	---

Models

Warranty	Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.
----------	--

HPE ProLiant BL460c Gen9 ES-2640v3 1P 32GB-R P244br Base Server 727028-B21	Processor(s) (1) Intel® Xeon® ES-2640 v3 (2.6GHz/8-core/20MB/8.6GT-s OPIV95W, DDR4-1866, HT, Turbo2) Cache Memory 20MB (1x20MB) Level 3 cache Memory 32GB (2x 16GB) PC4-2133P-R (DDR4-1866) Registered DIMMs at 1.2V NOTE: Total of 16 DIMM slots. Only eight (8) usable with single processor. Network Controller HPE FlexFabric 10Gb 2-port 536FLB FlexibleLOM Storage Controller HPE Smart Array P244br Controller with 1GB FBWC RAID 0,1 Hard Drive None ship standard Supports up to two (2) HPE hot-plug SFF SAS/SATA/SDD drives NOTE: NVMe SSDs not available on this model. Internal Storage SAS: 2.0TB, SATA: 2.0TB; SAS SSD: 3.84TB, SATA SSD: 3.84TB Optical Drive Bay None Expansion Slots 2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards. Management HPE iLO Management (standard) Optional: HPE OneView or HPE Insight Control Form Factor Up to eight (8) half-height blades supported in the HPE BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HPE BladeSystem c7000 Enclosure Warranty Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.
--	---

HPE ProLiant BL460c Gen9 ES-2650v3 1P 32GB-R P244br Base Server 727029-B21	Processor(s) (1) Intel® Xeon® ES-2650 v3 (2.3GHz/10-core/25MB/9.6GT-s OPIV105W, DDR4-2133, HT, Turbo2) Cache Memory 25MB (1x25MB) Level 3 cache Memory 32GB (2x 16GB) PC4-2133P-R (DDR4-2133) Registered DIMMs at 1.2V NOTE: Total of 16 DIMM slots. Only eight (8) usable with single processor. Network Controller HPE FlexFabric 10Gb 2-port 536FLB FlexibleLOM Storage Controller HPE Smart Array P244br Controller with 1GB FBWC RAID 0,1 Hard Drive None ship standard Supports up to two (2) HPE hot-plug SFF SAS/SATA/SDD drives NOTE: NVMe SSDs not available on this model. Internal Storage SAS: 2.0TB, SATA: 2.0TB; SAS SSD: 3.84TB, SATA SSD: 3.84TB Optical Drive Bay None Expansion Slots 2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards. Management HPE iLO Management (standard) Optional: HPE OneView or HPE Insight Control Form Factor Up to eight (8) half-height blades supported in the HPE BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HPE BladeSystem c7000 Enclosure Warranty Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.
--	---

000103

HSPHC

Handwritten signature and date: 11/11/2014

Models table for HPE ProLiant BL460c Gen9 Server Blade. Columns include Processor(s), Cache Memory, Memory, Network Controller, Storage Controller, Hard Drive, Internal Storage, Optical Drive Bay, Expansion Slots, Management, Form Factor, and Warranty.

Models table for HPE ProLiant BL460c Gen9 Server Blade. Columns include Processor(s), Cache Memory, Memory, Network Controller, Storage Controller, Hard Drive, Internal Storage, Optical Drive Bay, Expansion Slots, Management, Form Factor, and Warranty.

Configuration Information - Factory Integrated Models

NOTE: This section lists some of the status required to configure a Factory Integrated Model (configure-to-order or CTO server). To ensure only valid configurations are ordered, Hewlett-Packard Enterprise recommends the use of an Hewlett-Packard Enterprise approved configurator. Contact your local sales representative for information on CTO product offerings and requirements.

Step 1: Base Server Blade Configuration (Select a configurable blade)

Models table for Step 1: Base Server Blade Configuration. Columns include Models, HPE ProLiant BL460c Gen9 ES-v3 10Gb/20Gb FlexibleLOM Configure-to-order Blade Server, HPE ProLiant BL460c Gen9 ES-v4 10Gb/20Gb FlexibleLOM Configure-to-order Blade Server, and Configurable Models ship with.

Step 2: Choose Required Options (one of the following from each list unless otherwise noted)

HPE Processors table for Step 2: Choose Required Options. Lists various processor models like HPE BL460c Gen9 Intel® Xeon® ES-2690v4, HPE BL460c Gen9 Intel® Xeon® ES-2683v4, etc., with their respective part numbers.

Configuration Information - Factory Integrated Models

Models table for Configuration Information - Factory Integrated Models. Lists various HPE BL460c Gen9 Intel® Xeon® processor models and their part numbers, including v3 and v4 series processors.

Configuration Information - Factory Integrated Models

Models table for Configuration Information - Factory Integrated Models. Lists various HPE BL460c Gen9 Intel® Xeon® processor models and their part numbers, including v3 and v4 series processors, and HPE Smart Memory options.

Configuration Information - Factory Integrated Models

Registered DIMMs (RDIMMs) - E5-2600 v3 series Processors
HP 8GB (1x8GB) Dual Rank x8 DDR4-2133 CAS-15-15-15 Registered Memory Kit 759034-B21
HP 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit 726718-B21
HP 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit 726719-B21
HP 32GB (1x32GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit 728629-B21
Load Reduced DIMMs (LRDIMMs) - E5-2600 v3 series Processors
HP 32GB (1x32GB) Quad Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit 726722-B21
HP 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit 726720-B21
HP 8GB (1x8GB) Quad Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit 726724-B21

NOTE: For more information on ProLiant Energy Efficient Features, see: http://h18000.www1.hp.com/products/servers/platforms/energyefficient/bridge.html

HPE Networking FlexibleLOM Adapters
NOTE: The server requires one (1) FlexibleLOM that is installed in the FlexibleLOM connectors. All FlexibleLOMs are dual port. One port is required to Interconnect module bay 1 and the other to bay 2.
20Gb FlexibleLOM Adapters
HPE FlexFabric 20Gb 2-port 630FLB FIO Adapter 700066-B21
HPE FlexFabric 20Gb 2-port 650FLB FIO Adapter 700764-B21
10Gb FlexibleLOM Adapters
HPE FlexFabric 10Gb 2-port S36FLB FIO Adapter 766493-B21
HPE Ethernet 10Gb 2-port S60FLB FIO Adapter 684214-B21
NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://www.hp.com/go/ProLiantNICs

Step 3: Choose Additional Factory Integration Options

HPE Insight Software HPE Insight Control including 3yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO LTU C6N36A
HPE OneView with iLO Advanced - Server hardware required on same purchase order
HPE OneView including 3yr 24x7 Support Flexible Quantity E-LTU E5Y35AAE
HPE OneView for Blade Server including 3yr 24x7 Support FIO Bundle Physical 1-server LTU F6089A
HPE Storage Controllers HP Smart Array P244br/1GB FBWC 12Gb 2-ports Int FIO SAS Controller 761871-B21
HP Smart Array P244br/1GB FBWC 12Gb 4-ports Int FIO SAS Controller 749975-B21
HPE Smart Array P741m/2GB FBWC 12Gb 4-ports Ext Mezzanine SAS Controller 726782-B21
HP H244br 12Gb 2-ports Int FIO Smart Host Bus Adapter 761878-B21
HP FIO Enable Smart Array B140c Setting 784308-B21
HPE BL460c G9 Broadwell NVMe FIO Setting 825555-B21
NOTE: The HPE Gen9 Broadwell NVMe FIO Setting (825555-B21) is required to support SFF NVMe SSDs within the system. This option is not compatible with the HPE Smart Array P244br, HPE Smart Array P244br, or HPE Smart HBA H244br. Hewlett Packard Enterprise recommends the use of a dual M.2 solid state drive kit for boot when using this

Configuration Information - Factory Integrated Models

NOTE: The HPE Smart Array P244br Controller (chipset SATA) comes standard with the HPE BL460c Gen9 10Gb/20Gb FLB CLT O Blade (727203-B21). If neither the HPE Smart Array P244br nor the HPE H244br controllers are chosen, a SATA cable will be provided to support SATA devices for the two internal drives. If RAID is required when using the BL460c, please choose HPE FIO RAID Enable Kit - BIOS Series (784308-B21). NOTE: The HPE Smart Array P244br controller is only required when using a PCI expansion blade or D2Z2usb storage blade with the BL460c Gen9.

Step 4: Choose Additional Options for Factory Integration

- NOTE: For additional options, please refer to the "Core Options" and "Additional Options" section below. For additional options, including server blade enclosures interconnect, mezzanine options and power subsystem options, please see the Core Options and Additional sections below for the following:
HPE BladeSystem c3000 Enclosure QuickSpecs: https://www.hp.com/h10195/v2/GetPDF.aspx/c04128310.pdf
NOTE: The c3000 HPE c-Class enclosures have full backwards and forwards compatibility, existing server blades are supported in the new enclosures and any future server blades will be supported in the existing enclosures.
HPE BladeSystem c7000 Enclosure QuickSpecs: https://www.hp.com/h20195/v2/GetPDF.aspx/c04128339.pdf
NOTE: The c7000 HPE c-Class enclosures have full backwards and forwards compatibility, existing server blades are supported in the new enclosures and any future server blades will be supported in the existing enclosures.
HPE BladeSystem c-Class Interconnect and Mezzanine Components: http://h18000.www1.hp.com/products/blade/components/class-interconnects.html and http://h18000.www1.hp.com/products/blade/components/class-adapters.html

NOTE: For optimal cooling and system performance the BL460c Gen9 Server Blade requires the c7000 enclosure to be configured with 10 fans and the c3000 enclosure to be configured with 6 fans.

Core Options

HPE Networking NOTE: A 10 Gbps Ethernet adapter supports linking at 10Gbps or 100Gbps when configured to an interconnect module with 10Gb Ethernet downlinks.
NOTE: A 10 Gbps Ethernet adapter supports linking at only 1Gbps when connected to an interconnect module with 1Gb Ethernet downlinks.
NOTE: The 10 Gbps Ethernet adapters on each server blade connect to a 10Gb interconnect in bays 3-6 (HPE BladeSystem c7000 enclosure) or bays 2-4 (HPE BladeSystem c3000 enclosure).
20 Gigabit Ethernet Mezzanine Cards
HPE FlexFabric 20Gb 2-port 630M Adapter 700076-B21
NOTE: Please see QuickSpecs for technical specifications and additional information at https://www.hp.com/h20195/v2/GetDocument.aspx?docname=c04312720
HPE FlexFabric 20Gb 2-port 650M Adapter 700767-B21
NOTE: Please see QuickSpecs for technical specifications and additional information at https://www.hp.com/h20195/v2/GetDocument.aspx?docname=c04312744
10 Gigabit Ethernet Mezzanine Cards
HPE FlexFabric 10Gb 2-port 534M Adapter 700748-B21
NOTE: Please see QuickSpecs for technical specifications and additional information at: http://www.hp.com/go/en/products/iss-adapters/product-detail.html?old=5404549
HPE Ethernet 10Gb 2-port S60M Adapter 665246-B21
NOTE: Please see QuickSpecs for technical specifications and additional information at: https://www.hp.com/h20195/v2/GetPDF.aspx/c0411496.pdf
1 Gigabit Ethernet Mezzanine Cards
HPE Ethernet 1Gb 4-port 366M Adapter 615729-B21
NOTE: Please see QuickSpecs for technical specifications and additional information at: https://www.hp.com/h20195/v2/GetPDF.aspx/c0411455.pdf?ver=1Q
FlexibleLOM Adapters
NOTE: The server supports one (1) FlexibleLOM that is installed in the FlexibleLOM connectors and is already included in the pre-configured models. However, it must be added in Step 2 for Configure-to-Order Models. The FlexibleLOM options below are used to change these original FlexibleLOMs.
20Gb FlexibleLOM Adapters
HPE FlexFabric 20Gb 2-port 630FLB Adapter 700066-B21
NOTE: Please see QuickSpecs for technical specifications and additional information at https://www.hp.com/h20195/v2/GetDocument.aspx?docname=c04312720
HPE FlexFabric 20Gb 2-port 650FLB Adapter 700763-B21
NOTE: Please see QuickSpecs for technical specifications and additional information at https://www.hp.com/h20195/v2/GetDocument.aspx?docname=c04312744
10Gb FlexibleLOM Adapters
HPE FlexFabric 10Gb 2-port S36FLB Adapter 766490-B21
NOTE: Please see QuickSpecs for technical specifications and additional information at https://www.hp.com/h20195/v2/GetDocument.aspx?docname=c04312744
HPE Ethernet 10Gb 2-port S60FLB Adapter 655639-B21

Core Options

NOTE: Please see QuickSpecs for technical specifications and additional information at https://www.hp.com/h20195/v2/GetPDF.aspx/c04114516.pdf
HPE InfiniBand Mezzanine Adapters
NOTE: When an InfiniBand adapter is installed in mezzanine slot 1, only one port is active (regardless of operating mode). When installed in mezzanine slot 2, both ports are active.
NOTE: InfiniBand QDR and FDR speeds are only supported on the HPE BladeSystem c7000 enclosure. For additional information, please see the HPE BladeSystem c7000 Enclosure and InfiniBand QuickSpecs at: https://www.hp.com/h20195/v2/GetPDF.aspx/c04128339.pdf
https://www.hp.com/h20195/v2/GetPDF.aspx/c04116944.pdf?ver=24
HPE InfiniBand QDR/Ethernet 10Gb 2-port S44+M Adapter 764282-B21
NOTE: The QDR InfiniBand adapter may be installed in either mezzanine slot of the server.
HPE InfiniBand FDR/Ethernet 10Gb/40Gb 2-port S44+M Adapter 764283-B21
NOTE: The FDR InfiniBand adapter must be installed in mezzanine slot 1 for FDR mode and may be installed in either mezzanine slot if operated in any other mode.
HP InfiniBand FDR 2-port S45M Adapter 702213-B21
HPE Fibre Channel HPE LPE1605 16Gb Fibre Channel HBA for BladeSystem c-Class 718203-B21
NOTE: Please see QuickSpecs for technical specifications and additional information at https://www.hp.com/h20195/v2/GetPDF.aspx/c041145132.pdf?ver=2
HPE QM-2672 16Gb Fibre Channel Host Bus Adapter 710608-B21
NOTE: Please see QuickSpecs for technical specifications and additional information at https://www.hp.com/h20195/v2/GetDocument.aspx?docname=c04312782
HPE LPE1205A 8Gb Fibre Channel Host Bus Adapter for BladeSystem c-Class 659818-B21
NOTE: Please see QuickSpecs for technical specifications and additional information at https://www.hp.com/h20195/v2/GetDocument.aspx?docname=c04312733
HPE QM12572 8Gb Fibre Channel Host Bus Adapter for BladeSystem c-Class 651281-B21
NOTE: Please see QuickSpecs for technical specifications and additional information at https://www.hp.com/h20195/v2/GetDocument.aspx?docname=c04126040
HPE Processors E5-2600 v4 series Processors
HPE BL460c Gen9 Intel® Xeon® E5-2690v4 (2.8GHz/14-core/35MB/135W) Processor Kit 819852-B21
HPE BL460c Gen9 Intel® Xeon® E5-2683v4 (2.4GHz/16-core/40MB/120W) Processor Kit 819851-B21
HPE BL460c Gen9 Intel® Xeon® E5-2680v4 (2.4GHz/14-core/35MB/120W) Processor Kit 819842-B21
HPE BL460c Gen9 Intel® Xeon® E5-2660v4 (2.0GHz/14-core/35MB/105W) Processor Kit 819841-B21
HPE BL460c Gen9 Intel® Xeon® E5-2650v4 (1.7GHz/17-core/30MB/105W) Processor Kit 819840-B21
HPE BL460c Gen9 Intel® Xeon® E5-2650L v4 (1.7GHz/14-core/35MB/65W) Processor Kit 819839-B21
HPE BL460c Gen9 Intel® Xeon® E5-2640v4 (2.1GHz/10-core/25MB/90W) Processor Kit 819838-B21
HPE BL460c Gen9 Intel® Xeon® E5-2630v4 (2.2GHz/10-core/25MB/85W) Processor Kit 819845-B21
HPE BL460c Gen9 Intel® Xeon® E5-2630L v4 (1.8GHz/10-core/25MB/65W) Processor Kit 819846-B21
HPE BL460c Gen9 Intel® Xeon® E5-2623v4 (2.6GHz/4-core/20MB/85W) Processor Kit 819844-B21
HPE BL460c Gen9 Intel® Xeon® E5-2620v4 (2.1GHz/8-core/20MB/85W) Processor Kit 819838-B21
HPE BL460c Gen9 Intel® Xeon® E5-2609v4 (1.7GHz/8-core/20MB/85W) Processor Kit 819837-B21
HPE BL460c Gen9 Intel® Xeon® E5-2603v4 (1.7GHz/6-core/15MB/85W) Processor Kit 819843-B21
HPE BL460c Gen9 Intel® Xeon® E5-2695v4 (2.2GHz/22-core/55MB/145W) Processor Kit 819856-B21

Handwritten numbers and stamps at the bottom of the page.

Core Options

Table listing various Intel Xeon processor options for the HPE ProLiant BL460c Gen9 Server Blade, including model numbers and processor kit details.

NOTE: All processors within the server must be identical. NOTE: DIMM slots 4 and 5 are not accessible when the ES-2609 v4, ES-2697 v4, ES-2697A v4, ES-2697 v4, ES-2643 v4, ES-2637 v4, ES-2699 v3, the ES-2697 v3, the ES-2643 v3, the ES-2637 v3, or the ES-2667 v3 is used. In a 2-processor configuration, there are 16 total available DIMM slots. NOTE: For the maximum supported memory speeds for each processor listed above, please reference the Memory Speeds by Processor Model table in the Memory section of the QuickSpecs. NOTE: All processors support Intel® Hyper-Threading and Intel® Turbo Boost Technologies (except the ES-2609 v4, ES-2603 v4, ES-2603 v3 and ES-2609 v3. NOTE: DDR4 is used as the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed. NOTE: Supports 1 or 2 processors. Mixing different processor models is not supported. NOTE: For the Intel® C410 Chipset ES-2600 v3 and v4 Series, the letter preceding the model number indicates the Product Line (E3, E5, E7), 2600A, 2 = number of CPUs in a Node, 0 = socket/register designation, 00 = Processor SKU, and a = L for low power SKUs. NOTE: The BL460c Gen9 includes two I/O mezzanine expansion slots. A processor must be installed in processor slot 1 for access to the first mezzanine expansion slot (expansion slot 1). A processor must be installed in processor slot 2 for access to the second.

Core Options

mezzanine expansion slot (expansion slot 2). NOTE: The letter "L" following the model number indicates lower wattage.

HPE Memory

NOTE: HPE memory from previous generation servers (DDR3) is not compatible with this server. HPE SmartMemory is required to realize the necessary performance improvements and enhanced functionality listed in this document for Gen9. For additional information, please see the HPE SmartMemory QuickSpecs at https://www.hpe.com/... NOTE: LRDIMM and RDIMM are distinct memory technologies and cannot be mixed within a server. NOTE: L2/L3B DIMMs cannot be mixed with other DIMM capacities within the server. NOTE: Depending on the memory configuration and processor installed, the memory speed may run at 1400MT/s, 2133MT/s, 1866MT/s, or 1600MT/s. Please see the Memory Population Table or the Online Memory Configuration Tool at: https://h21219.www2.hpe.com/.../DR/.../Home/LEGAL

HPE SmartMemory

Table listing HPE SmartMemory configurations, including Registered DIMMs (RDIMMs) and Load Reduced DIMMs (LRDIMMs) for various processor models and memory capacities.

HPE Hard Drives

NOTE: The ProLiant BL460c Gen9 server includes the HPE hot-plug small form factor (SFF) SmartDrive carrier for enhanced management and reduced installation errors. HPE drives from generation G7 servers and before are not compatible with the BL460c Gen9 drive bays. NOTE: The mixing of standard SAS drives with SAS SSD is supported within the server, but limits the RAID configuration to two separate RAID volumes. Mixing of other drives types is not supported. NOTE: HPE hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details. NOTE: The hard drive options are not required when configuring a drive-less model.

Core Options

Table listing various storage options for the HPE ProLiant BL460c Gen9 Server Blade, including SATA and SAS configurations with different capacities and performance levels.

Core Options

Table listing various storage options for the HPE ProLiant BL460c Gen9 Server Blade, including SAS and SATA configurations with different capacities and performance levels.

Core Options

SAS Hot Plug with SmartDrive SFF (2.5-inch) Enterprise Drives	
HPE 300GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Why HDD	759208-B21
HPE 300GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Why Digitally Signed Firmware HDD	670753-B21
HPE 450GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Why HDD	759210-B21
HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Why HDD	759212-B21
HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Why Digitally Signed Firmware HDD	670757-B21
HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Why 512e Digitally Signed Firmware HDD	670763-B21
HPE 900GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Why Digitally Signed Firmware HDD	670759-B21
HPE 900GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Why 512e Digitally Signed Firmware HDD	670765-B21

NOTE: The mixing of standard SAS drives with SAS SSD is supported within the server, but limits the RAID configuration to two separate RAID 0 volumes. Mixing of other drives types is not supported.

Additional Options

HPE Insight software	HPE Insight Control	
	HPE Insight Control Including 1yr 24x7 Technical Support and Updates 1-server LTU	C6N27A
	NOTE: HPE Insight Management Media Kit contains DVDs without licenses. Contains HPE Systems Insight Manager, HPE Insight Control, HPE Matrix Operating Environment, and Virtual Connect Enterprise Manager software. Uses an integrated installer to perform quick and accurate software installation and updates.	
	NOTE: Electronic and Flexible Quantity licenses can be used to purchase multiple licenses with a single activation key.	
	NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HPE Software Technical Support Service.	
	NOTE: Licenses ship without media. The HPE Insight Management Media Kit can be ordered separately, or can be downloaded at https://h20392.www2.hp.com/portal/swdriveportal/displayProductInfo.do?productNumber=IMDVD	
	NOTE: For additional license kits, please see the QuickSpecs at: https://www.hp.com/h20195/v1/GetHTML.aspx?docname=c041213391	

HPE iLO Advanced License	HPE Integrated Lights-Out (iLO) Advanced for ProLiant BladeSystem Remote Management	
	HPE iLO Advanced for BladeSystem including 3yr 24x7 Technical Support and Updates E-LTU	E6U63ABE
	HPE iLO Advanced for BladeSystem including 3yr 24x7 Tech Support and Updates 1-server LTU	BD502A
	HPE iLO Advanced for BladeSystem including 3yr 24x7 Technical Support and Updates E-LTU	E6U60ABE
	HPE iLO Advanced for BladeSystem including 3yr 24x7 Support 1-server LTU	512488-B21
	NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one or three years of 24 x 7 HPE Software Technical Support Service.	
	NOTE: For additional license kits, including electronic delivery options, please see the iLO QuickSpecs at https://www.hp.com/us/en/server/infrastructure/lights-out-ilo.html	
	NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one or three years of 24 x 7 HPE Software Technical Support Service.	
	NOTE: For additional license kits, please see the QuickSpecs at http://h20566.www2.hp.com/hpsc/doc/public/display?docId=c04951959	

Converged Infrastructure Management Software	HPE OneView	
	HPE OneView with iLO Advanced	
	HPE OneView including 3yr 24x7 Support Physical 1-server LTU	ESY34A
	HPE OneView including 3yr 24x7 Support Flexible Quantity E-LTU	ESY35AAE
	HPE OneView Physical Media Kit LTU	ESY37A
	HPE OneView w/o iLO including 3yr 24x7 Support 1-server LTU	P8B24AE
	HPE OneView w/o iLO including 3yr 24x7 Support Flexible Quantity E-LTU	P8B26AAE
	HPE OneView w/o iLO including 3yr 24x7 Support 1-server FIO LTU	P8B31A

Additional Options

NOTE: For additional license kits please see the QuickSpecs at <http://h20566.www2.hp.com/hpsc/doc/public/display?docId=c04951959>

High Performance	HPE Cluster Management Utility	
	HPE Insight Cluster Management Utility 1yr 24x7 Flexible LTU	QL803B
	HPE Insight Cluster Management Utility 3yr 24x7 Flexible LTU	BD476A
	NOTE: These part numbers can be used to purchase one certificate for multiple licenses and support with a single activation key. Each license is for one node (server). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key. Customer also will receive a support agreement.	
	HPE Insight Cluster Management Utility Media	BD477A
	NOTE: For additional license kits please see the QuickSpecs at https://www.hp.com/h20195/v1/GetDocument.aspx?docname=c04111735	

HPE Security	HPE Trusted Platform Module Option	488069-B21
	HPE Trusted Platform Module 2.0 Kit	745823-B21
	NOTE: The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server 2008 R2 and 2012. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 R2 and 2012 has not been tampered with while the system was offline.	
	NOTE: For more information about TPM, including a white paper, go to https://www.hp.com/h20195/v1/GetPDF.aspx/c04128339.pdf	
	NOTE: ProLiant OS pre-installed units will come with the certification required for TPM deployment.	
	NOTE: The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.	

HPE Storage Controllers	HPE Smart Array P244br/1GB FBWC 12Gb 2-ports Int SAS Controller	749680-4
	HPE H244br 12Gb 2-ports Int Smart Host Bus Adapter	726809-9
	HPE Smart Array P244br/1GB FBWC 12Gb 4-ports Int SAS Controller	726793-B21
	HPE BL460c G9 Broadwell NVMe FIO Setting	825555-B21
	NOTE: The HPE Gen9 Broadwell NVMe FIO Setting (825555-521) is required to support SFF NVMe SSDs within the system. This option is not compatible with the HPE Smart Array P244br, HPE Smart Array P754br, or HPE Smart HBA H244br. HPE recommends recommending the use of a dual M.2 solid state drive kit for boot when using this option.	
	NOTE: The HPE Smart Array B140i Controller (chipset SATA) comes standard with the HPE BL460c Gen9 10Gb/20Gb FLB CTO Blade (777021-B21). If neither the HPE Smart Array P244br nor the HPE H244br controllers are chosen, a SATA cable will be provided to support SATA devices for the two internal drives. If RAID is required when using the B140i, please choose HPE P81340e RAID Enable Kit - BIOS Setting (794309-B21)	
	NOTE: The HPE Smart Array P244br controller is only required when using a PCI expansion blade or D12206b storage blade with the BL460c Gen9.	

HPE Secure	HPE Secure Encryption per Svr Entitlement	C9A82AAE
------------	---	----------

Additional Options

Encryption	NOTE: HPE Secure Encryption is supported on the HPE Smart Array P244br and H244br (running in RAID mode) as an option. HPE Secure Encryption licensing is based on the number of physical drives requiring encryption.	
	NOTE: For more information about HPE Secure Encryption, go to http://www6.hp.com/us/en/products/server-software/product-detail.html?oid=6537260	

HPE InfiniBand Mezzanine Adapters	NOTE: When an InfiniBand adapter is installed in mezzanine slot 1, only one port is active (regardless of operating mode). When installed in any other mezzanine slot, both ports are active.	
	NOTE: InfiniBand ODR and FDR speeds are only supported on the HPE BladeSystem C7000 Enclosure. For additional information, please see the HPE BladeSystem C7000 Enclosure and InfiniBand QuickSpecs at: https://www.hp.com/h20195/v1/GetPDF.aspx/c04128339.pdf	
	https://www.hp.com/h20195/v1/GetPDF.aspx/c04126044.pdf?vers=26	
	HPE InfiniBand ODR/Ethernet 10Gb 2-port S44+M Adapter	764282-B21
	NOTE: The ODR InfiniBand adapter may be installed in any mezzanine slot of the server.	
	HPE InfiniBand FDR/Ethernet 10Gb/40Gb 2-port S44+M Adapter	764283-B21
	NOTE: The FDR InfiniBand adapter must be installed in mezzanine slot 1 for FDR mode and may be installed in any mezzanine slot if operated in any other mode.	
	HP InfiniBand FDR 2-port S45M Adapter	702213-B21

HPE Flash Media Kits for USB Drives	HPE Flash Media Kits for USB Drives	
	HPE Enterprise Mainstream Flash Media Kits for Memory Cards	
	HPE 8GB USB Enterprise Mainstream Flash Media Drive Key Kit	737953-B21
	HPE 8GB microSD Enterprise Mainstream Flash Media Kit	726116-B21
	HPE 32GB microSD Mainstream Flash Media Kit	700139-B21
	HPE Dual 8GB microSD Enterprise Midline USB Kit	741279-B21

HPE Care Pack Services	Proactive Care Services	
	HPE 3 year Proactive Care 24x7 BL4xxc Gen9 Service	U78N8E
	HPE 3 year Proactive Care 24x7 with DMR BL4xxc Gen9 Service	U78N9E
	HPE 3 year Proactive Care Advanced 24x7 BL4xxc Gen9 Service	U78T6E
	HPE 3 year Proactive Care Advanced 24x7 with DMR BL4xxc Gen9 Service	U7CF8E

Installation Services	HPE Install c-Class Server Blade Service	UE493E
	NOTE: Additional HPE Pointnext operational services can be found at http://www6.hp.com/us/en/business-services/it-services.html?compURI=077422E-V9HL_RKKG	

000105

Memory

For detailed memory configuration rules and guidelines, please use the Online DDR4 Memory Configuration Tool: <https://h272195.www2.hp.com/DDR4memoryconf/Home/LEGAL>

Memory Subsystem Architecture

Each Intel® Xeon® E5-2600 v3 family or Intel® Xeon® E5-2600 v3 family processor socket contains four memory channels that support two DIMMs each for a total of eight (8) DIMM per installed processor or a grand total of sixteen (16) DIMMs for the server. Up to 64GB capacity DIMMs are supported for 1TB of memory (16 DIMM slots x 64GB per DIMM).

Memory Population Rules and Guidelines:

- A minimum of one DIMM is required per processor.
- Install DIMMs only if the corresponding processor is installed.
- If only one processor is installed in a two processor system, only half of the DIMM slots are available.
- DIMM sizes can be mixed in channel. To maximize performance, it is recommended to balance the total memory capacity between all installed processors and to load the channels similarly whenever possible.
- LRDIMM and RDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen9 servers support RDIMM and LRDIMM.
- DIMMs of different speeds may be mixed in any order; the server will select a common optimal speed.
- The maximum memory speed is a function of the memory type, memory configuration, and processor model.
- The maximum memory capacity is a function of the memory type and number of installed processors.
- HPE memory from previous generation servers is not compatible with the BL460c Gen9 Server Blade.
- To realize the performance memory capabilities listed in this document, HPE SmartMemory is required. For additional information, please see the HPE SmartMemory QuickSpecs at: <https://www.hp.com/h20135/v2/GetHTML.aspx?docname=c04111535>

Supported Memory Bandwidth on Intel® Xeon® E5-2600 v3 series Processors

DIMM Rank	Register DIMM (RDIMM)				Load Reduced (LRDIMM)			
	Single Rank (1R)		Dual Rank (2R)		Dual Rank (2R)		Quad Rank (4R)	
DIMM Capacity	8GB	16GB	8GB	32GB	16GB	32GB	64GB	
Voltage	Std Voltage 1.2V	Std Voltage 1.2V	Std Voltage 1.2V	Std Voltage 1.2V	Std Voltage 1.2V	Std Voltage 1.2V	Std Voltage 1.2V	
SLOTS THAT CAN BE POPULATED								
12 slot servers	12	12	12	12	12	12	NA	
16 slot servers	16	16	16	16	16	16	16	
MAXIMUM CAPACITY (GB)*								
12 slot servers	96	192	96	384	192	384	NA	
16 slot servers	128	256	128	512	256	512	1024	
POPULATED DIMM SPEED (MT/s)								
1 DIMM Per Channel	2133	2133	2133	2133	2133	2133	2133	
2 DIMM Per Channel	2133	2133	2133	2133	2133	2133	2133	

*Maximum Capacity will vary based on individual server platform qualification schedule

Memory

Memory Speed by E5-2600 v3 Series Processor Model

Processor Models	Supported Memory Speeds
E5-2690 v3, E5-2695 v3, E5-2697 v3, E5-2698 v3, E5-2699 v3, E5-2687W v3, E5-2683 v3, E5-2680 v3, E5-2670 v3, E5-2667 v3, E5-2660 v3, E5-2650 v3, E5-2650L, E5-2643 v3, E5-2637 v3	2133MT/s
E5-2640 v3, E5-2630 v3, E5-2630L v3, E5-2623 v3, E5-2620 v3	1866MT/s
E5-2609 v3, E5-2603 v3	1600MT/s

Standard and Maximum Memory Capacity (Pre-configured Models) for E5-2600 v3 Series

Pre Configured Models	Standard Memory	Maximum Memory Plus Optional Memory	Standard Memory Replaced with Optional Memory
Intel Xeon E5-2670 v3	128GB (4x 32GB)	896GB (4x 32GB + 12x 64GB)	1TB (16x 64GB)
Intel Xeon E5-2660 v3	64GB (4x 16GB)	448GB (4x 16GB + 12x 32GB)	1TB (16x 64GB)
Intel Xeon E5-2650 v3, E5-2640 v3	32GB (2x 16GB)	480GB (2x 16GB + 14x 32GB)	1TB (16x 64GB)
Intel Xeon E5-2620 v3, E5-2609 v3	16GB (2x 8GB)	240GB (2x 8GB + 16x 16GB)	1TB (16x 64GB)

NOTE: Capacity references are rounded to the nearest gigabyte (GB) values.

- 2GB = 2,048MB
- 4GB = 4,096MB
- 8GB = 8,192MB
- 16GB = 16,384MB
- 32GB = 32,768MB

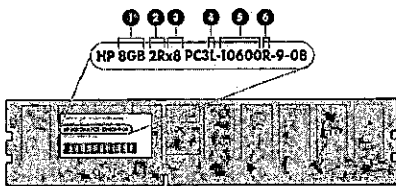
Supported Memory Bandwidth on Intel® Xeon® E5-2600 v4 series Processors

DIMM Rank	Register DIMM (RDIMM)				Load Reduced (LRDIMM)	
	Single Rank (1R)		Dual Rank (2R)		Dual Rank (2R)	Quad Rank (4R)
DIMM Capacity	8GB	16GB	16GB	32GB	32GB	64GB
Voltage	Std Voltage 1.2V	Std Voltage 1.2V	Std Voltage 1.2V	Std Voltage 1.2V	Std Voltage 1.2V	Std Voltage 1.2V
SLOTS THAT CAN BE POPULATED						
12 slot servers	12	12	12	12	12	12
16 slot servers	16	16	16	16	16	16
MAXIMUM CAPACITY (GB)*						
12 slot servers	96	192	192	384	384	768
16 slot servers	128	256	256	512	512	1024
POPULATED DIMM SPEED (MT/s)						
1 DIMM Per Channel	2400	2400	2400	2400	2400	2400
2 DIMM Per Channel	2133	2133	2400	2400	2400	2400

*Maximum Capacity will vary based on individual server platform qualification schedule

Memory

Memory options part number decoder



Item	Description	Definition
1	Capacity	8 GByte 16 GByte 32 GByte
2	Rank	1R = Single-rank 2R = Dual-rank 4R = Quad-rank
3	Data width	x4 = 4-bit x8 = 8-bit
4	Memory generation	DDR4
5	Max. Memory speed	2133MT/s
6	CasLatency	P = 15
6	DIMM type	R = RDIMM (registered) L = LRDIMM (load reduced)

Following are memory options available from Hewlett Packard Enterprise:

HPE Memory NOTE: HPE memory from previous generation servers (DDR3) is not compatible with this server. HPE SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen9. For additional information, please see the HPE SmartMemory QuickSpecs at: <https://www.hp.com/us/en/servers/memory.html>

NOTE: LRDIMM and RDIMM are distinct memory technologies and cannot be mixed within a server.

NOTE: Depending on the memory configuration and processor model, the memory speed may run at 2400MT/s, 2133MT/s, 1866MT/s, or 1600MT/s.

Registered DIMMs (RDIMMs) - E5-2600 v4 series Processors

- HP 8GB (1x8GB) Single Rank x8 DDR4-2400 CAS-17-17-17 Registered Memory Kit 605347-821
- HP 16GB (1x16GB) Single Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit 605349-821

Memory

- HPE 16GB (1x16GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit 836220-821
- HP 32GB (1x32GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit 805351-821
- Load Reduced DIMMs (LRDIMMs) - E5-2600 v4 series Processors
- HPE 32GB (1x32GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Load Reduced Memory Kit 805353-821
- HPE 64GB (1x64GB) Quad Rank x4 DDR4-2400 CAS-17-17-17 Load Reduced Memory Kit 805359-821

Registered DIMMs (RDIMMs)

Registered DIMMs (RDIMMs) - E5-2600 v3 series Processors

- HP 8GB (1x8GB) Dual Rank x8 DDR4-2133 CAS-15-15-15 Registered Memory Kit 759934-821
- HP 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit 726718-821
- HP 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit 726719-821
- HP 32GB (1x32GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit 726829-821
- Load Reduced DIMMs (LRDIMMs) - E5-2600 v3 series Processors
- HP 32GB (1x32GB) Quad Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit 726722-821
- HP 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit 726720-821
- HP 64GB (1x64GB) Quad Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit 726724-821

WARRANTY

Overview

HPE MSA 1040 Storage

The HPE MSA 1040 Storage is designed for entry-level market needs, features 8Gb Fibre Channel, 12 Gb SAS, and 10GbE and 10GbE iSCSI at previously unattainable entry price points. The array allows users to take advantage of the latest storage technologies in simple and efficient ways by providing a good balance between performance and budget resulting in a highly favorable \$/GB return on their investment.

Entry consolidation and virtualization initiatives are now well in your budgetary reach. The MSA 1040 offers many of MSA 2040 features but at more affordable entry price point. ProLiant and BladeSystems administrators as well as IT generalists will find storage management tasks simple and intuitive with MSA.

The MSA 1040 arrays leverage a new 4th-generation MSA architecture with a new processor, 2-host ports and 4GB data cache and 2GB of system memory per controller. Take advantage of the latest hard drive advances by choosing the form factor and technology which best meets your application and budget requirements. Unlike many competing arrays, the MSA 1040 ships standard with intuitive management tools and powerful data services such as Snapshots and Volume Copy for increased data protection. The MSA 1040 now offers a simplified licensing strategy with one optional software suite. The Advanced Data Services Suite include the following software licenses:

- HPE MSA 2042 Performance Automated Tiering LTU
- HPE MSA S12-Snapshot Software LTU
- HPE MSA Remote Snap Software LTU



HPE MSA 1040 Storage (SFF)



HPE MSA 1040 Storage (LFF)



Overview

MSA 1040, shown with 2 controllers installed

- | | |
|------------------------|----------------------------|
| 1. Power supply 1 | 2. Controller Module A |
| 3. Controller Module B | 4. CLI Port (mini USB) |
| 5. CLI Port (mini USB) | 6. Network Management Port |
| 7. Cache Status LED | 8. SAS Expansion Port |
| 9. Power Supply | |

Models

HPE MSA 1040 Storage Models	MSA 1040 Pre-Configured Models	
	HP MSA 1040 2-port Fibre Channel Dual Controller LFF Storage ¹	E7V99A
	HP MSA 1040 2-port Fibre Channel Dual Controller SFF Storage ²	E7W00A
	HP MSA 1040 2-port SAS Dual Controller LFF Storage ³	K2Q90A
	HP MSA 1040 2-port SAS Dual Controller SFF Storage ⁴	K2QB9A
	HP MSA 1040 2-port 1G iSCSI Dual Controller LFF Storage ⁵	E7W01A
	HP MSA 1040 2-port 1G iSCSI Dual Controller SFF Storage ⁶	E7W02A
	HP MSA 1040 2-port 10G iSCSI Dual Controller LFF Storage ⁷	E7W03A
	HP MSA 1040 2-port 10G iSCSI Dual Controller SFF Storage ⁸	E7W04A

NOTE:
¹Includes LFF Array Chassis + two MSA 1040 FC 2-port controllers, SFPs installed, drives not included.
²Includes SFF Array Chassis + two MSA 1040 FC 2-port controllers, SFPs installed, drives not included.
³Includes LFF Array Chassis + two MSA 1040 SAS 2-port controllers, drives not included.
⁴Includes SFF Array Chassis + two MSA 1040 SAS 2-port controllers, drives not included.
⁵Includes LFF Array Chassis + two MSA 1040 1GbE 2-port controllers, SFPs installed, drives not included.
⁶Includes SFF Array Chassis + two MSA 1040 1GbE 2-port controllers, SFPs installed, drives not included.
⁷Includes LFF Array Chassis + two MSA 1040 10GbE 2-port controllers, SFPs installed, drives not included, direct attached copper cables are supported in 10GbE Controller systems.
⁸Includes SFF Array Chassis + two MSA 1040 10GbE 2-port controllers, SFPs installed, drives not included, direct attached copper cables are supported in 10GbE Controller systems.

Smart Buys are pre-discounted SKUs available in participating North and South American countries. Please check with your local authorized partner for availability.

Smart Buy Drive Kits

HP MSA 300GB 12G SAS 10K SFF (2.5in) Dual Port Enterprise 3yr Warranty Hard Drive	J9F445B
HP MSA 600GB 12G SAS 10K SFF (2.5in) Dual Port Enterprise 3yr Warranty Hard Drive	J9F465B
HP MSA 1.2TB 12G SAS 10K SFF (2.5in) Dual Port Enterprise 3yr Warranty Hard Drive	J9F485B
HP MSA 1.8TB 12G SAS 10K SFF (2.5in) 512e Enterprise 3yr Warranty Hard Drive	J9F495B
HP MSA 200GB 12G ME SAS SFF (2.5in) Enterprise Mainstream 3yr Warranty Solid State Drive	K2Q455B

Smart Buy MSA 1040 Storage System

HP MSA 1040 2-port Fibre Channel Dual Controller LFF Storage/S-Buy	E7V995B
HP MSA 1040 2-port Fibre Channel Dual Controller SFF Storage/S-Buy	E7W005B
HP MSA 1040 2-port 1G iSCSI Dual Controller LFF Storage/S-Buy	E7W015B
HP MSA 1040 2-port 1G iSCSI Dual Controller SFF Storage/S-Buy	E7W025B
HP MSA 1040 2-port 10G iSCSI Dual Controller LFF Storage/S-Buy	E7W035B
HP MSA 1040 2-port 10G iSCSI Dual Controller SFF Storage/S-Buy	E7W045B
HP MSA 1040 1Gb iSCSI w/12 300GB SAS 10K SFF (2.5in) Hard Drive Bundle/S-Buy	K2Q055B
HP MSA 1040 1Gb iSCSI w/12 900GB SAS 10K SFF (2.5in) Hard Drive Bundle/S-Buy	K2Q065B

Models

HP MSA 1040 10Gb iSCSI w/12 300GB SAS 10K SFF (2.5in) Hard Drive Bundle/S-Buy	K2Q075B
HP MSA 1040 10Gb iSCSI w/12 900GB SAS 10K SFF (2.5in) Hard Drive Bundle/S-Buy	K2Q085B
Smart Buy Disk Enclosures	
HP D2700 Disk Enclosure/S-Buy	AJ9415B

000106

Features

All MSA 1040 models offer a common set of valuable features:

- Ease of management featuring browser-based out-of-band access. This allows a department or small company to effectively handle growing storage requirements, with the aid of an intuitive GUI to administer the unit with a minimum of complexity. Ideal for local or remote installations.
- Storage Management Utility V3 (SMU). This new MSA management GUI brings a new modern look and feel to array management. SMU V3 is available with GL200 firmware or newer. Existing MSA customers can choose to use the new SMU (V3) or to continue to use the previous generation SMU (V2) if new virtualization features are not required.
- Thin Provisioning allows storage allocation of physical storage resources only when they are consumed by an application. Thin Provisioning also allows over-provisioning of physical storage pool resources allowing ease of growth for volumes without predicting storage capacity upfront. Thin Provisioning is available with GL200 firmware or newer.
- MSA 1040 comes standard with 64 controller-based snapshots and clone capability (volume copy is only available on linear storage with pre-GL220 firmware; volume copy for both linear and virtual storage is available with GL220 firmware or newer). There is also an optional license for 512 snapshots.
- Dual controller array models with automated failover for high availability.
- All models support a wide variety of drives: High-performance enterprise-class SAS, and high-capacity SAS Midline drives.
- The MSA 1040 will support a maximum of 3 disk enclosures (either LFF and/or SFF). Add-on enclosures can either be D2700 Small Form Factor (SFF) Drive Enclosures or MSA 2040 Large Form Factor (LFF) Disk Enclosures. The array can grow incrementally from a few drives to 48 LFF or 99 SFF drives.
- Disk Groups support RAID levels 1, 5, 6, 10. Linear Volumes support RAID levels 0, 1, 3, 5, 6, 10, 50.
- Maximum hard drive counts vary by RAID levels: 2 drive max for RAID level 1; max of 16 drives for RAID levels 0, 3, 5, 6, and 10; max of 32 drives for RAID level 50. With GL200 or newer firmware and the purchase of virtualization license multiple Disk Groups can be aggregated into a Storage Pool.
- The maximum LUN size is 140TB (128TiB).
- Storage Pools allow data on a given LUN to span across all drives in a pool. When capacity is added to a system, the user is also getting a performance benefit of the additional spindles – hence the term Wide Striping. Storage Pools are available with GL200 firmware or newer and the advanced Virtualization license needs to be purchased separately.
- Snapshot enhancements for virtual storage, including performance improvements, hierarchical snapshots, and simplified resource management. These enhancements are offered with GL200 or newer firmware and with the purchase of advanced Virtualization license.
- Snapshot enhancements for virtual storage, including performance improvements, hierarchical snapshots, and simplified resource management. Administrators can monitor and optionally control snapshot space usage with GL220 firmware or later.
- Scheduler to schedule virtual storage snapshots for replication with GL220 firmware or later.
- SSD support is available with GL220 firmware or newer. With SSD support customers can enable advanced virtualization features such as read cache and automated tiering (requires Advanced Virtualization Upgrade License). SSD performance tier requires additional Performance Auto Tiering License.
- Virtual tier affinity allows customers to prioritize data by assigning appropriate affinity level (Performance, No Affinity & Archive) with GL220 firmware or later.

Non-disruptive on-line controller code upgrade (requires dual controllers w/ multi-pathing software) Upgradable by design. Owners of a P2200 G3 array are able to do data-in-place upgrades to the new MSA 1040 array.

This unique ability protects the earlier investments in drives, and JBODs.

NOTE: Certain limitations are applicable; please review MSA 1040-2040 Upgrade Technical Whitepaper before upgrading your P2200 G3 systems <http://www.hpe.com/h20195/v2/GetDocument.aspx?docname=4AAA-483DENW>

Features

Application Solutions

The HPE MSA 1040 Storage is the ideal solution for customers running Oracle, Microsoft, SAP environments and those customers who are deploying virtual server technologies like VMware, Hyper-V. The MSA 1040 delivers enterprise functionality that enhances virtual environments, simplifies management, and reduces costs. Easy to deploy, scale and maintain, HPE MSA 1040 Arrays ensure that crucial business data remains available.

Hewlett Packard Enterprise has developed best-in-class expertise in Oracle, Microsoft, SAP, and Virtualization Hypervisor technology through extensive testing with the HPE MSA 1040, Hewlett Packard Enterprise servers, and management software. High availability and disaster recovery solutions and backup and recovery on the Oracle, Microsoft, and SAP application platforms. As a result, our customers can expect a wide range of operational and business benefits where they can:

- Deploy IT assets across multiple locations.
- Incrementally grow storage without interruption.
- Enable high availability and disaster recovery capabilities for critical applications.
- Deploy a remote disaster recovery site.

Learn more

To learn more about specific HPE Storage Solutions that are built with Oracle, Microsoft, SAP and Virtualization environments in mind, visit the solution sites supporting each of these applications. HPE MSA Storage hyperlink to: <http://www.hp.com/go/MSA>
HPE Storage for Oracle hyperlink to: <http://www.hp.com/storage/oracle>
HPE Storage for Microsoft hyperlink to: <http://www.hp.com/storage/microsoft>
HPE Storage for SAP hyperlink to: <http://www.hp.com/storage/sap>
HPE Storage for VMware hyperlink to: <http://www.hp.com/go/vmware/storage>

Family Information

MSA 2040	
Capacity	LFF:
Single Enclosure and Maximum Additional Drive Enclosures	144 TB (single LFF array-head - using 12 x 12TB LFF SAS MDL drives) 576 TB (by adding 3 LFF Disk Enclosures behind LFF Array & using 12 TB LFF SAS MDL drives)
	SFF:
	76.8 TB (single SFF array-head - using 24 x 3.2TB SFF SSD drives) 307.2 TB (by adding 3 SFF Disk Enclosures behind SFF Array & using 3.2TB SFF SSD drives) NOTE: 1) maximum available storage capacity depends on the RAID level being implemented
Pool Capacity	GL200: 169 TB (154 TiB) GL210: 219 TB (200 TiB) GL220: 329 TB (300 TiB) GL220 with Large Pool Support: 562 TB (512 TiB) NOTE: 1) The above pool capacities by firmware release apply to virtual storage only. 2) The above capacities are usable capacity/pool. Each MSA system can support two pools. Therefore each MSA Storage system can have double the usable capacity listed above.
Cache	6 GB per controller NOTE: 6GB cache includes Data (Read/Write) cache -- 4GB, and Metadata and System OS cache -- 2GB.
Total LUNs (LUN size are dependent of the storage architecture: Linear vs. Virtualized)	512 maximum LUN size: 140TB (128TiB) Thin Provisioning allows you to create the LUNs independent of the physical storage
Host Interconnect	2 x 8Gb Fibre Channel ports per controller 2 x 1GbE RJ-45 ports per controller 2 x 10GbE ports per controller 2 x 12Gb SAS ports per controller
Maximum Drives w/ 3 expansion	48 LFF/99 SFF
Maximum Host Supported	64 in v2 UI 512 in v3 UI
Standard Software	Snapshots (64)
Optional Software	Remote Snap (linear storage only) Max Snapshot (512)

Product Technology

MSA 1040 Models	MSA 1040 Storage offers 4 factory configured models: MSA 1040 8Gb FC with 2-ports per controller MSA 1040 12Gb SAS with 2-ports per controller MSA 1040 10Gb iSCSI with 2-ports per controller MSA 1040 10GbE iSCSI with 2-ports per controller
Modular Chassis	2U rack height, 12 Large Form Factor or 24 Small Form Factor drive bays, accommodating SAS and SAS MDL Drives
Optional Disk Enclosures	Just as the user has a choice of chassis for the array head (LFF and SFF drive bays), so also do they have a choice of expansion disk enclosures accommodating either drive size. The MSA LFF and the SFF disk enclosures can be hot-added to an operating array. SFF and LFF Array heads and Disk

Family Information

Enclosures can be mixed without limitations.

The MSA 1040 storage systems have supported various SFF and LFF disk enclosures over time. The latest disk enclosures to be supported on the MSA 1040 platform are the MSA 2050 SFF Disk Enclosure and the MSA 2050 LFF Disk Enclosures. The MSA 2050 SFF and LFF enclosures can be added to existing MSA 1040 storage systems for expansion disk capacity. The MSA 2050 SFF and LFF disk enclosures can be intermixed with the D2700 SFF disk enclosure and/or the MSA 2040 LFF disk enclosure when connected to the MSA 1050 base system.

The MSA 2050 SFF and LFF disk enclosures are the recommended enclosures to be used for capacity expansion on the MSA 2040 storage system.

LFF Disk Enclosures

MSA 2040 LFF Disk Enclosure. This 2U unit has twelve LFF (3.5-inch) drive bays and accepts for MSA dual-ported SAS, SEDs and SAS MDL drives. The pre-configured HPE MSA 2040 LFF Drive Enclosure (M0596A) has two I/O modules and supports both single and dual controller arrays.

- This 3.5-inch MSA disk enclosure can be attached to MSA 1040 LFF or SFF array head
- Each configured model ships standard with two .5m mini-SAS to mini-SAS cables for connection to the MSA 1040 array expansion port or existing disk enclosure cascade port.
- LFF and/or SFF Disk Enclosures can be mixed up to the maximum of 3 total Disk Enclosures

MSA 2050 LFF Disk Enclosure. This 2U enclosure is designed to support twelve HPE Storage LFF drives and accepts MSA dual-ported 12Gb SSD and SAS Midline hard drives. The pre-configured MSA 2050 LFF Disk Enclosure (Q1J06A) has two I/O modules and supports the MSA 1040 dual controller arrays.

- The MSA 2050 LFF Disk Enclosure can be attached to the MSA 1040 LFF or SFF storage models.
- Each MSA 2050 LFF Disk Enclosure ships standard with two .5m mini-SAS to mini-SAS cables for connection to the MSA 1040 array expansion port or existing disk enclosure cascade port.
- LFF and/or SFF Disk Enclosures can be mixed up to the maximum of 3 total Disk Enclosures on the MSA 1040 storage models.
- Requires GL225 array controller firmware or newer
- The MSA 2050 LFF Disk Enclosures are the recommended LFF enclosures to be used for capacity expansion on the MSA 2040 storage system.

SFF Disk Enclosures

HP D2700 Disk Enclosure (AJ941A) is designed to support twenty five HPE Storage or ProLiant 2.5-inch Universal form factor (SFF) 12Gb, SSD, SAS, SEDs or SAS MDL hard drives. It ships standard with dual I/O modules installed.

- This 2.5-inch D2700 disk enclosure can be attached to MSA 2040 LFF or SFF array head
- The D2700 enclosure ships with a two .5m mini-SAS to mini-SAS cables for connection to the MSA 2040 array expansion port or existing disk enclosure cascade port.
- LFF and/or SFF Disk Enclosures can be mixed up to the maximum of 3 total Disk Enclosures.
- The MSA 2040 does not support SFF SATA HDDs.

HPE MSA 2050 SFF Disk Enclosure (Q1J07A) This 2U enclosure is designed to support twenty four HPE Storage 2.5-inch SFF drive bays and accepts MSA dual-ported 12Gb SSD, Enterprise SAS, or SAS Midline hard drives. The pre-configured MSA 2050 SFF Disk Enclosure has two I/O modules and supports the MSA 1040 dual controller arrays.

- The MSA 2050 SFF Disk Enclosure can be attached to the MSA 1040 LFF or SFF storage models.
- Each MSA 2050 SFF Disk Enclosure ships standard with a two .5m mini-SAS to mini-SAS cables for connection to the MSA 1040 array expansion port or existing disk enclosure

Family Information

- cascade port.
- LFF and/or SFF Disk Enclosures can be mixed up to the maximum of 3 total Disk Enclosures.
- Requires GL225 array controller firmware or newer
- The MSA 2050 SFF Disk Enclosures are the recommended SFF enclosures to be used for capacity expansion on the MSA 1040 storage system.

Scalability The MSA 1040 Arrays are designed to allow an installation to begin with smaller capacity and be able to grow gradually as needed. The flexibility of SAS or SAS MDL drives technology, form factors, sizes, speeds, and costs per GB allows a system to easily fit in almost any budget.

- Large Form Factor configurations can scale up to 120 TB SAS MDL, expandable to 480 TB SAS MDL, with the addition of a maximum of three MSA 3.5 LFF-inch Disk Enclosures.
- Small Form Factor configurations can scale from 43.2 TB SAS. With the addition of three D2700 JBODs, the MSA 1040 storage can support 178.2 TB SAS

Vdisks The Vdisk nomenclature is being replaced by Disk Group. In the Linear Storage and in the SMU V2 you will see reference to Vdisk in the Virtual Storage and the SMU V3 you will see Disk Group. Vdisk and Disk Group are essentially the same. Vdisks have additional RAID types (RAID 0, 3) available only in the CLI.

Disk Group A Disk Group is a collection of disks in a given redundancy mode (RAID 1, 5, 6, 10, 50). It is equivalent to a Vdisk in Linear Storage and utilizes the same proven fault tolerant technology used by Linear Storage. Disk Group RAID level and size can be created based on performance and/or capacity requirements. With GL200 or newer firmware multiple Disk Groups can be allocated into a Storage Pool for use with the Virtual Storage features.

LUNs The MSA 1040 arrays support 512 volumes and up to 512 snapshots in a system. All of these volumes can be mapped to LUNs. Maximum LUN sizes up to 140TB (128TB). The LUNs size are dependent on the storage architecture: Linear vs. Virtualized. Thin Provisioning allows the user to create the LUNs independent of the physical storage.

Storage Pools The GL200 firmware or newer introduces Storage Pools – which are comprised of one or more Disk Groups. LUNs are no longer be restricted to a single Vdisk as with Linear Storage. A volume's data on a given LUN can now span all disk drives in a pool. When capacity is added to a system, users will benefit from the performance of all spindles in that pool. Leveraging Storage Pools, the MSA 2040 supports large, flexible Volumes with sizes up to 128TB and facilitates seamless capacity expansion. As volumes are expanded data automatically reflows to balance capacity utilization on all drives.

RAID 0, 1, 3, 5, 6, 10, 50 In addition to the usual RAID levels, the MSA 1040 features several important additional levels. RAID 6 is the highest level of RAID protection. It allocates two sets of parity data across drives and allows simultaneous write operations. It can withstand two simultaneous drive failures without downtime or data loss. RAID 10 is mirroring and striping without parity. RAID 50 combines the block striping and parity of RAID 5 with the straight block striping of RAID 0, yielding higher performance than RAID 5 through the addition of RAID 0, particularly during writes.

Performance The preliminary performance figures provided here are for your reference as many variables exist between array configurations, workloads, hard drive types, vdisk setup parameters and host system setup. All Performance information is measure using Linear Storage.

MSA 1040 Array Performance (with HDDs) ¹	HPE MSA 1040 8Gb FC Controllers	HPE MSA 1040 10GbE Controllers	HPE MSA 1040 1GbE Controllers	HPE MSA 1040 SAS Controllers
Protocol (host connect)	8Gb Fibre Channel	10GbE iSCSI	1GbE iSCSI	6Gb SAS

Page 9

Family Information

MSA 1040 RAID 1 Performance Results				
Random Reads IOPS	72,900	69,100	53,400	71,200
Random Writes IOPS	29,100	28,000	27,900	29,000
Random Mix 60/40 IOPS	42,700	41,200	40,700	42,300
MSA 1040 RAID 5 Performance Results				
Random Reads IOPS	69,700	66,000	53,300	68,700
Random Writes IOPS	16,200	15,900	15,900	16,000
Random Mix 60/40 IOPS	28,500	27,900	25,100	28,100
MSA 1040 RAID 6 Performance Results				
Random Reads IOPS	69,500	66,700	53,500	68,600
Random Writes IOPS	13,000	12,700	12,600	13,000
Random Mix 60/40 IOPS	24,800	24,300	24,000	24,600

NOTE: 1) SSD's were used in a dual controller configuration of 4 vdisks consisting of two disks per vdisk and 1 volume per host. 4 hosts directly attached to the HPE MSA 1040 array were used in this test configuration (results cannot be expected with a single host).

MSA 1040 Array Performance (with HDDs) ¹	HPE MSA 1040 8Gb FC Controllers	HPE MSA 1040 10GbE Controllers	HPE MSA 1040 1GbE Controllers	HPE MSA 1040 SAS Controllers
Protocol (host connect)	8Gb Fibre Channel	10GbE iSCSI	1GbE iSCSI	6Gb SAS
MSA 1040 RAID 10 Performance Results				
Random Reads IOPS	29,400	29,200	28,900	29,500
Random Writes IOPS	23,000	22,500	22,500	22,000
Random Mix 60/40 IOPS	25,500	25,000	25,000	25,000
Sequential Reads MB/s	3,100	3,050	440	3,100
Sequential Writes MB/s	1,650	1,650	420	1,650
MSA 1040 RAID 5 Performance Results				
Random Reads IOPS	29,000	28,800	28,600	29,500
Random Writes IOPS	13,000	12,800	12,500	12,500
Random Mix 60/40 IOPS	16,500	16,500	16,500	16,500
Sequential Reads MB/s	3,100	3,050	440	3,100
Sequential Writes MB/s	2,900	2,700	430	2,800
MSA 1040 RAID 6 Performance Results				
Random Reads IOPS	29,000	28,800	28,500	29,500
Random Writes IOPS	9,500	9,500	9,500	8,700
Random Mix 60/40 IOPS	12,500	12,700	12,500	12,500
Sequential Reads MB/s	3,100	3,050	440	3,100
Sequential Writes MB/s	2,700	2,650	420	2,750

NOTE: 2) 300 GB 15K SAS drives were used in a dual controller configuration of 8 vdisks consisting of twelve disks per vdisk, 3.3 TB volumes, and 2 volumes per host. 4 hosts directly attached to the HPE MSA 1040 arrays were used in this test configuration (results cannot be expected with a single host).

Page 10

Family Information

NOTE: MSA 1040 tests with 1GbE iSCSI used 4 hosts directly attached to the HPE MSA 1040 array

- Sequential tests results were achieved with 256K block sizes and random tests were based on 8K block sizes.

NOTE: For sequential workloads with a queue depth greater than 1, each sequential stream is targeted to operate on a separate LBA range. Other types of sequential workloads that target specific LBA ranges may achieve higher results.

- All Fibre Channel results were measured using 10Gb FC Host Bus Adapters running at 8Gb. All 10GbE iSCSI results were measured using 10Gb iSCSI Host Bus Adapters. All 1GbE iSCSI results were measured using 1Gb network interface controllers (NICs). All 6Gb SAS results were measured using 6Gb SAS Host Bus Adapter.

NOTE: Number and type of applications, drive type and number of drives, operating system used, and the number of hosts will affect overall performance. This table is provided strictly as a test-lab comparison.

NOTE: These numbers reflect a full array configuration with the maximum number of front-end ports, disks, and controllers. The test results shown for the HPE MSA 1040 are designed to give a conservative reference point for comparisons.

Configuration and Management Tools HPE Storage Management Utility (SMU) Management access, out-of-band, WEB GUI, CLI Interface Types: USB, 100/1000 Ethernet. Protocols Supported: SNMP, SSH-S, SSL, SSH, SMT, FTP, HTTP, Telnet

Hot Plug Expansion and Replacement Support All MSA 1040 models support hot plug expansion and replacement of redundant controllers, enclosures, fans, power supplies, and I/O modules for simple, fast installation and maintenance. Hot add expansion of disk enclosures is also supported.

Snapshot and Clone All MSA 1040 arrays come standard with 64 snaps, 512 snaps available. This controller based functionality offers higher levels of data protection, enables an almost instant recovery from data failure or corruption and offers alternative development testing of 'offline' production data and the ability to backup snapped/cloned data.

Overview The MSA 1040 arrays come integrated with web browser and CLI based software for storage and RAID management, setup, configuration, and troubleshooting. This reduces the cost of ownership by reducing the training and technical expertise necessary to install and maintain your HPE storage solution.

The SPOCK database provides interoperability information for thousands of components and millions of component combinations. It is available to all users at: <http://www.hp.com/storage/spock>. Supports most HPE ProLiant and BladeSystems including

- Server Compatibility**
NOTE: depends on protocol
- HPE ProLiant DL, ML
 - HPE c-Class Blade Servers
 - Compatibility must be confirmed at: <http://www.hp.com/storage/spock>

- Industry Standard servers support**
- Supports most multi-vendor industry standard servers. Hewlett Packard Enterprise requires the Third-Party Server to be logged and listed on the Microsoft Windows Server Catalog.
 - Refer to the Microsoft website: <https://www.windowsservercatalog.com/>
 - Hewlett Packard Enterprise recommends that the Third-Party Server Vendor is an active member of TSANet. Refer to the TSANet website for details: <http://www.tsanet.com>
 - Non-Hewlett Packard Enterprise servers will generally be supported if the HPE storage stack is used. This includes supported Hewlett Packard Enterprise branded HBAs and drivers, and supported FC

Page 11

Family Information

switches.

OS Support Refer to the Hewlett Packard Enterprise support statements for complete current OS version support: <http://www.hp.com/storage/uspsk>

- Microsoft Windows Server 2012
- Microsoft Windows Server 2008 R2
- Microsoft Windows Server 2016
- VMware
- HPE-UX
- Red Hat Linux
- SUSE SLES
- Solaris
- OpenVMS
- MAC OS X

Web Browser support

- The MSA 1040 supports target based management, and includes a Web interface and a telnet interface, and require a web browser for management.
- Beginning with GL200 or newer firmware, MSA 1040 customers have the option to use one of two Web's.
- Users taking advantage of virtualization features will be required to use SMU V3.
- The MSA 1040 requires Microsoft Internet Explorer, Mozilla Firefox, and Google Chrome.

HPE StoreFront Manager for Microsoft HPE StoreFront Manager for Microsoft enables management and monitoring of HPE MSA Storage running in Microsoft Hyper-V environment with a single pane-of-glass view to events/alerts, capacity and health dashboards and detailed virtual infrastructure information. It integrates seamlessly with Microsoft System Center Operations Manager (SCOM) and provides Microsoft administrators the following:

It supports heterogeneous HPE Storage environment including MSA 2040, 1040, HPE StoreVirtual HPE 3PAR StoreServ, HPE StoreOnce, HPE StoreEasy, HPE XP, HPE EVA and HPE StoreEver Storage.

When deployed with the MSA 2040 array, HPE StoreFront Manager provides the following:

- Monitors the health, events and alerts for the MSA 2040/1040 – Linear and virtual Pools, and volumes
- Provides detailed information on the VMs provisioned through MSA Storage
- Effortless installation and configuration using PowerShell

HPE StoreFront Manager for Microsoft for MSA Storage is downloadable from Software Depot: https://120392.www2.hp.com/portal/newportal/displayProductInfo.do?productNumber=System_Center

000107

12

Optional Software

Advanced Data Services Software Suite All software for the MSA platform is now included as a standard feature on the MSA 2042 at no extra charge. The MSA 2042 includes the Advanced Data Services Software Suite which includes the following software titles

1. HPE MSA 2040 Performance Automated Tiering LTU
2. HPE MSA 2040 512 Snapshot Software LTU
3. HPE MSA Remote Snap Software LTU

HPE MSA Advanced Data Services Suite LTU OOH99A
 HPE MSA Advanced Data Services Suite E-LTU DDH99AAE

HPE MSA 1040 Advanced Virtualized Features

A Virtualized Storage array is an extension to the Linear Storage building blocks (Vdisks). Data is virtualized not only across a single Vdisk, as in Linear implementation, but also across multiple Disk Groups and additionally now across multiple Tiers of storage with different performance capabilities.

No new MSA 1040 hardware is required to take advantage of Virtualized Storage features available at a very low price point.

HPE MSA 1040 Adv Virtualized Upg LTU D4T78A
 HPE MSA 1040 Adv Virtualized Upg E-LTU D4T78AAE

MSA Performance Tiering

Disk tiers are comprised of aggregating 1 or more Disk Groups of similar physical disks. The MSA 1040 supports 3 distinct tiers:

1. A Performance tier with SSDs
2. A Standard SAS tier with Enterprise SAS HDDs
3. An Archive tier utilizing Midline SAS HDDs.

Beginning with GL220 or newer firmware, the MSA 2040 now supports sub-LUN tiering and automated data movement between tiers.

The MSA automated tiering engine moves data between available tiers based on the access characteristics of that data. Frequently accessed "pages" will migrate to the highest available tier delivering maximum I/O's to the application (Performance Tiering). Another feature to the MSA 2040 tiering engine is Archive Tiering where "cold" or not frequently accessed data can be moved to lower performance tiers. Pages are migrated between tiers automatically such that I/Os are optimized in real-time.

The Archive Tiering functionality is provided at no charge on the MSA 1040 platform beginning with GL220 or newer firmware. The Performance Tiering capability utilizing a fault tolerant SSD Disk Group is a paid feature and requires the below SKU to enable it. Creating an SSD virtual disk group for both read and write capabilities requires a Performance Auto Tiering License. AutoTiering from SAS MDL (Archive Tier) to Enterprise SAS (Standard Tier) drives is provided with the Advanced Virtualization license specified above. To utilize a Performance SSD tier requires BOTH the Advanced Virtualization license and the Performance Auto Tiering license.

HPE OneView for VMware vCenter

HPE OneView for VMware vCenter is a component within the HPE OneView plug-in for vCenter. It provides VMware administrators that are using VMware's vSphere management console (vCenter) with the ability to see how virtual machines are mapped to datastores and individual MSA Storage volumes. By providing these clear relationships between VMS, datastores and storage, the VMware administrators productivity increases, as does the ability to ensure quality of service. Roles for administrators can be

Optional Software

vStorage API for Array Integration (VAAI) The vStorage API for Array Integration (VAAI) is one of the storage application programming interface (API) sets in vSphere. VAAI is an API storage partners can leverage to enhance performance of virtual machine (VM) management operations by delegating these operations to the storage array. With hardware offload, ESX/ESXi hosts perform certain operations faster and consume less server CPU and memory resources, and also storage port and storage fabric bandwidth. VAAI includes high performance and scalable VM data path primitives.

Storage Hardware Primitives for VAAI

- Full Copy or Hardware Assisted Move
- Block Zeroing or Hardware Assisted Zeroing
- Hardware Assisted Locking or Atomic Test and Set (ATS)

Snapshot and Volume Copy Software for the MSA 1040

Product Features
Data Protection

- Snapshots create up to 512 point-in-time pictures of data
- Volume Copies create up to 128 point-in-time copies of data
- Recovery is instant - reverts data from any previous Snapshot or Volume Copy (volume copy is available for both linear and virtual storage with GL220 firmware or later; pre-GL220 firmware volume copy is only available on linear storage)
- Backup 'snapped' data to disk, virtual tape, or physical tape without a backup window
- A 64 snapshot license and Volume Copy are included with all MSA 1040 models.
- Support and updates are desired for bundled software functionalities (such as 64 LTU Snap and/or Volume Copy etc. in the MSA 1040 products) a combination HW + SW support care pack must be purchased.
- Hewlett Packard Enterprise does not provide warranty assistance for software products included with our base hardware products. This would either be SupportPlus or SupportPlus24. The hardware warranty component of these services is accounted for in the pricing of the SP and SP24 care packs.

Data Testing

- Snap or clone data to test the performance of a software application on 'offline' production data.
- Snap or clone data to test how a software patch or enhancement will function on 'offline' production data.

MSA 1040 Snapshot and Clone:

All MSA 1040 models come STANDARD with 64 snapshots and Volume Copy software. 512 Snapshot option is also available for additional cost.

HPE MSA Remote Snap Software

- HPE MSA Remote Snap software is available for both linear and virtual storage with GL220 firmware or later; pre-GL220 firmware remote snap replication is only available on linear storage
- HPE MSA Remote Snap Software is array based software that provides remote replication on the HPE MSA 1040 Array products. HPE Remote Snap is a form of asynchronous replication which consists of replication of block-level data from a volume on a local system to a volume that may be on the same system or on a second independent system. This second system may be collocated with the first system or may be located at a remote site.
- HPE Remote Snap functionality is based on existing Snapshot technology offered by HPE MSA SAN Array products. Snapshots are used to track the data to be replicated as well as to determine the differences in data updated on the master volume, minimizing the amount of data to be transferred.
- HPE Remote Snap replication technology provides the ability to accomplish key data

Optional Software

defined on an individual basis, providing the ability to apply specific permissions for both view and control functions

HPE OneView for VMware vCenter supports mixed array environments including MSA Storage, P2000, EVA, StoreVirtual Appliances, and the XP array series including the P9500.

When deployed with the MSA Storage array, HPE OneView for VMware vCenter provides the following:

- Active Management functionality for the MSA 1040 array:
 - Create/Expand/Delete a Datastore
 - Create a Virtual Machine from a template
 - VMClone for linear storage
- Monitors the health and status of the MSA 1040
- Displays LUN / volume connections from VMS and ESX servers to the arrays and provides the location and attributes of the MSA 1040 within the SAN
- Identifies what storage features are available to allow administrators to match the features available on the MSA 1040 to their requirements
- Provide a cluster-level view of the storage

HPE OneView for VMware vCenter is downloadable from Software Depot:
<https://h20197.www2.hp.com/portal/wwdportal/displayProductInfo.do?productNumber=HPVPR>

For complete software requirements and compatibility lists, refer to the product documentation below and the HPE SPOCK website: <http://www.hp.com/storage/spack>

For more information on HPE Insight Control Storage Module for vCenter visit:
<http://www.hpe.com/go/vmware>

VMware Site Recovery Manager (SRM)

VMware vCenter Site Recovery Manager (SRM) is an extension to VMware vCenter that delivers business-continuity and disaster-recovery solution that helps you plan, test, and execute the recovery of vCenter virtual machines. SRM can discover and manage replicated datastores, and automate migration of inventory from one vCenter to another. Site Recovery Manager integrates with the underlying replication product through a Storage Replication Adapter (SRA). The SRM is available only for linear storage.

HPE MSA 2040 Site Recovery Adapter (SRA)

The MSA 2040 SRA, a free-to-use plugin, is the program that integrates the VMware vCenter SRM with HPE MSA 2040 arrays. It enables full-featured use of the VMware SRM. It is a host-software component installed on a Microsoft Windows Server that enables disaster recovery management (DRM) software, the host to communicate and control certain aspects of the replication feature in storage systems connected to the server. It allows the VMware SRM software to automatically coordinate virtual machine failover and failback between a protected data center and a disaster recovery site by employing a disaster recovery solution called Remote Snap. A perfect combination of the Remote Snap replication and VMware SRM provides an unified automated solution for implementing and testing the disaster recovery between sites located across geographies. It enables communication between the HPE MSA Remote Snap replication functionality that is embedded in HPE MSA 2040 systems. Users are required to acquire Remote Snap license for their local and remote HPE MSA 2040 arrays to use the HPE MSA SRA.

Site Recovery Manager Requirements/Dependencies:

- Requires vSphere 5.1, 5.5
- Supports SRM 5.1, 5.5 and 5.8
- Requires HPE MSA 2040 /P2000 SRA 5.8 or later Plug-in (downloadable from Hp.com)
- SRM works with Remote Snap linear mode

Requires purchase of MSA 2040 Remote Snap licenses (one for each site)

Optional Software

management and protection capabilities. First, because Remote Snap uses snapshots as the underlying technology it creates multiple local recovery points which can be used for such tasks as to complement daily backups; second, replication provides the ability to access data in a remote site which could be used for dispersed operations; and third but definitely not least important replication allows for business continuity in the event of a failure on the primary site.

- In order to perform a replication, a snapshot of the volume to be replicated is taken, creating a point-in-time image of the data. This point-in-time image is then replicated to the destination volume by copying the data represented by the snapshot via a transport medium such as TCP/IP (iSCSI) or Fibre Channel. The amount of data transferred is minimized through the use of snapshots whenever possible.

NOTE: One license per array is required for replication. For example, if you have two MSA arrays performing replication from Primary system to Remote System, you will need 2 Advanced Data Services licenses

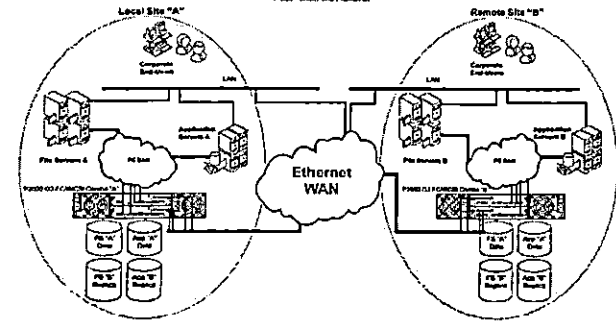
Product Features

- Storage based asynchronous snapshot replication
- Initial copy of data can be performed locally, reducing burden on wide area networks
- Support of both Ethernet and Fiber Channel interconnects provides flexible options to the application environments.
- Snapshot based replication technology means only changed data will be replicated to alternate site
- Many to 1 replication (up to 4 nodes) - primary use case is to replicate from "many" branch offices to the home office for the purpose of backing up data from the branches
- Single controller to single controller replication
- Advanced scheduler provides several options to IT administrators for business continuity
- Flexible architecture allows remote replication between MSA 1040 and/or MSA 2040/P2000 G3 supported arrays. Protects existing investments and enhances business continuity planning objectives.
- Replication Wizard simplifies the task of setting up and establishing replication paths from one unified, easy to use GUI
- Snapshot based replication enables both local and remote recovery depending on the need. Snapshot replication isolates problems to a specific point in time which can be selected by the administrator. Additionally snapshot replication supports longer distance replication.
- Multiple relationships provide greater storage flexibility and utilization.
- Bundled 64 Snapshots and Volume Copy integration provides better efficiencies by combining the management and array technologies to create local copies.
- Fast application recovery with minimal or no transaction loss
- Creation of disaster tolerant copies of your critical business data

No single-point-of-failure solution to increase the availability of your customers data

Optional Software

Use Case - Scenario 1B
"Peer" sites with failover



Customer Benefits

Disaster Recovery

Replication technology has typically been used to address disaster recovery issues. Disaster recovery is still the driving business case behind replication. Remote replication can be implemented from the production site to one or more remote sites across a campus, across town, across a state or across the country. When a disaster strikes the primary location, the applications can be brought up at the remote site and continue processing against the replicated copies. When the primary site is back online, the replication can be reversed and when the data is resynchronized, processing can be switched back to the primary site and business can continue. In the past, if an e-mail system experienced a disaster it was an "oh well" moment. The loss of a day or more of e-mail was not considered important. Today, e-mail is a critical component of many companies' business plans and recovering e-mail after a disaster quickly and completely is required.

Maintenance

HPE Remote Snap software can also be used to solve other business needs. For instance, E-mail servers may need periodic maintenance that can take hours to complete. With remote replication in place, the downtime can be minimal (as long as it takes to bring the remote peer of the primary e-mail server online). The primary server can be worked on (patches, hardware upgrades, etc.) and then brought back online and into production. A whole datacenter can be failed over to a remote site on purpose to perform maintenance on generators, air conditioning, etc. Replication can also be used to perform a datacenter move with minimal downtime (fail everything to the DR site, move the production datacenter to its new location then fail the DR site back to the new datacenter).

Storage Based

Data replication is performed at the storage subsystem controller level and is totally transparent to the host, alleviating unnecessary host cycles to perform the data mirroring functions. Unlike a fabric based or host based solution, the storage based solution dedicates its resources to managing the replication process between arrays, with minimal impact to applications, other data or devices on the SAN.

Bi-Directional

The bidirectional HPE MSA 1040 Array solution addresses the growing need among businesses to ensure continuous availability of applications that are critical to daily business operations. HPE MSA 1040 enables two sites in a remote replication connection to use each other as a destination to maintain replicated copies of online data. This maximizes resource utilization while enabling business continuity, even in the event of disaster.

Disaster Tolerance

Optional Software

The MSA 1040 Arrays utilize snapshot data online and in real time to a remote MSA 1040 through a local or extended storage area network (SAN). Additionally, data replication can be bidirectional, meaning that a storage array can be both a source and a destination. A particular LUN can be replicated in only one direction between the two storage arrays. Write I/O data sent to the source is replicated by HPE MSA 1040 Array to the destination. A pair of properly configured HPE MSA 1040 arrays is a replication solution that guarantees data integrity in the event of a storage system or site failure.

First Initial Copy

When a DR site is initially created an initial copy of the data from the source volume to the target volume must occur. The MSA 1040 array allows this first copy to take place locally. After completion the disks can be manually moved to the remote location. Subsequent changes will only remotely copy the changed blocks.

SAN Extensions

HPE MSA 1040 Array provides the capability to replicate data over direct Fibre Channel. The distances supported over dark fiber are determined by the speed of the dark fiber connection and the technology used to communicate over the dark fiber.

Path failover (MPIO) Multipath failover (MPIO) is supported on all operating systems

HPE StoreEasy 3000 Gateway Storage
Add more value to your MSA 1040 array
HPE MSA combined with HPE StoreEasy 3850 Gateway Storage enables you to consolidate block and file storage onto a single, high-performance system - giving your business the flexibility to meet changing business needs on-demand.

The HPE StoreEasy 3850 delivers efficient, secure, and highly available file services that help address your changing file-serving needs. It reduces your cost of ownership by simplifying management, increasing resource utilization, centralizing growth, and protecting data. HPE StoreEasy 3850 provides a simple and consistent experience for managing block and file storage for multiple workloads centrally.

NOTE: For more information visit: <http://www.hp.com/go/StoreEasy>

HPE StoreEasy 3850 Gateway Storage
HPE StoreEasy 3850 Gateway Single Node
HPE StoreEasy 3850 Gateway Blade Storage

K2R69A
K2R70A
K2R72A

Service and Support, HPE Care Pack, and Warranty Information

Warranty Three-year limited warranty, parts exchange Next Business day delivery

Enclosures, Hard drives, and Options for the MSA 1040 carry their own warranty. Refer to The Hewlett Packard Enterprise Limited Warranty Statement for more information.

The MSA 1040 has been designed with customer self-repairable parts to minimize repair time and provide greater flexibility in performing defective parts replacement. Please refer to The Hewlett Packard Enterprise limited warranty statement and parts replacement instructions for further details.

<http://h18006.www1.hp.com/products/storage/ww/warranty.html>

Products included in various kits carry their own individual warranties.

NOTE: The warranty of the hard drive options purchased with the MSA 1040 models is different for SAS hard drives versus SAS HDL. SAS hard drive options have a three year warranty and SAS HDL

NOTE: Firmware updates beyond the 3-year warranty period requires a support contract.

Solid State Drives (SSD) Warranty 3/0/0 warranty, Customer Self Repair (CSR) subject to maximum usage and or maximum supported lifetime limitations, whichever occurs first. Maximum Supported Lifetime is the period in years set to equal the warranty for the device. Maximum usage limit is the maximum amount of data that can be written to the device before reaching the device's write endurance limit

NOTE: SSDs used for replacement will be of equal or greater capacity and are designed to meet or exceed the original SSD warranty. Replacement drive's could be of the same model drive or of a different model qualified to operate interchangeably inside the MSA array. Warranties of these components are limited by any substitution.

Service and Support Services to accelerate time to results
HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Our integrated portfolio of Services for storage help customers reduce costs, optimize data, streamline storage management, and improve backup and recovery. HPE Support Services enable you to choose the right service level, length of coverage and response time as you purchase your new storage solution, giving you full entitlement for the support for need for your IT and business

Connect your devices Unlock all of the benefits of your technology investment by connecting your products to HP Enterprise. Achieve up to 77% reduction in down time, near 100% diagnostic accuracy and a single consolidated view of your environment. By connecting, you will receive 24x7 monitoring, pre-failure alerts, automatic call logging, and automatic parts dispatch. HPE Proactive Care Service and HPE Datacenter Care Service customers will also benefit from proactive activities to help prevent issues and increase optimization. All of these benefits are already available to you with your server storage and networking products, securely connected to HPE support.

¹ IDC whitepaper - The Business Value of Connected Support from HP, March 2015
² HP CSC reports 2014 - 2015

Optimized Care HPE Proactive Care with 6 hour call-to-repair commitment, three year Support Service
HPE Proactive Care gives customers an enhanced call experience plus helps preventing problems and maintains IT stability by utilizing tailored, proactive reports with recommendations and advice when your products are connected to HPE. This Service combines three years' proactive reporting and advice with our highest level of hardware support - HPE's 24x7, six hour hardware call-to-repair. HPE is the only leading manufacturer who makes this level of coverage available as a standard service offering for your

Service and Support, HPE Care Pack, and Warranty Information

most valuable storage systems.
<https://www.hp.com/h20195/v1/GetPDF.aspx/4AA3-8855ENW.pdf>

Standard Care HPE Proactive Care with 24x7 coverage, three year Support Service
HPE Proactive Care gives customers an enhanced call experience plus helps preventing problems and maintains IT stability by utilizing personalized proactive reports with recommendations and advice when your products are connected to HPE. This Service combines three years' proactive reporting and advice with our 24x7 coverage, four hour hardware response time when there is a problem.
<https://www.hp.com/h20195/v1/GetPDF.aspx/4AA3-8855ENW.pdf>

Basic Care HPE Foundation Care 24x7, three-year Support Service
HPE Foundation Care 24x7 gives you access to HPE 24 hours a day, seven days a week for assistance on resolving issues. This service includes need based Hardware onsite response within four hours. Simplify your support experience and make HPE your first call to help resolve hardware or software problems.
<https://www.hp.com/h20195/v1/GetDocument.aspx?docname=4AA4-8876ENW.ccs&lc=en>

Advanced Services Choose from a rich portfolio of services to make the most of MSA 2042 SAN Storage so you can efficiently and affordably consolidate, manage, and extract value from unstructured data.

HPE Services can help you discover needs and create a plan for simplifying the environment, reducing risk, and maximizing your storage investments

HPE MSA Family Disk Array Installation and Startup Service - Implement right from the start, as Hewlett Packard Enterprise experts install, test, and configure your hardware and software onsite. We deliver a tailored storage deployment properly integrated into your environment.
<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-3048ENW.pdf>

HPE Storage Data Migration Services - End-to-end data migration service providing seamless discovery, assessment, planning, and design, completely customizable to your organization's storage area network or network attached storage environment and using innovative software to help you migrate to HPE storage quickly and efficiently.
<http://h20195.www2.hp.com/v2/GetPDF.aspx/5982-4107en.pdf>

HPE Storage Efficiency Analysis - The HPE Storage Efficiency Analysis provides customers with a view of their storage infrastructure and operating environment, highlighting recommendations for improvements. The report provides extensive insight about the existing storage environment, opportunities for efficiency gains, asset aging and replacement through interaction with key decision makers.
<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-9475enw.pdf>

For more information <http://www.hp.com/us/en/business-services/it-enr/keys/storage-services.html>

To learn more on HPE Storage Services, please contact your Hewlett Packard Enterprise sales representative or HPE Authorized Channel Partner

HPE Support Services are sold by Hewlett Packard Enterprise and Hewlett Packard Enterprise Authorized Service Partners.

000108

Configuration Information

Configure to Order Program Information

Hewlett Packard Enterprise has a very successful Configure to Order program for the MSA 1040 family. The MSA 1040 models and options may be factory installed in a rack with switches, disk enclosures and hard drives. The MSA 1040 arrays may be integrated with ProLiant servers or as standalone storage. Orders to be shipped through the CTO process must have a minimum of four drives of the same type (SAS or SAS MDL).

Step 1 - MSA 1040 - Base Configuration

Select one model:

Table with columns Model Name and SKUs. Lists various MSA 1040 configurations including LFF and SFF storage options.

NOTE: Includes LFF Array Chassis + two MSA 1040 FC 2-port controllers, SFPs installed, drives not included. Includes SFF Array Chassis + two MSA 1040 SAS 2-port controllers, SFPs installed, drives not included.

Step 2 - Options

Select each option with quantities specified.

Step 2a - SAS or SAS MDL Drive Options

NOTE: SAS MDL drives are designed for archival or reference data. They should not be used in a heavy or intense I/O environment. These situations require the use of enterprise-class SAS drives.

MSA 1040 Drives:

Table listing SAS Drives (SFF 2.5-inch) and 12G SFF 15K SAS HDDs with their respective SKUs.

12G SFF 10K SAS HDDs

Table listing 12G SFF 10K SAS HDDs with their SKUs.

Configuration Information

Table listing HP External Mini SAS 3m Cable ALL and HP External Mini SAS 2m Cable with SKUs.

Step 3 - Other MSA 1040 Options

Choose optional AC Power Cords (1 required)

NOTE: Two PDU cables: one 142263-008 (Black) and one 142263-015 (Grey), ship standard with all AC-powered enclosures.

Table listing various AC Power Cords for different regions like Australia/China, Europe, etc., with SKUs.

Step 4 - Choose Supported Options For Fibre Channel Infrastructure

Table listing PremierFlex OM4 type cables and HP Premier Flex LC/LC Multi-mode OM4 cables with SKUs.

Table listing OM3 FC LC-LC cables and HP LC to LC Multi-mode OM3 cables with SKUs.

Step 4 - Choose Supported Options For SAS Infrastructure

Table listing supported options for SAS infrastructure, including Mini-SAS HD to Mini-SAS Fanout Cables and Mini-SAS HD to Mini-SAS HD Fanout Cables with SKUs.

Configuration Information

Table listing various MSA configurations including HP MSA 600GB 12G SAS 10K SFF, HP MSA 1.2TB 12G SAS 10K SFF, HP MSA 1.8TB 12G SAS 10K SFF, etc., with SKUs.

MSA Large Form Factor (LFF) SAS MDL DP drives for MSA 1040 Array

Table listing MSA Large Form Factor SAS MDL DP drives with SKUs.

MSA Large Form Factor (LFF) SAS DP drives for MSA 1040 Array

Table listing MSA Large Form Factor SAS DP drives with SKUs.

Step 2b - Drive Enclosure Options

Use either LFF or SFF disk enclosures with either Large or Small Form Factor array heads. Each enclosure ships with two 5.0m SAS to mini-SAS cables.

Table listing various drive enclosure options with SKUs.

NOTE: The MSA 2050 LFF and SFF Disk Enclosures require GL225 firmware or newer. The use of MSA 2050 LFF and SFF Disk Enclosures with MSA 1040/2040/2042 storage requires GL225 array controller firmware, or newer.

Step 2c - SAS Cable Options

miniSAS to miniSAS Cables: Connecting MSA 1040 Controller to a disk enclosure where a longer cable is desired.

Configuration Information

Table listing HP Mini SAS High Density to Dual 2-lane Mini SAS High Density External Fanout 4 Meter Cable with SKU.

NOTE: Recommended to utilize Fanout cables when connecting to SAS HBAs for maximum future flexibility without downtime. The Fanout cables are not supported on the MSA 2040.

Table listing Mini-SAS HD to Mini-SAS Cables with SKUs.

Table listing Mini-SAS HD to Mini-SAS HD Cables with SKUs.

Table listing SAS Controllers with SKUs.

Table listing Switches with SKUs.

Large handwritten signature and a circular stamp at the bottom right of the page.

Configuration Information

Step 4b - Choose Supported Options For 10GbE Infrastructure

- Verify that the cable/transceiver is supported with the connecting device (i.e. switch or NIC/SCSI HBA)
NOTE: Direct attach copper cables are supported in 10GbE Lom-based systems

Copper Cable	HP BladeSystem c-Class 10GbE SFP+ to SFP+ 0.5m Direct Attach Copper Cable	487649-B21
	HP BladeSystem c-Class 10GbE SFP+ to SFP+ 1m Direct Attach Copper Cable	487652-B21
	HP BladeSystem c-Class 10GbE SFP+ to SFP+ 3m Direct Attach Copper Cable	487655-B21
	HP BladeSystem c-Class 10GbE SFP+ to SFP+ 5m Direct Attach Copper Cable	537963-B21
	HP BladeSystem c-Class 10GbE SFP+ to SFP+ 7m Direct Attach Copper Cable	487658-B21

DAC Cable	HPE X242 10G SFP+ to SFP+ 1m Direct Attach Copper Cable	J92810
	HPE X242 10G SFP+ to SFP+ 3m Direct Attach Copper Cable <th>J92839</th>	J92839
	HPE X242 10G SFP+ to SFP+ 7m Direct Attach Copper Cable <th>J92858</th>	J92858
	HPE FlexNetwork X240 10G SFP+ to SFP+ 0.65m Direct Attach Copper Cable <th>JD095C</th>	JD095C
	HPE FlexNetwork X240 10G SFP+ to SFP+ 1.2m Direct Attach Copper Cable <th>JD096C</th>	JD096C
	HPE FlexNetwork X240 10G SFP+ to SFP+ 3m Direct Attach Copper Cable <th>JD097C</th>	JD097C
	HPE FlexNetwork X240 10G SFP+ to SFP+ 5m Direct Attach Copper Cable <th>JG081C</th>	JG081C
	HPE FlexNetwork X240 10G SFP+ to SFP+ 7m Direct Attach Copper Cable <th>JG784C</th>	JG784C

ISCSI Adapters NOTE: OS Specific software (ISCSI initiators) are supported on HICs which conform to the Fibre Channel Standards (Review SPOC) for any changes to the hardware ISCSI adapters which are supported: <http://www.hp.com/storage/ispoc>

Step 5 - Software

Software The MSA advanced virtualization functionalities are available as salable options for new and existing MSA 1040 owners. A firmware upgrade may be required
NOTE: The Advanced Data Services Suite includes a Performance Tuning LTU, S12 Snapshot Software LTU, and the Reinate Snap Software LTU.

HPE MSA Advanced Data Services Suite LTU	Q0H99A
HPE MSA Advanced Data Services Suite E-LTU	Q0H99AAE
HPE MSA 1040 Adv Virtualized Upg LTU	D4T78A
HPE MSA 1040 Adv Virtualized Upg E-LTU	D4T78AAE

Technical Specifications

MSA 1040	POWER REQUIREMENTS
	Input Power Requirements 110VAC 320A, 343W, 220VAC 167A, 337W (typical-running VO)
	SFF/LFF arrays
	Max Input Power 100-240 VAC, 50/60 Hz, 4.20-1.77A
	Heat Dissipation 1174 BTU/hr
	TEMPERATURE AND HUMIDITY RANGES
	Operating Temperature 41°F to 104°F (5°C to 40°C)
	Shipping Temperature -40°F to 158°F (-40°C to 70°C)
	Operating Humidity 10% to 90% RH @ 104°F (40°C) non-condensing
	Non-Operating Humidity Up to 93% RH @ 104°F (40°C)
	DECLARED ACOUSTIC NOISE LEVELS
	Sound Power A weighted sound power LWAd=6.75 B
	Sound Pressure A weighted sound pressure LpA= 55dB
	SHOCK AND VIBRATION
	Shock, Operational 3G's for 11 milliseconds
	Shock, Non-Operational Per NEBS GR-63-CORE UNPACKAGED EQUIPMENT SHOCK CRITERIA (4.3.2)
	Vibration, Operational 5-500Hz, 0.14 Grms shaped
	Vibration, Non-Operational 3-365-3Hz, 1.22 Grms-z-axis, 0.85 Grms, X&Y axis shaped spectrum
	PHYSICAL
	Height 3.5 in / 89 cm
	Depth (excluding cables) MSA 1040 SFF 24-bay array: 19.5 in / 495 cm
	(back of ear to back of controller handle) MSA 1040 LFF 12-bay array: 22.5 in / 572 cm
	Width (body only) 17.6 in / 44.7 cm (w/ ears 19 in / 48.26 cm)
	Chassis Weight (no controllers) MSA 1040 LFF chassis: 31 lbs. (DC-pwr model: 32.6 lbs)
	MSA 1040 SFF chassis: 29.1 lbs. (DC-pwr model: 30.7 lbs)
MSA 1040 Controllers:	User Interface Status and activity provided via management interfaces. Status indicators on front of Controller
	RAID Support 0, 1, 3, 5, 6, 10, 50
	Cache Memory 4GB Read/Write, ECC protection with backup to Flash memory (indefinite backup)
	Cache Backup ECC protection with back up to flash memory (indefinite backup)
	Upgradeable Firmware yes
	Disk Drive and Enclosure 6 Gb SAS - Serial Attached SCSI
	Protocol Support
	Host Ports 2 x 8Gb Fibre Channel per controller 2 x 10GbE iSCSI per controller 2 x 10GbE iSCSI per controller
	Expansion Port SAS (SFF8088) 4x lane 6 Gb SAS
	Weight, controller MSA 1040 Controllers 4.8 lbs.

Technical Specifications

MSA 1040 Regulatory Info	Safety	UL 60950-1 (USA) CAN/CSA-C22.2 No. 60950-1-03 (Canada) EN 60950-1 (European Union) GS mark (Germany) IEC 60950-1 (International) CCC Mark (power supply only, China PRC)
	Electromagnetic Compatibility	VCCI2008-04 Class A (Japan) FCC 15-109(j) Class A (USA) ICES-003/2004 Class A (Canada) EN55022 (European Union Class A), CISPR 22 (International Class A) EN61000-3-2 (G-harmonics) (European Union) EN61000-3-3 (Flicker) (European Union) EN 55024 (European Union, Immunity, Class A), CISPR 24 (International Immunity, Class A) AS/NZS CISPR 22, Class A (Australia, New Zealand) CNS 13438 Taiwan, Class A (Taiwan) KN21 Class A (Emissions Class A), KN24 (Immunity) (S Korea)
	RoHS and WEEE	RoHS-6/6 Compliance, China RoHS, WEEE
	Country Approvals	United States, Australia, New Zealand, Canada, China (PRC), European Union, Germany (GS Mark), Japan, South Korea, Taiwan

Summary of Changes

Date	Version History	Action	Description of Change:
05-Mar-2018	From Version 22 to 23	Added	Added MSA 2050 SFF and LFF Disk Enclosures as supported options on the MSA 1040 storage systems.
05-Feb-2018	From Version 21 to 22	Added Changed	Added new Drive Capacities. Maximum Capacity with SFF and LFF drives. Family Information and Configuration Information were revised.
06-Nov-2017	From Version 20 to 21	Changed	Changes were made throughout the QuickSpecs
27-Mar-2017	From Version 19 to 20	Changed	Changes were made throughout the QuickSpecs
13-Feb-2017	From Version 18 to 19	Changed	Changes were made throughout the QuickSpecs
26-Sept-2016	From Version 17 to 18	Changed	Changes made to the Configuration Information, Family Information and Features Sections
15-Aug-2016	From Version 16 to 17	Changed	Changes made throughout the QuickSpecs
13-Mar-2016	From Version 15 to 16	Changed	Changes made to the Configuration Information and Models Sections.
11-Mar-2016	From Version 14 to 15	Changed	Changes made to the What's New, Models and Family Info Sections.
16-Feb-2016	From Version 13 to 14	Changed	Changes made to the Optional Software, Configuration Information, Features and Service and Support Sections
04-Dec-2015	From Version 12 to 13	Changed	Corrected the description of the StoreEasy gateway SKU
23-Oct-2015	From Version 11 to 12	Changed	Changes were made throughout the QuickSpecs
18-Sept-2015	From Version 10 to 11	Changed	Changes made to the Configuration Information Section.
21-Aug-2015	From Version 9 to 10	Changed	Changes were made throughout the QuickSpecs.
17-Jul-2015	From Version 8 to 9	Changed	Changed the Models, Family Info and Configuration information Sections
26-Jun-2015	From Version 7 to 8	Changed	Changes made to the Optional Software, Family Information, Features and Overview Sections
01-Jun-2015	From Version 6 to 7	Changed	Changes were made throughout the QuickSpecs.
03-Apr-2015	From Version 5 to 6	Changed	Changes made to the What's New, Family Info and Config Info Sections.
30-Mar-2015	From version 4 to 5	Changed Added	SKUs descriptions updated. Obsolete SKUs removed. Introducing support for 12G SFF and LFF w/ Hard Disk Drives
01-Dec-2014	From Version 3 to 4	Changed	Changes were made throughout the QuickSpecs
29-Sep-2014	From Version 2 to 3	Changed	Changes were made throughout the QuickSpecs
14-Apr-2014	From Version 1 to 2	Changed	Corrected the HTML Changes document.

f t in m
Sign up for updates

Hewlett Packard
Enterprise

© Copyright 2018 Hewlett Packard Enterprise Development LP. The information contained herein is subject to change without notice. The only warranties for Hewlett Packard Enterprise products and services are set forth in the express warranty documents accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Hewlett Packard Enterprise shall not be liable for technical or editorial errors or omissions contained herein.

Microsoft and Windows NT are US registered trademarks of Microsoft Corporation. Intel is a US registered trademark of Intel Corporation. Unix is a registered trademark of The Open Group.

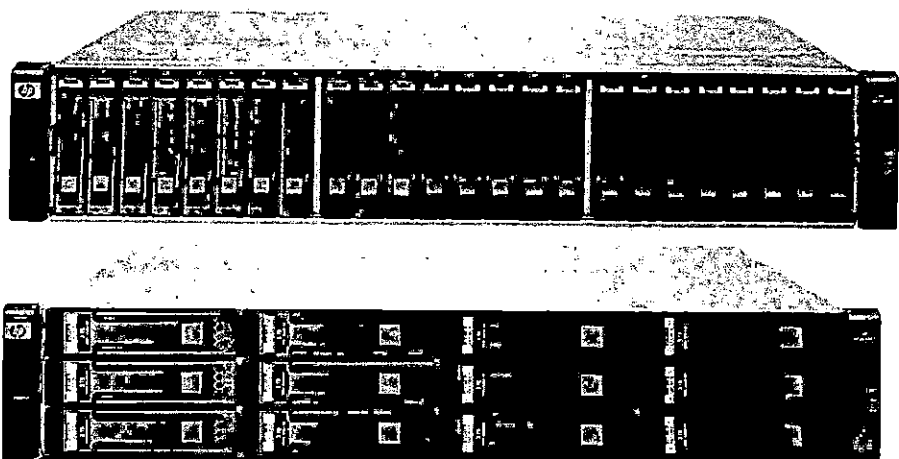
04227623 - 14884 - Worldwide - V23 - 05-March-2018

SECRET

Handwritten signature



HPE MSA 2040 Storage

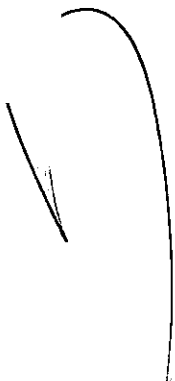


The latest MSA array features two high-performance controllers with support for the industry's latest Fibre Channel, iSCSI, and SAS host interfaces. The MSA 2040 delivers mid-market features to entry SAN customers wanting to utilize the latest spinning or solid state drive technologies. Simple to deploy and simple to manage.

Changing storage requirements have raised the bar for entry shared storage arrays. The MSA 2040 uniquely addresses HPE ProLiant and BladeSystem server customers' shared storage and data protection needs, reducing total cost of ownership while dramatically increasing performance and availability utilizing technologies such as SSDs, Self-Encrypted Drives (SEDs), and a host of advanced data services previously only available on mid-range and enterprise disk arrays.

The HPE MSA 2040 Storage arrays are positioned to provide an excellent value for customers needing increased performance to support initiatives such as consolidation and virtualization. The MSA 2040 delivers this performance by leveraging a new, fourth generation, controller architecture with more processing resources, 4GB data cache and 2GB system memory per controller and four host ports per controller standard. The controller architecture delivers incredible performance and allows users to extract full benefits from the latest storage technologies such as SSDs.

AA



000110

Product key benefits

Simple: Flexible architecture. Easy to setup. Easy to manage

- Choice of 8 Gb/16 Gb FC, 1GbE/10GbE iSCSI, and 6 Gb/12 Gb SAS to match the configuration needs of your SAN infrastructure.
- Deploy single or dual controllers depending on high-availability and budgetary requirements.
- Select large or small form factor disk enclosures with choice of high-performance SSDs, SEDs, Enterprise-class SAS or SAS Midline drives based on application, performance, and budgetary requirements. Drive types may be mixed in any enclosure.
- Integrated setup and management tools for MSA are easy to manage for ProLiant/BladeSystem IT managers.

Fast: The MSA 2040 set new standards for \$/IOPS in entry SAN, up to 4X today's competition

- High-performance controller architecture delivering up to 4X the performance of today's other entry-level SAN arrays.
- MSA 2040 4-port controller architecture with 4 GB cache supporting the latest FC, iSCSI & SAS interfaces translates into better application response times and the ability to support more virtualized workloads.
- SSD support with integrated lifecycle management and new virtualized data services to help unlock flash capabilities in your environment. Utilizing the latest SSDs, you will see improved application performance and reduces operating costs by reducing foot prints and power consumption.

Future proof: 2X the bandwidth and the MSA 2040 was the first entry SAN with 16 Gb FC and 12 Gb SAS

- Converged SAN Controller ports are upgradeable by SFPs to 8 Gb/16 Gb FC, and/or 1GbE/10GbE iSCSI. The MSA 2040 SAS controller supports 6 Gb or 12 Gb SAS facilitating ultra-high performance with or without required dedicated SAN infrastructure.
- 4th generation of MSA's unique Data-in-Place upgrades provides unmatched investment protection during generational upgrades within the MSA family. This eliminates painful data migrations required by our competitors.

CONFIDENTIAL

Handwritten signature and scribbles at the bottom right of the page.

Virtualization features

The 4th generation of MSA provides support for a powerful set of data services enabled with a new virtualized array system architecture. Existing MSA 2040 customers have access to these new features via a firmware upgrade. Features supported in virtualization firmware are:

- Thin Provisioning. This feature allows storage allocation of physical storage resources only once they are consumed by an application.
- SSD Read Cache. Improves random read performance by allowing an SSD to be utilized as an extension of the MSA 2040 controller cache.
- Automated Tiering (with Performance³ and Archive Tiering). Utilizing a real-time I/O engine to intelligently position data on the most appropriate "tier" of storage. For customers leveraging MSA's Performance tiering capacities¹, users will see improved application response times on both read and write activities for frequently accessed data and better utilization of storage resources through the ability to move data which has not been accessed for long periods of time off to more cost effective Midline SAS HDDs (Archive Tiering).
- Virtual Tier Affinity. This features prioritizes application workloads. This feature is an enhancement to the Automated Tiering feature. This feature is available with GL220 firmware or newer.
- Virtualized Snapshot services. Created specifically for MSA's virtualized storage architecture, the MSA 2040 will be able to utilize Redirect-on-Write technology to provide better snapshot performance and the ability to create more complex snapshots with simplified snapshot management.
- New Web User Interface. The new virtualized array architecture also comes with a powerful, embedded Storage Management Utility which will make setup and management of the MSA 2040 and these new features a breeze. Users familiar with MSA's previous Web UI will have the option to continue on or take advantage of the new UI.
- Wide Striping. By leveraging virtualized storage "pools," MSA 2040 users can leverage wide striping technology to simplify volume expansion and to facilitate full utilization of all resources allocated to a specific volume.

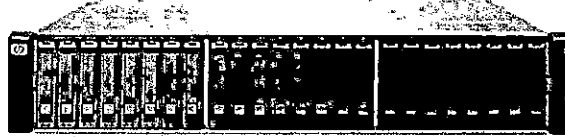
For more information on MSA software, visit hp.com/go/MSA

³ Paid Option

000111

AT/MSA/ATA
M

Technical specifications



HPE MSA 2040 Storage

Drive description	Up to 199 SFF SAS/MDL SAS/SSD/SED or 96 LFF SAS/MDL SAS/SED Maximum including base array and expansion, depending on model
Drive type	Please refer to QuickSpecs for detailed information on supported hard drives: h18004.www1.hp.com/products/quickspecs/14603_div/14603_div.pdf
Capacity	Supported 768 TB maximum including expansion, depending on model
Storage expansion options	HPE MSA 2040 3.5-inch LFF disk enclosure or D2700 2.5-inch SFF-disk enclosure MSA 2040 supports up to 7 disk enclosures
Storage host interface	4-Port SAN Controller: 8 Gb/16 Gb Fibre Channel and/or 1GbE/10GbE iSCSI 4-Port SAS Controller: 6 Gb/12 Gb SAS (autoswitching)
Storage controllers	MSA 2040 SAN Controller MSA 2040 SAS Controller
SAN backup support	Yes
Systems Insight Manager support	Yes
ENERGY STAR® Compliance	Yes
	Note MSA 2040 ENERGY STAR Certification is listed on the EPA website— Link
Compatible operating systems	Microsoft® Windows Server® 2012 Microsoft Windows® 2008 Microsoft Windows Hyper-V HP-UX Red Hat® Linux SUSE Linux VMware® ESXi 5.x VMware ESXi 6.x Detailed information available at: hp.com/storage/spock
Clustering support	Windows, Linux®, HP-UX
Form factor	2U base array, 2U LFF or SFF disk enclosures
Warranty (parts-labor-onsite)	3-0-0

HP
MSA 2040

MSA Software and Data Services

HPE MSA Snapshot Software

HPE MSA Snapshot Software services enable increased data protection by creating recovery points for your data, taking a "picture" of your data at a specific point in time. Snapshots are then maintained even as data continues to change. In the event of a failure, you can recover to any previous snapshot. Snapshots are a great complement to tape or disk backup strategy.

MSA Snapshot functionality is controller-based so no host resources are used. MSA 2040 Copy Services utilize Copy-on-Write capabilities when operating on Linear Volumes and Redirect-on-Write capabilities when operating on virtualized volumes. The MSA 2040 ships standard with 64 Snapshots enabled. An optional 512 Snapshot Software License is available¹.

HPE Volume Copy Software

HPE MSA Volume Copy Software makes a physical copy of the data to another set of disks within the same array. One of the benefits of Snapshot and Volume Copy software is the ability to mount a Snap or Volume Copy to another server for backup, application testing, or data mining. HPE Volume Copy Software is controller based, meaning no host resources are used. MSA 2040 arrays ship standard with Volume Copy. Volume copy works for both linear and virtual storage with GL220 firmware or newer. Pre-GL220 firmware, volume copy only works with linear storage.

HPE MSA Array Remote Snap Software

Built on asynchronous replication technology that provides remote replication on the HPE MSA 1040/2040 and HPE P2000 G3 Arrays (FC, Combo FC/iSCSI, or iSCSI models), this optional software is based on MSA's core Snapshot technology. It supports both Ethernet (iSCSI) and Fibre Channel interconnects and provides flexible remote data protection options between two MSA arrays enabling local and/or remote recovery. Remote Snapshots only function with linear volumes. For more information, please visit: hp.com/go/RemoteSnap

MSA 2040 Performance Tiering Upgrade

MSA 2040's Automated Tiering engine is capable of providing "Performance Tiering" functionality as well as "Archive Tiering" functionality. The Performance Tiering functionality operates to move data between an Enterprise SAS HDD tier and an SSD Tier based on real-time access trends placed on the array. Archive Tiering is a standard feature with the virtualized firmware architecture. It operates to move data between and Enterprise SAS HDDs and Midline SAS HDDs based on real-time I/O patterns.

HPE StoreEasy File Services

An HPE StoreEasy 3000 Gateway can add file, print, iSCSI, and management hosting services to an MSA 2040 array. For more information, visit hp.com/go/StoreEasy



RECEIVED

000112

104

HPE Factory Express provides customization and deployment services along with your storage and server purchases. You can customize hardware to your exact specifications in the factory—helping speed deployment. hp.com/go/factoryexpress

Gain the skills you need with ExpertOne training and certification. With HPE Converged Storage training, you will accelerate your technology transition, improve operational performance, and get the best return on your HPE investment. Our training is available when and where you need it, through flexible delivery options and a global training capability. hp.com/learn/storage

Customize your IT lifecycle management, from acquisition of new IT, management of existing assets, and removal of unneeded equipment. hp.com/go/hpfinancialservices

HPE Technology Services

Expert HPE storage consultants and service professionals sit down with you and your team to map your storage needs. Not only can we help you accelerate implementation and reduce deployment risk, but we can also help you realize the full value of your storage purchases as you transform storage for the New Style of IT.

Advice, transform, and integrate

Navigate through the complexities of storage, backup, archive, disaster recovery, and Big Data with advisory, transformation, and integration consulting.

Deploy and implement

Access expertise to support deployment, operations, relocation, sanitization, and disposal, plus improvement-focused education.

Operate and support

Find the level of personalized, proactive, and simplified support right for your business.

Note

Specific service availability varies by product

HPE Foundation Care

System-level IT hardware and software support delivers flexible coverage window and response time for more choice and simplicity.

HPE Proactive Care

Combined reactive and proactive services provide easy-to-purchase, cost-efficient system-level support coupled with personalized expert advice and products connected to HPE to help prevent problems and reduce downtime.

HPE Proactive Care Advanced builds and incorporates on Proactive Care and also gives customers personalized technical and operational advice from an assigned, local Account Support Manager for personalized technical collaboration, flexible access to specialist skills to help optimize business critical IT, and enhanced Critical Incident Management to help so the business is not affected if there is a system or device outage.

The bottom of the page contains several handwritten signatures and stamps. On the left, there are two large, stylized signatures. In the center, there is a smaller signature. On the right, there are two rectangular stamps, one above the other, both containing illegible text. Below the stamps, there is another signature.

Resources

QuickSpecs

HPE Datacenter Care

Get the support you need to deploy, operate, and evolve your data center environment to be hybrid-cloud ready with single-point-of-accountability for HPE and others' product.

Get connected and get back to business—HPE Storage Technology Services provide the path to get your HPE Storage solutions and your business connected to HPE. Once connected, our experts are able to scan your system and run health checks, then use that data to create personalized reports and recommendations for actions to take to prevent problems and downtime.

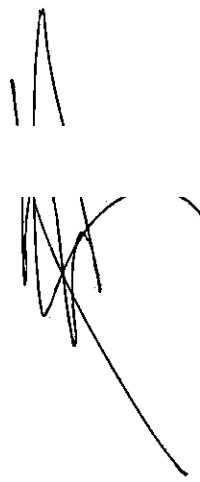
For more information, visit hp.com/services/storage

Learn more at
hp.com/go/msa



2

J



Sign up for updates

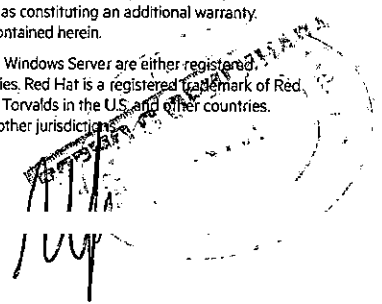
★ Rate this document



© Copyright 2013–2016 Hewlett Packard Enterprise Development LP. The information contained herein is subject to change without notice. The only warranties for Hewlett Packard Enterprise products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Hewlett Packard Enterprise shall not be liable for technical or editorial errors or omissions contained herein.

ENERGY STAR is a registered mark owned by the U.S. government. Microsoft, Windows, and Windows Server are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. Red Hat is a registered trademark of Red Hat, Inc. in the United States and other countries. Linux is the registered trademark of Linus Torvalds in the U.S. and other countries. VMware is a registered trademark or trademark of VMware, Inc. in the United States and/or other jurisdictions.

4AA4-6608ENW, March 2016, Rev. 6



Overview

HPE MSA 2040 Storage

ENERGY STAR certified HPE MSA 2040 is a high-performance storage array designed for entry-level Hewlett Packard Enterprise customers desiring 8Gb/16Gb Fibre Channel, 1GbE/10GbE iSCSI or 12Gb SAS connectivity with 4 host ports per controller. The MSA 2040 Storage array provides an excellent value for customers needing performance balanced with price to support initiatives such as consolidation and virtualization.

The MSA 2040 delivers this performance by offering:

- High performance controller architecture
- 6GB cache per controller, 12GB per storage array
- Support for SSDs, Enterprise SAS HDDs, Midline SAS HDDs, and Self Encrypting Drives
- SAN and SAS interfaces
- Up to four (4) host ports per controller, 8 host ports per storage array
- Two new MSA 2040 Controllers:
 - MSA 2040 SAN Controller
 - 8Gb/16Gb FC connectivity and/or
 - 1GbE/10GbE iSCSI connectivity
 - MSA 2040 SAS Controller
 - 6Gb/12Gb SAS connectivity

The HPE MSA 2040 Storage ships standard with a license for 64 snapshots for increased data protection. The MSA2040 now offers a simplified licensing strategy with one optional software suite. The Advanced Data Services Suite include the following software licenses:

- HPE MSA 2042 Performance Automated Tiering LTU
- HPE MSA S12-Snapshot Software LTU
- HPE MSA Remote Snap Software LTU

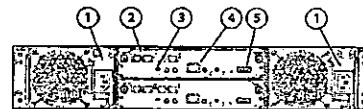


HPE MSA 2040 Storage (SFF)



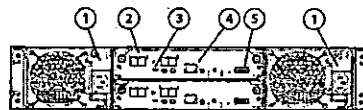
HPE MSA 2040 Storage (LFF)

Overview



MSA 2040, 2 SAN controllers Installed

1. Power supplies
2. 8 and/or 16Gb Fibre Channel 1 and/or 10GbE iSCSI
3. CLI port (mini-USB)
4. Management Ethernet port
5. Expansion port



MSA 2040, 2 SAS controllers Installed

1. Power supplies
2. 6Gb/12Gb mini-SAS HD ports
3. CLI port (mini-USB)
4. Management Ethernet port
5. Expansion port

Models

HPE MSA 2040 Storage Models

MSA 2040 Controller:	
HPE MSA 2040 SAN Controller	CBR09A
HPE MSA 2040 SAS Controller	CBSS5A
MSA 2040 Pre-Configured Models:	
HPE MSA 2040 Energy Star SAN Dual Controller LFF Storage ¹	K2R79A
HPE MSA 2040 Energy Star SAN Dual Controller SFF Storage ²	K2R80A
HPE MSA 2040 Energy Star SAS Dual Controller LFF Storage ³	K2R83A
HPE MSA 2040 Energy Star SAS Dual Controller SFF Storage ⁴	K2R84A

NOTES:

- ¹Includes LFF Array Chassis - two MSA 2040 SAN controllers, no drives or SFPs are included.
- ²Includes SFF Array Chassis - two MSA 2040 SAN controllers, no drives or SFPs are included.
- ³Includes LFF Array Chassis - two MSA 2040 SAS controllers, no drives or host connect cables are included (SFPs not required for SAS controllers)
- ⁴Includes SFF Array Chassis - two MSA 2040 SAS controllers, no drives or host connect cables are included (SFPs not required for SAS controllers)

[Handwritten signature]

Features

ENERGY STAR Certified

The HPE MSA 2040 SKUs are now ENERGY STAR certified. ENERGY STAR certified products are energy efficient which result in cost savings via reduced energy consumption and regulatory rebates. Please refer to the US EPA website for details on ENERGY STAR certification criteria and process. MSA 2040 ENERGY STAR Certification is listed on the EPA website.

As a part of gaining ENERGY STAR certification, MSA 2040 SKUs were required to change such that Hewlett Packard Enterprise and our customers can delineate between product shipped before the EPA recognized the MSA 2040 as ENERGY STAR compliant and arrays shipped after the MSA 2040 obtaining the official certification.

No physical changes were made to the MSA 2040 or any of its components to pass the ENERGY STAR compliance testing other than SKU numbering and labels (physical and electronic). There are no physical form, fit or function differences between the older and the ENERGY STAR compliant HPE MSA 2040 SKUs.

No new qualification or testing is required in order to use/substitute the new ENERGY STAR certified SKUs.

NOTE: The EOL SKUs in the table below were discontinued on July 31, 2015. The replacement ENERGY STAR SKUs are listed below.

EOL SKU	Energy Star SKU	Energy Star SKU Description
CBR14A	K2R79A	HPE MSA 2040 Energy Star SAN Dual Controller LFF Storage
CBR15A	K2R80A	HPE MSA 2040 Energy Star SAN Dual Controller SFF Storage
CBSS4A	K2R83A	HPE MSA 2040 Energy Star SAS Dual Controller LFF Storage
CBSS5A	K2R84A	HPE MSA 2040 Energy Star SAS Dual Controller SFF Storage
CBR10A	K2R81A	HPE MSA 2040 Energy Star SFF Chassis
CBR12A	K2R82A	HPE MSA 2040 Energy Star LFF Chassis
CBR18A	M0S96A	HPE MSA 2040 Energy Star LFF Disk Enclosure
CBR16A	M0T00A	HPE MSA 2040 Energy Star SAN Dual Controller with 24 1.2TB 12G SAS 10K SFF HDD 28.8TB Bundle
CBSS6A	M0T01A	HPE MSA 2040 Energy Star SAS Dual Controller with 24 1.2TB 12G SAS 10K SFF HDD 28.8TB Bundle

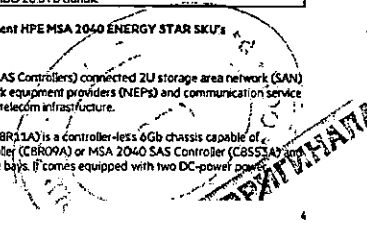
Table showing the replacement HPE MSA 2040 ENERGY STAR SKUs

HPE MSA 2040 Carrier-Grade Components (NEBS)

The HPE MSA 2040 Storage arrays (SAN or SAS Controllers) connected 2U storage area network (SAN) or direct connect solution designed for network equipment providers (NEPs) and communication service providers. Suited for those who need a robust telecom infrastructure.

The HPE MSA 2040 Carrier-Grade Chassis (CBR11A) is a controller-less 4GB chassis capable of supporting one or two MSA 2040 SAN Controller (CBR09A) or MSA 2040 SAS Controller (CBSS5A) and has twenty-four Small Form Factor (SFF) drive bays. It comes equipped with two DC-power power supplies.

0000114



Features

The HPE MSA 25-in Dual I/O JBOD (BV921C) is a special model disk enclosure designed for use with NEBS compliant MSA 2040 configurations. This drive enclosure has 24 drive bays (unlike the D2700 with 25 drive bays) and has dual DC-power supplies. It is only sold with a carrier-grade arrays. The NEBS compliant MSA 2040 supports configurations with up to 7 compliant disk enclosures for a maximum of 192 SFF HDD's.

When used in conjunction with specific Storage SFF SAS drives, the solution is NEBS certified (GR-63 and GR-1089) and Seismic Zone 4 rated. NEBS level-3 certification provides the assurance that the equipment is safe to operate and sturdy enough to withstand certain physical and environmental (for example, fire earthquakes) conditions. For Seismic Zone 4 rating, the MSA 2040 must be mounted in an HPE Seismic Rack (AH335A).

MSA DC-power Carrier-grade SFF Chassis SKU
 HPE MSA 2040 SFF DC-power Chassis CBR11A
 NOTE: NEBS certified

MSA 2040 Controller:
 HPE MSA 2040 SAN Controller CBR09A
 HPE MSA 2040 SAS Controller CBS53A

SFF Carrier-grade (only) DC-power JBOD
 HPE MSA Dual I/O DC Power Carrier Grade SFF (2.5in) Drive Enclosure BV921C
 NOTE: 24-drive SFF bays, NEBS certified, only sold with carrier-grade arrays.

HPE MSA SFF Hard Disk Drives
 MSA 2040 Drives:

SAS Drives (SFF 2.5-Inch)
 12G SFF 15K SAS HDDs
 HPE MSA 300GB 12G SAS 15K SFF (2.5in) Enterprise 3yr Warranty Hard Drive J9F40A
 HPE MSA 600GB 12G SAS 15K SFF (2.5in) Enterprise 3yr Warranty Hard Drive J9F42A
 HPE MSA 900GB 12G SAS 15K SFF (2.5in) Enterprise 3yr Warranty Hard Drive O1H47A
 12G SFF 10K SAS HDDs
 HPE MSA 300GB 12G SAS 10K SFF(2.5in) Dual Port Enterprise 3yr Warranty Hard Drive J9F44A
 HPE MSA 600GB 12G SAS 10K SFF(2.5in) Dual Port Enterprise 3yr Warranty Hard Drive J9F46A
 HPE MSA 1.2TB 12G SAS 10K SFF(2.5in) Dual Port Enterprise 3yr Warranty Hard Drive J9F48A
 12G SFF SAS SSDs (Mixed Use)
 HPE MSA 400GB 12G SAS Mixed Use SFF (2.5in) 3yr Warranty Solid State Drive N9X95A
 HPE MSA 800GB 12G SAS Mixed Use SFF (2.5in) 3yr Warranty Solid State Drive N9X96A
 HPE MSA 1.6TB 12G SAS Mixed Use SFF (2.5in) 3yr Warranty Solid State Drive N9X91A
 HPE MSA 3.2TB 12G SAS Mixed Use SFF (2.5in) 3yr Warranty Solid State Drive N9X92A
 12G SFF SAS SED
 HPE MSA 1.2TB 12G SAS 10K SFF (2.5in) Enterprise Self Encrypted 3yr Wty Hard Drive P9M81A

Smart Buys SmartBuys are pre-discounted SKUs available in participating North and South American countries. Please check with your local authorized partner for availability

Features

Smart Buy Drive Kits
 HPE MSA 300GB 12G SAS 10K SFF(2.5in) Dual Port Enterprise 3yr Warranty Hard Drive/S-Buy J9F44SB
 HPE MSA 600GB 12G SAS 10K SFF(2.5in) Dual Port Enterprise 3yr Warranty Hard Drive/S-Buy J9F46SB
 HPE MSA 1.2TB 12G SAS 10K SFF(2.5in) Dual Port Enterprise 3yr Warranty Hard Drive/S-Buy J9F48SB
 HPE MSA 1.8TB 12G SAS 10K SFF (2.5in) 512e Enterprise 3yr Warranty Hard Drive/S-Buy J9F49SB

Smart Buy MSA 2040 Storage Systems
 HPE MSA 2040 SAN Controller/S-Buy CBR09SB
 HPE MSA 2040 8Gb Short Wave Fibre Channel SFP+ 4-pack Transceiver/S-Buy CBR23SB
 HPE MSA 2040 16Gb Short Wave Fibre Channel SFP+ 4-pack Transceiver/S-Buy CBR24SB
 HPE MSA 2040 1Gb Short Wave iSCSI SFP+ 4-pack Transceiver/S-Buy CBS75SB
 HPE MSA 2040 10Gb Short Wave iSCSI SFP+ 4-pack Transceiver/S-Buy CBR25SB
 HPE MSA 2040 Energy Star SAN Dual Controller LFF Storage/S-Buy K2R79SB
 HPE MSA 2040 Energy Star SAN Dual Controller SFF Storage/S-Buy K2R80SB
 HPE MSA 2040 Energy Star SFF Chassis/S-Buy K2R81SB
 HPE MSA 2040 Energy Star LFF Chassis/S-Buy K2R82SB
 HPE MSA 2040 Energy Star SAS Dual Controller LFF Storage/S-Buy K2R83SB
 HPE MSA 2040 Energy Star SAS Dual Controller SFF Storage/S-Buy K2R84SB
 HPE MSA 2040 Energy Star LFF Disk Enclosure/S-Buy M9S96SB

HPE MSA ES Dual Controller SAS 600GB Flash Bundle/S-Buy P9H23SB
 *Includes: (1) HPE MSA 2040 ES SAS DC SFF Storage K2R84A
 (4) HPE MSA 800GB 12G Mixed Use SAS 2.5in SSD N9X96A
 (1) HPE MSA 2040 Perf Auto Tiering E-LTU D4T79A
 HPE MSA ES Dual Controller SAN 400GB Flash Bundle/S-Buy P9H24SB
 *Includes: (1) HPE MSA 2040 ES SAN DC SFF Storage K2R80A
 (4) HPE MSA 400GB 12G Mixed Use SAS 2.5in SSD N9X95A
 (1) HPE MSA 2040 Perf Auto Tiering E-LTU D4T79A
 HPE MSA ES Dual Controller SAN 800GB Flash Bundle/S-Buy P9H25SB
 *Includes: (1) HPE MSA 2040 ES SAN DC SFF Storage K2R80A
 (4) HPE MSA 800GB 12G Mixed Use SAS 2.5in SSD N9X96A
 (1) HPE MSA 2040 Perf Auto Tiering E-LTU D4T79A
 HPE MSA ES Dual Controller SAS 400GB Flash Bundle/S-Buy P9H26SB
 *Includes: (1) HPE MSA 2040 ES SAS DC SFF Storage K2R84A
 (4) HPE MSA 400GB 12G Mixed Use SAS 2.5in SSD N9X95A
 (1) HPE MSA 2040 Perf Auto Tiering E-LTU D4T79A

Smart Buy Disk Enclosures
 HP D2700 Disk Enclosure/S-Buy AJ941SB

Features

All MSA 2040 models offer a common set of valuable features:

- MSA 2040 controller architecture which maximizes performance
 - Four host ports per controller
 - MSA 2040 SAN controller supports 8 Gb FC, 16 Gb FC, 1GbE iSCSI or 10GbE iSCSI SFPs.
 - MSA 2040 SAS controller supports 6 Gb and 12 Gb SAS host connectivity using mini-SAS HD Cables.
 - 4 GB transportable read/write cache per controller.
 - Battery-free cache backup with super capacitors and compact flash
- MSA 2040 SAN Controller allows customers to create their own Combo Controller by mixing FC and iSCSI SFPs. Below are the valid configurations for mixing SFPs:

Configuration Table for mixing SFPs

Configuration	Controller	Host Port 1 SFP ¹	Host Port 2 SFP ²	Host Port 3 SFP ³	Host Port 4 SFP ⁴
Table for mixing SFPs	Controller A	16Gb FC	16Gb FC	None	None
				16Gb FC	16Gb FC
				8Gb FC	8Gb FC
				10GbE iSCSI	10GbE iSCSI
				1GbE iSCSI	1GbE iSCSI
				10GbE iSCSI	10GbE iSCSI
		8Gb FC	8Gb FC	None	None
				16Gb FC	16Gb FC
				8Gb FC	8Gb FC
				10GbE iSCSI	10GbE iSCSI
				1GbE iSCSI	1GbE iSCSI
				10GbE iSCSI	10GbE iSCSI
10GbE iSCSI	10GbE iSCSI	None	None		
		10GbE iSCSI	10GbE iSCSI		
		1GbE iSCSI	1GbE iSCSI		
		None	None		
		10GbE iSCSI	10GbE iSCSI		
		1GbE iSCSI	1GbE iSCSI		
Dual Controller	Controller B	N/A	N/A	N/A	N/A
				None	None
				16Gb FC	16Gb FC
				8Gb FC	8Gb FC
				10GbE iSCSI	10GbE iSCSI
				1GbE iSCSI	1GbE iSCSI
	Controller A	16Gb FC	16Gb FC	None	None
				16Gb FC	16Gb FC
				8Gb FC	8Gb FC
				10GbE iSCSI	10GbE iSCSI
				1GbE iSCSI	1GbE iSCSI
				10GbE iSCSI	10GbE iSCSI
8Gb FC	8Gb FC	8Gb FC	None	None	
			16Gb FC	16Gb FC	
			8Gb FC	8Gb FC	
			10GbE iSCSI	10GbE iSCSI	
			1GbE iSCSI	1GbE iSCSI	
			10GbE iSCSI	10GbE iSCSI	
10GbE iSCSI	10GbE iSCSI	10GbE iSCSI	None	None	
			10GbE iSCSI	10GbE iSCSI	
			1GbE iSCSI	1GbE iSCSI	
			None	None	
			10GbE iSCSI	10GbE iSCSI	
			1GbE iSCSI	1GbE iSCSI	

Features

Controller B | Match Controller A | Match Controller A | Match Controller A | Match Controller A
 NOTES: ¹SFP in Host Port 1 must match SFP in Host Port 2
²SFP in Host Port 3 must match SFP in Host Port 4



Features

All MSA 2040 models offer a common set of valuable features:

- NOTE:**
Customers must upgrade their MSA 2040 controller firmware to GL101 or later for SCSI functionality.
Customers must upgrade their MSA 2040 controller firmware to GL200 or later for Self-Encrypting Drive functionality.
Customers must upgrade their MSA 2040 controller firmware to GL210 or later for enhanced performance.
Customers must upgrade their MSA 2040 controller firmware to GL220 or later for additional MSA 2040 virtualization features (such as remote Snap resolution for iSCSI, virtual tier affinity, large pool support, thin-provisioned space management, scheduler and volume copy on virtual storage).
- MSA 2040 supports SSD drives which allow IT managers to boost IOPS performance.
 - Automated Sub-Lun Tiering. The MSA 2040 can manage up to three tiers of storage. Performance tier, Standard tier and Archive tier. This feature is available with GL200 firmware or newer.
 - SSD Performance Tier to improve random read and write performance. Creation of an SSD Performance Tier for both read and write capabilities requires a Performance Auto Tiering License (D4T79AJ/D4T79AE). The Performance Auto Tiering License is not required in Linear Storage configurations not utilizing Virtual Storage Disk-Groups and Pools.
 - SSD Read Cache to improve random read performance. A maximum of 2 SSDs are supported per pool utilizing a maximum of 4 TB of read cache per controller.
 - Thin Provisioning allows storage allocation of physical storage resources only once they are consumed by an application. Thin Provisioning also allows over-provisioning of physical storage pool resources allowing ease of growth for volumes without predicting storage capacity upfront. Thin Provisioning is available with GL200 firmware or newer.
 - Snapshot enhancements for virtual storage, including performance improvements, hierarchical snapshots, and simplified resource management. Administrators can monitor and optionally control snapshot space usage with GL220 firmware or later.
 - Prioritize data by assigning appropriate affinity level (Performance, No Affinity & Archive) with GL220 firmware or later.
 - Large Pool Support is available with GL220 firmware or later. Customers can now enjoy 512 TiB capacity per virtual pool by enabling large pool support.
 - MSA 2040 supports Self-Encrypting Drives (SED) to allow customers to secure their critical data and comply with all required regulatory mandates.
 - Simple storage management including an intuitive browser-based user interface.
 - Storage Management Utility V3 (SMU). This new MSA management GUI brings a new modern look and feel to array management. SMU V3 available with GL200 firmware or newer. Existing MSA customers can choose to use the new SMU V3 or to continue to use the previous generation SMU V2 if new virtualization features are not required.
 - MSA 2040 comes standard with 64 controller-based snapshots and clone capability (volume copy is available for both linear and virtual storage with GL220 firmware or later; pre-GL220 firmware, volume copy is only available on linear storage). Arrays also support an optional 512 snaps. Choose either a low-cost single controller array or start with a configured dual controller array model to fit the budget, high availability, and performance needs.
 - All models feature a wide variety of drives: High-performance SSD drives, enterprise-class SAS, SED and SAS Midline drives.
 - The MSA 2040 will support a maximum of 7 disk enclosures (either LFF and/or SFF). Add-on enclosures can either be D2700 Small Form Factor (SFF) drive enclosures or MSA 2040 Large Form Factor (LFF) disk enclosures. The array can grow incrementally from a few drives to 96 LFF or 199 SFF drives.
 - Disk Groups can be spanned across multiple enclosures RAID levels 1, 5, 6, 10. Linear Volumes support RAID levels 0, 1, 3, 5, 6, 10, 50.
 - Maximum hard drive counts vary by RAID levels: 2 drive max for RAID level 1; max of 16 drives for RAID levels 0, 3, 5, 6, and 10; max of 32 drives for RAID level 50. With GL200 or newer firmware multiple Disk Groups can be aggregated into a Storage Pool.
 - The maximum LUN size is 140TB (128TiB).
 - Storage Pools allow data on a given LUN to span across all drives in a pool. When capacity is added to a system, the user is also getting a performance benefit of the additional spindles—hence the term Wide Striping. Storage Pools are available with GL200 firmware or newer.
 - Non-disruptive on-line controller code upgrade (requires dual controllers w/ multi-pathing software)

Features

- Upgradable by design. Owners of an MSA P2000 G3 and an MSA 1040 array are able to do data-in-place controller upgrades to the new MSA 2040 array. This unique ability protects the earlier investments in drives, and JBODs.

Application Solutions The HPE MSA 2040 Storage is the ideal solution for customers running Oracle, Microsoft, SAP environments and those customers who are deploying virtual server technologies like VMware and Hyper-V. The MSA 2040 delivers enterprise functionality that enhances virtual environments, simplifies management, and reduces costs. Easy to deploy, scale and maintain, HPE MSA 2040 Arrays ensure that crucial business data remains available. Hewlett Packard Enterprise has developed best-in-class expertise in Oracle, Microsoft, SAP, and Virtualization Hypervisor technology through extensive testing with the HPE MSA 2040, HPE servers, and management software; high availability and disaster recovery solutions; and backup and recovery on the Oracle, Microsoft, and SAP application platforms. As a result, our customers can expect a wide range of operational and business benefits where they can:

- Deploy IT assets across multiple locations.
- Incrementally grow storage without interruption.
- Enable high availability and disaster recovery capabilities for critical applications.
- Deploy a remote disaster recovery site.

Family Information

MSA 2040	
Capacity	LFF: 144 TB (single LFF array-head - using 12 x 12TB LFF SAS MDL drives) 1152 TB (7 LFF Disk Enclosures behind LFF Array & using 12TB LFF SAS MDL drives)
Maximum Additional Drive Enclosures	SFF: 768 TB (single SFF array-head - using 24 x 32TB SFF SSD drives) 637 TB (7 SFF Disk Enclosures behind SFF Array & using 32TB SFF SSD drives) <small>NOTE: 1) maximum available storage capacity depends on the RAID level being implemented</small>
Pool Capacity	GL200: 144 TB (154 TiB) GL210: 229 TB (200 TiB) GL220: 329 TB (300 TiB) GL220 with Large Pool Support: 562 TB (512 TiB) <small>NOTE: 1) The above pool capacities by firmware release apply to virtual storage only. 2) The above capacities are usable capacity/pool. Each MSA system can support two pools. Therefore each MSA storage system can have double the usable capacity listed above.</small>
Cache	6 GB per controller <small>NOTE: 6GB cache includes Data (Read/Write) cache = 4GB and Metadata and System OS memory = 2GB</small>
Total LUNs (LUN size are dependent of the storage architecture: Linear vs. Virtualized)	512 maximum LUN size: 140TB (128TiB) Thin Provisioning allows you to create the LUNs independent of the physical sto
Host Interconnect	MSA 2040 SAN controller will support up to four connections with options of 16Gb, 8 10GbE, 1GbE iSCSI per controller. See table above for valid configuration table. MSA 2040 SAS controller will support up to four 6Gb/12Gb SAS connections per controller SAS HD cables
Maximum Drives w/ expansion	96 LFF/199 SFF
Maximum host supported	64 in v2 UI 512 in v3 UI
Standard Software:	Snapshot, 64 (snaps)
Optional Software	Remote Snap (linear storage only) Max Snapshot (512) Performance Tiering

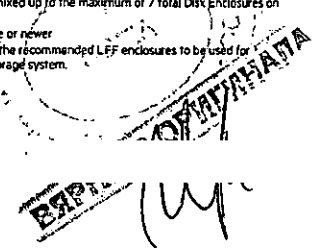
Product Technology

MSA 2040 SAN controller	MSA 2040 SAN controller supports 8Gb FC, 16Gb FC, 1GbE iSCSI or 10GbE iSCSI SFFs.
MSA 2040 SAS controller	MSA 2040 SAS controller supports 6Gb and 12Gb SAS host connectivity using mini-SAS HD cables.
Modular Chassis	2U rack height, 12 Large Form Factor or 24 Small Form Factor drive bays, accommodating SSD (available only for Small Form Factor), SAS, SEDs and SAS Midline drives. Comes with space for one or two controllers

Family Information

Drives available	The MSA 2040 controllers support both the MSA 3.5-inch Large Form Factor (LFF) drives, and the MSA 2.5-inch Small Form Factor (SFF) drives. <ul style="list-style-type: none"> Solid State Drives (SSDs) deliver exceptional performance for applications requiring high random read IOPS performance (available only for Small Form Factor). Serial Attached SCSI (SAS) enterprise-class drives are designed for high demand, 24x7 usage. SAS Midline drives are usually reserved for archival of data as they are relatively inexpensive and are available in very large capacities. Self-Encrypting Drives (SEDs) are designed to safeguard critical personal and business information and to comply with Regulatory Mandates
Optional Disk Enclosures	Just as the user has a choice of chassis for the array head (LFF and SFF drive bays, AC or DC powered), so also do they have a choice of expansion disk enclosures accommodating either drive size. The LFF and the SFF disk enclosures can be hot-added to an operating array. SFF and LFF Array heads and Disk Enclosures can be mixed without limitations. <p>The MSA 2040 storage systems have supported various SFF and LFF disk enclosures over time. The latest disk enclosures to be supported on the MSA 2040 platform are the MSA 2050 SFF Disk Enclosure and the MSA 2050 LFF Disk Enclosures. The MSA 2050 SFF and LFF enclosures can be added to existing MSA 2040 storage systems for expansion disk capacity. The MSA 2050 SFF and LFF disk enclosures can be intermixed with the D2700 SFF disk enclosure and/or the MSA 2040 LFF disk enclosure.</p> <p>The MSA 2050 SFF and LFF disk enclosures are the recommended enclosures to be used for capacity expansion on the MSA 2040 storage system.</p> <p>LFF Disk Enclosures</p> <p>MSA 2040 3.5-inch Disk Enclosure. This 2U unit has twelve LFF (3.5-inch) drive bays and accepts for MSA dual-ported SAS, SEDs and SAS MDL drives. The pre-configured HPE MSA 2040 LFF Drive Enclosure (M0596A) has two I/O modules and supports both single and dual controller arrays.</p> <ul style="list-style-type: none"> This 3.5-inch MSA disk enclosure can be attached to MSA 2040 LFF or SFF array head. Each configured model ships standard with two 5m mini-SAS to mini-SAS cables for connection to the MSA 2040 array expansion port or existing disk enclosure cascade port. LFF and/or SFF Disk Enclosures can be mixed up to the maximum of 7 total Disk Enclosures The MSA 2040 does not support LFF SATA HDDs <p>MSA 2050 LFF Disk Enclosure. This 2U enclosure is designed to support twelve HPE Storage LFF drives and accepts MSA dual-ported 12Gb SSD and SAS Midline hard drives. The pre-configured MSA 2050 LFF Disk Enclosure (C01J06A) has two I/O modules and supports the MSA 2040 dual controller arrays.</p> <ul style="list-style-type: none"> The MSA 2050 LFF Disk Enclosure can be attached to the MSA 2040 LFF or SFF storage models. Each MSA 2050 LFF Disk Enclosure ships standard with two 5m mini-SAS to mini-SAS cables for connection to the MSA 2040 array expansion port or existing disk enclosure cascade port. LFF and/or SFF Disk Enclosures can be mixed up to the maximum of 7 total Disk Enclosures on the MSA 2040 storage models. Requires GL225 array controller firmware or newer The MSA 2050 LFF Disk Enclosures are the recommended LFF enclosures to be used for capacity expansion on the MSA 2040 storage system. <p>SFF Disk Enclosures</p>

000115



Family Information

Leveraging Storage Pools, the MSA 2040 supports large, flexible Volumes with sizes up to 128TiB and delivers seamless capacity expansion. As volumes are expanded data automatically reflows to balance capacity utilization on all drives.

RAID 0, 1, 3, 5, 6, 10, 50

In addition to the usual RAID levels, the MSA 2040 features several important additional levels. RAID 6 offers the highest level of RAID protection. It allocates two sets of parity data across drives and allows simultaneous write operations. It can withstand two simultaneous drive failures without downtime or data loss. RAID 10 is mirroring and striping without parity and allows large Disk Groups to be created with high performance and mirroring for fault tolerance. RAID 50 combines the block striping and parity of RAID 5 with the straight block striping of RAID 0, yielding higher performance than RAID 5 through the addition of RAID 0, particularly during writes.

Performance

The performance figures provided here are for reference as many variables exist between array configurations, workloads, hard drive types, disk group setup parameters and host system setup. All performance information is measured using both Linear and Virtual Storage.

Hewlett Packard Enterprise has traditionally published a set of end-to-end MSA performance specifications which feed into HPE Sizer tools which are based on conservative real-world configurations. For consistency, the MSA 2040 performance numbers have been documented in both Benchmark and End-to-End Performance tables. Configuration details are provided for both test scenarios. These numbers are preliminary and subject to change without notice.

Benchmark Performance Results using Linear Storage:

MSA 2040 Array Performance ¹	HPE MSA 2040 Converged SAN Controllers with HDDs	HPE MSA 2040 Converged SAN Controllers with Mainstream Endurance SSDs	HPE MSA 2040 Converged SAN Controllers with Mixed Use SSDs
Protocol (Host connect)	16 Gb Fibre Channel	16 Gb Fibre Channel	16 Gb Fibre Channel
MSA 2040 RAID 10 Performance Results²			
Random Reads (IOPS)	66,000		
Random Writes (IOPS)	32,000		
MSA 2040 RAID 1 SSD Performance Results³			
Random Reads (IOPS)		122,000	115,000
Random Writes (IOPS)		43,000	40,000
MSA 2040 RAID 5 Performance Results⁴			
Sequential Reads (MB/s)	6,300		
Sequential Writes (MB/s)	5,200		

Benchmark Setup Configurations

- ¹ Performance numbers generated through the IO Meter performance software.
- ² Dual Controller configuration, (192) 15k HDDs, RAID: 10, 6 drives per vDisk, block size: 8k, Average Latency under 30ms, Windows Server 2012 host, 16Gb FC direct connect to array. Tested with GL210 firmware.
- ³ Dual Controller configuration, (4) SSDs, RAID: 1, 2 drives per vDisk, block size: 8k (8k Aligned), Average Latency under 3ms, Windows Server 2012 R2 host, 16Gb FC direct connect to array. Tested with GL220 firmware.

Family Information

* Dual Controller configuration, (48) 15k HDD, RAID: 5, 12 drives per vDisk, block size: 256k. Average Latency under 30ms, Windows Server 2012 host, 16Gb FC direct connect to array. Sequential numbers are obtained using a single volume per vdisk and single sequential workload. Tested with GL210 firmware.

End-to-End Performance Figures using Linear Storage:

Guarantee Performance numbers are a guideline as established by tests using RAW I/O in an Operating System Agnostic test lab environment.

MSA 2040 Array Performance	HPE MSA Linear End-to-End Performance Figures ⁵							
	HPE MSA 2040 Converged SAN Controller With HDD*	HPE MSA 2040 Converged SAN Controller With SSD*	HPE MSA 2040 Converged SAN Controller With HDD*	HPE MSA 2040 Converged SAN Controller With SSD*	HPE MSA 2040 Converged SAN Controller With HDD*	HPE MSA 2040 Converged SAN Controller With SSD*	HPE MSA 2040 Converged SAN Controller With HDD*	HPE MSA 2040 Converged SAN Controller With SSD*
Protocol (Host connect)	16 Gb Fibre Channel	16 Gb Fibre Channel	10GbE iSCSI	10GbE iSCSI	10GbE iSCSI	10GbE iSCSI	10GbE iSCSI	12Gb SAS
MSA 2040 RAID 10 Performance Results⁶ *NOTE: RAID 1 was used for SSD testing								
Random Reads IOPS	57,000	112,500	56,500	102,000	56,500	93,000	56,500	112,500
Random Writes IOPS	32,000	31,500	30,500	31,500	30,500	31,500	31,000	32,500
Random Mix 60/40 IOPS	45,000	57,500	44,500	54,500	44,500	54,500	44,500	58,000
Sequential Reads (MB/s)	5,000		4,700		860		4,720	
Sequential Writes (MB/s)	2,400		2,300		850		2,300	
MSA 2040 RAID 5 Performance Results⁷ *NOTE: RAID 1 was used for SSD testing								
Random Reads IOPS	57,000	106,500	55,500	100,000	55,500	87,000	55,500	108,000
Random Writes IOPS	18,000	20,500	17,500	20,500	17,500	20,000	18,000	20,500
Random Mix 60/40 IOPS	30,000	37,500	29,500	37,500	29,500	36,500	29,500	37,000
Sequential Reads (MB/s)	4,900		4,700		860		4,700	

Family Information

Sequential Reads (MB/s)	4,000		3,600		850		4,100
MSA 2040 RAID 6 Performance Results⁸ *NOTE: RAID 1 was used for SSD testing							
Random Reads IOPS	57,000	106,500	54,500	97,500	54,500	67,000	108,000
Random Writes IOPS	12,500	16,500	12,000	16,000	12,000	16,000	16,500
Random Mix 60/40 IOPS	23,000	31,500	22,500	31,000	22,500	30,500	32,000
Sequential Reads (MB/s)	4,900		4,600		860		4,500
Sequential Writes (MB/s)	3,900		3,500		850		3,800

Refer to the paper titled "Upgrading to the HPE MSA 2040", available in the Resource Library at <http://www.hpe.com/storage/msa2040>

5) Sequential tests (MB/s) are based on 256K block sizes and random tests (IOPS) are based on 8K block sizes run against linear storage. For sequential workloads with a queue depth greater than 1, each sequential stream is targeted to operate on a separate LBA range. Other types of sequential workloads that target specific LBA ranges may achieve higher results. Results cannot be expected with a single host.

6) Fibre Channel results were measured using 16Gb FC Host Bus Adapters. SAS results were measured using 6Gb SAS Host Bus Adapters. 10GbE iSCSI results were measured using 10GbE iSCSI Host Bus Adapters. 1GbE iSCSI results were measured using 1GbE network interface controllers (NICs). Hosts were directly attached to the HPE MSA 2040 array.

7) MSA 2040 Hard Disk Drive (HDD) results: Dual Controller configuration, 192 15K SAS HDDs, 12 drives per vDisk, 8 vdisks per controller, 1 volume per vdisk.

8) MSA 2040 Solid State Drives (SSD) results: Dual Controller configuration, 2 SSDs per vdisk in RAID 1, 3 SSDs per vdisk in RAID 5, 4 SSDs per vdisk in RAID 6, 2 vdisks per controller, 1 volume per vdisk.

NOTE: Number and type of applications, drive type and number of drives, operating system used, and the number of hosts will affect overall performance. This table is provided strictly as a host-to-host comparison.

End-to-End Performance Figures using Virtual Storage:

Guarantee Performance numbers are a guideline as established by tests using RAW I/O in an Operating System Agnostic test lab environment.

MSA 2040 Array Performance	HPE MSA Virtual End-to-End Performance Figures ⁹							
	HPE MSA 2040 Converged SAN Controller	HPE MSA 2040 Converged SAN Controller	HPE MSA 2040 Converged SAN Controller	HPE MSA 2040 Converged SAN Controller	HPE MSA 2040 Converged SAN Controller	HPE MSA 2040 Converged SAN Controller	HPE MSA 2040 Converged SAN Controller	HPE MSA 2040 Converged SAN Controller
Protocol (Host connect)	16 Gb Fibre Channel	16 Gb Fibre Channel	10GbE iSCSI	10GbE iSCSI	10GbE iSCSI	10GbE iSCSI	10GbE iSCSI	12Gb SAS

Family Information

	Controllers With HDD	Controllers With SSD	11 With HDD	Controllers With SSD	Controllers With HDD	Controllers With SSD	Controllers With HDD	Controllers With SSD
Protocol (Host connect?)	16 Gb Fibre Channel	16 Gb Fibre Channel	10GbE iSCSI	10GbE iSCSI	1GbE iSCSI	1GbE iSCSI	12Gb SAS	12Gb SAS
MSA 2040 RAID 10 Performance Results <small>3333333333</small> NOTE: RAID 1 was tested for SSD testing								
Random Reads IOPS	62,300	96,000	62,000	92,500	61,100	81,500	62,700	92,900
Random Writes IOPS	33,100	40,500	32,200	38,300	31,700	37,500	32,400	39,000
Random Mix 60/40 IOPS	44,800	58,100	44,200	55,700	43,400	53,900	44,100	56,300
Sequential I Reads MB/s	5,350		5,340		880		5,350	
Sequential I Writes MB/s	3,110		2,910		860		3,110	
MSA 2040 RAID 5 Performance Results <small>33333333</small>								
Random Reads IOPS	54,500	92,300	53,300	83,200	52,900	70,470	54,000	88,800
Random Writes IOPS	17,700	22,500	17,500	22,100	17,500	21,800	17,700	22,200
Random Mix 60/40 IOPS	27,200	38,900	27,000	38,000	27,000	37,500	27,300	38,400
Sequential I Reads MB/s	5,270		5,250		880		5,270	
Sequential I Writes MB/s	3,950		3,430		860		3,900	
MSA 2040 RAID 6 Performance Results <small>33333333</small>								
Random Reads IOPS	55,100	93,000	54,100	79,000	53,800	70,470	55,000	89,800
Random Writes IOPS	13,000	19,200	13,000	18,800	13,000	18,700	13,000	19,000
Random Mix 60/40 IOPS	21,100	34,800	21,000	33,800	21,100	33,600	21,000	34,200

Family Information

Sequential I Reads MB/s	5,540	5,480	880	5,530
Sequential I Writes MB/s	3,790	3,290	860	3,810

Refer to the paper titled "Upgrading to the HPE MSA 2040", available in the Resource Library at: <http://www.hpe.com/storage/msa2040>

9) Sequential tests (MB/s) are based on 256K block sizes and random tests (IOPS) are based on 8K block sizes run against virtual pool storage. For sequential workloads with a queue depth greater than 1, each sequential stream is targeted to operate on a separate LBA range. Other types of sequential workloads that target specific LBA ranges may achieve higher results. Results cannot be expected with a single host.

10) Fibre Channel results were measured using 16Gb FC Host Bus Adapters. SAS results were measured using 6Gb SAS Host Bus Adapters. 10GbE iSCSI results were measured using 10GbE iSCSI Host Bus Adapters. 1GbE iSCSI results were measured using 1GbE network interface controllers (NICs). Hosts were directly attached to the HPE MSA 2040 array.

11) MSA 2040 RAID 10 Hard Disk Drive (HDD) random results: Dual Controller configuration, 192 15k SAS HDDs, 12 drives per disk group, 8 disk groups per pool, 8 volumes per pool.

12) MSA 2040 RAID 10 Hard Disk Drive (HDD) sequential read results: Dual Controller configuration, 96 15k SAS HDDs, 12 drives per disk group, 4 disk groups per pool, 4 volumes per pool.

13) MSA 2040 RAID 10 Hard Disk Drive (HDD) sequential write results: Dual Controller configuration, 48 15k SAS HDDs, 12 drives per disk group, 2 disk groups per pool, 4 volumes per pool.

14) MSA 2040 RAID 5 Hard Disk Drive (HDD) random results: Dual Controller configuration, 180 15k SAS HDDs, 9 drives per disk group, 10 disk groups per pool, 10 volumes per pool.

15) MSA 2040 RAID 5 Hard Disk Drive (HDD) sequential results: Dual Controller configuration, 72 15k SAS HDDs, 9 drives per disk group, 4 disk groups per pool, 4 volumes per pool.

16) MSA 2040 RAID 6 Hard Disk Drive (HDD) random results: Dual Controller configuration, 180 15k SAS HDDs, 10 drives per disk group, 9 disk groups per pool, 9 volumes per pool.

17) MSA 2040 RAID 6 Hard Disk Drive (HDD) sequential results: Dual Controller configuration, 80 15k SAS HDDs, 10 drives per disk group, 4 disk groups per pool, 4 volumes per pool.

18) MSA 2040 Solid State Drives (SSD) results: Dual Controller configuration, 2 SSDs per disk group in RAID 1, 3 SSDs per disk group in RAID 5, 4 SSDs per disk group in RAID 6, 1 disk group per pool, 1 volume per pool.

NOTE: Number and type of applications, drive type and number of drives, operating system used, and the number of hosts will affect overall performance. This table is provided strictly as a test-lab comparison.

Family Information

DC-power chassis
 Hewlett Packard Enterprise is making the two models of controller-less chassis available with direct current (DC) power supplies. They each have the two empty bays where users can insert one or two MSA 2040 controller(s). The 500 watt power supply is designed to operate over the input range of -40VDC to -75VDC.
MSA 2040 Controller-less Chassis (DC-powered)
 HPE MSA 2040 SFF DC-power Chassis CBR11A
 (Will accept one or two MSA 2040 SAN or MSA 2040 SAS controllers and can accommodate up to twenty four 2.5-in (SFF) drives)
 HPE MSA 2040 LFF DC-power Chassis CBR13A
 (Will accept one or two MSA 2040 SAN or MSA 2040 SAS controllers and can accommodate up to twelve 3.5-in (LFF) drives)

Configuration and Management Tools
 HPE Storage Management Utility (SMU), Management access, out-of-band, WEB GUI, CLI, Interface Types: USB 100/1000 Ethernet. Protocols Supported: SNMP, SSH, SSL, SSH, SMTP, FTP, HTTP, Telnet

MSA 2040 Software and Documents Support CD
 • All product documentation (CD can be used on ALL supported server Operating Systems)
 • Host Software Bundles (Win and Linux for both ProLiant x86, ProLiant x64 and Integrity IA64 servers)
 • CD updated quarterly on HPE.com with sustaining firmware updates

Hot Plug Expansion and Replacement Support
 All MSA 2040 models support hot plug expansion and replacement of redundant controllers, enclosures, fans, power supplies, and I/O modules for simple, fast installation and maintenance. Hot add expansion of disk enclosures is also supported.

Snapshot and Clone
 All MSA 2040 arrays come standard with 64 snaps, 512 snaps is available as an option. This controller based functionality offers higher levels of data protection, enables an almost instant recovery from data failure or corruption and offers alternative development testing of 'offline' production data and the ability to backup snapped/cloned data.

Overview
 The MSA 2040 arrays come integrated with web browser and CLI based software for storage and RAID management, setup, configuration, and troubleshooting. This reduces the cost of ownership by reducing the training and technical expertise necessary to install and maintain your HPE storage solution.

Server Compatibility
 NOTE: depends on protocol
 Supports most HPE ProLiant, BladeSystems and Integrity servers including:
 • HPE ProLiant DL, ML
 • HPE c-Class Blade Servers
 • Integrity servers, IA64
 • Compatibility must be confirmed at: <http://www.hpe.com/storage/stock>

Industry Standard servers support
 • Supports most multi-vendor industry standard 32-bit Intel and AMD based (x86) servers. Hewlett Packard Enterprise requires the Third-Party Server to be logged and listed on the Microsoft Windows Server Catalog.
 • Hewlett Packard Enterprise recommends that the Third-Party Server Vendor is an active member of TSANet. Refer to the TSANet website for details: <http://www.tsanet.com>
 • Non-HPE servers will generally be supported if the HPE storage stack is used. This includes supported HPE branded HBAs and drivers, and supported FC switches.

OS Support
 NOTE: depends on protocol
 Refer to the Hewlett Packard Enterprise support statements for complete current OS version support: <http://www.hpe.com/storage/stock>
 • Microsoft Windows Server 2016

Family Information

- Microsoft Windows Server 2012
- Microsoft Windows Server 2008 R2
- VMware
- HP-UX
- Red Hat Linux
- SUSE SLES SERVER
- Citrix XenServer
- OpenVMS
- Solaris
- MAC OS

- Web Browser support**
- The MSA 2040 supports target based management, and include a Web interface and a telnet interface, and require a web browser for management.
 - Beginning with GL200 or newer firmware, MSA 2040 customers have the option to use one of two Web I's.
 - Users taking advantage of virtualization features will be required to use SMU V3.
 - The MSA 2040 management supports Microsoft Internet Explorer, Mozilla Firefox, and Google Chrome.

Optional Software

Advanced Data Services Software Suite
All software for the MSA platform is now included as a standard feature on the MSA 2042 at no extra charge. The MSA 2042 includes the Advanced Data Services Software Suite which includes the following software titles:

- 1. HPE MSA 2040 Performance Automated Tiering LTU
2. HPE MSA 2040 512 Snapshot Software LTU
3. HPE MSA Remote Snap Software LTU

HPE MSA Advanced Data Services Suite LTU
HPE MSA Advanced Data Services Suite E-LTU

OOH9WA
OOH9AAE

Performance Tiering
See below for a detailed description of each of these software features. Disk tiers are comprised of aggregating 1 or more Disk Groups of similar physical disks. The MSA 2040 supports 3 distinct tiers:

- 1. A Performance tier with SSDs
2. A Standard SAS tier with Enterprise SAS HDDs
3. An Archive tier utilizing Midline SAS HDDs.

Prior to GL200 firmware the MSA 2040 operated through manual Tiering. LUN-level tiers are manually created and managed by using dedicated vdisks and volumes. LUN-level Tiering requires careful planning such that applications requiring the highest performance be placed on vdisks utilizing high performance SSD's.

The MSA 2040 automated tiering engine moves data between available tiers based on the access characteristics of that data. Frequently accessed 'pages' will migrate to the highest available tier delivering maximum I/O's to the application (Performance Tiering). Another feature to the MSA 2040 tiering engine is Archive Tiering where 'cold' or not frequently accessed data can be moved to lower performance tiers. Pages are migrated between tiers automatically such that I/Os are optimized in real-time.

The Archive Tiering functionality is provided at no charge on the MSA 2040 platform beginning with GL200 or newer firmware. The Performance Tiering capability utilizing a fault tolerant SSD Disk Group is a paid feature and requires the below SKU to enable it. Creating an SSD virtual disk group for both read and write capabilities requires a Performance Auto Tiering License. Performance Tiering from SAS MDL (Archive Tier) to Enterprise SAS (Standard Tier) drives is provided at no charge.

VMware Site Recovery Manager (SRM) is an extension to VMware vCenter that delivers business-critical and disaster-recovery solution that helps you plan, test, and execute the recovery of vCenter virtual machines. SRM can discover and manage replicated datastores, and automate migration of inventory from one vCenter to another. Site Recovery Manager integrates with the underlying replication product through a Storage Replication Adapter (SRA). The SRM is available only for linear storage.

HPE MSA 2040 Site Recovery Adapter (SRA)

The MSA 2040 SRA, a free-to-use plugin, is the program that integrates the VMware vCenter SRM with HPE MSA 2040 arrays. It enables full-featured use of the VMware SRM. It is a host-ware component installed on a Microsoft Windows Server that enables disaster recovery management (DRM) software on the host to communicate and control certain aspects of the replication feature in storage systems connected to the server.

Optional Software

When deployed with the MSA 2040 array, HPE StoreFront Manager provides the following:
- Monitors the health, events and alerts for the MSA 2040/1040 - Linear and virtual Pools, and volumes
- Provides detailed information on the VMS provisioned through MSA Storage
- Effortless installation and configuration using Powershell

HPE StoreFront Manager for Microsoft for MSA Storage is downloadable from Software Depot:
http://192.168.1.100:8080/portal/awd/en/displayProductInfo.do?productId=System_Center

vStorage API for Array Integration (VAAI) is one of the storage application programming interface (API) sets in vSphere. VAAI is an API storage partners can leverage to enhance performance of virtual machine (VM) management operations by delegating these operations to the storage array. With hardware offload, ESX/ESXi hosts perform certain operations faster and consume less server CPU and memory resources, and also storage port and storage fabric bandwidth. VAAI includes high performance and scalable VM data path primitives.

Storage Hardware Primitives for VAAI

- Full Copy or Hardware Assisted Move
- Block Zeroing or Hardware Assisted Zeroing
- Hardware Assisted Locking or Atomic Test and Set (ATS)
- UNMAP reclaims space that is no longer on a thinly provisioned VMFS volume

Snapshot and Volume Copy Software for the MSA 2040
Product Features
Data Protection

- Snapshots create up to 512 point-in-time pictures of data
- Volume Copies create up to 120 point-in-time copies of data
- Recovery is instant - revert data from any previous Snapshot or Volume Copy (volume copy is available for both linear and virtual storage with GL220 firmware or later; pre-GL220 firmware volume copy is only available on linear storage)
- Backup 'snapped' data to disk, virtual tape, or physical tape without a backup window
- A 64 snapshot license and Volume Copy are included with all MSA 2040 models.
- Support and updates are desired for bundled software functionalities (such as 64 LRU Snap and/or Volume Copy etc. in the MSA 2040 products) a combination HW + SW support care pack must be purchased.
- Hewlett Packard Enterprise does not provide warranty assistance for software products included with our base hardware products. This would either be SupportPlus or SupportPlus24. The hardware warranty component of these services is accounted for in the pricing of the SP and SP24 care packs.

Data Testing

- Snap or clone data to test the performance of a software application on 'offline' production data
- Snap or clone data to test how a software patch or enhancement will function on 'offline' production data

MSA 2040 Snapshot and Clone:

All MSA 2040 models come STANDARD with 64 snapshots and Volume Copy software (volume copy is available for both linear and virtual storage with GL220 firmware or later; pre-GL220 firmware volume copy is only available on linear storage).

Optional Software

It allows the VMware SRM software to automatically coordinate virtual machine failover and failback between a protected data center and a disaster recovery site by employing a disaster recovery solution called Remote Snap. A perfect combination of the Remote Snap replication and VMware SRM provides an unfailing automated solution for implementing and testing the disaster recovery between sites located across geographies. It enables communication between the HPE MSA Remote Snap replication functionality that is embedded in HPE MSA 2040 systems. Users are required to acquire Remote Snap license for their local and remote HPE MSA 2040 arrays to use the HPE MSA SRA.

Site Recovery Manager Requirements/Dependencies

- Requires vSphere 5.1, 5.5
- Supports SRM 5.1, 5.5 and 5.8
- Requires HPE MSA 2040/P2000 SRA 5.8 or later Plug-in (downloadable from hpe.com)
- SRM works with Remote Snap linear mode
- Requires purchase of MSA 2040 Remote Snap licenses (one for each site)

HPE OneView for VMware vCenter is a component within the HPE OneView plug-in for vCenter. It provides VMware administrators that are using VMware's vSphere management console (vCenter) with the ability to see how virtual machines are mapped to datastores and individual MSA 2040 volumes. By providing these clear relationships between VMs, datastores and storage, the VMware administrator's productivity increases, as does the ability to ensure quality of service. Roles for administrators can be defined on an individual basis, providing the ability to apply specific permissions for both view and control functions.

HPE OneView for VMware vCenter supports mixed array environments including MSA 2040, 1040, P2000, EVA, P4000, and the XP array series including the P9500.

When deployed with the MSA 2040 array, HPE OneView provides the following:

- Active Management functionality for the MSA 2040 array:
- Create/Expand/Delete a Datastore
- Create a Virtual Machine from a template
- VMClone for linear storage
- Monitors the health and status of the MSA 2040
- Displays LUN / volume connections from VMs and ESX servers to the arrays and provides the location and attributes of the MSA 2040 within the SAN
- Identifies what storage features are available to allow administrators to match the features available on the MSA 2040 to their requirements
- Provide a cluster-level view of the storage

HPE OneView for VMware vCenter is downloadable from Software Depot:
https://192.168.1.100:8080/portal/awd/en/displayProductInfo.do?productId=HPEVPE

For more information on HPE OneView for VMware vCenter visit:
http://192.168.1.100:8080/portal/awd/en/partners/onevwa/

HPE StoreFront Manager for Microsoft

HPE StoreFront Manager for Microsoft enables management and monitoring of HPE MSA Storage running in Microsoft Hyper-V environment with a single pane-of-glass view to events/alerts, capacity and health dashboards and detailed virtual infrastructure information. It integrates seamlessly with Microsoft System Center Operations Manager (SCOM) and provides Microsoft administrators the following:

It supports heterogeneous HPE Storage environment including MSA 2040, 1040, HPE StoreVirtual, HPE 3PAR StoreServ, HPE StoreOnce, HPE StoreEasy, HPE XP, HPE EVA and HPE StoreEver Storage.

Optional Software

512 Snapshot option is also available for additional cost.

- HP MSA 512-Snapshot Software LTU
- HP MSA 512-Snapshot Software E-LTU

TC462A
TC462AAE

HPE MSA Remote Snap Software

- HPE MSA Remote Snap software is available for both linear and virtual storage with GL220 firmware or later; pre-GL220 firmware remote snap replication is only available on linear storage. HPE MSA Remote Snap Software is array based software that provides remote replication on the HPE MSA 2040 Array products. HPE Remote Snap is a form of asynchronous replication which consists of replication of block-level data from a volume on a local system to a volume that may be on the same system or on a second independent system. This second system may be co-located with the first system or may be located at a remote site.
- HPE Remote Snap functionality is based on existing Snapshot technology offered by HPE MSA SAN Array products. Snapshots are used to track the data to be replicated as well as to determine the differences in data updated on the master volume, minimizing the amount of data to be transferred.
- HPE Remote Snap replication technology provides the ability to accomplish key data management and protection capabilities. First, because Remote Snap uses snapshots as the underlying technology it creates multiple local recovery points which can be used for such tasks as to complement daily backups (second replication provides the ability to access data in a remote site which could be used for dispersed operations; and third but definitely not least important replication allows for business continuity in the event of a failure on the primary site.
- In order to perform a replication, a snapshot of the volume to be replicated is taken, creating a point-in-time image of the data. This point-in-time image is then replicated to the destination volume by copying the data represented by the snapshot via a transport medium such as TCP/IP (SCSD) or Fibre Channel. The amount of data transferred is minimized through the use of snapshots whenever possible.

NOTE: One Advanced Data Services (ADS) license per array is required for replication. For example, if you have two MSA arrays performing replication (from Primary system to Remote System), you will need 2 ADS licenses.

Product Features

- Storage based asynchronous snapshot replication
- Initial copy of data can be performed locally, reducing burden on wide area networks
- Support of both Ethernet and Fiber Channel interconnects provides flexible options to the application environments. Remote Snap is not supported on SAS models.
- Snapshot based replication technology means only changed data will be replicated to alternate site
- Many to 1 replication (up to 4 nodes) - primary use case is to replicate from 'many' branch offices to the home office for the purpose of backing up data from the branches
- Single controller to single controller replication
- Advanced scheduler provides several options to IT administrators for business continuity
- Flexible architecture allows remote replication between MSA 2040 and/or P2000 G3 supported arrays. Protects existing investments and enhances business continuity planning objectives
- Replication Wizard simplifies the task of setting up and establishing replication pairs from one unified, easy to use GUI
- Snapshot based replication enables both local and remote recovery depending on the need. Snapshot replication isolates problems to a specific point in time which can be selected by the administrator. Additionally snapshot replication supports longer distance replication.
- Multiple relationships provide greater storage flexibility and utilization.
- Bundled 64 Snapshots and Volume Copy integration provides better efficiencies by combining the management and array technologies to create local copies.
- Fast application recovery with minimal or no transaction loss
- Creation of disaster tolerant copies of your critical business data
- No single-point-of-failure solution to increase the availability of your customer data

Warranty, Service and Support Information

Warranty	<p>Three-year limited warranty, parts exchange Next Business day delivery</p> <p>Enclosures, Hard drives, and Options for the MSA 2040 carry their own warranty. Refer to Hewlett Packard Enterprise Limited Warranty Statement for more information.</p> <p>The MSA 2040 has been designed with customer self-repairable parts to minimize repair time and provide greater flexibility in performing defective parts replacement. Please refer to Hewlett Packard Enterprise limited warranty Statement and parts replacement instructions for further details.</p> <p>Products included in various kits carry their own individual warranties.</p> <p>NOTE: The warranty of the hard drive option purchased with the MSA 2040 models is different for SAS hard drives versus SAS MDL. SAS hard drive options have a three-year warranty and SAS MDL have a one-year warranty.</p>
Solid State Drives (SSD) Warranty	<p>3/0/0 warranty; Customer Self Repair (CSR) subject to maximum usage and/or maximum supported lifetime limitations, whichever occurs first. Maximum Supported Lifetime is the period in years set to equal the warranty for the device. Maximum usage limit is the maximum amount of data that can be written to the device before reaching the device's write endurance limit.</p> <p>NOTE: SSDs used for replacement will be of equal or greater capacity and are designed to meet or exceed the original SSD warranty. Replacement drives could be of the same model drive or of a different model qualified to operate interchangeably inside the MSA array. Warranties of these components are unaffected by any substitution.</p>
Service and Support	<p>Protect your business beyond warranty with HPE Support Services</p> <p>HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Our integrated portfolio of Services for storage help customers reduce costs, optimize data, streamline storage management, and improve backup and recovery. HPE Support Services enable you to choose the right service level, length of coverage and response time as you purchase your new storage solution, giving you full entitlement for the support for need for your IT and business</p>
Connect your devices	<p>Unlock all of the benefits of your technology investment by connecting your products to HP Enterprise. Achieve up to 77% reduction in down time, near 100% diagnostic accuracy and a single consolidated view of your environment. By connecting, you will receive 24x7 monitoring, pre-failure alerts, automatic call logging, and automatic parts dispatch. HPE Proactive Care Service and HPE Datacenter Care Service customers will also benefit from proactive activities to help prevent issues and increase optimization. All of these benefits are already available to you with your server storage and networking products, securely connected to HPE support.</p> <p>¹ IDC whitepaper - The Business Value of Connected Support from HP, March 2015 ² HP CSC reports 2014 - 2015</p>
Optimized Care	<p>HPE Proactive Care with 6 hour call-to-repair commitment, three year Support Service. HPE Proactive Care gives customers an enhanced call experience plus helps preventing problems and maintains IT stability by utilizing isolated, proactive reports with recommendations and advice when your products are connected to HPE. This Service combines three years' proactive reporting and advice with our highest level of hardware support - HPE's 24x7, six hour hardware call-to-repair. HPE</p>

Warranty, Service and Support Information

is the only leading manufacturer who makes this level of coverage available as a standard service offering for your most valuable storage systems.

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855ENW.pdf>

Standard Care	<p>HPE Proactive Care with 24x7 coverage, three year Support Service</p> <p>HPE Proactive Care gives customers an enhanced call experience plus helps preventing problems and maintains IT stability by utilizing personalized proactive reports with recommendations and advice when your products are connected to HPE. This Service combines three years' proactive reporting and advice with our 24x7 coverage, four hour hardware response time when there is a problem. http://h20195.www2.hp.com/v2/GetPDF.aspx/4A6A3-8855ENW.pdf</p>
Basic Care	<p>HPE Foundation Care 24x7, three-year Support Service</p> <p>HPE Foundation Care 24x7 gives you access to HPE 24 hours a day, seven days a week for assistance on resolving issues. This service includes need based Hardware onsite response within four hours. Simplify your support experience and make HPE your first call to help resolve hardware or software problems. http://h20195.www2.hp.com/v2/GetDocument.aspx?docname=4AA4-8876ENWScccvs1k1cen</p>
Related Services	<p>Choose from a rich portfolio of services to make the most of MSA 2040 SAN Storage so you can efficiently and affordably consolidate, manage, and extract value from unstructured data.</p> <p>HPE Services can help you discover needs and create a plan for simplifying the environment, reducing risk, and maximizing your storage investments</p> <p>HPE MSA Family Disk Array Installation and Startup Service - Implement right from the start, as Hewlett Packard Enterprise experts install, test, and configure your hardware and software onsite. We deliver a tailored storage deployment properly integrated into your environment. http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-3048ENW.pdf</p> <p>HPE Storage Data Migration Services - End-to-end data migration service providing seamless discovery, assessment, planning, and design, completely customizable to your organization's storage area network or network attached storage environment and using innovative software to help you migrate to HPE storage quickly and efficiently. http://h20195.www2.hp.com/v2/GetPDF.aspx/5982-4107en.pdf</p> <p>HPE Storage Efficiency Analysis - The HPE Storage Efficiency Analysis provides customers with a view of their storage infrastructure and operating environment, highlighting recommendations for improvements. The report provides extensive insight about the existing storage environment, opportunities for efficiency gains, asset aging and replacement through interaction with key decision makers. http://h20195.www2.hp.com/v2/GetPDF.aspx/4aa3-9475enw.pdf</p>
For more information	<p>http://www8.hp.com/us/en/business-services/it-services/storage-services.html</p> <p>To learn more on HPE Storage Services, please contact your Hewlett Packard Enterprise sales representative or HPE Authorized Channel Partner</p>

Warranty, Service and Support Information

- HPE Support Services are sold by Hewlett Packard Enterprise and Hewlett Packard Enterprise Authorized Service Partners.

Handwritten signature and scribbles

Configuration Information

Configure to Order Program Information

Hewlett Packard Enterprise has a very successful Configure to Order program for the MSA 2040 family. The MSA 2040 models and options may or may not be factory installed in a rack with add-on controllers, switches, disk enclosures and hard drives. The MSA 2040 arrays may be integrated with ProLiant servers or as standalone storage. Orders to be shipped through the CTO process must have a minimum of two drives of the same type (SSD, SAS or SAS MDL) ordered per controller.

Step 1 - MSA 2040 - Base Configuration

Select either controller-less chassis (step 1a) or a pre-configured model (step 1b)

Step 1a: Select one chassis:

Model Name	SKU#s
MSA 2040 Controller-less Chassis (AC-powered)	
HPE MSA 2040 Energy Star SFF Chassis	K2R81A
HPE MSA 2040 Energy Star LFF Chassis	K2R82A
MSA 2040 Controller-less Chassis (DC-powered)	
HPE MSA 2040 SFF DC-power Chassis	CBR11A
HPE MSA 2040 LFF DC-power Chassis	CBR13A
Step 1b: Select one pre-configured models	
HPE MSA 2040 Energy Star SAN Dual Controller LFF Storage ¹	K2R79A
HPE MSA 2040 Energy Star SAN Dual Controller SFF Storage ²	K2R80A
HPE MSA 2040 Energy Star SAS Dual Controller LFF Storage ³	K2R83A
HPE MSA 2040 Energy Star SAS Dual Controller SFF Storage ⁴	K2R84A

NOTE:

- ¹ Includes LFF Array Chassis + two MSA 2040 SAN controllers, no drives or SFPs are included
- ² Includes SFF Array Chassis + two MSA 2040 SAN controllers, no drives or SFPs are included
- ³ Includes LFF Array Chassis + two MSA 2040 SAS controllers, no drives or host connect cables are included (SFPs not required for SAS controllers)
- ⁴ Includes SFF Array Chassis + two MSA 2040 SAS controllers, no drives or host connect cables are included (SFPs not required for SAS controllers)

Step 2 - Options

Select each option with quantities specified for controller-less chassis

Step 2a - MSA 2040 Controllers

Quantity	Description with Parts Shipped:	SKU#s
1 or 2	HP MSA 2040 SAN Controller NOTE: for either the LFF or SFF MSA 2040 chassis or the two DC-powered chassis	CBR09A
1 or 2	HP MSA 2040 SAS Controller NOTE: each controller has four mini-SAS HD connectors for host connection. Cables must be purchased separately. NOTE: for either the LFF or SFF MSA 2040 chassis or the two DC-powered chassis	CBSS3A

Handwritten signature and stamp

000117 *Handwritten signature*

Configuration Information

Step 2b - SFPs

NOTE: HPE MSA 2040 SAN Controllers or pre-configured systems do not ship with any SFPs. MSA SAS controllers and systems do not require SFP modules. Customers must select one of the following SFP options. Each MSA 2040 SAN controller can be configured with 2 or 4 SFPs. MSA SFPs are for use only with MSA 2040 SAN Controllers. For MSA 2040 10Gb iSCSI configurations users can use DAC cables instead of SFPs

MSA Small Form Factor Pluggable (SFP) Transceivers:

Table listing SFP transceivers: HPE MSA 8Gb Short Wave Fibre Channel SFP+ 4-Pack Transceiver (C8R23B), HPE MSA 16Gb Short Wave Fibre Channel SFP+ 4-Pack Transceiver (C8R24B), HPE MSA 10Gb Short Range iSCSI SFP+ 4-Pack Transceiver (C8R25B), HPE MSA 1Gb RJ-45 iSCSI Channel SFP+ 4-Pack Transceiver (C8575B)

Step 2c - SSD, SAS, SED or SAS MDL Drive Options

NOTE: SAS MDL drives are designed for archival or reference data. They should not be used in a heavy or intense I/O environment. Those situations require the use of enterprise-class SSD or SAS drives. MSA 3.5-inch or 2.5-inch drives are for use only with MSA arrays. Customers can mix SSD, SAS, and SAS MDL drives in the same array head and disk enclosure.

MSA 2040 Drives:

Solid State Drives (SSD) (SFF 2.5-inch)

12G SFF SAS SSDs (Mixed Use)

Table listing 12G SFF SAS SSDs: HPE MSA 400GB 12G SAS Mixed Use SFF (2.5in) 3Yr Warranty Solid State Drive (N9X95A), HPE MSA 800GB 12G SAS Mixed Use SFF (2.5in) 3Yr Warranty Solid State Drive (N9X96A), HPE MSA 1.6TB 12G SAS Mixed Use SFF (2.5in) 3Yr Warranty Solid State Drive (N9X91A), HPE MSA 3.2TB 12G SAS Mixed Use SFF (2.5in) 3Yr Warranty Solid State Drive (N9X92A)

SAS Drives (SFF 2.5-inch)

12G SFF 15K SAS HDDs

Table listing 12G SFF 15K SAS HDDs: HP MSA 300GB 12G SAS 15K SFF (2.5in) Enterprise 3Yr Warranty Hard Drive (J9F40A), HP MSA 600GB 12G SAS 15K SFF (2.5in) Enterprise 3Yr Warranty Hard Drive (J9F42A), HPE MSA 900GB 12G SAS 15K SFF (2.5in) Enterprise 3Yr Warranty Hard Drive (Q1H47A)

12G SFF 10K SAS HDDs

Table listing 12G SFF 10K SAS HDDs: HP MSA 300GB 12G SAS 10K SFF(2.5in) Dual Port Enterprise 3Yr Warranty Hard Drive (J9F44A), HP MSA 600GB 12G SAS 10K SFF(2.5in) Dual Port Enterprise 3Yr Warranty Hard Drive (J9F46A), HP MSA 1.2TB 12G SAS 10K SFF(2.5in) Dual Port Enterprise 3Yr Warranty Hard Drive (J9F48A), HP MSA 1.8TB 12G SAS 10K SFF (2.5in) 512e Enterprise 3Yr Warranty Hard Drive (J9F49A), HPE MSA 2.4TB 12G SAS 10K SFF (2.5in) Enterprise 512e 3Yr Warranty Hard Drive (Q2R41A)

NOTE: 512e drives require MSA 1040/2040 firmware version GL200P002 or newer

12G SFF 7.2K SAS MDL HDDs

Table listing 12G SFF 7.2K SAS MDL HDDs: HP MSA 1TB 12G SAS 7.2K SFF (2.5in) 512e Midline 1Yr Warranty Hard Drive (J9F50A), HP MSA 2TB 12G SAS 7.2K SFF (2.5in) 512e Midline 1Yr Warranty Hard Drive (J9F51A)

NOTE: 512e drives require MSA 1040/2040 firmware version GL200P002 or newer

MSA Large Form Factor (LFF) SAS MDL DP drives for MSA 2040 Array

12G LFF 7.2K SAS Midline Drives

Table listing 12G LFF 7.2K SAS Midline Drives: HPE MSA 12TB 12G SAS 7.2K LFF (3.5in) Midline 512e 1Yr Warranty Hard Drive (Q2R42A)

Configuration Information

Table listing MSA 2040 drives: HPE MSA 10TB 12G SAS 7.2K LFF (3.5in) Midline 512e 1Yr Warranty Hard Drive (P9M82A), HP MSA 8TB 12G SAS 7.2K LFF (3.5in) 512e Midline 1Yr Warranty Hard Drive (M0S90A), HP MSA 6TB 12G SAS 7.2K LFF (3.5in) 512e Midline 1Yr Warranty Hard Drive (J9F43A), HP MSA 4TB 12G SAS 7.2K LFF (3.5in) 512e Midline 1Yr Warranty Hard Drive (K2082A)

MSA Large Form Factor (LFF) SAS DP drives for MSA 2040 Array

12G LFF SAS SSDs (SFF Solid State Drives in LFF Converters)

Table listing 12G LFF SAS SSDs: HPE MSA 400GB 12G SAS Mixed Use LFF (3.5in) Converter Carrier 3Yr Warranty Solid State Drive (P9M79A), HPE MSA 800GB 12G SAS Mixed Use LFF (3.5in) Converter Carrier 3Yr Warranty Solid State Drive (P9M80A), MSA Large Form Factor (LFF) SAS DP Self-Encrypted Drives for MSA 2040 Array (P9M81A), HPE MSA 4TB 12G SAS 7.2K LFF (3.5in) Midline Self Encrypted 1Yr Warranty Hard Drive (Q1H48A), MSA Small Form Factor (SFF) SAS DP Self-Encrypted Drives for MSA 2040 Array (P9M81A), HPE MSA 1.2TB 12G SAS 10K SFF (2.5in) Enterprise Self Encrypted 3Yr Warranty Hard Drive (P9M81A)

NOTE:

- All drives within the MSA 2040 array must be self-encrypted drives to enable the encryption feature. These cannot be a mixture of encrypted and non-encrypted drives within the same array. SEDs can be used in a non-SED environment, but will not be encrypted unless all drives in the array are SED. Self-encrypted drives are only supported on the MSA 2040 Storage array and require Firmware version GL103. Customers must upgrade their MSA 2040 controller firmware to GL105 or later for Self-Encrypting Drive functionality. All MSA SEDs are FIPS 140-2 compliant FIPS 140-2 Validated Self-Encrypting Drives (SEDs) have been certified by the U.S. National Institute of Standards and Technology (NIST) and Canadian Communications Security Establishment (CCSE) as meeting the Level 2 security requirements for cryptographic modules as defined in the Federal Information Processing Standards (FIPS) 140-2 Publication.

NOTE:

- For instructions to setup and use SEDs, refer to the MSA 2040 CLI Reference Guide and MSA 2040 SIMU Reference Guide located on the HPE MSA 2040 Manuals page.

Configuration Information

Step 2d - Drive Enclosure Options

Use any disk enclosure with large or small form factor, single or dual controller MSA 2040 storage systems. Each disk enclosure ships with two 5m mini-SAS to mini-SAS cables.

Table listing drive enclosure options: HP MSA 2040 Energy Star LFF Disk Enclosure (M0S96A), HP D2700 Disk Enclosure (AJ941A), HPE MSA 2050 LFF Disk Enclosure (Q1J06A), HPE MSA 2050 SFF Disk Enclosure (Q1J07A)

NOTE:

- The MSA 2050 LFF and SFF Disk Enclosures are the recommended disk enclosures for capacity expansion on the MSA 2040 storage system.
- The use of MSA 2050 LFF and SFF Disk Enclosures with MSA 1040/2040/2042 storage requires GL223 array controller firmware, or newer.

Step 2e - SAS Cable Options

mini-SAS to mini-SAS Cables:

Connecting MSA 2040 Controller to a JBOD if a longer cable is desired.

Table listing mini-SAS to mini-SAS cables: HP External Mini SAS 1m Cable ALL (407337-821), HP External Mini SAS 2m Cable (407339-821)

Step 3 - Other MSA 2040 Options

Choose optional AC Power Cords (required)

NOTE: Two PDU cables one 1422633-008 (black) and one 1422633-017 (grey), ship standard with all AC-powered enclosures

Table listing AC power cords: HP ProLiant 12 ft Power Cord (227099-001), Power Cord, (Australia/China/New Zealand) (227098-001), Power Cord, (Central Europe) (157215-001), Power Cord, (United Kingdom/Hong Kong) (157216-001), Power Cord, (Switzerland) (157219-001), Power Cord, (Italy) (157217-001), Power Cord, (Denmark) (157228-001), Power Cord, (Japan) (139867-001), Power Cord, (South East Asia/India) (157220-001)

Step 4 - Choose Supported Options For Fibre Channel Infrastructure

Table listing fibre channel infrastructure options: Fibre Channel Host Bus Adapters - X86 servers (Model, SKU), Fibre Channel Host Bus Adapters - X86 servers (FCHBAs), HP StoreFabric SN1000Q 16Gb 1-port PCIe Fibre Channel Host Bus Adapter (QW971A), HP StoreFabric SN1000Q 16Gb 2-port PCIe Fibre Channel Host Bus Adapter (QW972A), HP StoreFabric SN1100E 16Gb Single Port Fibre Channel Host Bus Adapter (C8R38A), HP StoreFabric SN1100E 16Gb Dual Port Fibre Channel Host Bus Adapter (C8R39A), BladeSystem c-Class Fibre Channel Mezzanine HBAs (QLogic OMH2562 8Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem (451871-821)

Configuration Information

Table listing fibre channel infrastructure options: Emulex LPe1205 8Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem C-Class HBA (456972-B21), HP QMH2572 8Gb Fibre Channel Host Bus Adapter for BladeSystem c-Class (651281-B21), HP LPe1205A 8Gb Fibre Channel Host Bus Adapter for BladeSystem c-Class (659816-B21), HP 820 8Gb 2-port PCIe Fibre Channel Host Bus Adapter (AJ764A), Fibre Channel Host Bus Adapters - Integrity servers (HP 4Gb 1-port PCI-X 2.0 Fibre Channel Host Bus Adapter (AB370A), HP 4Gb 2-port PCIe Fibre Channel Host Bus Adapter (AD300A), HP 4Gb 1-port PCIe Fibre Channel Host Bus Adapter (AD299A), HP 4Gb 2-port PCIe Fibre Channel Host Bus Adapter (AD355A), HP PCIe 1-port 4Gb and 1-port 1000BT Adapter (AD221A), HP PCIe 2-port 4Gb and 2-port 1000BT Adapter (AD222A), HP PCIe 2-port 4Gb and 2-port 1000BSX Adapter (AD393A), HP PCI-X 1-port 4Gb FC and 1-port 1000BT Adapter (AD193A), HP PCI-X 2-port 4Gb FC and 2-port 1000BT Adapter (AD194A), HP PCI Express 1-port 8Gb Fibre Channel SR (QLogic) Adapter (AH400A), HP PCI Express 2-port 8Gb Fibre Channel SR (QLogic) Adapter (AH401A), HP 8Gb 1-port PCIe Fibre Channel Host Bus Adapter (AH402A), HP 8Gb 2-port PCIe Fibre Channel Host Bus Adapter (AH403A), Brocade Fibre Channel HBAs (HP 81B 8Gb 1-port PCIe Fibre Channel Host Bus Adapter (AP769B), HP 82B 8Gb 2-port PCIe Fibre Channel Host Bus Adapter (AP770B), Emulex Fibre Channel HBAs (HP 81E 8Gb 1-port PCIe Fibre Channel Host Bus Adapter (AJ762B), HP 82E 8Gb 2-port PCIe Fibre Channel Host Bus Adapter (AJ763B), QLogic Fibre Channel HBAs (HP 81Q 8Gb 1-port PCIe Fibre Channel Host Bus Adapter (AK344A), HP 82Q 8Gb 2-port PCIe Fibre Channel Host Bus Adapter (AJ764A), Integrity server blades (QLogic OMH2562 8Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem (451871-821), Emulex LPe1205 8Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem (456972-B21), HP Premier Flex LC/LC Multi-mode OM4 2 fiber 1m Cable (OK732A), HP Premier Flex LC/LC Multi-mode OM4 2 fiber 2m Cable (OK733A), HP Premier Flex LC/LC Multi-mode OM4 2 fiber 5m Cable (OK734A), HP Premier Flex LC/LC Multi-mode OM4 2 fiber 15m Cable (OK735A), HP Premier Flex LC/LC Multi-mode OM4 2 fiber 30m Cable (OK736A), HP Premier Flex LC/LC Multi-mode OM4 2 fiber 50m Cable (OK737A), OMS FC/LC-LC cables (HP LC to LC Multi-mode OM3 2-Fiber 0.5m 1-Pack Fiber Optic Cable (AJ834A), HP LC to LC Multi-mode OM3 2-Fiber 1.0m 1-Pack Fiber Optic Cable (AJ835A), HP LC to LC Multi-mode OM3 2-Fiber 2.0m 1-Pack Fiber Optic Cable (AJ836A), HP LC to LC Multi-mode OM3 2-Fiber 5.0m 1-Pack Fiber Optic Cable (AJ837A), HP LC to LC Multi-mode OM3 2-Fiber 15.0m 1-Pack Fiber Optic Cable (AJ838A), HP LC to LC Multi-mode OM3 2-Fiber 30.0m 1-Pack Fiber Optic Cable (AJ839A), HP LC to LC Multi-mode OM3 2-Fiber 50.0m 1-Pack Fiber Optic Cable (AJ839A)

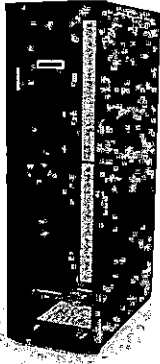
Overview

HPE G2 Advanced Series Racks

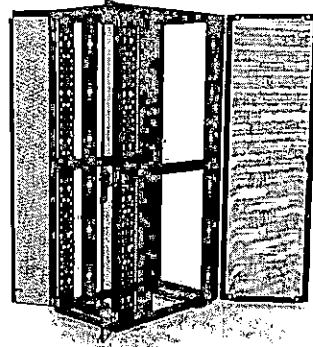
HPE G2 Advanced Series Racks are designed for low-to-medium density IT configurations deployed in a diverse set of environments – from the data closet to the data center. Following EIA-310 specifications for 19-inch racks, G2 Advanced Racks are designed specifically to support a wide range of HPE IT equipment (servers, storage, and networking), as well as the entire portfolio HPE Rack and Power Infrastructure solutions (PDU, UPS and KVM)

All HPE G2 Advanced Series Racks are supported with a 10 year limited warranty that provides either repair or complete replacement of the rack. Offering this industry-leading warranty requires a highly reliable and durable design that includes features such as a fully-welded, roll-form rack design, heavy-gauge rails, and heavy-duty casters that can support a static load of up to 3000 lbs. Additionally, select shock pallet models include packaging specifically designed to support the shipment of pre-configured racks with up to 2,250 lbs. of IT equipment.

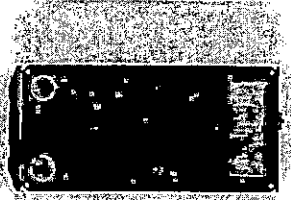
The G2 Advanced Series Rack portfolio includes a wide range of rack models covering a variety of heights, widths, and depths. To simplify purchasing and installation, all rack models include locking side panels and baying kits. Additionally, HPE offers a large portfolio of rack accessories that support airflow management, cable management, and added rack stability.



Overview



P9K07A



P9K09A

Rack Models

HPE G2 Advanced Series Rack Models

Review the following details to better understand the different rack models that are offered in the HPE G2 Advanced Series rack portfolio.

- Pallet Rack**
Standard pallet and packaging for racks that will be configured on-site.
- Shock Pallet**
Pallet and packaging designed to support racks that will be shipped directly to the data center fully configured.
 - Can support up to 2,250 lbs. of IT equipment during shipment
 - Packaging includes integrated ramp to simplify rack deployment
 - Must be selected when requesting HPE Factory Express Services

- Network Racks**
Designed to support dense Networking equipment configurations, or the integration of Networking, Servers, and Storage equipment into a single industry standard 19" rack.
 - Front and rear vertical EIA rails are moved back 75mm to facilitate front to rear cabling
 - Include additional bristle covered cable access slots in the front and top of the rack to prevent the mixing of hot and cold air and to allow pass-through for large cable connectors and bundles

- HPE Recommended Options**
HPE recommended options have best performance, value and availability.
 - Recommended**
Offering the best combination of performance, value and availability, Recommended Options have been selected by HPE experts to provide the right technology for a range of workloads and market segments. Fully integrated into the ProLiant management and security experience, Recommended Options provide the best fit with timely availability.

Extended
Extended Options provide an extended catalog of products tailored for customers in specific markets or with specific workloads, requiring the utmost in performance or value. Fully integrated into the ProLiant management and security experience, Extended Options represent great value and performance but typically have a longer lead-time.

HPE Recommended Options – [View the list for your region](#)

HPE Recommended G2 Advanced Series Racks

600mm Wide G2 Advanced Series Rack Models

HPE 22U 600mmx1075mm G2 Kitted Advanced Shock Pallet Rack with Side Panels and Baying	P9K03A
HPE 22U 600mmx1075mm G2 Kitted Advanced Shock Pallet Rack with Side Panels and Baying	P9K04A
HPE 42U 600mmx1075mm G2 Kitted Advanced Shock Pallet Rack with Side Panels and Baying	P9K07A
HPE 42U 600mmx1075mm G2 Kitted Advanced Shock Pallet Rack with Side Panels and Baying	P9K08A

Standard Features

- What's Included With Rack?**
 - Complete set of 4-piece locking side panels
 - Baying kit
 - Hardware Kit (including key to front and rear doors)
 - Support documentation
- Compatibility**
 - Designed to EIA-310 specifications for industry standard racks
 - Designed for HPE IT solutions
 - Integration with HPE rack and power infrastructure solutions
 - Include adjustable EIA rails
- Reliability / Durability**
 - 10 year limited warranty. Hardware replacement and repair is available for ten years from date of purchase.
 - Proven frame design, heavy-gauge mounting rails, and heavy-duty casters can support up to 3000 lbs. static loads and up to 2250 lbs. dynamic (rolling) loads
 - Highest levels of ship-load testing to ensure a dynamic load of up to 2250 lbs. when selecting a shock pallet rack option
 - Fully welded, roll form rack frame
 - High-strength steel side bracing
- Usability / Management**
 - Industry's widest range of enclosure sizes with rack depths of 42-inches or greater
 - Side panels and baying kit included with all G2 Advanced Series rack models
 - Multiple 800mm wide rack models including Network rack models available
 - Includes either 2 (1075mm models) or 4 (1200mm models) integrated and adjustable full-height PDU Mounting Trays in each rack to support PDU and cable management accessories
 - 80% front-door airflow perforation
 - Removal and reversible rack canopy with pre-installed brush strips capable of supporting easy pass-through of large cables and connectors
 - Enhanced front and rear door cabling channels
 - Redesigned bottom area designed for unobstructed access to data center floor
 - Depth adjustable, side EIA mounting rails designed to support front-to-back cabling
 - Flush-mounted, locking 2-piece side panels
 - Quick release front and rear doors
 - Wide array of rack accessories for airflow management, cable management, stabilization, and safety/security
 - Eyebolt support integrated into enclosure frame
 - Configuration services through HPE Factory Express
- Safety/Security**
 - Industry standard lock panel on the front and rear doors capable of supporting a wide range of third-party electronic locking/security solutions
 - Flush-mounted side panels that support rack baying when installed
 - Optional electrical grounding covering frame and components
 - Single key access for front doors, rear doors, and side panels

Industry Standards Compliance	EIA UL/CES Certification WEEE RoHS compliant TAA compliant	Type A cabinet per section 4.1.1 Yes Yes Yes Compliant for all rack models sold in North America
-------------------------------	--	--



000118

Service & Support

Warranty / Service Coverage HPE G2 Advanced Racks are covered by a global 10 warranty and supported by HPE Services and a worldwide network of HPE Authorized Channel Partners resellers. Hardware replacement and repair is available for ten years from date of purchase. Normal HPE warranty exclusions apply.

Additional information regarding worldwide limited warranty and technical support is available at: <http://h17007.www1.hp.com/infocenter/servers/warranty/index.aspx?V=10xESr3ba>

HPE Support Services **HPE Services**
To help streamline implementation and enhance ongoing support of rack solutions, Hewlett Packard Enterprise provides cost-effective service options with resources and specialized expertise to complement customers' in-house capabilities.

Installation and Startup services
Take advantage of complete installation and implementation support—including global rollout capabilities—to get rack solutions up-and-running rapidly, with minimal business disruption.

Server Option Hardware Support
Cover rack options with a single convenient service package. HPE Support Services for rack-mounted ProLiant DL servers and storage products provide support for all HPE-branded rack hardware options that are qualified for inclusion with the server at the time of or after purchase. This covers all rack and power infrastructure options including power distribution units (PDU), UPS options up to 12kVA (not including battery), rack and rack accessories, and KVM consoles and switches. All of these products are covered at the same service level and for the same period as the server at no additional cost.

HPE Support Services help increase uptime and productivity with rapid response on a 24x7 or 13x5 basis. Both options feature same-day, 4-hour on-site assistance when service issues cannot be resolved remotely. And both help enhance the return on server investment with proven HPE Services expertise and consistent support levels across geographically dispersed sites.

Related Options

proper airflow.

Rack Shelves	HPE 10000 Rack 1U Monitor Utility Shelf NOTE: This is a 1U fixed shelf that can be mounted at any height to place a monitor or other component within the rack. The shelf has a maximum weight capacity of 150 lbs. (68kg) and slots with bezels for both a 15" and 17" monitor. HP 100kg Sliding Shelf	253449-821 234672-821
Adjustable Rails	Depth Adjustable Fixed Rail Kit NOTE: This kit contains two depth adjustable rails that allow Hewlett Packard Enterprise servers, storage, UPSs and other products to be mounted in HPE or third-party racks. Maximum weight capacity is 200 lbs. (90 kg).	332558-821
Rack Light Kit	HPE Rack LED Light Kit NOTE: The Rack Light Kit is mounted under the roof of the rack and is used to illuminate the rear section of the rack. The light is turned on and off with the opening and closing of the rear doors.	BW939A
Locking Drawer	HPE 2U Universal Locking Drawer NOTE: This rack accessory mounts on HPE Advanced and Enterprise Series racks with sliding rails and is used to store CDs, instruction manuals, tools, and any other items that are frequently used at the rack. Drawer includes lock.	361591-821
Cable Management Kits	HPE Quarter Turn Hook and Loop 10 Pack Kit HPE Quarter Turn Hook and Loop 100 Pack Kit NOTE: Quarter turn hook and loop straps help attach cables and other devices to the accessory bracket in the rear of the rack without tools. Compaq Cable Management D Rings NOTE: This kit consists of 10 "D" rings that can be used for cable management. HPE Rack Cable Management Velcro Clips HP Rack Cable Management Kit NOTE: The HPE Rack Cable Management Kit includes a 1U and 2U front cable entry panel with brush inserts, 2x crossover cable brackets, 10x D-rings, 10x hook and loop straps (8 inch), 10x hook and loop straps (10 inch), and mounting hardware.	BW963A BW964A 168233-821 379820-821 AF099A
Rack Top Cable Trays	HPE 600 Wide Rack Top Cable Tray HPE 800 Wide Rack Top Cable Tray HPE Rack Top Cable Mgmt Transfer Tray NOTE: HPE Rack Top Cable Tray connects two aisles of racks with HPE Rack Top Cable Trays to run overhead cables.	383982-821 383983-821 383984-821
Rack Fan Kits	HPE 10000 Rack Roof Mount Fan (110V) Kit HPE 10000 Rack Roof Mount Fan (220V) Kit NOTE: The Rack Fan Kits enhance natural convection cooling by increasing airflow in the rack.	257413-821 257414-821
Grounding Kit	HPE G2 Rack Grounding Kit NOTE: The Rack Grounding Kit can be used to reduce the level of electromagnetic emissions outside the rack. The Kit includes (2) 6" Grounding Straps, (2) 14.5" Grounding Straps, (4) 6" Grounding Straps w/connectors, (4) 14.5" Grounding Straps w/connectors.	P9L11A

Related Options

Hewlett Packard Enterprise offers a full line of accessories and options that can be added to HPE Racks allowing you to customize each rack to fit your IT requirements. HPE Rack accessories include upgrades such as side panels, baying kits, cable management kits, drawers, shelving, and filler panels. To build a complete rack and power infrastructure for your IT environment, Hewlett Packard Enterprise also offers a full line of options that include power distribution units (PDU), uninterruptible power systems (UPS), and KVM (keyboard, video, mouse) consoles and switches. See HPE Rack and Power Infrastructure for more complete information at: <https://www.hp.com/info/racksandpower>
NOTE: ODI may appear after the above selected part numbers on your sales order if factory integration is indicated.

Rack Baying Kits	HPE G2 Rack Baying Kit NOTE: This Baying Kit is used to connect HPE G2 racks of the same U height and depth together and includes the following components: (4) 24-inch baying brackets, (4) 600mm baying brackets, and 1-3/8 Torx screws. HPE G2 1075mm/1200mm Offset Baying Kit HPE 47U to 48U Rack Baying Kit	P9L12A P9L19A Q7G16A
Airflow Optimization	HPE Air Flow Optimization Kit NOTE: The Airflow Optimization kit seals air gaps inside the rack, in between bayed racks, and the clearance from the floor to the rack to prevent hot and cold air from mixing thus optimizing the temperature at which the chilled air enters the racked servers. NOTE: When configuring racks through Factory Express a Rack Optimization kit will automatically ship with the rack. This kit is recommended for all other bayed rack configurations also.	BW930A
SideWall Panel Kits	HPE G2 Rack 42U 1075mm Side Panel Kit HPE G2 Rack 42U 1200mm Side Panel Kit HPE G2 Rack 48U 1075mm Side Panel Kit HPE G2 Rack 48U 1200mm Side panel Kit NOTE: HPE G2 Rack Side Panel Kits are locking, 2-piece panels that provide coverage for both sides of the rack. NOTE: All HPE G2 Advanced Series Racks ship with a complete set of side panels.	P9L15A P9L16A P9L17A P9L18A
Rack Stabilization Kits	HPE 600mm Rack Stabilizer Kit HPE 600mm Heavy Duty V2 Stabilizer Kit HPE 800mm Rack Stabilizer Kit NOTE: Anti-tip stabilizer kits provide stability and support when equipment is installed, removed or accessed within the rack. Heavy Duty stabilizer kit should be used when a single racked component exceeds 200 lbs. HPE 9000 and 10000 Rack Ballast Kit NOTE: The Ballast Kit is designed to provide additional stability and support when used with the Stabilizer Kit. It is typically used when very heavy equipment is routinely installed, removed or accessed within the rack. Compatible with HPE Advanced and Enterprise Series racks.	BW932A BW961A BW933A 120672-81
Tie Down Kit	HPE 11K G2 Rack Tie Down Kit NOTE: The Rack Tie Down Kit is used to secure the rack to the datacenter floor. Part number AF076A is used for 600mm wide racks only.	AF076A
Universal 1U Filler Panels	HPE 1U 10-pack Black Universal Filler Panel HP 1U 100-pack Black Universal Filler Panel NOTE: Filler panels are made from high grade recycled plastic, and are designed to be installed without tools. The use of filler panels is recommended to ensure	BW928A BW929A

Related Options

Hardware Kit	HPE Rack Hardware Kit NOTE: The HPE Rack Hardware Kit includes 24x M6 cage nuts, 24x M6x1.6 T25 screws, 10x 2mm thread clip nuts, cage nut tool and 5x Quarter turn hook and loop straps.	H6J85A
Door Kits	HPE Custom Door Branding Kit NOTE: Blank panel that allows you to customize the rack with rack location information, branding, or other designation information. HPE G2 Enterprise Rack 42U 600mm Front Door Kit HPE G2 Enterprise Rack 42U 600mm Rear Door Kit	BW935 P9L22A P9L23A
HPE Support Services	HPE Install Rack and Rack Options Service	U2871E
HPE Factory Express Services	HPE Hardware Customization Service HPE 3rd Party Hardware Install Service HPE Customer Defined Rack Cable Labeling Service HPE Customer Furnished Equipment Handling Service HPE Custom Placement within Rack Service NOTE: HPE Factory Express offers a full line of services. For more information visit http://www.hp.com/info/factoryexpress	HA838A1 HA844A1 HA850A1 HA851A1 HA864A1

88940 G2/ENTERPRISE

Technical Specifications

Model	Rackable/Useable Area			Total Area	
	Height	Width	Depth	Total Cabinet Area	Shipping Dimensions
P9K03A	22U	600mm	1,075mm	43.64 x 44.30 x 23.54 in (11084 x 11252 x 5978 cm)	5079 x 4724 x 2795 in (12900 x 31998 x 7100 cm)
P9K04A	22U	600mm	1,075mm	43.64 x 44.30 x 23.54 in (11084 x 11252 x 5978 cm)	5949 x 5087 x 3543 in (15100 x 12920 x 8999 cm)
P9K07A	42U	600mm	1,075mm	78.98 x 44.30 x 23.54 in (20060 x 11252 x 5978 cm)	8417 x 4724 x 2795 in (21379 x 11998 x 7100 cm)
P9K08A	42U	600mm	1,075mm	78.98 x 44.30 x 23.54 in (20060 x 11252 x 5978 cm)	8535 x 5087 x 3543 in (21679 x 12920 x 8999 cm)

Understanding rack weights and loads

HPE G2 Advanced Series Racks are designed to support high capacity weight loads that include the weight of the rack and all the equipment installed. Weight loads are defined as:

- Shipping Weight - rack including shipping packaging and materials.
- Static Load - maximum loaded weight that a rack can support when stationary.
- Dynamic Load (Rolling) - maximum loaded weight a rack can support when rolled.
- Dynamic Load (Shipping) - maximum loaded weight a rack can support when shipped configured with IT equipment.

HPE G2 Advanced Series Racks are rated for Static Loads of up to 3000 lbs. If you require a rack that can be shipped when fully loaded with equipment, please consider purchasing one of our Shock Pallet models that can support up to 2,250 lbs. during shipment.

Technical Specifications

Model	Rack Height	Rack Weight (lbs)	Shipping Weight (lbs)	Static Load	Dynamic (Rolling) Load	Dynamic (Shipping) Load*
P9K03A	22U	173.06	202.83	3,000 lbs. (1,361 kg)	2500 lb (1133.98 kg)	-
P9K04A	22U	173.06	338.41	3,000 lbs. (1,361 kg)	2500 lb (1133.98 kg)	2,250 lbs. (1021 kg)
P9K07A	42U	281.10	310.90	3,000 lbs. (1,361 kg)	2500 lb (1133.98 kg)	-
P9K08A	42U	281.10	470.71	3,000 lbs. (1,361 kg)	2500 lb (1133.98 kg)	2,250 lbs. (1021 kg)

Environment-friendly Products and Approach End-of-Life Management and Recycling

Hewlett Packard Enterprise offers end-of-life product return, trade-in, and recycling programs, in many geographic areas, for our products. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner.

<http://www.hpe.com/recycle>

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard Enterprise web site. These instructions may be used by recyclers and other WEEE treatment facilities as well as Hewlett Packard Enterprise OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.

<http://www.hpe.com/recycle>

Technical Specifications

HPE Extended G2 Advanced Series Racks

600mm Wide G2 Advanced Series Rack Models		
HPE 36U 600mmx1075mm G2 Kitted Advanced Pallet Rack with Side Panels and Baying		P9K05A
HPE 36U 600mmx1075mm G2 Kitted Advanced Shock Rack with Side Panels and Baying		P9K06A
HPE 42U 600mmx1200mm G2 Kitted Advanced Pallet Rack with Side Panels and Baying		P9K09A
HPE 42U 600mmx1200mm G2 Kitted Advanced Shock Rack with Side Panels and Baying		P9K10A
HPE 48U 600mmx1075mm G2 Kitted Advanced Pallet Rack with Side Panels and Baying		P9K19A
HPE 48U 600mmx1075mm G2 Kitted Advanced Shock Rack with Side Panels and Baying		P9K18A
800mm Wide G2 Advanced Series Rack Models		
HPE 42U 800mmx1075mm G2 Kitted Advanced Pallet Rack with Side Panels and Baying		P9K11A
HPE 42U 800mmx1075mm G2 Kitted Advanced Shock Rack with Side Panels and Baying		P9K12A
HPE 42U 800mmx1200mm G2 Kitted Advanced Pallet Rack with Side Panels and Baying		P9K15A
HPE 42U 800mmx1200mm G2 Kitted Advanced Shock Rack with Side Panels and Baying		P9K16A
HPE 48U 800mmx1075mm G2 Kitted Advanced Pallet Rack with Side Panels and Baying		P9K21A
HPE 48U 800mmx1075mm G2 Kitted Advanced Network Pallet Rack		P9K17A
HPE 42U 800mmx1200mm G2 Kitted Advanced Shock Network Rack with Side Panels and Baying		P9K18A

Model	Rackable/Useable Area			Total Area	
	Height	Width	Depth	Total Cabinet Area	Shipping Dimensions
P9K05A	36U	600mm	1,075mm	68.66 x 44.30 x 23.54 in (174.39 x 11252 x 5978 cm)	8417 x 4724 x 2795 in (21379 x 11998 x 7100 cm)
P9K06A	36U	600mm	1,075mm	68.66 x 44.30 x 23.54 in (174.39 x 10852 x 5978 cm)	8535 x 5087 x 3543 in (21679 x 12920 x 8999 cm)
P9K09A	42U	600mm	1,200mm	78.98 x 51.19 x 23.54 in (200.60 x 13002 x 5978 cm)	8417 x 54.92 x 2795 in (21879 x 13950 x 7100 cm)
P9K10A	42U	600mm	1,200mm	78.98 x 51.19 x 23.54 in (200.60 x 13002 x 5978 cm)	8535 x 57.87 x 3543 in (21679 x 14699 x 8999 cm)
P9K19A	48U	600mm	1,075mm	90.39 x 44.30 x 23.54 in (229.78 x 11252 x 5978 cm)	94.46 x 47.24 x 27.95 in (245.00 x 11998 x 7100 cm)
P9K11A	42U	800mm	1,075mm	78.98 x 44.30 x 31.41 in (200.60 x 11252 x 7978 cm)	8417 x 54.84 x 35.43 in (21379 x 13929 x 8999 cm)
P9K12A	42U	800mm	1,075mm	78.98 x 44.30 x 31.41 in (200.60 x 11252 x 7978 cm)	8535 x 57.87 x 35.43 in (21679 x 14699 x 8999 cm)
P9K17A	42U	800mm	1,075mm	78.98 x 44.30 x 31.41 in (200.60 x 11252 x 7978 cm)	8417 x 54.84 x 43.43 in (21379 x 13929 x 11031 cm)
P9K15A	42U	800mm	1,200mm	78.98 x 51.19 x 31.41 in (200.60 x 13002 x 7978 cm)	8417 x 54.84 x 35.83 in (21879 x 13929 x 9100 cm)
P9K18A	42U	800mm	1,200mm	78.98 x 51.19 x 31.41 in (200.60 x 13002 x 7978 cm)	8535 x 57.87 x 43.43 in (21679 x 14699 x 11031 cm)
P9K16A	42U	800mm	1,200mm	78.98 x 51.19 x 31.41 in (200.60 x 13002 x 7978 cm)	8535 x 57.87 x 43.43 in (21679 x 14699 x 11031 cm)
P9K21A	48U	600mm	1,075mm	90.39 x 44.30 x 31.41 in (229.78 x 11252 x 7978 cm)	97.84 x 50.87 x 35.43 in (248.01 x 12920 x 8999 cm)

Technical Specifications

Model	Rack Height	Rack Weight (lbs)	Shipping Weight (lbs)	Static Load	Dynamic (Rolling) Load	Dynamic (Shipping) Load*
P9K05A	36U	255.74	285.50	3,000 lbs. (1,361 kg)	2500 lb (1133.98 kg)	-
P9K06A	36U	255.74	421.08	3,000 lbs. (1,361 kg)	2500 lb (1133.98 kg)	2,250 lbs. (1021 kg)
P9K09A	42U	310.85	342.82	3,000 lbs. (1,361 kg)	2500 lb (1133.98 kg)	-
P9K10A	42U	310.85	514.81	3,000 lbs. (1,361 kg)	2500 lb (1133.98 kg)	2,250 lbs. (1021 kg)
P9K19A	48U	311.95	341.72	3,000 lbs. (1,361 kg)	2500 lb (1133.98 kg)	-
P9K11A	42U	346.35	379.42	3,000 lbs. (1,361 kg)	2500 lb (1133.98 kg)	-
P9K12A	42U	346.35	549.17	3,000 lbs. (1,361 kg)	2500 lb (1133.98 kg)	2,250 lbs. (1021 kg)
P9K17A	42U	346.35	379.42	3,000 lbs. (1,361 kg)	2500 lb (1133.98 kg)	-
P9K15A	42U	362.66	397.93	3,000 lbs. (1,361 kg)	2500 lb (1133.98 kg)	-
P9K18A	42U	346.35	580.92	3,000 lbs. (1,361 kg)	2500 lb (1133.98 kg)	2,250 lbs. (1021 kg)
P9K16A	42U	362.66	580.82	3,000 lbs. (1,361 kg)	2500 lb (1133.98 kg)	2,250 lbs. (1021 kg)
P9K21A	48U	363.76	596.83	3,000 lbs. (1,361 kg)	2500 lb (1133.98 kg)	-

000119

ESPT

Handwritten signature

Summary of Changes

Date	Version History	Action	Description of Change
05-Feb-2018	Version 6	Changed	Rack Models, Standard Features, and Technical Specifications were updated.
07-Aug-2017	Version 5	Added	Added new Baying kits and Door kits.
		Changed	Related Options section was revised.
27-Mar-2017	Version 4	Changed	Standard Features, Related Options and Technical Specifications were updated.
13-Feb-2017	Version 3	Changed	Reliability/Durability and Sidewall Panel Kits were revised.
13-Jan-2017	Version 2	Changed	Description for P9L17A was changed. Front left image was updated.
28-Nov-2016	Version 1	Added	New QuickSpecs.



Sign up for updates

**Hewlett Packard
Enterprise**

© Copyright 2018 Hewlett Packard Enterprise Development LP. The information contained herein is subject to change without notice. The only warranties for Hewlett Packard Enterprise products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Hewlett Packard Enterprise shall not be liable for technical or editorial errors or omissions contained herein.
c05324689 - 15754 - Worldwide - V6 05 - February 2018



Cisco ASA with FirePOWER Services

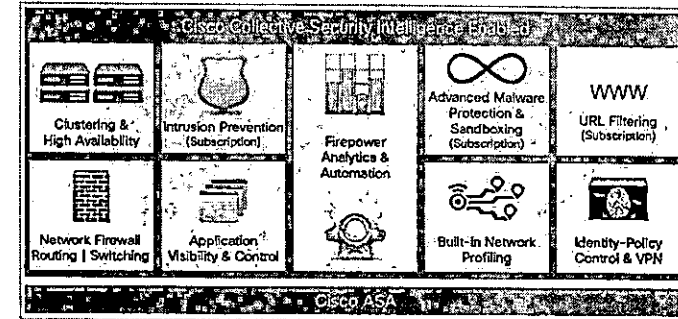
Meet the industry's first adaptive, threat-focused next-generation firewall (NGFW) designed for a new era of threat and advanced malware protection. Cisco® ASA with FirePOWER Services delivers integrated threat defense for the entire attack continuum - before, during, and after an attack. How? By combining the proven security capabilities of the Cisco ASA firewall with the industry-leading Sourcefire® threat and Advanced Malware Protection (AMP) features together in a single device. The solution uniquely extends the capabilities of the Cisco ASA 5500-X Series Next-Generation Firewalls beyond what today's NGFW solutions are capable of. Whether you need protection for a small or mid-sized business, a distributed enterprise, or a single data center, Cisco ASA with FirePOWER Services provides the needed scale and context in a NGFW solution.

Superior Multilayered Protection

Cisco ASA with FirePOWER Services brings distinctive threat-focused next-generation security services to the Cisco ASA 5500-X Series Next-Generation Firewalls. It provides comprehensive protection from known and advanced threats, including protection against targeted and persistent malware attacks (Figure 1). Cisco ASA is the world's most widely deployed, enterprise-class stateful firewall. Cisco ASA with FirePOWER Services features these comprehensive capabilities:

- Site-to-site and remote access VPN and advanced clustering provide highly secure, high-performance access and high availability to help ensure business continuity.
- Granular Application Visibility and Control (AVC) supports more than 4,000 application-layer and risk-based controls that can launch tailored intrusion prevention system (IPS) threat detection policies to optimize security effectiveness.
- The industry-leading Cisco ASA with FirePOWER next-generation IPS (NGIPS) provides highly effective threat prevention and full contextual awareness of users, infrastructure, applications, and content to detect multivector threats and automate defense response.
- Reputation- and category-based URL filtering offer comprehensive alerting and control over suspicious web traffic and enforce policies on hundreds of millions of URLs in more than 80 categories.
- AMP provides industry-leading breach detection effectiveness, sandboxing, a low total cost of ownership, and superior protection value that helps you discover, understand, and stop malware and emerging threats missed by other security layers.

Figure 1. Cisco ASA with FirePOWER Services: Key Security Features



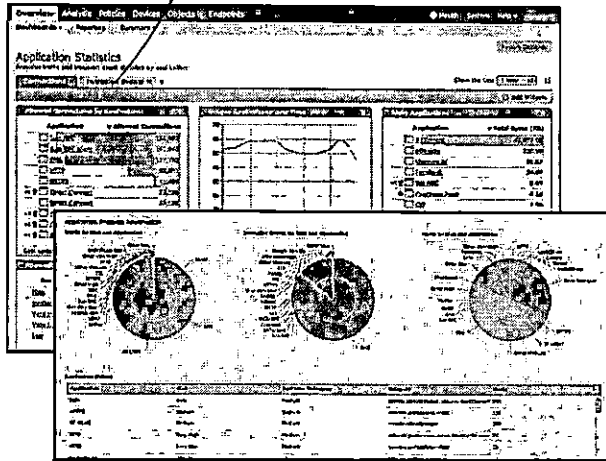
Unprecedented Network Visibility

Cisco ASA with FirePOWER Services is centrally managed by the Cisco Firepower Management Center (formerly known as Cisco FireSIGHT Management Center), which provides security teams with comprehensive visibility into and control over activity within the network. Such visibility includes users, devices, communication between virtual machines, vulnerabilities, threats, client-side applications, files, and web sites. Holistic, actionable indications of compromise (IoCs) correlate detailed network and endpoint event information and provide further visibility into malware infections. Cisco's enterprise-class management tools help administrators reduce complexity with unmatched visibility and control across NGFW deployments. Cisco Firepower Management Center also provides content awareness with malware file trajectory that aids infection scoping and root cause determination to speed time to remediation.

Cisco Security Manager provides scalable and centralized network operations workflow management. It integrates a powerful suite of capabilities; including policy and object management, event management, reporting, and troubleshooting for Cisco ASA firewall functions when utilizing Cisco Firepower Management Center.

For local, on-device management including deployments for small and mid-sized businesses, Cisco Adaptive Security Device Manager (ASDM) 7.3.x provides access control and advanced threat defense management. ASDM V 7.3.x provides an enhanced user interface that provides quick views on trends and the ability to drill down for further analysis.

Figure 2. Cisco Firepower Management Center: Intuitive High-Level and Detailed Drill-Down Dashboards



Reduced Costs and Complexity

Cisco ASA with FirePOWER Services incorporates an integrated approach to threat defense, reducing capital and operating costs and administrative complexity. It smoothly integrates with the existing IT environment, work stream, and network fabric. The appliance family is highly scalable, performs at up to multigigabit speeds, and provides consistent and robust security across branch, Internet edge, and data centers in both physical and virtual environments.

With Cisco Firepower Management Center, administrators can streamline operations to correlate threats, assess their impact, automatically tune security policy, and easily attribute user identities to security events. Cisco Firepower Management Center continually monitors how the network is changing over time. New threats are automatically assessed to determine which ones can affect your business. Responses are then focused on remediation and network defenses are adapted to changing threat conditions. Critical security activities such as policy tuning are automated, saving time and effort, while protections and countermeasures are maintained in an optimal state.

Cisco Firepower Management Center integrates easily with third-party security solutions through the eStreamer API to streamline operation workflows and fit existing network fabrics.

Table 1 highlights the best-in-class features and benefits of Cisco ASA with FirePOWER Services.

Table 1. Features and Benefits of Cisco ASA with FirePOWER Services

Feature	Benefits
Next-generation firewall	Industry's first threat-focused NGFW, provides ASA firewall functionality, advanced threat protection, and advanced breach detection and remediation combined in a single device
Proven ASA firewall	Rich routing, stateful firewall, Network Address Translation, and dynamic clustering for high-performance, highly secure, and reliable access with Cisco AnyConnect SM VPN
Market-leading NGIPS	Superior threat prevention and mitigation for both known and unknown threats
Advanced malware protection	Detection, blocking, tracking, analysis, and remediation to protect the enterprise against targeted and persistent malware attacks
Full contextual awareness	Policy enforcement based on complete visibility of users, mobile devices, client-side applications, communication between virtual machines, vulnerabilities, threats, and URLs
Application control and URL filtering	Application-layer control (over applications, geolocations, users, webpages) and ability to enforce usage and tailor detection policies based on custom applications and URLs
Enterprise-class management	Dashboards and drill-down reports of discovered hosts, applications, threats, and indications of compromise for comprehensive visibility
Streamlined operations automation	Lower operating cost and administrative complexity with threat correlation, impact assessment, automated security policy tuning, and user identification
Purpose-built, scalable	Highly scalable security appliance architecture that performs at up to multigigabit speeds; consistent and robust security across small office, branch offices, Internet edge, and data centers in either physical and virtual environments
On-device management	Simplifies advanced threat defense management for small and medium sized business with small scale deployments
Remote Access VPN	Extends secure corporate network access beyond corporate laptops to personal mobile devices, regardless of physical location; support for Cisco AnyConnect Secure Mobility Solution, with granular, application-level VPN capability, as well as native Apple iOS and Android VPN clients
Site-to-site VPN	Protect traffic, including VoIP and client-server application data, across the distributed enterprise and branch offices
Integrated wireless access	Integrated W-Fi is available in the desktop form factor (ASA 5506W-X) for compact and simplified small office deployments
Ruggedized form factor	A ruggedized model (ASA 5506H-X), designed specifically for extreme environmental conditions, is available for critical infrastructure and control network applications
Third-party technology ecosystem	Open API that enables the third-party technology ecosystem to integrate with existing customer work streams
Integration with Snort and OpenAppID	Open source security integration with Snort and OpenAppID for access to community resources and ability to easily customize security to address new and specific threats and applications quickly
Collective Security Intelligence (CSI)	Unmatched security and web reputation intelligence provides real-time threat intelligence and security protection

Product Performance and Specifications

Table 2 details the NGFW capabilities and capacities of the Cisco ASA with FirePOWER Services for Cisco ASA 5500-X Series.

Table 2. Cisco ASA 5500-X with FirePOWER Services Capabilities and Capacities

Feature	Cisco ASA 5508-X w/ FirePOWER Services	Cisco ASA 5508W-X w/ FirePOWER Services	Cisco ASA 5508H-X w/ FirePOWER Services	Cisco ASA 5508-X w/ FirePOWER Services	Cisco ASA 5516-X w/ FirePOWER Services	Cisco ASA 5512-X w/ FirePOWER Services	Cisco ASA 5516-X w/ FirePOWER Services	Cisco ASA 5525-X w/ FirePOWER Services	Cisco ASA 5545-X w/ FirePOWER Services	Cisco ASA 5555-X w/ FirePOWER Services
Throughput: Application Control (AVC)	250 Mbps	250 Mbps	250 Mbps	450 Mbps	650 Mbps	300 Mbps	500 Mbps	1,100 Mbps	1,500 Mbps	1,750 Mbps
Throughput: Application Control (AVC) and IPS	125 Mbps	125 Mbps	125 Mbps	250 Mbps	450 Mbps	150 Mbps	250 Mbps	650 Mbps	1,000 Mbps	1,250 Mbps
Maximum concurrent sessions	20,000; 50,000 ¹	20,000; 50,000 ¹	50,000	100,000	250,000	100,000	250,000	500,000	750,000	1,000,000
Maximum New Connections per second	5,000	5,000	5,000	10,000	20,000	10,000	15,000	20,000	30,000	50,000
Supported applications	More than 3,000									
URL categories	80+									
Number of URLs categorized	More than 280 million									
Centralized configuration, logging, monitoring, and reporting	Multi-device Cisco Security Manager (CSM) and Cisco Firepower Management Center									
On-Device Management	ASDM (version 7.3 or higher required)					ASDM				

¹ Higher specifications are associated with the Security Plus license.

000121

Table 3 compares the features and capacities of the different ASA 5500-X Series Next-Generation Firewalls for small offices, branch locations, and Internet edge deployments.

Table 3. Cisco ASA 5500-X Series Next-Generation Firewalls

Feature	Cisco ASA 5508-X w/ FirePOWER Services	Cisco ASA 5508W-X w/ FirePOWER Services	Cisco ASA 5508H-X w/ FirePOWER Services	Cisco ASA 5508-X w/ FirePOWER Services	Cisco ASA 5516-X w/ FirePOWER Services	Cisco ASA 5512-X w/ FirePOWER Services	Cisco ASA 5516-X w/ FirePOWER Services	Cisco ASA 5525-X w/ FirePOWER Services	Cisco ASA 5545-X w/ FirePOWER Services	Cisco ASA 5555-X w/ FirePOWER Services
Stateful Inspection throughput (maximum ¹)	750 Mbps	750 Mbps	750 Mbps	1 Gbps	1.8 Gbps	1 Gbps	1.2 Gbps	2 Gbps	3 Gbps	4 Gbps
Stateful Inspection throughput (multi-protocol)	300 Mbps	300 Mbps	300 Mbps	500 Mbps	600 Mbps	500 Mbps	600 Mbps	1 Gbps	1.5 Gbps	2 Gbps
Triple Data Encryption Standard/Advanced Encryption Standard (3DES/AES) VPN throughput ²	100 Mbps	100 Mbps	100 Mbps	175 Mbps	250 Mbps	200 Mbps	250 Mbps	300 Mbps	400 Mbps	700 Mbps
Users/nodes	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
IPsec site-to-site VPN peers	10; 50 ³	10; 50 ³	50	100	300	250	250	750	2500	5000
Cisco Cloud Web Security users	For detailed sizing guidance see the CWS Connector Sizing for ASA 5500 and ASA 5500-X									
Cisco AnyConnect Plus/Apex VPN maximum simultaneous connections ⁴	50 ⁵	50 ⁵	50 ⁵	100 ⁵	300 ⁵	250 ⁵	250 ⁵	750 ⁵	2500 ⁵	5000 ⁵
Virtual Interfaces (VLANs)	5; 30 ⁶	5; 30 ⁶	30	50	100	50; 100	100	200	300	500
Security contexts (Included; maximum)	N/A	N/A	N/A	2; 5	2; 5	0; 2; 5	2; 5	2; 20	2; 50	2; 100
High availability ⁷	Requires Security Plus License; Active/Standby	Requires Security Plus License; Active/Standby	Active/Standby	Active/Active and Active/Standby	Active/Active and Active/Standby	Requires Security Plus License; Active/Active and Active/Standby	Active/Active and Active/Standby	Active/Active and Active/Standby	Active/Active and Active/Standby	Active/Active and Active/Standby
Integrated Wireless Access Point (See Cisco AP 702 datasheet for WPA technical details)	N/A	Wireless Bands a/B/g/n; Max a with throughput 54 Mbps; internal antenna only; local management or centralized via Cisco WLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Handwritten notes and stamps at the bottom right of the page, including a circular stamp and the word "BAP" in a rectangular stamp.

Feature	Cisco ASA 5506-X w/ FirePOWER Services	Cisco ASA 5508-X w/ FirePOWER Services	Cisco ASA 5512-X w/ FirePOWER Services	Cisco ASA 5516-X w/ FirePOWER Services	Cisco ASA 5520-X w/ FirePOWER Services	Cisco ASA 5524-X w/ FirePOWER Services	Cisco ASA 5528-X w/ FirePOWER Services	Cisco ASA 5532-X w/ FirePOWER Services	Cisco ASA 5536-X w/ FirePOWER Services	Cisco ASA 5540-X w/ FirePOWER Services
Expansion slot	N/A	N/A	N/A	N/A	N/A	1 Interface card	1 Interface card	1 Interface card	1 Interface card	1 Interface card
User-accessible Flash slot	No	No	No	No	No	No	No	0	0	0
USB 2.0 ports	USB port type 'A', High Speed 2.0	USB port type 'A', High Speed 2.0	USB port type 'A', High Speed 2.0	USB port type 'A', High Speed 2.0	USB port type 'A', High Speed 2.0	2	2	2	2	2
Integrated I/O	8 x 1 GbE Ethernet (10G)	4 x 1 GbE	4 x 1 GbE	8 x 1 GbE	8 x 1 GbE	6 GE copper	6 GE copper	8 GE copper	8 GE copper	8 GE copper
Expansion I/O	N/A	N/A	N/A	N/A	N/A	6 GE copper or 6 GE SFP	6 GE copper or 6 GE SFP	6 GE copper or 6 GE SFP	6 GE copper or 6 GE SFP	6 GE copper or 6 GE SFP
Dedicated management port	Yes (To be shared with FirePOWER Services), 10/100/1000	Yes (To be shared with FirePOWER Services), 10/100/1000	Yes (To be shared with FirePOWER Services), 10/100/1000	Yes (To be shared with FirePOWER Services), 10/100/1000	Yes (To be shared with FirePOWER Services), 10/100/1000	Yes (1 GE)	Yes (1 GE)	Yes (1 GE)	Yes (1 GE)	Yes (1 GE)
Serial ports	1 RJ-45 and Mini USB console	1 RJ-45 and Mini USB console	1 RJ-45 and Mini USB console	1 RJ-45 and Mini USB console	1 RJ-45 and Mini USB console	1 RJ-45 console	1 RJ-45 console	1 RJ-45 console	1 RJ-45 console	1 RJ-45 console
Solid-state drive	50 GB mSata	50 GB mSata	50 GB mSata tested for heat	80 GB mSata	100 GB mSata	1 slot, 120 GB MLC SED	1 slot, 120 GB MLC SED	1 slot, 120 GB MLC SED	2 slots, RAID 1	2 slots, RAID 1
Memory	4 GB	4 GB	4 GB	8 GB	8 GB	4 GB	8 GB	8 GB	12 GB	16 GB
System flash	8 GB	8 GB	8 GB	8 GB	8 GB	4 GB	8 GB	8 GB	8 GB	8 GB
System bus	Multibus architecture	Multibus architecture	Multibus architecture	Multibus architecture	Multibus architecture	Multibus architecture	Multibus architecture	Multibus architecture	Multibus architecture	Multibus architecture
Operating Parameters										
Temperature	32 to 104°F (0 to 40°C)	32 to 104°F (0 to 40°C)	-4 to 140°F (-20 to 60°C)	32 to 104°F (0 to 40°C)	32 to 104°F (0 to 40°C)	23 to 104°F (-5 to 40°C)	23 to 104°F (-5 to 40°C)	23 to 104°F (-5 to 40°C)	23 to 104°F (-5 to 40°C)	23 to 104°F (-5 to 40°C)
Relative humidity	90 percent noncondensing	90 percent noncondensing	95 percent noncondensing	10 to 90 percent noncondensing	10 to 90 percent noncondensing	10 to 90 percent noncondensing	10 to 90 percent noncondensing	10 to 90 percent noncondensing	90 percent	90 percent
Altitude	Designed and tested for 0 to 10,000 ft (3048 m)	Designed and tested for 0 to 10,000 ft (3048 m)	Designed and tested for 0 to 10,000 ft (3050 m)	Designed and tested for 0 to 10,000 ft (3048 m)	Designed and tested for 0 to 10,000 ft (3048 m)	Designed and tested for 0 to 15,000 ft (4572 m)	Designed and tested for 0 to 15,000 ft (4572 m)	Designed and tested for 0 to 10,000 ft (3050 m)	Designed and tested for 0 to 10,000 ft (3050 m)	Designed and tested for 0 to 10,000 ft (3050 m)

Feature	Cisco ASA 5506-X w/ FirePOWER Services	Cisco ASA 5508-X w/ FirePOWER Services	Cisco ASA 5512-X w/ FirePOWER Services	Cisco ASA 5516-X w/ FirePOWER Services	Cisco ASA 5520-X w/ FirePOWER Services	Cisco ASA 5524-X w/ FirePOWER Services	Cisco ASA 5528-X w/ FirePOWER Services	Cisco ASA 5532-X w/ FirePOWER Services	Cisco ASA 5536-X w/ FirePOWER Services	Cisco ASA 5540-X w/ FirePOWER Services
Acoustical noise	Fanless 0 dBA	Fanless 0 dBA	Fanless 0 dBA	41.6 A-weighted decibels (dBA) type	41.6 dBA type	64.2 dBA max	64.2 dBA max	64.2 dBA max	64.2 dBA max	67.9 dBA max
Non-operating Parameters										
Temperature	-13 to 158°F (-25 to 70°C)	-13 to 158°F (-25 to 70°C)	-40 to 185°F (-40 to 85°C)	-13 to 158°F (-25 to 70°C)	-13 to 158°F (-25 to 70°C)	-13 to 158°F (-25 to 70°C)	-13 to 158°F (-25 to 70°C)	-13 to 158°F (-25 to 70°C)	-13 to 158°F (-25 to 70°C)	-13 to 158°F (-25 to 70°C)
Relative humidity	10 to 90 percent noncondensing	10 to 90 percent noncondensing	10 to 95 percent noncondensing	10 to 90 percent noncondensing	10 to 90 percent noncondensing	10 to 90 percent noncondensing	10 to 90 percent noncondensing	10 to 90 percent noncondensing	10 to 90 percent noncondensing	10 to 90 percent noncondensing
Altitude	Designed and tested for 0 to 15,000 ft (4572 m)	Designed and tested for 0 to 15,000 ft (4572 m)	Designed and tested for 0 to 15,000 ft (4572 m)	Designed and tested for 0 to 15,000 ft (4572 m)	Designed and tested for 0 to 15,000 ft (4572 m)	Designed and tested for 0 to 15,000 ft (4570 m)	Designed and tested for 0 to 15,000 ft (4570 m)	Designed and tested for 0 to 15,000 ft (4572 m)	Designed and tested for 0 to 15,000 ft (4572 m)	Designed and tested for 0 to 15,000 ft (4572 m)
Power Input (per power supply)										
AC range line voltage	External, 90 to 240 volts alternating current (VAC)	External, 90 to 240 volts alternating current (VAC)	External, 90 to 240 volts alternating current (VAC)	External, 90 to 240 volts alternating current (VAC)	External, 90 to 240 volts alternating current (VAC)	100 to 240 VAC	100 to 240 VAC	100 to 240 VAC	100 to 240 VAC	100 to 240 VAC
AC normal line voltage	90 to 240 VAC	90 to 240 VAC	90 to 240 VAC	91 to 240 VAC	92 to 240 VAC	100 to 240 VAC	100 to 240 VAC	100 to 240 VAC	100 to 240 VAC	100 to 240 VAC
AC current	N/A	N/A	N/A	0.25AC amps	0.25AC amps	4.85A	4.85A	4.85A	5A, 100 to 120V	5A, 100 to 120V
AC frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Dual-power supplies	None	None	None	None	None	None	None	None	Yes	Yes
DC domestic line voltage	N/A	N/A	N/A	N/A	N/A	-40.5 to 56 VDC (-48 VDC nominal)	-40.5 to 56 VDC (-48 VDC nominal)	-40.5 to 56 VDC (-48 VDC nominal)	-40.5 to 56 VDC (-48 VDC nominal)	-40.5 to 56 VDC (-48 VDC nominal)
DC international line voltage	N/A	N/A	N/A	N/A	N/A	-55 to -72 VDC (-60 VDC nominal)	-55 to -72 VDC (-60 VDC nominal)	-55 to -72 VDC (-60 VDC nominal)	-55 to -72 VDC (-60 VDC nominal)	-55 to -72 VDC (-60 VDC nominal)
DC current	N/A	N/A	N/A	N/A	N/A	15A (maximum input)	15A (maximum input)	15A (maximum input)	15A (maximum input)	15A (maximum input)
Output										
Steady state	12V @ 2.5A	12V @ 2.5A	5V @ 3.6A	12V @ 3.0A	12V @ 3.0A	51W	65W	75W	86W	90W
Maximum peak	12V @ 5A	12V @ 5A	5V @ 4.4A	12V @ 5.0A	12V @ 5.0A	56W	70W	105W	125W	134W
Maximum heat dissipation	205 British thermal units (Btu)/hr	205 Btu/hr	75 Btu/hr	205 Btu/hr	205 Btu/hr	192 Btu/hr	239 Btu/hr	369 Btu/hr	477 Btu/hr	458 Btu/hr

Feature	Cisco ASA 5506-X w/ FirePOWER Services	Cisco ASA 5506W-X w/ FirePOWER Services	Cisco ASA 5508-X w/ FirePOWER Services	Cisco ASA 5508-X w/ FirePOWER Services	Cisco ASA 5516-X w/ FirePOWER Services	Cisco ASA 5516-X w/ FirePOWER Services	Cisco ASA 5512-X w/ FirePOWER Services	Cisco ASA 5512-X w/ FirePOWER Services	Cisco ASA 5525-X w/ FirePOWER Services	Cisco ASA 5545-X w/ FirePOWER Services	Cisco ASA 5552-X w/ FirePOWER Services
Form factor	Desktop, rack mountable	Desktop, rack mountable	Desktop, rack mountable (wall mountable, DIN-Rail)	1 rack unit (RU), 19-in. rack-mountable	1 rack unit (RU), 19-in. rack-mountable	1 rack unit (RU), 19-in. rack-mountable	1RU, 19-in. rack-mountable	1RU, 19-in. rack-mountable	1RU, 19-in. rack-mountable	1RU, 19-in. rack-mountable	1RU, 19-in. rack-mountable
Dimensions (H x W x D)	1.72 x 7.871 x 9.23 in.	1.72 x 7.871 x 9.23 in.	2.72 x 9.05 x 9.05 in.	1.72 x 17.2 x 11.288 in.	1.72 x 17.2 x 11.288 in.	1.67 x 16.7 x 15.6 in.	1.67 x 16.7 x 15.6 in.	1.75 x 17.5 x 14.25 in.	1.67 x 16.7 x 19.1 in.	1.67 x 16.7 x 19.1 in.	1.67 x 16.7 x 19.1 in.
Weight (with AC power supply)	4 lb (1.82 kg)	4 lb (1.82 kg)	7 lb (3.18 kg)	8 lb (3 kg)	8 lb (3 kg)	13.39 lb (6.07 kg)	13.39 lb (6.07 kg)	22.0 lb (10 kg)	16.82 lb (7.63 kg) with single power supply	16.82 lb (7.63 kg) with single power supply	16.82 lb (7.63 kg) with dual power supply

¹ Maximum throughput measured with UDP traffic under ideal conditions.
² Multi-protocol = Traffic profile consisting primarily of TCP-based protocols/applications like HTTP, SMTP, FTP, IMAPv4, BitTorrent, and DNS.
³ VPN throughput and sessions count depend on the ASA device configuration and VPN traffic patterns. These elements should be taken into consideration as part of your capacity planning.
⁴ Higher specifications are associated with the Security Plus license.
⁵ Separately licensed feature. For AnyConnect, licenses are purchased based on feature tier (Plus/Apex), term and authorized user license. See ordering guide below for detailed ordering instructions.
⁶ Usable space dependent upon system software.
⁷ Derate the maximum operating temperature 1.5°C per 1000 ft above sea level.

Hardware Product Compliance

Current information on ASA with FirePOWER product compliance information can be found on the Cisco Product Approval Status (PAS) link: <http://tools.cisco.com/cse/ordapp>.

If you are not registered with Cisco.com, please refer to the registration link located at: <http://tools.cisco.com/RFP/register/register.do>.

To access information please follow the below steps:

1. Select the **Product Certifications by Country** radio button select **GO**
2. Under option 2 enter product ID or part of it in the product name box (one at a time only) for example **FPR-C9300**
3. Under additional filter select or highlight your country of interest or keep all countries selected for full results
4. Select **submit**
5. Your results will be displayed. Under status select the hyperlink **Details**
6. Find your corresponding documents

Hardware Product Performance and Specifications

Platform Support/Compatibility

Cisco ASA with FirePOWER Services include Cisco ASA firewalling, AVC, URL filtering, NGIPS, and AMP. This unique set of capabilities is available on the Cisco ASA 5500-X Series NGFW platforms: Cisco ASA 5506-X, 5506W-X, 5508-X, 5508-X, 5516-X, 5512-X, 5515-X, 5525-X, 5545-X, 5555-X.

Cisco ASA with FirePOWER Services software is supported on the Cisco ASA 5500-X Series of next-generation midrange security appliances running Cisco ASA Software Release 9.2.2 and later. Cisco Firepower Management Center and Cisco Security Manager are required to manage Cisco ASA with FirePOWER Services ASA 5512-X, 5515-X, 5525-X, 5545-X, 5555-X. ASDM V 7.3.x is available on-device to manage single instance deployments of Cisco ASA 5506-X, 5506W-X, 5508-X, 5508-X, and 5516-X with FirePOWER Services.

Cisco ASA 5500-X Series 6-Port GE Interface Cards



Cisco ASA 5500-X Series 6-port Gigabit Ethernet Interface Cards extend the I/O profile of the Cisco ASA 5500-X Series appliances by providing additional GE ports. The cards provide the following benefits:

- Better segmentation of network traffic into separate security zones
- Fiber-optic cable connectivity for long-distance communication
- Load sharing of traffic as well as protection against link failure through the use of EtherChannel
- Support for jumbo Ethernet frames of up to 9000 bytes
- Protection against cable failure for the most demanding active/active failover and full-mesh firewall deployments

Note: Not available on ASA 5508-X or ASA 5516-X

Table 4 lists the characteristics of the Cisco ASA 5500-X Series 6-port GE interface cards.

Table 4. Characteristics of Cisco ASA 5500-X Series 6-Port GE Interface Cards

Feature	Cisco ASA 5500-X Series 6-Port 10/100/1000	Cisco ASA 5500-X Series 6-Port GE SFP SX/LH and LX
Technical Specifications		
Integrated ports	Six 10/100/1000BASE-T	Six GE optical SFP 1000BASE-SX, 1000BASE-LX, or 1000BASE-LH transceiver supported
Environmental Operating Ranges		
Operating		
Temperature	32 to 113°F (0 to 45°C)	32 to 113°F (0 to 45°C)
Relative humidity	5 to 95 percent noncondensing	5 to 95 percent noncondensing
Nonoperating		
Temperature	-40 to 149°F (-40 to 65°C)	-40 to 149°F (-40 to 65°C)
Power consumption	25W maximum	25W maximum
Physical Specifications		
Dimensions (H x W x D)	1.57 x 5.31 x 9.09 in. (3.99 x 13.49 x 23.09 cm)	1.57 x 5.31 x 9.09 in. (3.99 x 13.49 x 23.09 cm)

Feature	Cisco ASA 5500-X Series 8-Port 10/100/1000	Cisco ASA 5500-X Series 6-Port GE SFP SX, LH, and LX
Weight	1.00 lb (0.45 kg)	1.00 lb (0.45 kg)
Regulatory and Standards Compliance		
Safety	UL 60950, CSA C22.2 No. 60950, EN 60950 IEC 60950, AS/NZS 60950	UL 60950, CSA C22.2 No. 60950, EN 60950 IEC 60950, AS/NZS 60950
Electromagnetic compatibility (EMC)	CE marking, FCC Part 15 Class A, AS/NZS CISPR22 Class A, VCCI Class A, EN55022 Class A, CISPR22 Class A, EN61000-3-2, EN61000-3-3	CE marking, FCC Part 15 Class A, AS/NZS CISPR22 Class A, VCCI Class A, EN55022 Class A, CISPR22 Class A, EN61000-3-2, EN61000-3-3

Ordering Information

To place an order, visit the [Cisco ordering homepage](#). Table 5 provides ordering information for Cisco ASA with FirePOWER Services.

Table 5. Cisco ASA with FirePOWER Services Ordering Information

The following table includes Cisco ASA FirePOWER Services bundle SKUs (including hardware and subscription) that offer a convenient mechanism for ordering both the appliances and software subscriptions in a single SKU configuration. It is the recommended mode of configuration for ordering. Standalone AMP license and subscriptions are also available to upgrade an existing TA or TAC subscription license. Please see the ASA with FirePOWER

Cisco ASA with FirePOWER Services 5500-X Series Bundles (Hardware and Subscription)	
ASA 5506-X with FirePOWER Svcs. Chassis and Subs. Bundle	ASA5506-FPWR-BUN
ASA 5506W-X with FirePOWER Svcs. WiFi Chassis and Subs. Bundle	ASA5506W-FPWR-BUN
ASA 5508-X with FirePOWER Svcs. Chassis and Subs. Bundle	ASA5508-FPWR-BUN
ASA 5516-X with FirePOWER Svcs. Chassis and Subs. Bundle	ASA5516-FPWR-BUN
ASA 5512-X with FirePOWER Svcs. Chassis and Subs. Bundle	ASA5512-FPWR-BUN
ASA 5515-X with FirePOWER Svcs. Chassis and Subs. Bundle	ASA5515-FPWR-BUN
ASA 5525-X with FirePOWER Svcs. Chassis and Subs. Bundle	ASA5525-FPWR-BUN
ASA 5545-X with FirePOWER Svcs. Chassis and Subs. Bundle	ASA5545-FPWR-BUN
ASA 5555-X with FirePOWER Svcs. Chassis and Subs. Bundle	ASA5555-FPWR-BUN

Product Description	Part Number
Cisco ASA 5500-X Series Low-End Appliances (Hardware)	
ASA 5506-X with FirePOWER services, 8GE Data, 1GE Mgmt, AC, DES	ASA5506-K8
ASA 5506-X with FirePOWER services, 8GE Data, 1GE Mgmt, AC, 3DES/AES	ASA5506-K9
ASA 5506-X with FirePOWER services, WiFi for North America (NOT US), 8GE Data, 1GE Mgmt, AC, 3DES/AES	ASA5506W-A-K9
ASA 5506W-B-X with FirePOWER services, WiFi for US ONLY, 8GE Data, 1GE Mgmt, AC, 3DES/AES	ASA5506W-B-K9
ASA 5506W-E-X with FirePOWER services, WiFi for Europe, 8GE Data, 1GE Mgmt, AC, 3DES/AES	ASA5506W-E-K9
ASA 5506W-Q-X with FirePOWER services, WiFi for Japan, 8GE Data, 1GE Mgmt, AC, 3DES/AES	ASA5506W-Q-K9
ASA 5506W-Z-X with FirePOWER services, WiFi for Australia/New Zealand, 8GE Data, 1GE Mgmt, AC, 3DES/AES	ASA5506W-Z-K9
ASA 5506H-X with FirePOWER services, ruggedized, security plus, 4GE Data, 1GE Mgmt, AC, 3DES/AES	ASA5506H-SP-BUN-K9
ASA 5506H-X with FirePOWER services, ruggedized, security plus, 4GE Data, 1GE Mgmt, AC, DES	ASA5506H-SP-BUN-K8
ASA 5508-X with FirePOWER services, 8GE Data, 1GE Mgmt, AC, DES	ASA5508-K8
ASA 5508-X with FirePOWER services, 8GE Data, 1GE Mgmt, AC, 3DES/AES	ASA5508-K9
ASA 5518-X with FirePOWER services, 8GE Data, 1GE Mgmt, AC, DES	ASA5518-FPWR-K8
ASA 5518-X with FirePOWER services, 8GE Data, 1GE Mgmt, AC, 3DES/AES	ASA5518-FPWR-K9
Cisco ASA 5500-X Series Midrange Appliances (Hardware)	
ASA 5512-X with FirePOWER services, 8GE data, AC, 3DES/AES, SSD	ASA5512-FPWR-K9
ASA 5515-X with FirePOWER Services, 8GE data, AC, 3DES/AES, SSD	ASA5515-FPWR-K9
ASA 5525-X with FirePOWER Services, 8GE data, AC, 3DES/AES, SSD	ASA5525-FPWR-K9
ASA 5545-X with FirePOWER Services, 8GE data, AC, 3DES/AES, 2 SSD	ASA5545-FPWR-K9
ASA 5555-X with FirePOWER Services, 8GE data, AC, 3DES/AES, 2 SSD	ASA5555-FPWR-K9
Cisco ASA 5500-X Series Interface Cards	
Cisco ASA Interface Card with 6 copper GE data ports for ASA 5512-X and ASA 5515-X	ASA-IC-6GE-CU-A
Cisco ASA Interface Card with 6 copper GE data ports for ASA 5525-X	ASA-IC-6GE-CU-B
Cisco ASA Interface Card with 6 copper GE data ports for ASA 5545-X and ASA 5555-X	ASA-IC-6GE-CU-C
Cisco ASA Interface Card with 6 SFP GE data ports (SX, LH, and LX) for ASA 5512-X	ASA-IC-6GE-SFP-A
Cisco ASA Interface Card with 6 SFP GE data ports (SX, LH, and LX) for ASA 5515-X	ASA-IC-6GE-SFP-B
Cisco ASA Interface Card with 6 SFP GE data ports (SX, LH, and LX) for ASA 5545-X and ASA 5555-X	ASA-IC-6GE-SFP-C
Cisco ASA Interface Card with 6 copper GE data ports for ASA 5512-X and ASA 5515-X (spare)	ASA-IC-6GE-CU-A*
Cisco ASA Interface Card with 6 copper GE data ports for ASA 5525-X (spare)	ASA-IC-6GE-CU-B*
Cisco ASA Interface Card with 6 copper GE data ports for ASA 5545-X and ASA 5555-X (spare)	ASA-IC-6GE-CU-C*
Cisco ASA Interface Card with 6 SFP GE data ports (SX, LH, and LX) for ASA 5512-X and ASA 5515-X (spare)	ASA-IC-6GE-SFP-A*
Cisco ASA 5500-X Series Accessories	

Product Description	Part Number	
Cisco GE optical SFP connector, 1000BASE-SX short-wavelength transceiver (spare)	GLC-SX-MM=	
Cisco GE optical SFP connector, 1000BASE-LX/LH long-wavelength/long-haul transceiver (spare)	GLC-LH-SM=	
Cisco GE optical SFP connector, 1000BASE-SX short-wavelength transceiver, digital optical monitoring (DOM) (spare)	GLC-SX-MMD=	
Cisco GE optical SFP connector, 1000BASE-LX/LH long-wavelength/long-haul transceiver, DOM (spare)	GLC-LH-SMD=	
Cisco ASA 5512-X and 5515-X Interface card (blank) (spare)	ASA-IC-A-BLANK=	
Cisco ASA 5525-X Interface card slot (blank) (spare)	ASA-IC-B-BLANK=	
Cisco ASA 5545-X and 5555-X Interface card slot (blank) (spare)	ASA-IC-C-BLANK=	
ASA with FirePOWER Services Software Subscription: 3-Year Term (1-Year Service Software Bundle Subscriptions Can be Purchased as well as Individual Cisco IPS, AMP, and URL Filtering Service Software Subscriptions with 1-Year and 3-Year Terms)		
Cisco ASA5506 FirePOWER IPS and Apps 3YR Subscription	L-ASA5506-TA=	L-ASA5506-TA-3Y
Cisco ASA5506 FirePOWER IPS, Apps and URL 3YR Subscription	L-ASA5506-TAC=	L-ASA5506-TAC-3Y
Cisco ASA5506 FirePOWER IPS, Apps and AMP 3YR Subscription	L-ASA5506-TAM=	L-ASA5506-TAM-3Y
Cisco ASA5506 FirePOWER IPS, Apps, AMP and URL 3YR Subscription	L-ASA5506-TAMC=	L-ASA5506-TAMC-3Y
Cisco ASA5506 FirePOWER URL Filtering 3YR Subscription	L-ASA5506-URL=	L-ASA5506-URL-3Y
Cisco ASA5506W FirePOWER IPS and Apps 3YR Subscription	L-ASA5506W-TA=	L-ASA5506W-TA-3Y
Cisco ASA5506W FirePOWER IPS, Apps and URL 3YR Subscription	L-ASA5506W-TAC=	L-ASA5506W-TAC-3Y
Cisco ASA5506W FirePOWER IPS, Apps and AMP 3YR Subscription	L-ASA5506W-TAM=	L-ASA5506W-TAM-3Y
Cisco ASA5506W FirePOWER IPS, Apps, AMP and URL 3YR Subscription	L-ASA5506W-TAMC=	L-ASA5506W-TAMC-3Y
Cisco ASA5506W FirePOWER URL Filtering 3YR Subscription	L-ASA5506W-URL=	L-ASA5506W-URL-3Y
Cisco ASA5506H FirePOWER IPS and Apps 3YR Subscription	L-ASA5506H-TA=	L-ASA5506H-TA-3Y
Cisco ASA5506H FirePOWER IPS, Apps and URL 3YR Subscription	L-ASA5506H-TAC=	L-ASA5506H-TAC-3Y
Cisco ASA5506H FirePOWER IPS, Apps and AMP 3YR Subscription	L-ASA5506H-TAM=	L-ASA5506H-TAM-3Y
Cisco ASA5506H FirePOWER IPS, Apps, AMP and URL 3YR Subscription	L-ASA5506H-TAMC=	L-ASA5506H-TAMC-3Y
Cisco ASA5508 FirePOWER IPS and Apps 3YR Subscription	L-ASA5508-TA=	L-ASA5508-TA-3Y
Cisco ASA5508 FirePOWER IPS, Apps and URL 3YR Subscription	L-ASA5508-TAC=	L-ASA5508-TAC-3Y
Cisco ASA5508 FirePOWER IPS, Apps and AMP 3YR Subscription	L-ASA5508-TAM=	L-ASA5508-TAM-3Y
Cisco ASA5508 FirePOWER IPS, Apps, AMP and URL 3YR Subscription	L-ASA5508-TAMC=	L-ASA5508-TAMC-3Y
Cisco ASA5508 FirePOWER URL Filtering 3YR Subscription	L-ASA5508-URL=	L-ASA5508-URL-3Y
Cisco ASA5516 FirePOWER IPS and Apps 3YR Subscription	L-ASA5516-TA=	L-ASA5516-TA-3Y
Cisco ASA5516 FirePOWER IPS, Apps and URL 3YR Subscription	L-ASA5516-TAC=	L-ASA5516-TAC-3Y
Cisco ASA5516 FirePOWER IPS, Apps and AMP 3YR Subscription	L-ASA5516-TAM=	L-ASA5516-TAM-3Y
Cisco ASA5516 FirePOWER IPS, Apps, AMP and URL 3YR Subscription	L-ASA5516-TAMC=	L-ASA5516-TAMC-3Y
Cisco ASA5516 FirePOWER URL Filtering 3YR Subscription	L-ASA5516-URL=	L-ASA5516-URL-3Y
Cisco ASA5512 FirePOWER IPS and Apps 3YR Subscription	L-ASA5512-TA=	L-ASA5512-TA-3Y
Cisco ASA5512 FirePOWER IPS, Apps and URL 3YR Subscription	L-ASA5512-TAC=	L-ASA5512-TAC-3Y
Cisco ASA5512 FirePOWER IPS, Apps and AMP 3YR Subscription	L-ASA5512-TAM=	L-ASA5512-TAM-3Y
Cisco ASA5512 FirePOWER IPS, Apps, AMP and URL 3YR Subscription	L-ASA5512-TAMC=	L-ASA5512-TAMC-3Y
Cisco ASA5512 FirePOWER URL Filtering 3YR Subscription	L-ASA5512-URL=	L-ASA5512-URL-3Y
Cisco ASA5515 FirePOWER IPS and Apps 3YR Subscription	L-ASA5515-TA=	L-ASA5515-TA-3Y
Cisco ASA5515 FirePOWER IPS, Apps and URL 3YR Subscription	L-ASA5515-TAC=	L-ASA5515-TAC-3Y
Cisco ASA5515 FirePOWER IPS, Apps and AMP 3YR Subscription	L-ASA5515-TAM=	L-ASA5515-TAM-3Y
Cisco ASA5515 FirePOWER IPS, Apps, AMP and URL 3YR Subscription	L-ASA5515-TAMC=	L-ASA5515-TAMC-3Y

000123

BR

Product Description	Part Number	Part Number
Cisco ASA5516 FirePOWER IPS, Apps, AMP and URL 3YR Subscription	L-ASA5516-TAMC*	L-ASA5516-TAMC-3Y
Cisco ASA5516 FirePOWER URL Filtering 3YR Subscription	L-ASA5516-URL*	L-ASA5516-URL-3Y
Cisco ASA5525 FirePOWER IPS and Apps 3YR Subscription	L-ASA5525-TA*	L-ASA5525-TA-3Y
Cisco ASA5525 FirePOWER IPS, Apps and URL 3YR Subscription	L-ASA5525-TAC*	L-ASA5525-TAC-3Y
Cisco ASA5525 FirePOWER IPS, Apps and AMP 3YR Subscription	L-ASA5525-TAM*	L-ASA5525-TAM-3Y
Cisco ASA5525 FirePOWER IPS, Apps, AMP and URL 3YR Subscription	L-ASA5525-TAMC*	L-ASA5525-TAMC-3Y
Cisco ASA5525 FirePOWER URL Filtering 3YR Subscription	L-ASA5525-URL*	L-ASA5525-URL-3Y
Cisco ASA5545 FirePOWER IPS and Apps 3YR Subscription	L-ASA5545-TA*	L-ASA5545-TA-3Y
Cisco ASA5545 FirePOWER IPS, Apps and URL 3YR Subscription	L-ASA5545-TAC*	L-ASA5545-TAC-3Y
Cisco ASA5545 FirePOWER IPS, Apps and AMP 3YR Subscription	L-ASA5545-TAM*	L-ASA5545-TAM-3Y
Cisco ASA5545 FirePOWER IPS, Apps, AMP and URL 3YR Subscription	L-ASA5545-TAMC*	L-ASA5545-TAMC-3Y
Cisco ASA5545 FirePOWER URL Filtering 3YR Subscription	L-ASA5545-URL*	L-ASA5545-URL-3Y
Cisco ASA5555 FirePOWER IPS and Apps 3YR Subscription	L-ASA5555-TA*	L-ASA5555-TA-3Y
Cisco ASA5555 FirePOWER IPS, Apps and URL 3YR Subscription	L-ASA5555-TAC*	L-ASA5555-TAC-3Y
Cisco ASA5555 FirePOWER IPS, Apps and AMP 3YR Subscription	L-ASA5555-TAM*	L-ASA5555-TAM-3Y
Cisco ASA5555 FirePOWER IPS, Apps, AMP and URL 3YR Subscription	L-ASA5555-TAMC*	L-ASA5555-TAMC-3Y
Cisco ASA5555 FirePOWER URL Filtering 3YR Subscription	L-ASA5555-URL*	L-ASA5555-URL-3Y

To Download the Software

Visit the [Cisco Software Center](#) to download Cisco ASA with FirePOWER Services Software.

Cisco Capital

Financing Helps You Achieve Your Objectives

Cisco CapitalSM financing can help you acquire the technology you need to achieve your objectives and stay competitive. We can help you reduce capital expenditures (CapEx), accelerate your growth, and optimize your investment dollars and ROI. Cisco Capital financing gives you flexibility in acquiring hardware, software, services, and complementary third-party equipment. And there's just one predictable payment. Cisco Capital financing is available in more than 100 countries. [Learn more.](#)

For More Information

For more information, please visit the following links:

- Cisco ASA 5500-X Series Next-Generation Firewalls: <http://www.cisco.com/go/asa>.
- Cisco Security Manager: <http://www.cisco.com/c/en/us/products/security/security-manager/index.html>.
- Cisco Adaptive Security Device Manager: <http://www.cisco.com/c/en/us/products/security/adaptive-security-device-manager/index.html>.
- Cisco Security Services: http://www.cisco.com/en/US/products/svcs/ps2961/ps2952/serv_group_home.html.
- Cisco AnyConnect Secure Mobility Client <http://www.cisco.com/go/anyconnect>.
- Cisco AnyConnect Ordering Guide <http://www.cisco.com/c/dam/en/us/products/security/anyconnect-og.pdf>.



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to the URL: www.cisco.com/go/trademarks. Third party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)

Printed in USA

© 2017 Cisco and/or its affiliates. All rights reserved. This document is Cisco Public Information.

Cisco Catalyst 3850 Series Switches

The digital transformation: Converged wired and wireless access and aggregation

The promise of digital for your business is all about innovating more quickly while reducing risk, cost, and complexity. It will be your network that forms the foundation of your business's transformation.

But supporting your digital organization will require your network to move beyond just connectivity to be a platform for insights, automation, and security.

This is the power of the **Cisco® Digital Network Architecture (Cisco DNA™)**.

Cisco DNA is a monumental shift on how to design and build networks. The Cisco Catalyst® 3850 Series, as part of the Cisco DNA portfolio of next-generation enterprise-class stackable Ethernet and Multigigabit Ethernet access and aggregation layer switches, securely enables time-saving virtualization, greater automation, and valuable analytics data that directly address your evolving business needs, including less cost to install and operate.

The Cisco Catalyst 3850 Series provides capabilities that ideally suited to support the convergence of wired and wireless access. The new Cisco Unified Access Data™ Plane (UADP) Application-Specific Integrated Circuit (ASIC) powers the switch and enables uniform wired-wireless policy enforcement, application visibility, flexibility, and application optimization. This convergence is built on the resilience of the new and improved Cisco StackWise®-480 technology.

The Cisco Catalyst 3850 Series Switches support full IEEE 802.3at Power over Ethernet Plus (PoE+), Cisco Universal Power Over Ethernet (Cisco UPOE™), modular and field-replaceable network modules, RJ-45 and fiber-based downlink interfaces, and redundant fans and power supplies.

Product overview

- Integrated wireless controller capability with:
 - Up to 40G of wireless capacity per switch (48-port RJ45 models)
 - Support for up to 100 access points and 2000 wireless clients on each switching entity (switch or stack)
- 24 and 48 10/100/1000Mbps data PoE+ and Cisco UPOE models with Energy-Efficient Ethernet (EEE)
- 24 and 48 100Mbps/1/2.5/5/10 Gbps Cisco UPOE models with Energy-Efficient Ethernet (EEE)
- 12- and 24-port 1 Gigabit Ethernet SFP-based models
- 12- and 24-port 1/10 Gigabit Ethernet SFP+-based models
- 48-port 1/10 Gigabit Ethernet SFP+ model with 4 fixed 40 Gigabit Ethernet QSFP+ uplinks
- Cisco StackWise-480 technology provides scalability and resiliency with 480 Gbps of stack throughput¹
- Cisco StackPower® technology provides power stacking among stack members for power redundancy¹

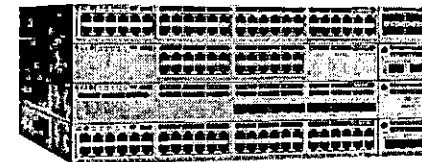
¹ StackWise and StackPower technologies are not supported on the 48-port SFP+ switch model.

- Five optional uplink modules² with 4 x Gigabit Ethernet, 2 x 10 Gigabit Ethernet, 4 x 10 Gigabit 8 x 10 Gigabit Ethernet4, or 2 x 40 Gigabit Ethernet QSFP+⁴ ports
- Dual redundant, modular power supplies and three modular fans providing redundancy
- Full IEEE 802.3at (PoE+) with 30W power on all copper ports in 1 Rack Unit (RU) form factor
- Cisco UPOE with 60W power per port in 1 Rack Unit (RU) form factor
- IEEE 802.3bz (2.5/5 G/s BASE-T) to go beyond 1 Gb/s with existing Cat5e and Cat6
- IEEE 802.1ba AV Bridging (AVB) built-in to provide better AV experience for including improved time synchronization and QoS
- Software support for IPv4 and IPv6 routing, multicast routing, modular Quality of Service (QoS), Flexible NetFlow (FNF), and enhanced security features
- Single universal Cisco IOS® Software image across all license levels, providing an easy upgrade path for software features
- Cisco DNA services delivered through Cisco ONE™ Software, providing simplified, high-value solutions with license portability and flexibility
- Support for AES-256 with the powerful MACSEC 256-bit for SFP+ and Multigigabit models and 128-bit encryption algorithm available on all models
- Enhanced Limited Lifetime Warranty (E-LLW) with Next Business Day (NBD) advance hardware replacement and 90-day access to Cisco Technical Assistance Center (TAC) support

Switch models and configurations

All switches ship with one of the five power supplies (350WAC, 715WAC, 750WAC, 1100WAC, or 440WDC)⁵. Figures 1 through 4 show the Cisco Catalyst 3850 Series Switches.

Figure 1. Cisco Catalyst 3850 Series Switches



² Optional uplink modules are not supported on the 48-port 10G SFP+ switch model.

³ Compatible only with the 48-port RJ45 models and with the 12-port (or higher) 10 Gigabit capable models.

⁴ Compatible only with Cisco Catalyst 3850 Multigigabit and 24-port SFP+ switch models.

⁵ The 48-port 10G SFP+ switch model will only support dedicated power supplies with front-to-back and back-to-front configurations.

Figure 2. Cisco Catalyst 3850 Series Switches with 12 and 24 1/10 Gigabit Ethernet SFP+ ports

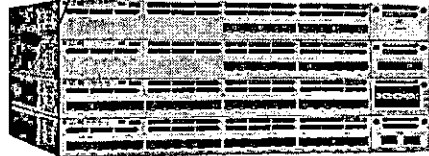


Figure 3. Cisco Catalyst 3850 Series Switches with 12 and 24 1 Gigabit Ethernet SFP ports

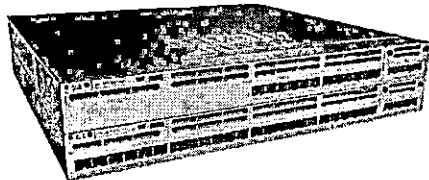


Figure 4. Cisco Catalyst 3850 Series Switches with 10 Gigabit Ethernet 48 ports



Table 1 shows the Cisco Catalyst 3850 Series configurations.

Table 1. Cisco Catalyst 3850 Series configurations

Model	Total 10/100/1000 or SFP or SFP+ ports	Default AC power supply	Available PoE power	POE budget with 1100W secondary PS	StackWise-480	StackPower
WS-C3850-24T	24	350WAC	-	-	Yes	Yes
WS-C3850-48T	48	715WAC	435W	1535W	-	-
WS-C3850-24P	24 PoE+	715WAC	435W	1535W	-	-
WS-C3850-48P	48 PoE+	1100WAC	800W	1900W	-	-
WS-C3850-48F	48 PoE+	1100WAC	800W	1900W	-	-
WS-C3850-24U	24 UPOE	1100WAC	800W	1900W	-	-
WS-C3850-48U	48 UPOE	1100WAC	800W	1900W	-	-
WS-C3850-24XU	24 UPOE (100Mbps/1/2.5/5/10 Gbps)	1100WAC	580W	1680W	-	-
WS-C3850-12X48U	48 UPOE (with 12 100Mbps/1/2.5/5/10 Gbps Ports)	1100WAC	630W	1730W	-	-
WS-C3850-12S	12 SFP	350WAC	-	-	-	-
WS-C3850-24S	24 SFP	350WAC	-	-	-	-
WS-C3850-12XS	12 1/10G SFP+	350WAC	-	-	-	-
WS-C3850-24XS	24 1/10G SFP+	715 WAC	-	-	-	-
WS-C3850-48XS	48 1/10G SFP+	750WAC (front to back)	-	-	No	No

Network modules

The Cisco Catalyst 3850 Series Switches support five optional network modules for uplink ports. The default switch configuration does not include the network module. At the time of switch purchase the customer has the flexibility to choose from the network modules described in Table 2.

Figure 5 shows the following network modules:

- 4 x Gigabit Ethernet with Small Form-Factor Pluggable (SFP) receptacles
- 2 x 10 Gigabit Ethernet with SFP+ or 4 x Gigabit Ethernet with SFP receptacles
- 4 x 10 Gigabit Ethernet with SFP+ receptacles (supported only on the 48-port Gigabit Ethernet models or on the 12-port or higher 10 Gigabit Ethernet models)

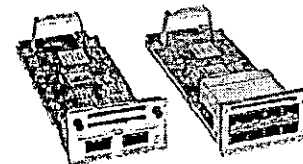
Figure 5. Network modules with four Gigabit Ethernet, two 10 Gigabit Ethernet SFP+, or four 10 Gigabit Ethernet SFP+ interfaces



Figure 6 shows the following network modules:

- 8 x 10 Gigabit Ethernet with Small Form-Factor Pluggable+ (SFP+) receptacles
- 2 x 40 Gigabit Ethernet with Quad Small Form-Factor Pluggable+ (QSFP+) receptacles

Figure 6. Network modules with two 40 Gigabit Ethernet QSFP+ or eight 10 Gigabit Ethernet SFP+ interfaces



The C3850-NM-4-10G module is supported only on the 48-port Gigabit Ethernet models or on the 12-port or higher 10 Gigabit Ethernet models. The C3850-NM-8x10G and C3850-NM-2x40G modules are supported on the 24-port and 48-port multigigabit switches and also on the 24-port 10G SFP+ switch model. The C3850-NM-4-1G and C3850-NM-2-10G modules are not supported on the 12-port and 24-port SFP+ models.

Table 2. Network module compatibility matrix

Model	Network modules
WS-C3850-24T	C3850-NM-4-1G, C3850-NM-2-10G
WS-C3850-48T	C3850-NM-4-1G, C3850-NM-2-10G, C3850-NM-4-10G
WS-C3850-24P	C3850-NM-4-1G, C3850-NM-2-10G
WS-C3850-48P	C3850-NM-4-1G, C3850-NM-2-10G, C3850-NM-4-10G

Model	Network modules
WS-C3850-48F	C3850-NM-4-1G, C3850-NM-2-10G, C3850-NM-4-10G
WS-C3850-24U	C3850-NM-2-1G, C3850-NM-2-10G
WS-C3850-48U	C3850-NM-4-1G, C3850-NM-2-10G, C3850-NM-4-10G
WS-C3850-24XU	C3850-NM-4-1G, C3850-NM-2-10G, C3850-NM-4-10G, C3850-NM-8-10G, C3850-NM-2-40G
WS-C3850-12X48U	C3850-NM-4-1G, C3850-NM-2-10G, C3850-NM-4-10G, C3850-NM-8-10G, C3850-NM-2-40G
WS-C3850-12S	C3850-NM-4-1G, C3850-NM-2-10G
WS-C3850-24S	C3850-NM-4-1G, C3850-NM-2-10G
WS-C3850-12XS	C3850-NM-4-10G
WS-C3850-24XS	C3850-NM-4-10G, C3850-NM-8-10G, C3850-NM-2-40G
WS-C3850-48XS	None

An SFP+ receptacle supports both 10 Gigabit Ethernet and Gigabit Ethernet modules, allowing customers to use their investment in Gigabit Ethernet SFP modules and upgrade to 10 Gigabit Ethernet when business demands change without having to do a comprehensive upgrade of the access switch. In contrast, SFP receptacles can be used only as Gigabit Ethernet ports, as shown in the examples in Table 3.

Table 3. Network module configuration examples

Network module	Interface options	
	10 Gigabit Ethernet SFP+ ports	Gigabit Ethernet SFP ports
4 x Gigabit Ethernet	0	4
4 x Gigabit Ethernet/2 x 10 Gigabit Ethernet network modules	2	0
	1	3
	2	2
4 x Gigabit Ethernet/4 x 10 Gigabit Ethernet network modules	0	4
	4	0
	0	4
	2	2
	3	1
	1	3

Dual redundant modular power supplies

The Cisco Catalyst 3850 Series Switches support dual redundant power supplies.⁶ The switch ships with one power supply by default, and the second power supply can be purchased at the time of ordering the switch or at a later time. If only one power supply is installed, it should always be in power supply bay 1. The switch also ships with three field-replaceable fans. (See Figure 7.)

⁶ The 48-port 10G SFP+ switch model will only support dedicated power supplies with front-to-back and back-to-front configurations.

Figure 7. Dual redundant power supplies

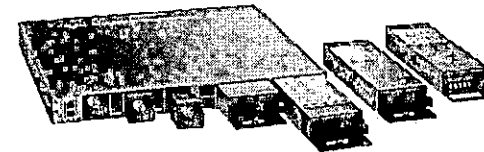


Table 4 shows the different power supplies available in these switches and available PoE power.

Table 4. Power supply models

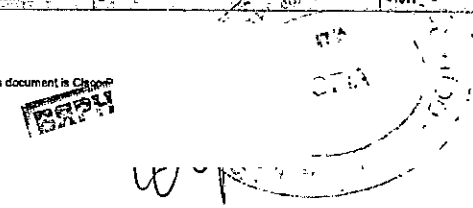
Model	Default power supply	Available PoE power
24-port data switch	PWR-C1-350WAC	
48-port data switch		
24-port PoE switch	PWR-C1-715WAC	435W
48-port PoE switch		
48-port full PoE switch	PWR-C1-1100WAC	800W
24-port UPOE switch	PWR-C1-1100WAC	800W
48-port UPOE switch		
24-port Multigigabit UPOE switch	PWR-C1-1100WAC	560W
48-port Multigigabit UPOE switch	PWR-C1-1100WAC	630W
12-port SFP switch	PWR-C1-350WAC	
24-port SFP switch		
12-port SFP+ switch	PWR-C1-350WAC	
24-port SFP+ switch	PWR-C1-715WAC	
48-port SFP+ switch (WS-C3850-48XS-S and WS-C3850-48XS-E)	PWR-C3-750WAC-R	
48-port SFP+ switch (WS-C3850-48XS-F-S and WS-C3850-48XS-F-E)	PWR-C3-750WAC-F	

In addition to the power supplies listed in Table 5, a 440WDC power supply is available as a configuration option and also as a spare (that is, it can be ordered separately) on all switch models. The DC power supply also delivers PoE capabilities for maximum flexibility (refer to Table 6 for available PoE budget with DC power supplies). Customers can mix and match the AC and DC power supplies in the two available power supply slots. Any of these power supplies can be installed in any of the switches.

Table 5. Available PoE with DC power supply

Model	Number of 440WDC power supplies	Total available PoE budget
24-port PoE switch	1	220W
	2	660W
48-port PoE switch	1	185W
	2	625W
24-port Multigigabit UPOE switch	2	360W
48-port Multigigabit UPOE switch	2	410W

000125



Power over Ethernet Plus (PoE+)

In addition to PoE (IEEE 802.3af), the Cisco Catalyst 3850 Series Switches support PoE+ (IEEE 802.3at standard), which provides up to 30W of power per port. The Cisco Catalyst 3850 Series Switches can provide a lower Total Cost of Ownership (TCO) for deployments that incorporate Cisco IP phones, Cisco Alronet® wireless LAN (WLAN) access points, or any IEEE 802.3at-compliant end device. PoE removes the need for wall power to each PoE-enabled device and eliminates the cost for additional electrical cabling and circuits that would otherwise be necessary in IP phone and WLAN deployments. Table 6 shows the power supply combinations required for different PoE needs.

Table 6. Power supply requirements for PoE and PoE+

	24-port PoE switch	48-port PoE switch
PoE on all ports (15.4W per port)	One PWR-C1-715WAC	One PWR-C1-1100WAC or two PWR-C1-715WAC
PoE+ on all ports (30W per port)	One PWR-C1-1100WAC or two PWR-C1-715WAC	Two PWR-C1-1100WAC or one PWR-C1-1100WAC and one PWR-C1-715WAC

Cisco Universal Power over Ethernet (Cisco UPOE)

Cisco UPOE (Table 7) is a breakthrough technology, offering the following services and benefits.

- 60W per port to enable a variety of end devices such as Samsung VDI client, BT IP turret systems in trading floors, Cisco Catalyst compact switches in retail/hospitality environments, personal Cisco TelePresence® systems, and physical access control devices
- High availability for power and guaranteed uninterrupted services, a requirement for critical applications (e911)
- Lowering OpEx by providing network resiliency at lower cost by consolidating backup power into the wiring closet
- Faster deployment of new campus access networking infrastructures by eliminating the need for a power outlet for every endpoint

Table 7. Power supply requirements for Cisco UPOE

	24-port UPOE switch	48-port UPOE switch	24-port Multigigabit UPOE switch	48-port multigigabit UPOE switch
UPOE (60W per port) on all (24 port switch) or max. 30 ports (48 port switch)	One PWR-C1-1100WAC and one PWR-C1-715WAC	Two PWR-C1-1100WAC	Two PWR-C1-1100WAC	Two PWR-C1-1100WAC

Cisco Catalyst Multigigabit Ethernet technology

Cisco Multigigabit Ethernet is a unique Cisco innovation to the new Cisco Catalyst Ethernet access switches. With the enormous growth of 802.11ac and new wireless applications, wireless devices are promoting the demand for more network bandwidth. This creates a need for a technology that supports speeds higher than 1 Gbps on all cabling infrastructure. Cisco Multigigabit technology allows you to achieve bandwidth speeds from 1 Gbps through 10 Gbps over traditional Cat 5e cabling or above. In addition, the Multigigabit ports on select Cisco Catalyst switches support UPOE, which is increasingly important for next-generation workspaces and Internet of Things (IoT) ecosystems.

Cisco Multigigabit technology offers significant benefits for a diverse range of speeds, cable types, and PoE power. The benefits can be grouped into three different areas:

- **Multiple speeds:** Cisco Multigigabit technology supports autonegotiation of multiple speeds on switch ports. The supported speeds are 100 Mbps, 1 Gbps, 2.5 Gbps, and 5 Gbps on Cat 5e cable and up to 10 Gbps over Cat 6a cabling.
- **Cable type:** The technology supports a wide range of cable types, including Cat 5e, Cat 6, and Cat 6a or above.
- **PoE power:** The technology supports PoE, PoE+, and UPOE for all the supported speeds and cable types.

For more information, visit <https://www.cisco.com/c/en/us/solutions/enterprise-networks/catalyst-multigigabit-switching/index.html>.

SD-Access architecture

What if you could give time back to IT? And provide network access in minutes for any user or device to any application – without compromise?

Cisco Software-Defined Access (SD-Access) is the industry's first intent-based networking solution for the enterprise, built on the principles of Cisco's Digital Network Architecture (Cisco DNA™). SD-Access provides automated, end-to-end segmentation to separate user, device, and application traffic without the need to redesign the network. SD-Access automates user access policy so organizations can make sure the right policies are established for any user or device with any application across the network. This is accomplished with a single network fabric across LAN and WLAN, which creates a consistent user experience anywhere without compromising on security.

Organizations have many challenges today in managing the network to drive business outcomes. These limitations are due to manual configuration and fragmented tool offerings. SD-Access provides:

- A transformational management solution that reduces operational expenses and enhances business agility
- Consistent management of wired and wireless network provisioning and policy
- Automated network segmentation and group-based policy
- Contextual insights for fast issue resolution and capacity planning
- Open and programmable interfaces for integration with third-party solutions

For an overview of key use cases that SD-Access addresses, refer to the [SD-Access Solution Overview](#).

SD-Access licensing

To be able to benefit from the SD-Access architecture, you must purchase an **add-on licensing package**. Such licensing package includes the Cisco DNA Essentials and Cisco DNA Advantage options. Add-on licenses have to be purchased for a 3-, 5-, (and hence are also known as term-based licenses). Product SKUs for these packages are given in Table 10 below.

~~Ordering and managing licenses with smart accounts:~~ Creating smart accounts by using the Cisco Smart Software Manager (SSM) enables you to order devices and licensing packages and also to manage your software licenses from a centralized website. You can set up Cisco SSM to receive daily email alerts and to be notified of expiring add-on licenses that you want to renew. When the license term expires, you can either renew the add-on license to continue using it or deactivate the add-on license and then reload the switch to continue operating with the base license capabilities.

~~Note:~~ You are not required to deploy Cisco DNA Center just to use one of the license packages.

Table 8 shows the features included in the Essentials and Advantage packages.

Table 8. Essentials and Advantage package features

Feature	Cisco DNA Essentials	Cisco DNA Advantage
Day 0 network bring-up automation Cisco Network Plug-and-Play application, network settings, device credentials	✓	✓
Element management Discovery, inventory, topology, software image, licensing, and configuration management	✓	✓
Element management Patching	✓	✓
Network monitoring Product Security Incident Response Team (PSIRT) compliance, and-of-life/end-of-sale reporting, telemetry quotient, client 360, device 360, top talkers, NetFlow/streaming telemetry collection and correlation	✓	✓
Static QoS configuration and monitoring EasyQoS application	✓	✓
Policy-based automation SD-Access, group-based policy for access, app prioritization, monitoring, and path selection; SD-Access with integrated wireless	✓	✓
Network assurance and analytics Insights gained from analytics and machine learning for the network, clients and applications that cover onboarding, connectivity, and performance	✓	✓

Table 9 shows the product IDs for these licenses.

Table 9. Essentials and Advantage package product IDs

Port	Product ID	Description
12-port	C3850-DNA-E-12	C3850 DNA Essentials, 12-port term licenses
	C3850-DNA-E-12-3Y	C3850 DNA Essentials, 12-port, 3-year term license
	C3850-DNA-E-12-5Y	C3850 DNA Essentials, 12-port, 5-year term license
	C3850-DNA-A-12	C3850 DNA Advantage, 12-port term licenses
	C3850-DNA-A-12-3Y	C3850 DNA Advantage, 12-port, 3-year term license
	C3850-DNA-A-12-5Y	C3850 DNA Advantage, 12-port, 5-year term license
24-port	C3850-DNA-E-24	C3850 DNA Essentials, 24-port term licenses
	C3850-DNA-E-24-3Y	C3850 DNA Essentials, 24-port, 3-year term license
	C3850-DNA-E-24-5Y	C3850 DNA Essentials, 24-port, 5-year term license
	C3850-DNA-A-24	C3850 DNA Advantage, 24-port term licenses
	C3850-DNA-A-24-3Y	C3850 DNA Advantage, 24-port, 3-year term license
	C3850-DNA-A-24-5Y	C3850 DNA Advantage, 24-port, 5-year term license

Port	Product ID	Description
48-port	C3850-DNA-E-48	C3850 DNA Essentials, 48-port term licenses
	C3850-DNA-E-48-3Y	C3850 DNA Essentials, 48-port, 3-year term license
	C3850-DNA-E-48-5Y	C3850 DNA Essentials, 48-port, 5-year term license
	C3850-DNA-A-48	C3850 DNA Advantage, 48-port term licenses
	C3850-DNA-A-48-3Y	C3850 DNA Advantage, 48-port, 3-year term license
	C3850-DNA-A-48-5Y	C3850 DNA Advantage, 48-port, 5-year term license
Spare	C3850-DNA-E-12#	C3850 DNA Essentials, 12-port term licenses spare
	C3850-DNA-A-12#	C3850 DNA Advantage, 12-port term licenses spare
	C3850-DNA-E-24#	C3850 DNA Essentials, 24-port term licenses spare
	C3850-DNA-A-24#	C3850 DNA Advantage, 24-port term licenses spare
	C3850-DNA-E-48#	C3850 DNA Essentials, 48-port term licenses spare
	C3850-DNA-A-48#	C3850 DNA Advantage, 48-port term licenses spare

Benefits

Converged wired plus wireless access

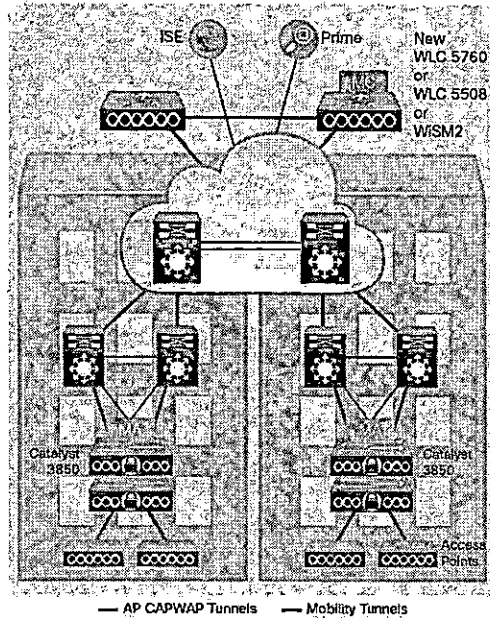
The Cisco Catalyst 3850 is the first stackable access switching platform that enables wired plus wireless services on a single Cisco IOS XE Software-based platform. With this, Cisco has pioneered a host of rich capabilities such as high availability based on Stateful Switchover (SSO) on stacking, granular QoS, security, and Flexible NetFlow (FNF) across wired and wireless in a seamless fashion. Also, the wired plus wireless features are bundled into a single Cisco IOS Software image, which reduces the number of software images that users have to qualify/certify before enabling them in their network. The single console port for Command-Line Interface (CLI) management reduces the number of touch points to manage for wired plus wireless services, thereby reducing network complexity, simplifying network operations, and lowering the TCO to manage the infrastructure.

Converged wired plus wireless not only improves wireless bandwidth across the network but also the scale of wireless deployment. Each 48-port Cisco Catalyst 3850 provides 40 Gbps of wireless throughput (20 Gbps on the 24-port/12-port models). This wireless capacity increases with the number of members in the stack. This makes sure that the network can scale with current wireless bandwidth requirements, as dictated by IEEE 802.11n-based access points and with future wireless standards such as IEEE 802.11ac. Additionally, the Cisco Catalyst 3850 distributes the wireless controller functions to achieve better scalability. Each Cisco Catalyst 3850 switch/stack can operate as the wireless controller in two modes (Figure B):

- **Mobility Agent (MA):** This is the default mode in which a Cisco Catalyst 3850 switch ships. In this mode the switch is capable of terminating the CAPWAP tunnels from the access points and providing wireless connectivity to wireless clients. Maintaining wireless client databases and configuring and enforcing security and QoS policies for wireless clients and access points can be enforced in this mode. No additional license on top of IP Base is required to operate in the mobility agent mode.
- **Mobility Controller (MC):** In this mode, the Cisco Catalyst 3850 switch can perform all the mobility agent tasks in addition to mobility coordination, Radio Resource Management (RRM), and Cisco CleanAir® coordination within a mobility subdomain. The mobility controller mode can be enabled on the switch CLI. IP Base license level is required when the Cisco Catalyst 3850 switch is acting as the mobility controller. A centrally located Cisco 5508 Wireless LAN Controller (WLC 5508), Cisco Wireless Services Module 2 (WSM2) (when running AireOS Version 7.3), and Wireless LAN Controller 5760 can also perform this role for larger deployments.

- With mobility agents located in the wiring closets providing 40 Gbps of wireless per 48-port Gigabit Ethernet RJ45 switch (n x 40 Gbps for a stack of n switches) and mobility controllers managing some of the central wireless functions, the converged access-based wireless deployment provides best-in-class scalability for wireless and significantly improved wireless throughput.

Figure 6. Mobility Controller (MC) and Mobility Agent (MA)



For more information about Converged Wired plus Wireless Access, refer to the Q&A document here: <https://www.cisco.com/c/dam/en/us/products/collateral/switches/catalyst-3850-series-switches/cisco-catalyst-3850-series-switches-faq.pdf>.

Distributed intelligent services

Flexible NetFlow (FNF)

Full visibility into the wired plus wireless traffic is achieved because of the access point Control and Provisioning of Wireless Access Points (CAPWAP) tunnel termination on the switch. This helps identify users and user traffic flows in order to identify potential attackers and take corrective action at the access layer before the attack penetrates further into the network. This is achieved using FNF, which monitors every single flow entering and exiting the switch stack for wired and wireless users. It also helps identify the top wired/wireless talkers and enforce appropriate bandwidth provisioning policies.

QoS

The Cisco Catalyst 3850 switch has advanced wired plus wireless QoS capabilities. It uses the Cisco modular QoS command line interface (MQC). The switch manages wireless bandwidth using unprecedented hierarchical bandwidth management starting at the per-access-point level and drilling further down to per-radio, per-service set identification (SSID), and per-user levels. This helps manage and prioritize available bandwidth between various radios and various SSIDs (enterprise, guest, and so on) within each radio on a percentage basis. The switch is also capable of automatically allocating equal bandwidth among the connected users within a given SSID. This makes sure that all users within a given SSID get a fair share of the available bandwidth while being connected to the network. The UADP ASIC enables the hierarchical bandwidth management and fair sharing of bandwidth, thereby providing hardware-based QoS for optimized performance at line-rate traffic.

In addition to these capabilities, the switch is able to do Class of Service (CoS) or Differentiated Services Code Point (DSCP) based queuing, policing, shaping, and marking of wired plus wireless traffic. This enables users to create common policies that can be used across wired plus wireless traffic. The Cisco Catalyst 3850 also supports downloadable policy names from the Cisco Identity Services Engine (ISE) when a user successfully authenticates to the network using the ISE.

Security

The Cisco Catalyst 3850 provides a rich set of security features for wired plus wireless users. Features such as IEEE 802.1x, port security, Dynamic Host Configuration Protocol (DHCP) Snooping and Guard, Dynamic ARP Inspection, RA Guard, IP Source Guard, Control Plane Protection (CoPP), Wireless Intrusion Prevention Systems (WIPSs), and so on enable protection against unauthorized users and attackers. With a variety of wired plus wireless users connecting to the network, the switch supports session-aware networking, in which each device connected to the network is identified as one session, and unique Access Control Lists (ACLs) and/or QoS policies can be defined and applied using the ISE for each of these sessions, providing better control on the devices connecting to the network.

AES-256 MACsec encryption is the IEEE 802.1AE standard for authenticating and encrypting packets between switches and endpoints. The Cisco Catalyst 3850 Series switches support 256-bit (SFP+ and Multigigabit models only) and 128-bit Advanced Encryption Standard (AES) on all ports at all speeds, providing the most secure link encryption.

Resiliency

Cisco StackWise-480 technology

Cisco StackWise-480 technology is built on the highly successful industry-leading StackWise[®] technology, which is a premium stacking architecture⁷. StackWise-480 has a stack bandwidth of 480 Gbps. StackWise-480 uses Cisco IOS Software SSO for providing resiliency within the stack. The stack behaves as a single switching unit that is managed by an "active" switch elected by the member switches.

The active switch automatically ejects a standby switch within the stack. The active switch creates and updates all the switching/routing/wireless information and constantly synchronizes that information with the standby switch. If the active switch fails, the standby switch assumes the role of the active switch and continues to keep the stack operational. Access points continue to remain connected during an active-to-standby switchover.

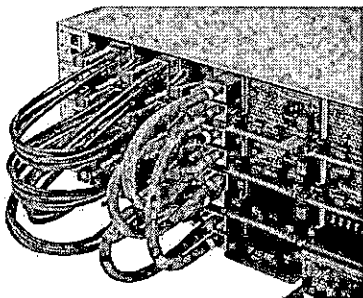
⁷ StackWise and StackPower technologies are not supported on the 48-port SFP+ switch model.

A working stack can accept new members or delete old ones without service interruption. StackWise-480 creates a single unified system of up to nine switches, providing simplified management using a single IP address, single Telnet session, single CLI, autoversion checking, autoupgrading, autoconfiguration, and more. StackWise-480 also enables local switching in Cisco Catalyst 3850 Series Switches.

Cisco StackPower technology

The Cisco Catalyst 3850 Series uses the Cisco StackPower[®] technology present on the Cisco Catalyst 3850 Series. StackPower is an innovative power interconnect system that allows the power supplies in a stack to be shared as a common resource among all the switches. Cisco StackPower unifies the individual power supplies installed in the switches and creates a pool of power, directing that power where it is needed. Up to four switches⁹ can be configured in a StackPower stack with the special connector at the back of the switch using the StackPower cable, which is different than the StackWise-480 cables. (See Figure 9.)

Figure 9. StackWise-480 and StackPower connectors



StackPower can be deployed in either power-sharing mode or redundancy mode. In power-sharing mode, the power of all the power supplies in the stack is aggregated and distributed among the switches in the stack. In redundant mode, when the total power budget of the stack is calculated, the wattage of the largest power supply is not included. That power is held in reserve and used to maintain power to switches and attached devices when one power supply fails, enabling the network to operate without interruption. Following the failure of one power supply, the StackPower mode becomes power sharing.

StackPower allows customers to simply add one extra power supply in any switch of the stack and either provide power redundancy for any of the stack members or simply add more power to the shared pool. StackPower eliminates the need for an external redundant power system or installation of dual power supplies in all the stack members. StackPower is available in LAN Base license level (or higher). For LAN Base, cables need to be purchased separately.

⁹ StackPower is not supported on the 48-port 10G SFP+ switch model.
⁹ Up to nine switches are supported in a star configuration with XPS-2200.

Foundation for Open Network Environment

The heart of the Cisco Catalyst 3850 is the UADP ASIC with programmability for future features and intelligence with investment protection. The new ASIC provides the foundation for converged APIs across wired and wireless, Cisco Open Network Environment, Software-Defined Networking (SDN) readiness, and OnePK SDK through software updates over the product lifetime.

Software features and services on Cisco Catalyst 3850 Series Switches

Software services supported on the Cisco Catalyst 3850 Series Switches can be classified into five broad categories:

- Ease of operations
- Advanced security features
- Resiliency
- Application visibility and control
- Audio Video Bridging

Ease of operations

The Cisco Catalyst 3850 helps reduce the operating costs through:

- Cisco Catalyst SmartOperations
- Easy-to-use deployment and control features
- Efficient switch operations
- Network management tools

Cisco Catalyst SmartOperations

Cisco Catalyst SmartOperations is a comprehensive set of capabilities that simplify LAN deployment, configuration, and troubleshooting. In addition to adaptive, always-on technologies such as StackWise-480 and StackPower, Cisco Catalyst SmartOperations enable zero-touch installation and replacement of switches, fast upgrade, and ease of troubleshooting with reduced operational cost. Features include Smart Install, Auto Smartports, Smart Configuration, and Smart Troubleshooting to enhance operational excellence.

- Cisco Smart Install is a transparent plug-and-play technology to configure the Cisco IOS Software image and switch configuration without user intervention. Smart Install utilizes dynamic IP address allocation and the assistance of other switches to facilitate installation, providing transparent network plug and play.
- Cisco Auto Smartports provide automatic configuration as devices connect to the switch port, allowing autodetection and plug and play of the device onto the network.
- Cisco Smart Troubleshooting is an extensive array of debug diagnostic commands and system health checks within the switch, including Generic Online Diagnostics (GOLD) and Onboard Failure Logging (OBFL).
- Embedded Event Manager (EEM) is a powerful and flexible feature that provides real-time network event detection and onboard automation. Using EEM, customers can adapt the behavior of their network devices to align with their business needs. This feature requires the IP Base feature set.

Easy-to-use deployment and control features

- User experience:
 - IP Service-Level Agreements (SLAs) enable customers to assure new business-critical IP applications, as well as IP services that utilize data, voice, and video, in an IP network. This feature requires the IP Services feature set.
 - DHCP autoconfiguration of multiple switches through a boot server eases switch deployment.
 - Automatic QoS (AutoQoS) simplifies QoS configuration in Voice over IP (VoIP) networks by issuing interface and global switch commands to detect Cisco IP phones, classify traffic, and help enable egress queue configuration.
 - Autonegotiation on all ports automatically selects half- or full-duplex transmission mode to optimize bandwidth.
 - Automatic media-dependent interface crossover (MDIX) automatically adjusts transmit and receive pairs if an incorrect cable type (crossover or straight through) is installed.
 - AV Bridging provides reliable time synchronized transmission with no pops or clicks or video dropouts.
- Simplified configuration and connectivity:
 - Dynamic Trunking Protocol (DTP) facilitates dynamic trunk configuration across all switch ports.
 - Port Aggregation Protocol (PAgP) automates the creation of Cisco Fast EtherChannel groups or Gigabit EtherChannel groups to link to another switch, router, or server.
 - Link Aggregation Control Protocol (LACP) allows the creation of Ethernet channeling with devices that conform to IEEE 802.3ad. This feature is similar to Cisco EtherChannel technology and PAgP.
 - Unidirectional Link Detection Protocol (UDLD) and aggressive UDLD allow unidirectional links caused by incorrect fiber-optic wiring or port faults to be detected and disabled on fiber-optic interfaces.
 - Cisco VLAN Trunking Protocol (VTP) Version 3 supports dynamic VLANs and dynamic trunk configuration across all switches.
 - AV Bridging provides reliable AV streaming without the need for the installer to perform extensive hand tuning of the network.
- Efficient switch operation:
 - Switching Database Manager (SDM) templates, VLAN template (specific to LAN Base license level), and advanced template allow the administrator to automatically optimize the Ternary Content-Addressable Memory (TCAM) allocation to the desired features based on deployment-specific requirements.
 - Local proxy Address Resolution Protocol (ARP) works in conjunction with private VLAN edge to minimize broadcasts and maximize available bandwidth.
 - Stacking master configuration management with Cisco StackWise-480 technology helps make sure that all switches are automatically upgraded when the master switch receives a new software version. Automatic software version checking and updating help ensure that all stack members have the same software version.
 - Trivial File Transfer Protocol (TFTP) reduces the cost of administering software upgrades by downloading from a centralized location.
 - Network Timing Protocol (NTP) provides an accurate and consistent timestamp to all intranet switches.

• Multicast:

- Optimized multicast for wired plus wireless: Cisco Catalyst 3850 offers greater multicast efficiency by receiving only one multicast stream and replicating it for all connected wired plus wireless devices connected to that switch.
 - Internet Group Management Protocol (IGMP) v1, v2, v3 snooping for IPv4; Multicast Listener Discovery (MLD) v1 and v2 snooping provides fast client joins and leaves of multicast streams and limits bandwidth-intensive video traffic to only the requestors.
- ## • Monitoring:
- Remote Switch Port Analyzer (RSPAN) allows administrators to remotely monitor ports in a Layer 2 switch network from any other switch in the same network.
 - For enhanced traffic management, monitoring, and analysis, the Embedded Remote Monitoring (RMON) software agent supports four RMON groups (history, statistics, alarms, and events).
 - Layer 2 traceroute eases troubleshooting by identifying the physical path that a packet takes from source to destination.
 - Wireless RF management provides both real-time and historical information about RF interference affecting network performance across controllers using systemwide Cisco CleanAir technology integration.

Efficient switch operation

Cisco Catalyst 3850 Series Switches, designed and engineered by Cisco, provide optimum power-saving, EEE (on RJ45 ports), low-power operations for industry best-in-class power management and power consumption capabilities. The Cisco Catalyst 3850 ports are capable of reduced power modes so that ports not in use can move into a lower power utilization state. Other efficient switch operation features are:

- Cisco Discovery Protocol Version 2 allows the Cisco Catalyst 3850 Series Switches to negotiate a more granular power setting when connecting to a Cisco powered device such as IP phones or access points than what is provided by IEEE classification.
- Per-port power consumption command allows customers to specify maximum power setting on an individual port. Per-port PoE power sensing measures actual power being drawn, enabling more intelligent control of powered devices.
- The PoE MIB provides proactive visibility into power usage and allows customers to set different power-level thresholds.

Environmental responsibility

Organizations may choose to turn off access point radios to reduce power consumption during off-peak hours. The integrated wireless LAN controller avoids the deployment of additional devices in the network.

Network management tools

The Cisco Catalyst 3850 Series Switches offer both a superior CLI for detailed configuration and Cisco Prime™ infrastructure for unified wired plus wireless management. Prime infrastructure provides fast and ongoing provisioning, ongoing monitoring and maintenance, configuration templates, and device and user 360-degree views and serves as the FNF collector for user traffic views using the Prime Assurance Manager module.

For detailed information about Cisco Prime infrastructure, go to <https://www.cisco.com/en/US/products/ps12239/index.html>.

Advanced Security Features

Cisco Catalyst 3850 Series Switches support advanced security features including but not limited to:

Protection against attackers:

- Port security secures the access to an access or trunk port based on MAC address. It limits the number of learned MAC addresses to deny MAC address flooding.
- DHCP snooping prevents malicious users from spoofing a DHCP server and sending out bogus addresses. This feature is used by other primary security features to prevent a number of other attacks, such as ARP poisoning.

Dynamic ARP inspection (DAI) helps ensure user integrity by preventing malicious users from exploiting the insecure nature of ARP.

- IP source guard prevents a malicious user from spoofing (that is, taking over) another user's IP address by creating a binding table between the client's IP and MAC address, port, and VLAN, and by using it to selectively block bogus packets.
- The Unicast Reverse Path Forwarding (uRPF) feature helps mitigate problems caused by the introduction of malformed or forged (spoofed) IP source addresses into a network by discarding IP packets that lack a verifiable IP source address.
- Bidirectional data support on a SPAN port allows the Cisco Intrusion Detection System (IDS) to take action when an intruder is detected.

User authentication:

- Flexible authentication that supports multiple authentication mechanisms, including 802.1X, MAC authentication bypass, and web authentication using a single, consistent configuration.
- RADIUS change of authorization and downloadable calls for comprehensive policy management capabilities.
- Private VLAN edge restricts traffic between hosts in a switch by segregating traffic at Layer 2, turning a broadcast segment into a nonbroadcast multiaccess-like segment. Private VLAN edge provides security and isolation between switch ports, which helps ensure that users cannot snoop on other users' traffic.
- Multidomain authentication allows an IP phone and a PC to authenticate on the same switch port while placing them on appropriate voice and data VLAN.
- MAC address notification allows administrators to be notified of users added to or removed from the network.
- Mobility and security for secure, reliable wireless connectivity and consistent end-user experience. Increased network availability through proactive blocking of known threats.
- IGMP filtering provides multicast authentication by filtering out nonsubscribers and limits the number of concurrent multicast streams available per port.

ACLs:

- Cisco security VLAN ACLs on all VLANs prevent unauthorized data flows from being bridged within VLANs.
- Cisco standard and extended IP security router ACLs define security policies on routed interfaces for control-plane and data-plane traffic. IPv6 ACLs can be applied to filter IPv6 traffic.
- Port-based ACLs for Layer 2 interfaces allow security policies to be applied on individual switch ports.

Device access:

- Secure Shell (SSH) Protocol, Kerberos, and Simple Network Management Protocol Version 3 (SNMPv3) provide network security by encrypting administrator traffic during Telnet and SNMP sessions. SSH Protocol, Kerberos, and the cryptographic version of SNMPv3 require a special cryptographic software image because of U.S. export restrictions.
- TACACS+ and RADIUS authentication facilitates centralized control of the switch and restricts unauthorized users from altering the configuration.
- Multilevel security on console access prevents unauthorized users from altering the switch configuration.
- Bridge Protocol Data Unit (BPDU) Guard shuts down Spanning Tree PortFast-enabled interfaces when BPDUs are received to avoid accidental topology loops.
- Spanning Tree Root Guard (STRG) prevents edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes.
- Wireless end-to-end security offers CAPWAP-compliant DTLS encryption to make sure of encryption between access points and controllers across remote WAN/LAN links.

Resiliency

Borderless networks enable enterprise mobility and business-grade video services. Industry's first unified network (wired plus wireless) location services enable tracking of mobile assets and the users of those assets for both wired plus wireless devices. The true borderless experience is enabled by the following feature sets in the Cisco Catalyst 3850 Series Switches:

- High availability
- High-performance IP routing
- Superior QoS

High availability

In addition to StackWise-480 and StackPower,¹⁰ the Cisco Catalyst 3850 Series supports high-availability features including but not limited to the following:

- Cross-Stack EtherChannel provides the ability to configure Cisco EtherChannel technology across different members of the stack for high resiliency.
- Flexlink provides link redundancy with convergence time less than 100ms.
- IEEE 802.1s Multiple Spanning Tree Protocol (MSTP) provides rapid spanning-tree convergence independent of spanning-tree timers and also offers the benefit of Layer 2 load balancing and distributed processing.
- Per-VLAN Rapid Spanning Tree (PVRST+) allows rapid spanning-tree (IEEE 802.1w) reconvergence on a per-VLAN spanning-tree basis, providing simpler configuration than MSTP. In both MSTP and PVRST+ modes, stacked units behave as a single spanning-tree node.
- Switch-port autorecovery ("err-disable" recovery) automatically attempts to reactivate a link that is disabled because of a network error.

¹⁰ StackPower is not supported on the 3850-40.

High-performance IP routing

The Cisco Express Forwarding hardware routing architecture delivers extremely high-performance IP routing in the Cisco Catalyst 3850 Series Switches:

- IP unicast routing protocols (static, Routing Information Protocol Version 1 [RIPv1], and RIPv2, RIPv3, Enhanced Interior Gateway Routing Protocol [EIGRP] stub) are supported for small-network routing applications with the IP Base feature set. Limited static routing with the LAN Base feature set. Equal-cost routing facilitates Layer 3 load balancing and redundancy across the stack.
- Advanced IP unicast routing protocols (Open Shortest Path First [OSPF], EIGRP, Border Gateway Protocol Version 4 [BGPv4], and Intermediate System-to-Intermediate System Version 4 [IS-ISv4]) are supported for load balancing and constructing scalable LANs. IPv6 routing (OSPFv3, EIGRPv6) is supported in hardware for maximum performance. OSPF for routed access is included in the IP Base Image. The IP Services feature set is required for full OSPF, EIGRP, BGPv4, and IS-ISv4.
- Policy-Based Routing (PBR) allows superior control by facilitating flow redirection regardless of the routing protocol configured. The IP Base feature set is required for PBR. Virtual Routing and Forwarding (VRF)-Lite enables a service provider to support two or more VPNs, with overlapping IP addresses. The IP Services feature set is required for VRF-Lite.
- Protocol-Independent Multicast (PIM) for IP multicast routing is supported, including PIM Sparse Mode (PIM-SM), PIM Dense Mode (PIM-DM), PIM sparse-dense mode, and Source-Specific Multicast (SSM). The IP Services feature set is required.
- IPv6 addressing is supported on interfaces with appropriate show commands for monitoring and troubleshooting.

Superior QoS

The Cisco Catalyst 3850 Series offers Gigabit Ethernet speed with intelligent services that keep traffic flowing smoothly, even at 10 times the normal network speed. Industry-leading mechanisms for cross-stack marking, classification, and scheduling deliver superior performance for data, voice, and video traffic, all at wire speed.

The following are some of the QoS features supported in the Cisco Catalyst 3850 Series Switches:

- Granular wireless bandwidth management and fair sharing use Cisco's proven Cisco IOS Software and UADP ASIC technology to provide hierarchical bandwidth management at line rate (per access point, per radio, per SSID, per client-based policies). Fair sharing across the users within an SSID makes sure that no single user is starved because of other heavy-hitting users. Fair sharing is automatically enabled for wireless at user level as well as SSID level.
- 802.1p CoS and DSCP field classification is provided, using marking and reclassification on a per-packet basis by source and destination IP address, MAC address, or Layer 4 Transmission Control Protocol/User Datagram Protocol (TCP/UDP) port number.
- Shaped Round Robin (SRR) scheduling helps ensure differential prioritization of packet flows by intelligently servicing the ingress queues and egress queues. Weighted Tail Drop (WTD) provides congestion avoidance at the ingress and egress queues before a disruption occurs. Strict priority queuing helps ensure that the highest priority packets are serviced ahead of all other traffic.
- The Cisco Committed Information Rate (CIR) function provides bandwidth in increments as low as 8 Kbps.

- Rate limiting is provided based on source and destination IP address, source and destination MAC address, Layer 4 TCP/UDP information, or any combination of these fields, using QoS ACLs (IP ACLs or MAC ACLs), class maps, and policy maps.
- Eight egress queues per port for wired traffic and four egress queues for wireless help enable differentiated management of different traffic types across the stack for wired traffic. Up to 2000 aggregate policers are available per switch.

Application visibility and control using Flexible NetFlow

Cisco IOS Software FNF is the next generation in flow visibility technology, allowing optimization of the network infrastructure, reducing operation costs, and improving capacity planning and security incident detection with increased flexibility and scalability. The Cisco Catalyst 3850 provides optimized application visibility with FNF across wired plus wireless. The switch is capable of up to 48,000 flow entries on 48-port models and up to 24,000 flow entries on 12-port and 24-port models across wired plus wireless. With UADP ASIC, Cisco Catalyst 3850 delivers next-generation flow technology with unprecedented flexibility and comprehensive visibility extending from Layer 2 (MAC and VLAN) to Layer 4 (TCP/UDP) flags and so on across wired plus wireless traffic. The Cisco Catalyst 3850 switch is medianet capable to provide visibility and troubleshooting capabilities across wired plus wireless video traffic. Specific medianet features will be enabled in future software updates.

The flow data collected by FNF can be exported to an external collector for analysis and reporting or tracked by the EEM. The Cisco Catalyst 3850 enables powerful on-box and customizable event correlation and policy actions with EEM, allowing the switches to trigger customized event alarms or policy actions when the predefined condition is met. With no external appliance required, customers are able to use existing infrastructure to perform traffic monitoring, making traffic analysis economical even on a large IP network.

Details about Cisco FNF are available at https://www.cisco.com/en/US/prod/collateral/cosswrel/ps6537/ps6555/ps6601/ps6965/produkt_data_sheet0900aecd804b590b.html.

High-performance video over wireless integrates Cisco VideoStream technology to optimize the delivery of video applications across the WLAN.

Wired plus wireless IP telephony supports unified communications for improved collaboration through messaging, presence, and conferencing and supports all Cisco Unified Communications wireless IP phones for cost-effective, real-time voice service.

Audio video bridging

With Cisco IOS® XE Software Release 16.3, Cisco Catalyst 3850 Multigigabit and 3850 10G SFP+ now support the IEEE 802.1 AVB standard. This standard provided the means for highly reliable delivery of low-latency, time-synchronized AV streaming services through Layer 2 Ethernet networks. The standard also makes it easier to integrate new services and for AV equipment from different vendors to interoperate. Whether the AV endpoint connections are analog or are inflexible digital one to one, the network transport enables many-to-many transparent plug-and-play connections for multiple AV endpoints.

Benefits

- Improves quality of experience by lowering jitter and latency for time-synchronized delivery of high-quality AV
- Provides scalability of applications across networked deployments, including expansive and complex AV infrastructure
- Lowers Total Cost of Ownership (TCO) with reduced cabling (lowers CapEx) and no license fees (lowers OpEx)

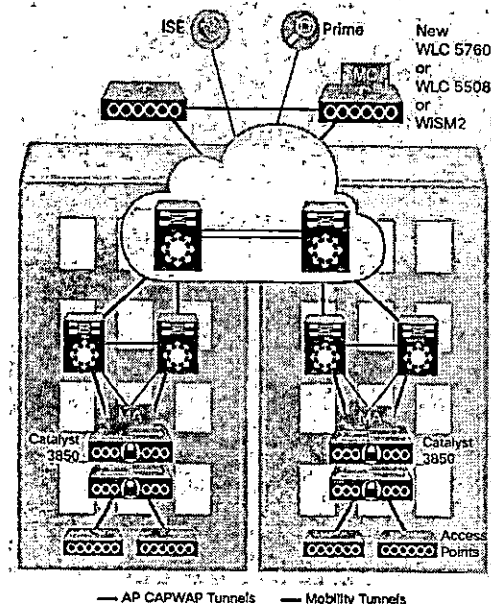
*For more details about AVB and specific models supported, check <https://www.cisco.com/go/avb>.

Deployment options
Campus

In a campus-type deployment, operating the Cisco Catalyst 3850 in the mobility agent mode and centralizing the mobility controller functionality in a WLC 5760, WLC 5508, or WISM2 helps achieve better scalability and performance. The Cisco Catalyst 3850 provides CAPWAP termination for access points, uniform policy enforcement for wireless clients, better wireless bandwidth, and uniform Cisco IOS Software-based configuration and monitoring for wired plus wireless features. The mobility controller provides central mobility, RRM, and CleanAir coordination.

Backward compatibility with traditional centralized wireless deployment mode on the WLC 5508, WISM2, and WLC 5760 helps ensure that customers can migrate to the Cisco Catalyst 3850-based converged access approach in phases, providing a continued controller for existing access points. This migration also provides investment protection on the existing wireless controller infrastructure. A phased adoption of the new Cisco Catalyst 3850 helps ensure that migration to the converged access mode of wireless is seamless. Figure 10 shows a Cisco Catalyst 3850 Series Switch in a campus-type deployment.

Figure 10. Mobility Controller (MC) and Mobility Agent (MA)

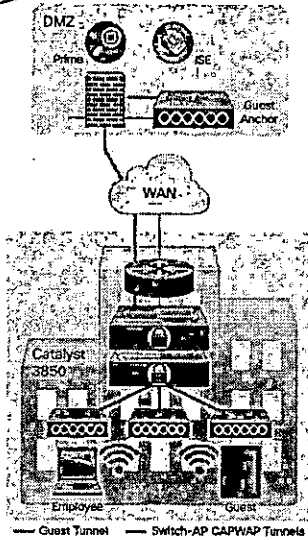


Branch

The Cisco Catalyst 3850 is optimized for branch deployments when it operates in mobility controller mode. In this mode, not only can the switch terminate CAPWAP tunnels from the access points and provide client connectivity, it can also manage mobility within the branch. This eliminates the need for a local controller in every branch in addition to the access-layer switches. Also, complete visibility into the wired plus wireless traffic means that the WAN router can prioritize the right wired plus wireless traffic in and out of the branch. Figure 11 shows a Cisco Catalyst 3850 in a branch access type deployment.

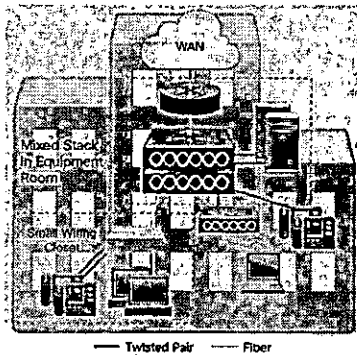
7001129

Figure 11 Deploying the Cisco Catalyst 3850 Series for branch access



The new 12-port and 24-port SFP+ or SFP-based Cisco Catalyst 3850 models as well as the nonstackable 48-port SFP+ model can also be used in the branch to aggregate traffic from smaller access switches through fiber links for more secure and EMI-sensitive deployments (Figure 12).

Figure 12. Deploying mixed copper and fiber connections with a Cisco Catalyst 3850 stack in the branch



Cisco Catalyst 3850 Series specifications
Switch performance

Table 10 shows the Cisco Catalyst 3850 Series Switches performance specifications.

Table 10. Cisco Catalyst 3850 Series performance specifications

Performance numbers for all switch models	
Switching capacity	176 Gbps on 48-port Gigabit Ethernet model 92 Gbps on 24-port Gigabit Ethernet model 68 Gbps on 12-port Gigabit Ethernet model 640 Gbps on 24-port Multigigabit Ethernet model 472 Gbps on 48-port Multigigabit Ethernet model 1280 Gbps on 48-port 10 Gigabit Ethernet SFP+ model 640 Gbps on 24-port 10 Gigabit Ethernet SFP+ model 320 Gbps on 12-port 10 Gigabit Ethernet SFP+ model
Stacking bandwidth	480 Gbps
Total number of MAC addresses	32,000
Total number of IPv4 routes (ARP plus learned routes)	24,000
FNF entries	48,000 flows on 48-port Gigabit Ethernet models 24,000 flows on 12-port and 24-port Gigabit Ethernet models 98,000 flows on 48-port 10 Gigabit Ethernet SFP+ model 48,000 flows on 24-port 10 Gigabit Ethernet SFP+ model 24,000 flows on 12-port 10 Gigabit Ethernet SFP+ model
DRAM	4 GB (8 GB on 48-port SFP+ model)
Flash	2 GB (4 GB on 12-port and 24-port SFP+ models, 8 GB on 48-port SFP+ model)
VLAN IDs	4,000
Total Switched Virtual Interfaces (SVIs)	1,000
Jumbo frame	9188 bytes
Total routed ports per 3850 stack	208
Wireless	
Number of access points per switch/stack	100
Number of wireless clients per switch/stack	2000
Total number of WLANs per switch	64
Wireless bandwidth per switch	Up to 40 Gbps on 48-port Gigabit Ethernet model Up to 20 Gbps on 24-port Gigabit Ethernet model
Supported Aronet access point series	3600, 3500, 2000, 1800, 1200, 1140, 1040
Forwarding rate of switch models (with 2 x 10 Gigabit Ethernet uplinks for 12-port and 24-port models and 4 x 10 Gigabit Ethernet uplinks for 48-port models)	
Model	Forwarding rate
WS-C3850-12S	50.5 Mpps
WS-C3850-24T	68.4 Mpps
WS-C3850-24P	
WS-C3850-24S	
WS-C3850-48T	130.95 Mpps
WS-C3850-48P	
WS-C3850-48F	
WS-C3850-24XU	500 Mpps (80B packets)
WS-C3850-12X48U	460 Mpps (64B packets)

Performance numbers for all switch models	
WS-C3850-12XS	227.28 Mpps
WS-C3850-24XS	454.55 Mpps
WS-C3850-48XS	909 Mpps

Dimensions, weight, acoustic, mean time between failures, and environmental range specifications for Cisco Catalyst 3850 Series Switches

Table 11 shows dimensions, weight, acoustic, Mean Time Between Failure (MTBF), and environmental range. Weight does not include an uplink FRU. Weight includes the chassis assembly as it is shipped (with fans), one power supply and, and one power supply slot blank.

Table 11. Dimensions, weight, acoustic, MTBF, and environmental range¹¹

Dimensions (H x W x D)	Inches	Centimeters
WS-C3850-12S	1.75 x 17.5 x 17.7	4.45 x 44.5 x 45.0
WS-C3850-24S		
WS-C3850-24T		
WS-C3850-24P		
WS-C3850-48T		
WS-C3850-48P		
WS-C3850-48F	1.75 x 17.5 x 19.2	4.45 x 44.5 x 48.8
WS-C3850-48U		
WS-C3850-24U		
WS-C3850-24XU		
WS-C3850-12X48U		
WS-C3850-12XS	1.75 x 17.5 x 17.7	4.45 x 44.5 x 45.0
WS-C3850-24XS		
WS-C3850-48XS	1.75 x 17.5 x 20.1	4.45 x 44.5 x 51.1
Weight	Pounds	Kilograms
WS-C3850-12S	15.48	7.02
WS-C3850-24S	15.5	7.03
WS-C3850-24T	15.9	7.2
WS-C3850-24P	16.3	7.4
WS-C3850-24U	18.5	7.5
WS-C3850-48T	17.0	7.7
WS-C3850-48P	17.4	7.9
WS-C3850-48F	17.6	8.0
WS-C3850-48U	17.8	8.0
WS-C3850-24XU	17.6	8.0
WS-C3850-12X48U	17.8	8.0
WS-C3850-12XS	12.9	5.8
WS-C3850-24XS	13.5	6.1
WS-C3850-48XS	16.42	7.45
C3850-NM-4-10G	0.69	0.30
C3850-NM-2-10G	0.71	0.32

¹¹ Additional information about the 48-port SFP+ model will be provided at time of shipment.

C3850-NM-4-10G	0.75	0.34
C3850-NM-8-10G	0.74	0.34
C3850-NM-2-40G	0.62	0.28
MTBF hours		
WS-C3850-12S	315,840	
WS-C3850-24S	300,760	
WS-C3850-24T	303,230	
WS-C3850-24P	269,450	
WS-C3850-24U	237,310	
WS-C3850-48T	303,660	
WS-C3850-48P	241,050	
WS-C3850-48F	241,050	
WS-C3850-48U	205,110	
WS-C3850-24XU	203,150	
WS-C3850-12X48U	202,030	
WS-C3850-12XS	371,440	
WS-C3850-24XS	307,890	
WS-C3850-32XS	307,890	
WS-C3850-48XS	285,900	
PWR-C1-350WAC	580,710	
PWR-C1-715WAC	664,055	
PWR-C1-1100WAC	392,174	
PWR-C1-440WDC	469,350	
C3850-NM-4-1G	7,052,100	
C3850-NM-2-10G	4,315,970	
C3850-NM-4-10G	3,835,330	
C3850-NM-8-10G	6,544,410	
C3850-NM-2-40G	9,303,100	
Environmental ranges		
With AC power supply Operating environment and altitude	Normal operating temperature ¹ and altitudes: • -5°C to +45°C, up to 5000 feet (1500m) • -5°C to +40°C, up to 10,000 feet (3000m) *Minimum ambient temperature for cold start is 32°F (0°C) Short-term ² exceptional conditions: • -5°C to +50°C, up to 5000 feet (1500m) • -5°C to +45°C, up to 10,000 feet (3000m) • -5°C to +45°C, at sea level with single fan failure ¹ Not more than following in one-year period: 96 consecutive hours, or 360 hours total, or 15 occurrences.	
With DC power supply Operating environment and altitude (NEBS)	Normal operating temperature and altitudes: • -5°C to +45°C, up to 6000 feet (1800m) • -5°C to +40°C, up to 10,000 feet (3000m) • -5°C to +35°C, up to 13,000 feet (4000m) Short-term ² exceptional conditions: • -5°C to +55°C, up to 6000 feet (1800m) • -5°C to +50°C, up to 10,000 feet (3000m) • -5°C to +45°C, up to 13,000 feet (4000m) • -5°C to +45°C, at sea level with single fan failure ¹ Not more than following in one-year period: 96 consecutive hours, or 360 hours total, or 15 occurrences.	

000130

ВРАНО СІ

СМ

Relative humidity	10% to 85%, noncondensing
Acoustic noise	With AC or DC power supply (with 24 PoE+ ports loaded): <ul style="list-style-type: none"> • LPA: 43dB typical, 45dB maximum • LWA: 5.2B typical, 5.5B maximum
Measured per ISO 7778 and declared per ISO 9296	Typical: Noise emission for a typical configuration Maximum: Statistical maximum to account for variation in production
Bystander positions operating to an ambient temperature of 23°C	
Storage environment	Temperature: -40°C to 70°C Altitude: 15,000 ft
Vibration	Operating: 0.41Grms from 3 to 500Hz with spectral break points of 0.0065 G2/Hz at 10Hz and 200Hz 5dB/octave roll off at each end Nonoperating: 1.12Grms from 3 to 500Hz with spectral break points of 0.0065 G2/Hz at 10Hz and 100Hz 5dB/octave roll off at each end
Shock	Operating: 30G, 2ms half sine Nonoperating: 55G, 10ms trapezoid

Connectors for Cisco Catalyst 3850 Series

Table 12 shows the supported connectors.

Table 12. Connectors

Connectors and cabling	<ul style="list-style-type: none"> • 1000BASE-T ports: RJ-45 connectors, 4-pair Cat-5E UTP cabling • Multigig-T ports: RJ-45 connectors, 4-pair Cat-5E, Cat-6, Cat6A UTP cabling • 1000BASE-T SFP-based ports: RJ-45 connectors, 4-pair Cat-5E UTP cabling • 100BASE-FX, 1000BASE-SX, -LX, -LH, -ZX, -BX10, DWDM and CWDM SFP transceivers: LC fiber connectors (single-mode or multimode fiber) • 10GBASE-SR, LR, LRM, ER, ZR, DWDM SFP+ transceivers: LC fiber connectors (single-mode or multimode fiber) • CX1 cable assemblies: SFP+ connector • Cisco StackWise-480 stacking ports: copper-based Cisco StackWise cabling • Cisco StackPower: Cisco proprietary power stacking cables • Ethernet management port: RJ-45 connectors, 4-pair Cat-5 UTP cabling • Management console port: RJ-45-to-DB9 cable for PC connections
Power connectors	<ul style="list-style-type: none"> • Customers can provide power to a switch by using either the internal power of StackPower from another member in the power stack. The connectors are located at the back of the switch. • Internal power supply connector: The internal power supply is an autoranging unit. The internal power supply supports input voltages between 100 and 240VAC. Use the supplied AC power cord to connect the AC power connector to an AC power outlet.

For the latest Cisco transceiver module compatibility information, refer to <https://www.cisco.com/c/en/us/support/interfaces-modules/transceiver-modules/products-device-support-tables-list.html>.

Management and standards support for Cisco Catalyst 3850 Series Switches

Table 13 shows management and standards support for the Cisco Catalyst 3850 Series.

Table 13. Management and standards support for the Cisco Catalyst 3850 Series

Description	Specification
Management	BRIDGE-MIB CISCO-AUTH-FRAMEWORK-MIB CISCO-BGP4-MIB, BGP4-MIB CISCO-BRIDGE-EXT-MIB CISCO-BULK-FILE-MIB CISCO-CABLE-DIAG-MIB CISCO-CALLHOME-MIB CISCO-SNMP-TARGET-EXT-MIB CISCO-STACKMAKER-MIB CISCO-MEMORY-POOL-MIB CISCO-STP-EXTENSIONS-MIB CISCO-SYSLOG-MIB CISCO-TCP-MIB CISCO-UDLD-MIB

Description	Specification
	CISCO-CEF-MIB CISCO-CIRCUIT-INTERFACE-MIB CISCO-ENTITY-VENDORTYPE-OID-MIB CISCO-CONTEXT-MAPPING-MIB CISCO-DEVICE-LOCATION-MIB CISCO-DHCP-SNOOPING-MIB CISCO-EGRP-MIB CISCO-EMBEDDED-EVENT-MGR-MIB CISCO-ENTITY-FRU-CONTROL-MIB CISCO-ENTITY-SENSOR-MIB ENTITY-MIB CISCO-ERR-DISABLE-MIB CISCO-CONFIG-COPY-MIB CISCO-FLOW-MONITOR-MIB CISCO-FTP-CLIENT-MIB CISCO-HSRP-EXT-MIB CISCO-HSRP-MIB CISCO-IETF-ISIS-MIB CISCO-IF-EXTENSION-MIB CISCO-IGMP-FILTER-MIB CISCO-CONFIG-MAN-MIB CISCO-IP-CBR-METRICS-MIB CISCO-IPROUTE-MIB CISCO-IP-STAT-MIB CISCO-IP-URPF-MIB CISCO-L2L3-INTERFACE-CONFIG-MIB CISCO-LAG-MIB CISCO-LICENSE-MGMT-MIB CISCO-MAC-AUTH-BYPASS-MIB CISCO-MAC-NOTIFICATION-MIB CISCO-MDI-METRICS-MIB CISCO-FLASH-MIB CISCO-OSPF-MIB CISCO-OSPF-TRAP-MIB CISCO-PAE-MIB CISCO-PAGP-MIB CISCO-PIM-MIB CISCO-PING-MIB CISCO-PORT-COS-MIB CISCO-PORT-SECURITY-MIB CISCO-PORT-STORM-CONTROL-MIB CISCO-POWER-ETHERNET-EXT-MIB CISCO-PRIVATE-VLAN-MIB CISCO-PROCESS-MIB CISCO-PRODUCTS-MIB CISCO-RF-MIB CISCO-RTP-METRICS-MIB CISCO-RTMCON-MIB CISCO-SMART-INSTALL-MIB CISCO-VLAN-IFTABLE-RELATIONSHIP-MIB CISCO-VLAN-MEMBERSHIP-MIB CISCO-VTP-MIB EtherLike-MIB HC-RMON-MIB IEEE8021-PAE-MIB IEEE8023-LAG-MIB IF-MIB IGMP-MIB IGMP-STD-MIB IP-FORWARD-MIB IP-MIB IPROUTE-STD-MIB LLDP-EXT-MED-MIB LLDP-MIB NOTIFICATION-LOG-MIB OLD-CISCO-MEMORY-MIB CISCO-CDP-MIB POWER-ETHERNET-MIB RMON2-MIB RMON-MIB SNMP-COMMUNITY-MIB SNMP-FRAMEWORK-MIB SNMP-MPD-MIB SNMP-NOTIFICATION-MIB SNMP-PROXY-MIB SNMP-TARGET-MIB SNMP-USM-MIB SNMPV2-MIB SNMP-VIEW-BASED-ACM-MIB TCP-MIB UDP-MIB CISCO-IMAGE-MIB CISCO-STACKWISE-MIB AIRSPACE-WIRELESS-MIB CISCO-LWAPP-IDS-MIB CISCO-LWAPP-AP-MIB CISCO-LWAPP-CCX-RM-MIB CISCO-LWAPP-CLIENT-ROAMING-MIB CISCO-LWAPP-DOT11-CCX-CLIENT-DIAG-MIB CISCO-LWAPP-DOT11-CCX-CLIENT-MIB CISCO-LWAPP-DOT11-CLIENT-CCX-REPORTS-MIB CISCO-LWAPP-DOT11-CLIENT-MIB CISCO-LWAPP-DOT11-MIB CISCO-LWAPP-DOWNLOAD-MIB CISCO-LWAPP-LINKTEST-MIB CISCO-LWAPP-MIB CISCO-LWAPP-MOBILITY-EXT-MIB CISCO-LWAPP-OS-MIB CISCO-LWAPP-REAP-MIB CISCO-LWAPP-ROGUE-MIB CISCO-LWAPP-RRM-MIB CISCO-LWAPP-SI-MIB CISCO-LWAPP-TSM-MIB CISCO-LWAPP-WLAN-MIB CISCO-LWAPP-WLAN-SECURITY-MIB

Description	Specification
Standards	IEEE 802.1es IEEE 802.1e IEEE 802.1w IEEE 802.11 IEEE 802.1x IEEE 802.1x-Rev IEEE 802.3ad IEEE 802.3af IEEE 802.3at IEEE 802.3bz IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports IEEE 802.1D Spanning Tree Protocol IEEE 802.1p CoS prioritization IEEE 802.1Qat Stream Reservation Protocol IEEE 802.1Qav IEEE 802.1Q VLAN IEEE 802.3 10BASE-T specification IEEE 802.3u 100BASE-TX specification IEEE 802.3ab 1000BASE-T specification IEEE 802.3z 1000BASE-X specification
	RMON I and II standards SNMPv1, SNMPv2c, and SNMPv3

Power supply specifications

Table 14 lists the power specifications for the Cisco Catalyst 3850 Series based on the kind of power supply used.

Table 14. Power specifications for Cisco Catalyst 3850 Series

Description	Specification			
	PWR-C1-1100WAC	PWR-C1-715WAC	PWR-C1-350WAC	PWR-C1-440WDC
Power supply rated maximum	1100W	715W	350W	440W
Total output BTU (Note: 1000 BTU/hr = 293W)	3785 BTU/hr, 1100W	2485 BTU/hr, 715W	1207 BTU/hr, 350W	1517 BTU/hr, 440W
Input-voltage range and frequency	115-240VAC, 50-60 Hz	100-240VAC, 50-60 Hz	100-240VAC, 50-60 Hz	-36VDC to -72VDC
Input current	12.6A	10.6A	4.2A	<6A at -72VDC <16A at -36VDC
Output ratings	-56V at 19.64A	-56V at 12.8A	-56V at 6.25A	-56V at 7.86A
Output holdup time	10 ms minimum at 102.5VAC	18.7 ms minimum at 100VAC	16.7 ms minimum at 100VAC	> 2ms at -48VDC
Power-supply input receptacles	IEC 320-C16 (IEC60320-C16)	IEC 320-C16 (IEC60320-C16)	IEC 320-C16 (IEC60320-C16)	Terminal strip
Power cord rating	13A	13A	10A	20A at 100VDC
Physical specifications	(H x W x D): 1.58 X 3.25 X 13.7 in Weight: 3 lb (1.4 kg)	(H x W x D): 1.58 X 3.25 X 12.20 in Weight: 2.8 lb (1.3 kg)	(H x W x D): 1.58 X 3.25 X 12.20 in Weight: 2.6 lb (1.2 kg)	(H x W x D): 1.58 X 3.25 X 12.20 in Weight: 2.6 lb (1.2 kg)
Operating temperature	23 to 113°F (-5 to 45°C)			
Storage temperature	-40 to 158°F (-40 to 70°C)			
Relative humidity operating and nonoperating noncondensing	5 to 90% noncondensing			
Altitude	10,000 ft. (3000 meters), up to 45°C			
MTBF	Calculated MTBF must be greater than 300,000 using Telcordia SR-332, Method 1, Case 3. Demonstrated MTBF is 500,000 hr (with 90% confidence level).			

Description	Specification			
	PWR-C1-1100WAC	PWR-C1-715WAC	PWR-C1-350WAC	PWR-C1-440WDC
EMI and EMC compliance	FCC Part 15 (CFR 47) Class A ICES-003 Class A EN 55022 Class A CISPR 22 Class A AS/NZS 3548 Class A BSMI Class A (AC input models only) VCCI Class A EN 55024, EN 500386, EN 50082-1, EN 61000-3-2, EN 61000-3-3 EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-6-1			
Safety compliance	UL 60950-1, CAN/CSA-C22.2 No. 60950-1, EN 60950-1, IEC 60950-1, CCC, CE Marking			
LED indicators	*AC OK: Input power to the power supply is OK *PS OK: Output power from the power supply is OK			

Power consumption of standalone Cisco Catalyst 3850 Series Switches

Table 15 shows power consumption of standalone Cisco Catalyst 3850 Series Switches based on Alliance for Telecommunications Industry Solutions (ATIS) testing using IMIX distribution stream traffic, with input voltage of 115VAC at 60 Hz and no PoE loading. The values given are the maximum possible power consumption numbers under the respective test scenarios.

Table 15. Power consumptions (in watts) of standalone Cisco Catalyst 3850 Series

Model	Uplink module	Power consumption (W) (no more than)			Weighted average
		0% traffic	10% traffic	100% traffic	
WS-C3850-12S	C3850-NM-4-1G	85.84	85.88	86.75	86.0
WS-C3850-24S		104.48	104.25	105.12	104.4
WS-C3850-12S	C3850-NM-2-10G	87.95	88.30	90.04	88.4
WS-C3850-24S		106.24	106.58	109.75	106.9
WS-C3850-24T	C3850-NM-4-1G	83.47	82.86	83.76	83.04
WS-C3850-24P		86.81	86.22	87.11	86.40
WS-C3850-24U		81.5	81.4	82.1	81.5
WS-C3850-48T		117.74	116.62	117.59	116.89
WS-C3850-48P		125.35	124.15	125.15	124.43
WS-C3850-48F		130.10	128.91	129.85	129.18
WS-C3850-48U		114.8	114.7	115.6	114.8
WS-C3850-24T	C3850-NM-2-10G	81.97	81.83	84.97	82.16
WS-C3850-24P		85.22	85.04	88.32	85.39
WS-C3850-24U		82.8	82.6	84.8	82.9
WS-C3850-48T		117.58	116.74	120.40	117.23
WS-C3850-48P		123.78	122.90	126.75	123.42
WS-C3850-48F		129.69	129.06	132.39	129.18
WS-C3850-48U		116.8	116.9	119.9	117.2
WS-C3850-48T	C3850-NM-4-10G	120.56	120.28	127.24	121.02
WS-C3850-48P		129.59	129.64	135.96	130.27
WS-C3850-48F		137.57	137.05	143.77	137.81
WS-C3850-48U		119.9	121.2	127.7	121.5
WS-C3850-12XS		112.7			109.7

Model	Link module	Power consumption (W) (no more than)			
		0% traffic	40% traffic	100% traffic	Weighted average
WS-C3850-24XU	C3850-NM-B-10G	229.7	231.2	248.1	232.7
WS-C3850-12X40U		191.3	183.8	208.1	194.8
WS-C3850-24XS		183.6	185.3	205.6	187.2
WS-C3850-24XS	C3850-NM-2-40G	158.2	161.1	177.0	162.5
WS-C3850-48XS	None	267.0	268.3	288.1	270.1

Safety and compliance

Table 16. Safety and compliance information for the Cisco Catalyst 3850 Series

Description	Specification
Safety certifications	UL 60950-1 Second Edition CAN/CSA-C22.2 No. 60950-1 Second Edition EN 60950-1 Second Edition IEC 60950-1 Second Edition NOM (obtained by partners and distributors)
Electromagnetic emissions certifications	47CFR Part 15 (CFR 47) Class A (FCC Part 15 Class A) AS/NZS CISPR22 Class A CISPR22 Class A EN55022 Class A ICES003 Class A VCCI Class A EN61000-3-2 EN61000-3-3 KN22 Class A KCC CNS13438 Class A EN55024 CISPR24 KN24
Environmental	Reduction of Hazardous Substances (ROHS) 5
Noise specifications	Office Product Spec: 48dBA at 30°C (refer to ISO 7778)
Telco	CLEI code

Cisco enhanced limited lifetime hardware warranty (E-LLW)

The Cisco Catalyst 3850 Series Switches come with an E-LLW that includes NBD delivery of replacement hardware where available and 90 days of 8x5 Cisco TAC support.

Your formal warranty statement, including the warranty applicable to Cisco software, appears in the Cisco information packet that accompanies your Cisco product. We encourage you to review carefully the warranty statement shipped with your specific product before use.

Cisco reserves the right to refund the purchase price as its exclusive warranty remedy.

For further information about warranty terms, visit <https://www.cisco.com/go/warranty>. Table 17 provides information about the E-LLW.

Table 17. E-LLW details

Device covered	Cisco E-LLW details
Device covered	Applies to Cisco Catalyst 3850 Series Switches.
Warranty duration	As long as the original customer owns the product.
EoL policy	In the event of discontinuance of product manufacture, Cisco warranty support is limited to 5 years from the announcement of discontinuance.
Hardware replacement	Cisco or its service center will use commercially reasonable efforts to ship a replacement for NBD delivery, where available. Otherwise, a replacement will be shipped within 10 working days after receipt of the RMA request. Actual delivery times might vary depending on customer location.
Effective date	Hardware warranty commences from the date of shipment to customer (and in case of resale by a Cisco reseller, not more than 90 days after original shipment by Cisco).
TAC support	Cisco will provide during business hours, 8 hours per day, 5 days per week basic configuration, diagnosis, and troubleshooting of device-level problems for up to a 90-day period from the date of shipment of the originally purchased Cisco Catalyst 3850 product. This support does not include solution or network-level support beyond the specific device under consideration.
Cisco.com access	Warranty allows guest access only to Cisco.com.

Licensing for Cisco Catalyst 3850 Series Switches

The three feature sets available with all Cisco Catalyst 3850 Series Switches are:

- LAN Base: Enterprise access Layer 2 switching features
- IP Base: Enterprise access Layer 3 switching features
- IP Services: Advanced enterprise Layer 3 switching (IPv4 and IPv6) features

The LAN Base feature set offers enhanced intelligent services that include comprehensive Layer 2 features, with up to 255 VLANs. The IP Base feature set provides entry-level enterprise services in addition to all LAN Base features, with 1K VLANs. IP Base also includes the support for wireless controller functionality (mobility agent and mobility controller role; additional access point license required for mobility controller role), routed access, smart operations, FNF, and so on. The IP Services feature set provides full enterprise services that include advanced Layer 3 features such as EIGRP, OSPF, BGP, PIM, and IPv6 routing such as OSPFv3 and EIGRPv6. All software feature sets support advanced security and MQC-based QoS.

The Cisco Catalyst 3850 Series Switches with LAN Base feature set can only stack with other Cisco Catalyst 3850 Series LAN Base switches. The same applies to IP Base and IP Services as well. A mixed stack of LAN Base switch with IP Base or IP Services feature set is not supported.

The 12-port and 24-port SFP+ and SFP-based models as well as the 48-port SFP+ model can only be ordered with IP Base or IP Services licenses. Therefore, in order to stack with LAN Base models, they need to be configured in LAN Base mode from the CLI.

Customers can transparently upgrade the software feature set in the Cisco Catalyst 3850 Series Switches through Cisco IOS Software CLI using the Right To Use (RTU)-based software upgrade process. Software activation enables the Cisco IOS Software feature sets. Based on the license's type, Cisco IOS Software activates the appropriate feature set. License types can be changed, or upgraded, to activate a different feature set.

Access point license for Cisco Catalyst 3850 Series

An access point license is required for Cisco Catalyst 3850 Series Switches operating in mobility controller mode. No access point license is required for 3850 operating in mobility agent mode. This functionality is included in the IP Base feature set. Other devices that can act as mobility controller are the WLC 5760, WLC 5508, and WiSM2 wireless controllers. Access point licenses can be transferred only between two 3850 switches or between 3850 and 5760 controller and vice versa.

Software policy for Cisco Catalyst 3850 Series Switches

Customers with Cisco Catalyst LAN Base and IP Base software feature sets will be provided with maintenance updates and bug fixes designed to maintain the compliance of the software with published specifications, release notes, and industry standards compliance as long as the original end user continues to own or use the product or up to one year from the end-of-sale date for this product, whichever occurs earlier. Customers with licenses for our IP Services software images require a service support contract such as Cisco Smart Net Total Care™ Service to download updates. This policy supersedes any previous warranty or software statement and is subject to change without notice.

Cisco ONE Software

Cisco ONE Software for Access Switching is available for the Cisco Catalyst 3850 Series Switches.

Cisco ONE Software is a new way for customers to purchase and use our infrastructure software. It offers a simplified consumption model, centered on common customer scenarios in the data center, WANs, and LANs.

Cisco ONE Software and services provide customers with four primary benefits:

- Software suites that address typical customer use scenarios at an attractive price
- Investment protection of their software purchase through software services-enabled license portability
- Access to ongoing innovation and new technology with Cisco Software Support Service (SWSS)
- Flexible licensing models to smoothly distribute customer's software spend over time

For ordering information for Cisco ONE Software for the Cisco Catalyst 3850 Series Switches, go to <https://www.cisco.com/c/en/us/products/software/one-access/switching-part-numbers.html>.

Cisco and partner services for next-generation Cisco Catalyst fixed switches

Enable the innovative, secure, intelligent edge in the Borderless Network Architecture using personalized services from Cisco and our partners. Through a discovery process that begins with understanding your business objectives, we help you integrate the next-generation Cisco Catalyst fixed switches into your architecture and incorporate network services onto that platform. Sharing knowledge and leading practices, we support your success every step of the way as you deploy, absorb, manage, and scale new technology.

Choose from a flexible suite of support services designed to meet your business needs and help you maintain high-quality network performance while controlling operational costs. (See Table 18.)

Table 18. Technical services available for Cisco Catalyst 3850 Series Switches

Technical services
Cisco Smart Net Total Care™ Service <ul style="list-style-type: none"> • Around-the-clock, global access to the Cisco TAC • Unrestricted access to the extensive Cisco.com knowledge base and tools • Next-business-day, 8x5x4, 24x7x4, and 24x7x2 advance hardware replacement and onsite parts replacement and installation available • Ongoing operating system software updates within the licensed feature set • Proactive diagnostics and real-time alerts on Smart Call Home-enabled devices
Cisco Smart Foundation Service <ul style="list-style-type: none"> • NBD advance hardware replacement is available • Business hours access to SMB TAC (access levels vary by region) • Access to Cisco.com SMB knowledge base • Online technical resources through Smart Foundation Portal • Operating system software bug fixes and patches
Cisco SP Base Service <ul style="list-style-type: none"> • Around-the-clock, global access to the Cisco TAC • Registered access to Cisco.com • NBD, 8x5x4, 24x7x4, and 24x7x2 advance hardware replacement; return to factory option available² • Ongoing operating system software updates¹
Cisco Focused Technical Support Services <ul style="list-style-type: none"> • Three levels of premium, high-touch services are available: <ul style="list-style-type: none"> • Cisco High-Touch Operations Management Service • Cisco High-Touch Technical Support Service • Cisco High-Touch Engineering Service • Valid Cisco Smart Net Total Care or SP Base contracts on all network equipment are required

Notes

¹ Cisco operating system updates include the following: maintenance releases, minor updates, and major updates within the licensed feature set.

² Advance hardware replacement is available in various service-level combinations. For example, 8x5xNBD indicates that shipment will be initiated during the standard 8-hour business day, 5 days a week (the generally accepted business days within the relevant region), with NBD delivery. Where NBD is not available, same day ship is provided. Restrictions apply; for details, review the appropriate service descriptions.

Ordering information

Table 19 lists ordering information for the Cisco Catalyst 3850 Series. To place an order, visit the Cisco Ordering homepage at https://www.cisco.com/en/US/ordering/or13/or8/order_customer_help/how_to_order_listing.html.

Table 19. Cisco Catalyst 3850 Series ordering information

Product number	Description
Cisco Catalyst 3850 Series	
WS-C3850-24T-L	Stackable 24 10/100/1000 Ethernet ports, with 350WAC power supply 1 RU, LAN Base feature set (StackPower cables need to be purchased separately)
WS-C3850-48T-L	Stackable 48 10/100/1000 Ethernet ports, with 350WAC power supply 1 RU, LAN Base feature set (StackPower cables need to be purchased separately)
WS-C3850-24P-L	Stackable 24 10/100/1000 Ethernet PoE+ ports, with 715WAC power supply 1 RU, LAN Base feature set (StackPower cables need to be purchased separately)
WS-C3850-24U-L	Stackable 24 10/100/1000 Ethernet UPOE ports, with 1100WAC power supply 1 RU, LAN Base feature set (StackPower cables need to be purchased separately)
WS-C3850-48P-L	Stackable 48 10/100/1000 Ethernet PoE+ ports, with 715WAC power supply 1 RU, LAN Base feature set (StackPower cables need to be purchased separately)

20180322

Product number	Description
WS-C3850-48F-L	Stackable 48 10/100/1000 Ethernet PoE+ ports, with 1100WAC power supply 1 RU, LAN Base feature set (StackPower cables need to be purchased separately)
WS-C3850-48U-L	Stackable 48 10/100/1000 Ethernet UPOE ports, with 1100WAC power supply 1 RU, LAN Base feature set (StackPower cables need to be purchased separately)
WS-C3850-24T-S	Stackable 24 10/100/1000 Ethernet ports, with 350WAC power supply 1 RU, IP Base feature set
WS-C3850-48T-S	Stackable 48 10/100/1000 Ethernet ports, with 350WAC power supply 1 RU, IP Base feature set
WS-C3850-24P-S	Stackable 24 10/100/1000 Ethernet PoE+ ports, with 715WAC power supply 1 RU, IP Base feature set
WS-C3850-24U-S	Stackable 24 10/100/1000 Ethernet UPOE ports, with 1100WAC power supply 1 RU, IP Base feature set
WS-C3850-48P-S	Stackable 48 10/100/1000 Ethernet PoE+ ports, with 715WAC power supply 1 RU, IP Base feature set
WS-C3850-48F-S	Stackable 48 10/100/1000 Ethernet PoE+ ports, with 1100WAC power supply 1 RU, IP Base feature set
WS-C3850-48U-S	Stackable 48 10/100/1000 Ethernet UPOE ports, with 1100WAC power supply 1 RU, IP Base feature set
WS-C3850-24T-E	Stackable 24 10/100/1000 Ethernet ports, with 350WAC power supply 1 RU, IP Services feature set
WS-C3850-48T-E	Stackable 48 10/100/1000 Ethernet ports, with 350WAC power supply 1 RU, IP Services feature set
WS-C3850-24P-E	Stackable 24 10/100/1000 Ethernet PoE+ ports, with 715WAC power supply 1 RU, IP Services feature set
WS-C3850-24U-E	Stackable 24 10/100/1000 Ethernet UPOE ports, with 1100WAC power supply 1 RU, IP Services feature set
WS-C3850-48P-E	Stackable 48 10/100/1000 Ethernet PoE+ ports, with 715WAC power supply 1 RU, IP Services feature set
WS-C3850-48F-E	Stackable 48 10/100/1000 Ethernet PoE+ ports, with 1100WAC power supply 1 RU, IP Services feature set
WS-C3850-48U-E	Stackable 48 10/100/1000 Ethernet UPOE ports, with 1100WAC power supply 1 RU, IP Services feature set
WS-C3850-12X48U-L	Stackable 48 10/100/1000 with 12 100Mbps/1/2.5/5/10 Gbps UPOE Ethernet ports, with 1100WAC power supply 1RU, LAN Base feature set
WS-C3850-12X48U-S	Stackable 48 10/100/1000 with 12 100Mbps/1/2.5/5/10 Gbps UPOE Ethernet ports, with 1100WAC power supply 1RU, IP Base feature set
WS-C3850-12X48U-E	Stackable 48 10/100/1000 with 12 100Mbps/1/2.5/5/10 Gbps UPOE Ethernet ports, with 1100WAC power supply 1RU, IP Services feature set
WS-C3850-24XU-L	Stackable 24 100Mbps/1/2.5/5/10 Gbps UPOE Ethernet ports, with 1100WAC power supply 1RU, LAN Base feature set
WS-C3850-24XU-S	Stackable 24 100Mbps/1/2.5/5/10 Gbps UPOE Ethernet ports, with 1100WAC power supply 1RU, IP Base feature set
WS-C3850-24XU-E	Stackable 24 100Mbps/1/2.5/5/10 Gbps UPOE Ethernet ports, with 1100WAC power supply 1RU, IP Services feature set
WS-C3850-12S-S	Stackable 12 SFP Ethernet ports, with 350WAC power supply 1 RU, IP Base feature set
WS-C3850-12S-E	Stackable 12 SFP Ethernet ports, with 350WAC power supply 1 RU, IP Services feature set

Product number	Description
WS-C3850-24S-S	Stackable 24 SFP Ethernet ports, with 350WAC power supply 1 RU, IP Base feature set
WS-C3850-24S-E	Stackable 24 SFP Ethernet ports, with 350WAC power supply 1 RU, IP Services feature set
WS-C3850-12XS-S	Stackable 12 SFP+ Ethernet ports, with 350WAC power supply 1 RU, IP Base feature set
WS-C3850-12XS-E	Stackable 12 SFP+ Ethernet ports, with 350WAC power supply 1 RU, IP Services feature set
WS-C3850-24XS-S	Stackable 24 SFP+ Ethernet ports, with 715WAC power supply 1 RU, IP Base feature set
WS-C3850-24XS-E	Stackable 24 SFP+ Ethernet ports, with 715WAC power supply 1 RU, IP Services feature set
WS-C3850-48XS-S	Standalone, 48 SFP+ and 4 QSFP+ Ethernet ports, with 750WAC front-to-back power supply 1 RU, IP Base feature set
WS-C3850-48XS-E	Standalone, 48 SFP+ and 4 QSFP+ Ethernet ports, with 750WAC front-to-back power supply 1 RU, IP Services feature set
WS-C3850-48XS-F-S	Standalone, 48 SFP+ and 4 QSFP+ Ethernet ports, with 750WAC back-to-front power supply 1 RU, IP Base feature set
WS-C3850-48XS-F-E	Standalone, 48 SFP+ and 4 QSFP+ Ethernet ports, with 750WAC back-to-front power supply 1 RU, IP Services feature set
Cisco Catalyst 3850 bundles	
WS-C3850-24PW-S	Cisco Catalyst 3850 24-port PoE IP Base with 5 access point license
WS-C3850-48PW-S	Cisco Catalyst 3850 48-port PoE IP Base with 5 access point license
WS-C3850-24UW-S	Cisco Catalyst 3850 24 Port UPOE with 5 access point licenses IP Base
WS-C3850-48UW-S	Cisco Catalyst 3850 48 Port UPOE with 5 access point licenses IP Base
WS-C3850-48UW-E	Cisco Catalyst 3850 48 Port UPOE with 5 access point licenses IP Base
WS-C3850-24XUW-S	Cisco Catalyst 3850 24 Port UPOE with 24 100Mbps/1/2.5/5/10 Gbps and 5 access point licenses IP Base
WS-C3850-12X48UW-S	Cisco Catalyst 3850 48 Port UPOE with 12 100Mbps/1/2.5/5/10 Gbps and 5 access point licenses IP Base
WS-C3850-16XS-S	Cisco Catalyst 3850 12 SFP+ port stackable model, with C3850-NM-4-10G module and 350WAC power supply, 1 RU, IP Base feature set
WS-C3850-16XS-E	Cisco Catalyst 3850 12 SFP+ port stackable model, with C3850-NM-4-10G module and 350WAC power supply, 1 RU, IP Services feature set
WS-C3850-32XS-S	Cisco Catalyst 3850 24 SFP+ port stackable model, with C3850-NM-8-10G module and 715WAC power supply, 1 RU, IP Base feature set
WS-C3850-32XS-E	Cisco Catalyst 3850 24 SFP+ port stackable model, with C3850-NM-8-10G module and 715WAC power supply, 1 RU, IP Services feature set
Network modules for the Cisco Catalyst 3850 Series	
C3850-NM-4-10G	4 x Gigabit Ethernet network module spare
C3850-NM-2-10G	4 x Gigabit Ethernet/2 x 10 Gigabit Ethernet network module spare
C3850-NM-BLANK	Network module blank spare
C3850-NM-4-10G	4 x Gigabit Ethernet/4 x 10 Gigabit Ethernet network module spare
C3850-NM-8-10G	8 x Gigabit Ethernet/8 x 10 Gigabit Ethernet network module spare
C3850-NM-2-40G	2 x 40 Gigabit Ethernet network module spare
Software licenses	
C3850-12-S-E	Cisco Catalyst 3850 12-port IP Base to IP Services RTU paper license
C3850-24-L-S	Cisco Catalyst 3850 24-port Switch LAN Base to IP Base RTU paper license
C3850-48-L-S	Cisco Catalyst 3850 48-port Switch LAN Base to IP Base RTU paper license
C3850-24-L-E	Cisco Catalyst 3850 24-port LAN Base to IP Services RTU paper license

Product number	Description
C3850-48-L-E	Cisco Catalyst 3850 48-port LAN Base to IP Services RTU paper license
C3850-24-S-E	Cisco Catalyst 3850 24-port IP Base to IP Services RTU paper license
C3850-48-S-E	Cisco Catalyst 3850 48-port IP Base to IP Services RTU paper license
L-C3850-24-L-S	Cisco Catalyst 3850 24-port LAN Base to IP Base RTU electronic license
L-C3850-48-L-S	Cisco Catalyst 3850 48-port LAN Base to IP Base RTU electronic license
L-C3850-24-L-E	Cisco Catalyst 3850 24-port LAN Base to IP Services RTU electronic license
L-C3850-48-L-E	Cisco Catalyst 3850 48-port LAN Base to IP Services RTU electronic license
L-C3850-24-S-E	Cisco Catalyst 3850 24-port IP Base to IP Services RTU electronic license
L-C3850-48-S-E	Cisco Catalyst 3850 48-port IP Base to IP Services RTU electronic license
L-C3850-12-S-E	Cisco Catalyst 3850 12-port IP Base to IP Services RTU electronic license
Access point licenses	
L-LIC-CT3850-UPG	Primary upgrade license SKU for Cisco 3850 wireless controller (e-delivery)
L-LIC-CT105-1A	1 access point adder license for Cisco IOS Software based wireless controller (e-delivery)
LIC-CT3850-UPG	Primary upgrade license SKU for Cisco 3850 wireless controller (paper license)
LIC-CT105-1A	1 access point adder license for the Cisco IOS Software based wireless controller (paper license)
Power supplies and fans for the Cisco Catalyst 3850 Series	
PWR-C1-350WAC=	350WAC power supply spare
PWR-C1-710WAC=	710WAC power supply spare
PWR-C1-1100WAC=	1100WAC power supply spare
PWR-C1-440WDC=	440WDC power supply spare
PWR-C1-BLANK=	Power supply blank spare
PWR-C3-750WAC-R=	750WAC power supply spare front-to-back airflow for 48XS
PWR-C3-750WAC-F=	750WAC power supply spare back-to-front airflow for 48XS
PWR-C3-750WDC-R=	750WDC power supply spare front-to-back airflow for 48XS
PWR-C3-750WDC-F=	750WDC power supply spare back-to-front airflow for 48XS
FAN-T3-R=	Fan module spare front-to-back airflow for 48XS
FAN-T3-F=	Fan module spare back-to-front airflow for 48XS
C3850-FAN-T3=	Cisco Catalyst 3850 and WLC 5760 Type 1 Fan Module
StackWise-480 and StackPower cables for the Cisco Catalyst 3850 Series	
STACK-T1-50CM=	Cisco StackWise-480 50cm stacking cable spare
STACK-T1-1M=	Cisco StackWise-480 1m stacking cable spare
STACK-T1-3M=	Cisco StackWise-480 3m stacking cable spare
CAB-SPWR-30CM=	Cisco Catalyst 3850 StackPower cable 30cm spare
CAB-SPWR-150CM=	Cisco Catalyst 3850 StackPower cable 150cm spare
Spare power cords for the Cisco Catalyst 3850 Series	
CAB-TA-NA=	AC power cord for Cisco Catalyst 3850 (North America)
CAB-TA-AP=	AC power cord for Cisco Catalyst 3850 (Australia)
CAB-TA-AR=	AC power cord for Cisco Catalyst 3850 (Argentina)
CAB-TA-SW=	AC power cord for Cisco Catalyst 3850 (Switzerland)
CAB-TA-UK=	AC power cord for Cisco Catalyst 3850 (United Kingdom)
CAB-TA-JP=	AC power cord for Cisco Catalyst 3850 (Japan)
CAB-TA-250VAC-JP=	Japan 250VAC power cord for Cisco Catalyst 3850 (Japan)
CAB-TA-EU=	AC power cord for Cisco Catalyst 3850 (Europe)
CAB-TA-IT=	AC power cord for Cisco Catalyst 3850 (Italy)

Product number	Description
CAB-TA-IN=	AC power cord for Cisco Catalyst 3850 (India)
CAB-TA-CN=	AC power cord for Cisco Catalyst 3850 (China)
CAB-TA-DN=	AC power cord for Cisco Catalyst 3850 (Denmark)
CAB-TA-IS=	AC power cord for Cisco Catalyst 3850 (Israel)
CAB-ACBZ-12A=	AC power cord for Cisco Catalyst 3850 (Brazil), 12A/125V BR-3-20 plug up to 12A
CAB-ACBZ-10A=	AC power cord for Cisco Catalyst 3850 (Brazil), 10A/250V BR-3-10 plug up to 10A
CAB-C15-CBN	Cabinet jumper power cord, 250 VAC 13A, C14-C15 connectors
Spare accessory and rack-mount kits for the Cisco Catalyst 3850 Series	
C3850-ACC-KIT=	Accessory kit for Cisco Catalyst 3850 Series
C3850-RAC-KIT=	Rack mount kit for Cisco Catalyst 3850 Series
C3850-4PT-KIT=	Extension rails and brackets for four-point mounting for Cisco Catalyst 3850 Series

Optics compatibility information

The Cisco Catalyst 3850 Series supports a wide range of optics. Because the list of supported optics is updated on a regular basis, consult the tables available here for the latest QSFP+, SFP+, and SFP compatibility information: https://www.cisco.com/en/US/products/tw/modules/ps5455/products_device_support_tables_list.html.

Cisco Capital

Financing to help you achieve your objectives

Cisco Capital® can help you acquire the technology you need to achieve your objectives and stay competitive. We can help you reduce CapEx. Accelerate your growth. Optimize your investment dollars and ROI. Cisco Capital financing gives you flexibility in acquiring hardware, software, services, and complementary third-party equipment. And there's just one predictable payment. Cisco Capital is available in more than 100 countries. [Learn more.](#)



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at <https://www.cisco.com/go/offices>.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: <https://www.cisco.com/go/trademarks>. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (11100)

Printed in USA

C78-72018-30 01/16

© 2016 Cisco and/or its affiliates. All rights reserved. This document is Cisco Public Information.

Page 33 of 38

Handwritten scribbles and marks in the top right corner, possibly including a signature or initials.



Cisco 4000 Series Integrated Services Routers

Cisco® 4000 Series Integrated Services Routers (ISRs) form an intelligent WAN platform that delivers the performance, security, and convergence capabilities that today's branch offices need.

Product Overview

The Cisco 4000 Series Integrated Services Routers (ISR) revolutionize WAN communications in the enterprise branch. With new levels of built-in intelligent network capabilities and convergence, the routers specifically address the growing need for application-aware networking in distributed enterprise sites. These locations tend to have lean IT resources. But they often also have a growing need for direct communication with both private data centers and public clouds across diverse links, including Multiprotocol Label Switching (MPLS) VPNs and the Internet.

The Cisco 4000 Series contains six platforms: the 4451, 4431, 4351, 4331, 4321 and 4221 ISRs (Figure 1).

Figure 1. Cisco 4000 Series Integrated Services Routers



Features and Benefits

Cisco 4000 Series ISRs provide you with Cisco Intelligent WAN (IWAN) software features and a converged branch infrastructure. Along with superior throughput, these capabilities form the building blocks of next-generation branch-office WAN solutions.

Cisco Intelligent WAN (IWAN)

Cisco IWAN is a set of intelligent software services that allow you to reliably and securely connect users, devices, and branch office locations across a diverse set of WAN transport links. IWAN-enabled routers like the 4000 Series dynamically route traffic across the "best" link based on up-to-the-minute application and network conditions for great application experiences. You get tight control over application performance, bandwidth usage, data privacy, and availability of your WAN links—control that you need as your branches conduct greater volumes of mission-critical business.

Cisco Converged Branch Infrastructure

The Cisco 4000 Series ISRs consolidate many must-have IT functions, including network, compute, and storage resources. The high-performance, integrated routers run multiple concurrent IWAN services, including encryption, traffic management, and WAN optimization, without slowing your data throughput. And you can activate new services on demand through a simple licensing change.

Table 1 breaks out many of the features and benefits of the Cisco 4000 Series that create an intelligent WAN and a converged branch infrastructure.

Table 1. Cisco 4000 Series ISR General Feature Highlights

Business Requirement(s)	Feature/Solution
Performance <ul style="list-style-type: none"> Throughput Service reliability 	<ul style="list-style-type: none"> Concurrent software services at speeds up to 2 Gbps. Backplane architecture supports high-bandwidth module-to-module communication at speeds up to 10 Gbps. A distributed multiplane architecture with the industry's first internal service plane. Remote installation of application-aware services, which run identically to their counterparts in dedicated appliances.
Lower WAN expenditures	<ul style="list-style-type: none"> Embedded IWAN solution for creating lower-cost, business-class Internet connections.
Pay-as-you-grow <ul style="list-style-type: none"> Performance upgrade model Investment protection CapEx budget management 	<ul style="list-style-type: none"> Router capacity can be increased with a remote performance-on-demand license upgrade (no hardware upgrade) for exceptional savings.
Superior and secure user application experiences	<ul style="list-style-type: none"> ISR-AX "Application Experience" software bundle with advanced routing and network monitoring services. Dynamic Multipoint VPN (DMVPN), zone-based firewalls, intrusion prevention (Snort and Umbrella Branch) and content management using Cisco Cloud Web Security and OpenDNS protecting data, providing authentication credentials, and enabling transmissions that are not backhauled through the data center. Secure boot feature performs hardware-based authentication of the bootloader software to prevent malicious or unintended software from booting on the system. Code signing verifies digital signatures of executables prior to loading to prevent execution of altered or corrupted code. Hardware authentication protects against hardware counterfeiting by using an on-board tamper-proof silicon, including field-replaceable modules. If authentication fails, the module is not allowed to boot.
IT consolidation, space savings, and improved total cost of ownership (TCO)	<ul style="list-style-type: none"> Single converged branch platform integrates routing, switching, virtual server, storage, security, unified communications, WAN optimization, and performance management tools.
Business continuity and increased resiliency	<ul style="list-style-type: none"> 4400 Series models (4451 and 4431 ISRs) support dual integrated power supplies for backup. The entire 4000 Series supports optional power supply capable of delivering an additional PoE power to endpoints. Defined models provide for a DC power supply. Modular network interfaces with diverse connection options for load-balancing and network resiliency. Modular interfaces with online removal and insertion (OIR) for module upgrades without network disruption. Cisco Unified Survivable Remote Site Telephony (SRST), which serves as a resiliency complement to Cisco Hosted Collaboration Solution (HCS), a Cisco cloud-based UC service. Support for multiple, diverse access links: T1/E1, T3/E3, Serial, xDSL, Gigabit and Ten-Gigabit Ethernet.
Lower telephony costs with VoIP and rich media experiences	<ul style="list-style-type: none"> High-performance analog/digital gateway, allowing VoIP over less expensive Session Initiation Protocol (SIP) trunks. Integrated IP PBX (Cisco Unified Communications Express) and Session Border Controller (Cisco Unified Border Element or CUBE).
Easier manageability and support	<ul style="list-style-type: none"> Single, universal software image for all features and performance-on-demand licensing flexibility. No additional services and support needed for compute and storage. Supported by Cisco and third-party management tools, with programmability and automation.

Platform Architecture

Table 2 lists the primary hardware architectural features and benefits of the Cisco 4000 Series. The routers run modular Cisco IOS® XE Software, widely deployed in the world's most demanding networks. The software's comprehensive portfolio of services spans multiple technology areas, including security, WAN optimization, app and network quality of service (QoS), and embedded management.

Table 2. Architectural Highlights

Architectural Features	Benefits/Description
Multicore processors	<ul style="list-style-type: none"> High-performance multicore processors support high-speed WAN connections. The data plane uses an emulated Flow Processor (FP) that delivers application-specific integrated circuit (ASIC)-like performance that does not degrade as services are added.
Embedded IP, Security (IPsec), VPN hardware acceleration	<ul style="list-style-type: none"> Increases scalability. When combined with an optional Cisco IOS XE Software Security license, enables WAN link security and VPN services.
Integrated Gigabit Ethernet ports	<ul style="list-style-type: none"> The Cisco 4000 Series provides up to four built-in 10/100/1000 Ethernet ports for WAN or LAN. Based on the platform, some of the 10/100/1000 Ethernet ports can support Small Form-Factor Pluggable (SFP)-based connectivity in addition to RJ-45 connections, enabling fiber or copper connectivity. Optionally, depending on the platform, up to 30W PoE+ can be enabled on two of the built-in front panel Gigabit Ethernet interfaces to provide power to external devices such as fourth-generation (4G) LTE routers. An additional dedicated Gigabit Ethernet port is provided for device management.¹
USB-based console access	<ul style="list-style-type: none"> A mini type B USB console port supports management connectivity when traditional serial ports are not available. Traditional console and auxiliary ports are also available.
Optional integrated power supply for distribution of PoE	<ul style="list-style-type: none"> An optional upgrade to the internal power supply provides inline power (802.3af-compliant PoE or 802.3at-compliant PoE+) to optional integrated switch modules. Redundant PoE conversion modules provide an additional layer of fault tolerance.
Optional integrated redundant power supply (RPS)	<ul style="list-style-type: none"> For the 4400 Series, power redundancy is available by installing an optional integrated RPS for decreasing network downtime and protecting the network from power failures. Optional PoE boost mode increases total PoE capacity to up to 1000W.
Cisco Enhanced Services Module (SM-X)	<ul style="list-style-type: none"> Each service-module slot offers high data-throughput capability of up to 10 Gbps toward the system and up to 1 Gbps to other module slots. Support for both single- and double-wide service modules provides flexibility in deployment options. An SM-X slot can be converted into a Network Interface Module (NIM) slot using an optional carrier card. Service modules support online insertion and removal (OIR), avoiding network disruption when installing new or replacement modules.¹
Cisco Network Interface Modules (NIMs)	<ul style="list-style-type: none"> Up to three integrated NIM slots on the Cisco 4000 Series allow for flexible configurations. Each NIM slot offers options of up to two 2-Gbps connections, one toward the route processor and one for direct module-to-module communication. The 4221 ISR has only one 1-Gbps connection to the route processor. NIMs support OIR. Special NIMs add support for solid-state drives (SSDs) and hard disk drives (HDDs).¹
Cisco Integrated Services Card (ISC) slot on motherboard	<ul style="list-style-type: none"> Integrated Services Card natively supports the new Cisco High-Density Packet Voice Digital Signal Processor Modules (PVDM4s), providing greater-density rich-media voice. Each Integrated Services Card slot connects to the system architecture through an up to 2-Gbps link. Future modules can be hosted on the Integrated Services Card slot, improving system functions.
Flash memory support	<ul style="list-style-type: none"> A single flash memory slot is available to support high-speed storage densities, upgradable to up to 32 GB. The 4221 ISR ships with a fixed 8 GB flash. Two USB type A 2.0 ports provide capabilities for convenient storage.¹
DRAM	<ul style="list-style-type: none"> For the 4400 Series ISRs, the default control-plane memory is 4 GB, upgradable to 16 GB to provide additional scalability for control-plane features. The default data-plane memory is 2 GB. For the 4300 Series ISRs, the default memory is 4 GB, upgradable to 16 GB (only 8 GB for the 4321) to provide additional scalability. The 4200 Series comes with 4 GB fixed DRAM.

¹ Not supported on the 4221 model.

² The 4221 model supports shared console and auxiliary ports.

³ Unified Communications (UC) License and Unified Communications NIMs are not supported on the ISR4221.

Managing Your Cisco 4000 Series ISRs

The Cisco network management applications listed at the top of Table 3 are standalone products that can be purchased or downloaded to manage your Cisco network devices. The applications are built specifically for the different operational phases; select those that best fit your needs. Those management capabilities listed under the "Cisco IOS Software XE Embedded Management" heading are directly integrated into the routers' software operating system.

Table 3. Network Management Solutions

Operational Phase	Application	Description
Device staging and configuration	WebUI	<ul style="list-style-type: none"> A GUI-based device-management tool for Cisco IOS and Cisco IOS XE Software-based access routers. This tool simplifies routing, firewall, VPN, unified communications, and WAN and LAN configuration through easy-to-use wizards.
Network-wide deployment, configuration, monitoring, and troubleshooting	Cisco Prime® Infrastructure	<ul style="list-style-type: none"> Offers comprehensive lifecycle management of wired and wireless access, campus, and branch-office networks, rich visibility into end-user connectivity, and application performance assurance. Provides wired lifecycle functions such as inventory, configuration, and image management; automated deployment; compliance reporting; integrated best practices; and reporting.
Staging, deployment, and changes to configuration and image files	Cisco Configuration Engine	<ul style="list-style-type: none"> A secure network management product that provides zero-touch image and configuration distribution through centralized, template-based management.
Context-aware security configuration and monitoring	Cisco Prime Security Manager	<ul style="list-style-type: none"> Management tool for configuring and managing context-aware security. The application supports both single- and multi-device manager form factors. Provides the ability to write and enforce the granular context-aware security policies.
Cisco Wide Area Application Service (WAAS) management	Cisco WAAS Central Manager	<ul style="list-style-type: none"> The management tool for the WAAS1⁴ (WAN optimization and application acceleration) integrated service. It provides a centralized mechanism for configuring WAAS features, reporting, and monitoring.

Cisco IOS XE Software Embedded Management Capabilities	
Feature	Description
Cisco IOS Embedded Event Manager (EEM)	<ul style="list-style-type: none"> A distributed and customized approach to event detection and recovery. Offers the ability to monitor events and take informational, corrective, or any desired EEM action when the monitored events occur or when a threshold is reached.
Cisco IOS XE IP Service-Level Agreements (IP SLAs)	<ul style="list-style-type: none"> Helps assure the performance of new business-critical IP applications as well as IP services that use data and voice in an IP network.
SNMP, Remote Monitoring (RMON), Syslog, NetFlow, IP Flow Information Export (IPFIX)	<ul style="list-style-type: none"> Network monitoring and accounting tools.

Cisco ONE Software

Cisco ONE™ Software offers a valuable and flexible way to buy software for the WAN, access, and data center domains. At each stage in the product lifecycle, Cisco ONE Software helps make buying, managing, and upgrading your network and infrastructure software easier. Cisco ONE Software provides:

- Flexible licensing models to smoothly distribute customers' software spending over time.
- Investment protection for software purchases through software services-enabled license portability.
- Access to updates, upgrades, and new technology from Cisco through Cisco® Software Support Services (SWSS)

⁴ It is suggested to use AppNav with an external WAAS device for the 4221 model.

Cisco ONE for WAN gives organizations broad capabilities for branch offices and the enterprise edge. Cisco ONE Foundation for WAN connects and secures your branch office while optimizing for cost. Cisco ONE WAN Collaboration integrates voice and video into your branch office and network edge.

Product Specifications

Table 4 lists the general product specifications for the Cisco 4000 Series routers.

Table 4. Specifications of Cisco 4000 Series Integrated Services Routers

Technical Specifications	Cisco 4451	Cisco 4431	Cisco 4351	Cisco 4331	Cisco 4321	Cisco 4221
Aggregate Throughput	1 Gbps to 2 Gbps	500 Mbps to 1 Gbps	200 Mbps to 400 Mbps	100 Mbps to 300 Mbps	50 Mbps to 100 Mbps	35 Mbps to 75 Mbps
Total onboard WAN or LAN (10/100/1000) ports	4	4	3	3	2	2
RJ-45-based ports	4	4	3	2	2	2
SFP-based ports	4	4	2	2	1	1
Enhanced service-module slots	2	0	3	1	0	0
Doublewide service-module slots	1 (assumes no singlewide SM-X modules installed)	0	1 (assumes no singlewide SM-X modules installed)	0	0	0
NIM slots	3	3	3	2	2	2
QRR (all I/O modules)	Yes	Yes	Yes	Yes	Yes	No
Onboard ISC slot	1	1	1	1	1	No
Default memory (double-data-rate 3 (DDR3) error-correction-code (ECC) DRAM (Combined control/services/data planes)	NA	NA	4 GB	4 GB	4 GB	4 GB
Maximum memory DDR3 ECC DRAM (Combined control/services/data planes)	NA	NA	16 GB	16 GB	8 GB	4 GB
Default memory DDR3 ECC DRAM (data plane)	2 GB	2 GB	NA	NA	NA	NA
Maximum memory DDR3 ECC DRAM (data plane)	2 GB	2 GB	NA	NA	NA	NA
Default memory DDR3 ECC DRAM (control/services plane)	4 GB	4 GB	NA	NA	NA	NA
Maximum memory DDR3 ECC DRAM (control/services plane)	16 GB	16 GB	NA	NA	NA	NA
Default flash memory	8 GB	8 GB	4 GB	4 GB	4 GB	8 GB
Maximum flash memory	32 GB	32 GB	16 GB	16 GB	8 GB	8 GB
External USB 2.0 slots (type A)	2	2	2	1	1	1

Technical Specifications	Cisco 4451	Cisco 4431	Cisco 4351	Cisco 4331	Cisco 4321	Cisco 4221
USB console port - type B mini (up to 115.2 kbps)	1	1	1	1	1	0
Serial console port - RJ45 (up to 115.2 kbps)	1	1	1	1	1	1 (combo CONAUX port)
Serial auxiliary port - RJ45 (up to 115.2 kbps)	1	1	1	1	1	1 (combo CONAUX port)
Power-supply options	Internal: AC, DC (roadmap) and PoE	Internal: AC, DC, and PoE	Internal: AC, DC (roadmap) and PoE	Internal: AC and PoE	External: AC and PoE	External AC only
Redundant power supply	Internal: AC, DC (roadmap) and PoE	Internal: AC, DC, and PoE	N/A	N/A	N/A	NA
Power Specifications						
AC input voltage	100 to 240 VAC autoranging	100 to 240 VAC autoranging	100 to 240 VAC autoranging	100 to 240 VAC autoranging	100 to 240 VAC autoranging	100 to 240 VAC autoranging
AC input frequency	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz
AC input current range, AC power supply (maximum)	7.1 to 3.0A	3 to 1.3A	7.1 to 3.0A	3 to 1.3A	1.5 to 0.6A	1.5 to 0.6A
AC input surge current	<50 A	60 A peak and less than 5 Arms per half cycle	60 A peak and less than 12 Arms per half cycle	60 A peak and less than 5 Arms per half cycle	90 A peak and less than 3 Arms per half cycle	90 A peak and less than 3 Arms per half cycle
Typical power (no modules) (watts)	158	65	48	42	38	24
Maximum power with AG power supply (watts)	450 (no PoE)	250 (no PoE)	430	250	125	90
Maximum power with PoE power supply (platform only) (watts)	1000 with PoE redundant 1450 with PoE boost no redundancy	500 with PoE redundant 1000 with PoE boost no redundancy	990	530	260	NA (no PoE support)
Maximum endpoint PoE power available from PoE power supply (watts)	500 W with optional redundancy	250 W with optional redundancy	500	250	120	NA (no PoE support)
Maximum endpoint PoE power capacity with PoE boost (watts)	950 W no redundancy	500 W no redundancy	N/A	N/A	N/A	NA (no PoE support)
Sizes and Weights						
Dimensions (H x W x D)	3.5 x 17.25 x 18.5 in (88.9 x 438.15 x 469.9 mm)	1.73 x 17.25 x 19.97 in (43.9 x 438.15 x 507.2 mm)	3.5 x 17.25 x 18.5 in (88.9 x 438.15 x 469.9 mm)	1.75 x 17.25 x 17.25 in (44.45 x 438.15 x 438.15 mm)	1.75 x 14.55 x 11.60 in (44.55 x 369.57 x 294.64 mm)	1.72 x 12.7 x 10 in (44.7 x 322.6 x 254 mm)
External Power Supply Dimensions (H x W x D)	N/A	N/A	N/A	N/A	2.95 x 1.18 x 6.10 in (75 x 30 x 155 mm)	37 x 73 x 152 mm (Philhong mfg PN: AA90U-120A-R) 36.5 x 67 x 155 mm (Delta mfg PN: ADP90GR-BA)
Shipping Box Dimensions (H x W x D)	9.75 x 22.25 x 26 in (24.76 x 56.51 x 66.04 mm)	7.88 x 22.25 x 26.75 in (200.2 x 565.1 x 730.25 mm)	9.75 x 22.25 x 26 in (24.76 x 56.51 x 66.04 mm)	7.125 x 22.75 x 22.5 in (180.98 x 577.85 x 571.5 mm)	7.0 x 21.5 x 16.125 in (177.8 x 546.1 x 409.8 mm)	4.13 x 18.25 x 12.94 in (104.9 x 463.6 x 326.7 mm)
Rack height	2 rack units (2RU)	1 rack unit (1RU)	2 rack units (2RU)	1 rack unit (1RU)	1 rack unit (1RU)	1 rack unit (1RU)

Technical Specifications	Cisco 4451	Cisco 4431	Cisco 4351	Cisco 4331	Cisco 4321	Cisco 4221
Rack-mount 19in. (48.3 cm) EIA	Included	Included	Included	Included	Included	Optional
Rack-mount 23in. (58.4 cm) EIA	Optional	Optional	Optional	Optional	N/A	N/A
Wall-mount	No	Yes	No	Yes	Mounting holes under chassis	Yes
Weight with 1,450-WAC power supply (no modules)	28.8 lb (13.1 kg)	N/A	28.8 lb (13.1 kg)	N/A	N/A	N/A
Weight with 1,000-WAC power supply* 1 PoE power module (no other modules)	30.6 lb (13.9 kg)	N/A	29.0 lb (13.2 kg)	N/A	N/A	N/A
Weight with AC PS (no modules)	N/A	18.5 lb (8.4 kg)	N/A	13.5 lb (6.2 kg)	7.7 lb (3.5 kg) + 1.2 lb (0.66 kg) external PS	7.1 lb (3.22 kg)
Weight with AC PS with PoE (no modules)	N/A	18.6 lb (8.4 kg)	N/A	14.1 lb (6.4 kg)	N/A	N/A
Typical weight (fully loaded with modules)	42.7 lb (19.4 kg)	22.4 lb (10.2 kg)	37.7 lb (17.1 kg)	16.1 lb (7.3 kg)	9.14 lb (4.2 kg) + 1.2 lb (0.66 kg) external PS	8.11 lb (3.68 kg)
Packaging Weight	6.4 lb (2.9 kg)	5.9 lb (2.7 kg)	6.4 lb (2.9 kg)	4.9 lb (2.1 kg)	2.2 lb (1 kg)	1.28 lb (0.58 kg)
Airflow	I/O side to bezel side	I/O side to bezel side	I/O side to bezel side	I/O side to bezel side	Right I/O side to Left I/O side	I/O side to bezel side
MTBF (Hours)	480770	512970	566310	587250	593270	593270
Environmental Specifications						
Operating Conditions						
Temperature	32° to 104°F (0° to 40°C)	32° to 104°F (0° to 40°C)	32° to 104°F (0° to 40°C)	32° to 104°F (0° to 40°C)	32° to 104°F (0° to 40°C)	32° to 104°F (0° to 40°C)
Altitude (China)	0 – 8,560 ft. (0 – 2,000 m)	0 – 6,560 ft. (0 – 2,000 m)	0 – 6,560 ft. (0 – 2,000 m)	0 – 6,560 ft. (0 – 2,000 m)	0 – 6,560 ft. (0 – 2,000 m)	0 – 6,560 ft. (0 – 2,000 m)
Altitude (Rest of the world)	0 – 10,000 ft. (0 – 3,050 m)	0 – 10,000 ft. (0 – 3,050 m)	0 – 10,000 ft. (0 – 3,050 m)	0 – 10,000 ft. (0 – 3,050 m)	0 – 10,000 ft. (0 – 3,050 m)	0 – 10,000 ft. (0 – 3,050 m)
Relative humidity	5% to 85%	5% to 85%	5% to 85%	5% to 85%	5% to 85%	5% to 85%
Short-term humidity	5% to 90%, not to exceed 0.024 kg water/kg of dry air	5% to 90%, not to exceed 0.024 kg water/kg of dry air	5% to 90%, not to exceed 0.024 kg water/kg of dry air	5% to 90%, not to exceed 0.024 kg water/kg of dry air	5% to 90%, not to exceed 0.024 kg water/kg of dry air	5% to 90%, not to exceed 0.024 kg water/kg of dry air
Acoustics: Sound pressure (Typical/maximum)	50.6/73.1 dBA	54.3/79.1 dBA	50.6/73.1 dBA	52.8/74.8 dBA	24.2/51.9 dBA	26.5/53 dBA
Acoustics: Sound power (Typical/maximum)	58.2/78.8 dBA	57.2/80.8 dBA	58.2/78.8 dBA	61.2/81.6 dBA	31.9/59.9 dBA	41/68 dBA
Nonoperating Conditions						
Temperature	-40° to 158°F (-40° to 70°C)	-40° to 158°F (-40° to 70°C)	-40° to 158°F (-40° to 70°C)	-40° to 158°F (-40° to 70°C)	-40° to 158°F (-40° to 70°C)	-40° to 158°F (-40° to 70°C)
Relative humidity	5% to 95%	5% to 95%	5% to 95%	5% to 95%	5% to 95%	5% to 95%
Altitude	15,584 ft. (4750m)	15,584 ft. (4750m)	15,584 ft. (4750m)	15,584 ft. (4750m)	15,584 ft. (4750m)	15,584 ft. (4750m)

Technical Specifications	Cisco 4451	Cisco 4431	Cisco 4351	Cisco 4331	Cisco 4321	Cisco 4221	
Regulatory and Compliance							
Safety	UL 60950-1 CAN/CSA C22.2 No. 60950-1 EN 60950-1 AS/NZS 60950-1 IEC 60950-1	UL 60950-1 CAN/CSA C22.2 No. 60950-1 EN 60950-1 AS/NZS 60950-1 IEC 60950-1 GB-4943	UL 60950-1 CAN/CSA C22.2 No. 60950-1 EN 60950-1 AS/NZS 60950-1 IEC 60950-1 GB-4943	UL 60950-1 CAN/CSA C22.2 No. 60950-1 EN 60950-1 AS/NZS 60950-1 IEC 60950-1 GB-4943	UL 60950-1 CAN/CSA C22.2 No. 60950-1 EN 60950-1 AS/NZS 60950-1 IEC 60950-1 GB-4943	UL 60950-1 CAN/CSA C22.2 No. 60950-1 EN 60950-1 AS/NZS 60950-1 IEC 60950-1 GB-4943	UL 60950-1 CAN/CSA C22.2 No. 60950-1 EN 60950-1 AS/NZS 60950-1 IEC 60950-1 GB-4943
EMC	47 CFR, Part 15 ICES-003 Class A EN55022 Class A CISPR22 Class A AS/NZS 3548 Class A VCCI V-3 CNS 13438 EN 300-386 EN 61000 (Immunity) EN 55024, CISPR 24 EN50082-1 S/D/EM/ KN22, KN24	47 CFR, Part 15 ICES-003 Class A EN55022 Class A CISPR22 Class A AS/NZS 3548 Class A VCCI V-3 CNS 13438 EN 300-386 EN 61000 (Immunity) EN 55024, CISPR 24 EN50082-1 KN22, KN24	47 CFR, Part 15 ICES-003 Class A EN55022 Class A CISPR22 Class A AS/NZS 3548 Class A VCCI V-3 CNS 13438 EN 300-386 EN 61000 (Immunity) EN 55024, CISPR 24 EN50082-1 KN22, KN24	47 CFR, Part 15 ICES-003 Class A EN55022 Class A CISPR22 Class A AS/NZS 3548 Class A VCCI V-3 CNS 13438 EN 300-386 EN 61000 (Immunity) EN 55024, CISPR 24 EN50082-1 KN22, KN24	ICES-003 Class A EN55022 Class A CISPR22 Class A AS/NZS 3548 Class A VCCI V-3 CNS 13438 EN 300-386 EN 61000 (Immunity) EN 55024, CISPR 24 EN50082-1 KN22, KN24	ICES-003 Class A EN55022 Class A CISPR22 Class A AS/NZS 3548 Class A VCCI V-3 CNS 13438 EN 300-386 EN 61000 (Immunity) EN 55024, CISPR 24 EN50082-1 KN22, KN24	
Telecom	T1 IC CS-03:2004 TIA-968-B:2009 HKTA 2028:2010 HKTA 2017:2010 HKTA 2015: 2006 G.703:2001 ID0002:2007 IS6100:2004 DSPR Gray Book:2000 DSPR Technical Condition: 2004 E1 AS/ACIF S018: 2001 AS/ACIF S038: 2001 G.703:2001 TBR 4:1995 TBR 12:1993 TBR 13:1996 RRA 2009-38 (RRL 2005-96) IDA TS DLCN:2011 IDA TS ISDN PRA:2005 IS6100: 2004 PTC 220:2008 Ethernet IEEE 802.3 ANSA X3.263	T1A-968-B ANSI T1.101 ITU-T G.823, G.824 IEEE 802.3 RTTE Directive Homologation requirements vary by country and interface type. For specific country information, refer to the online approvals data base at https://www.cisco.com/	T1A-968-B ANSI T1.101 ITU-T G.823, G.824 IEEE 802.3 RTTE Directive Homologation requirements vary by country and interface type. For specific country information, refer to the online approvals data base at https://www.cisco.com/	T1A-968-B ANSI T1.101 ITU-T G.823, G.824 IEEE 802.3 RTTE Directive Homologation requirements vary by country and interface type. For specific country information, refer to the online approvals data base at https://www.cisco.com/	T1A-968-B ANSI T1.101 ITU-T G.823, G.824 IEEE 802.3 RTTE Directive Homologation requirements vary by country and interface type. For specific country information, refer to the online approvals data base at https://www.cisco.com/	T1A-968-B ANSI T1.101 ITU-T G.823, G.824 IEEE 802.3 RTTE Directive Homologation requirements vary by country and interface type. For specific country information, refer to the online approvals data base at https://www.cisco.com/	T1A-968-B ANSI T1.101 ITU-T G.823, G.824 IEEE 802.3 RTTE Directive Homologation requirements vary by country and interface type. For specific country information, refer to the online approvals data base at https://www.cisco.com/

20170606 PM 17:41:14

Technical Specifications	Cisco 4451	Cisco 4351	Cisco 4331	Cisco 4221
Protocols IPv4, IPv6, static routes, Routing Information Protocol Versions 1 and 2 (RIP and RIPv2), Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP), Border Gateway Protocol (BGP), BGP Router Reflector, Intermediate System-to-Intermediate System (IS-IS), Multicast Internet Group Management Protocol Version 3 (IGMPv3), Protocol Independent Multicast sparse mode (PIM SM), PIM Source-Specific Multicast (SSM), Resource Reservation Protocol (RSVP), Cisco Discovery Protocol, Encapsulated Remote Switched Port Analyzer (ERSPAN), Cisco IOS IP Service-Level Agreements (IPSLA), Call Home, Cisco IOS Embedded Event Manager (EEM), Internet Key Exchange (IKE), access control lists (ACL), Ethernet Virtual Connections (EVC), Dynamic Host Configuration Protocol (DHCP), Frame Relay (FR), DNS, Locator ID Separation Protocol (LISP), Overlay Transport Virtualization (OTV), ³ Hot Standby Router Protocol (HSRP), RADIUS, authentication, authorization, and accounting (AAA), Application Visibility and Control (AVC), Distance Vector Multicast Routing Protocol (DVMRP), IPv4-to-IPv6 Multicast, MPLS, Layer 2 and Layer 3 VPN, IPsec, Layer 2 Tunneling Protocol Version 3 (L2TPv3), Bidirectional Forwarding Detection (BFD), IEEE 802.1ag, and IEEE 802.3ah				
Encapsulations Generic routing encapsulation (GRE), Ethernet, 802.1q VLAN, Point-to-Point Protocol (PPP), Multilink Point-to-Point Protocol (MLPPP), Frame Relay, Multilink Frame Relay (MLFR) (FR-15 and FR-16), High-Level Data Link Control (HDLC), Serial (RS-232, RS-449, X.21, V.35, and EIA-530), and PPP over Ethernet (PPPoE)				
Traffic management CoS, Class-Based Weighted Fair Queuing (CBWFQ), Weighted Random Early Detection (WRED), Hierarchical CoS, Policy-Based Routing (PBR), Performance Routing (PIR), and Network-Based Application Recognition (NBAR)				
Cryptographic algorithms Encryption: DES, 3DES, AES-128 or AES-256 (in CBC and GCM modes); Authentication: RSA (748/1024/2048 bit), ECDSA (256/384 bit); Integrity: MD5, SHA, SHA-256, SHA-384, SHA-512				

Services Plane: Enabling the Branch-in-a-Box

All Cisco 4000 Series ISRs contain processing cores built in as standard to allow full-featured services to run on board. This includes the full-featured Cisco WAAS engine that provides application acceleration and highly responsive virtual desktop experience. The technology is known as Cisco Service Containers, and it uses a standard hypervisor to allow x64-based applications to run.

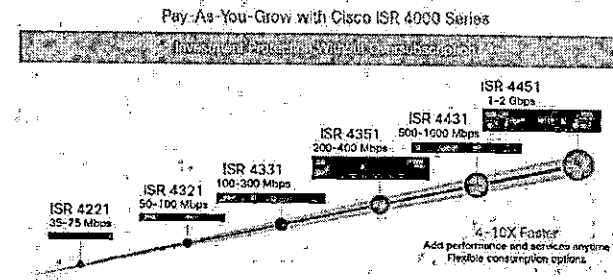
The 4000 Series routers can be fitted with Solid-State Drives (SSD) and server cards for local storage and computing capability. The Cisco UCS® E-Series server cards are available with 8-core Intel® Xeon® processors with up to 48 GB of high-speed DDR3 memory and three drives built in, offering RAID 0, 1, and 5. This immense amount of compute power can eliminate the need for any dedicated servers at branch sites. Cisco UCS E-Series cards can be configured and managed using VMware vCenter and pooled with data center compute resources.

Product Performance and Scalability

The Cisco 4000 Series is built on a multicore CPU architecture. It runs modular Cisco IOS XE Software, which allows the platform to use to full advantage a distributed multicore architecture. The architecture of the Cisco 4000 Series separates control- and data-plane operations and integrates an industry-first services plane. This design delivers full-featured integrated services up to Layer 7 at high performance, with the ability to deliver application-aware network services while maintaining a stable platform and a high level of performance during periods of heavy network traffic.

The 4000 Series consists of three subseries of routers – the 4400 Series, the 4300 Series, and the 4200 Series – whose performance levels are represented in Figure 2.

Figure 2. Cisco 4000 Series ISRs Performance Comparison



Throughout the 4000 Series, all platforms come with fixed maximum performance levels. One fixed base performance level is delivered as the factory default, with an optional performance-on-demand license to increase the base forwarding throughput. This scenario enables deployment in high-speed WAN environments through performance-on-demand licensing to double or, for one of the platforms, triple the router capacity without any hardware upgrades.

All 4000 Series platforms have their fixed performance levels set well within actual capacity, with the result that performance does not necessarily degrade when a service is added to the configuration. This setup provides a deterministic performance, eliminating a network administrator's guesswork when planning for new services.

For a more detailed document on 4000 Series performance and platform scalability, refer to the white paper at <https://www.cisco.com/c/en/us/products/collateral/routers/4000-series-integrated-services-routers-isr/white-paper-c11-734550.html>.

Interfaces and Modules Support

The Cisco 4000 Series Integrated Services Routers (ISRs) are modular routers with LAN and WAN connectivity. The routers provide for network interface module (NIM) slots and enhanced service module (SM-X) slots, offering a rich set of modules, such as LAN, WAN and wireless interfaces, plus a range of compute engines for embedded services.

For the complete list of modules supported on the 4000 Series, refer to the Interfaces and Modules data sheet at <https://www.cisco.com/c/en/us/products/routers/4000-series-integrated-services-routers-isr/relevant/interfaces-and-modules.html>.

Support for Intelligent WAN

The 4000 Series is optimized for Cisco Intelligent WAN. For enterprises, this means that business-critical applications run faster, with more reliability and reduced operational expenditures (OpEx). The Intelligent WAN achieves this by giving all branches and data centers the ability to monitor, control, move, and report on streams of application data, such as specific web (HTTP) traffic. The 4000 Series has deep packet inspection capability and can accurately identify and control thousands of different applications, including custom-in-house enterprise applications.

³ Supported only on the 4451 for bandwidths less than 100 Mbps.

The 4000 Series with Intelligent WAN can pay for itself in WAN cost savings within months, and the ongoing deep application visibility and reporting will continue to provide valuable application, site, and user statistics to better manage the rollout of new sites or applications.

The benefits are immense:

1. Business-critical applications no longer have to contend with each other or with traffic that should be served on a best effort basis.
2. The enterprise network becomes more reliable because multiple paths can be used.
3. Costs are greatly reduced because dual MPLS links can be replaced with a mix of MPLS and Internet.
4. The time required to bring up new remote sites is dramatically reduced because the Intelligent WAN supports rapidly deployed DSL and 3G/4G LTE connections as easily as MPLS.
5. Security is assured across these connections using a zero-touch secure VPN technology used by governments and finance organizations worldwide.

From a platform perspective, the 4000 Series has the following:

1. Separate control and data planes for prevention of denial-of-service (DoS) attacks, with intrusion prevention system (IPS) and firewall capability built in.
2. Software-as-a-service (SaaS) applications can have content locally cached. The caching is automatic and peers directly with Akamai technology to obtain intelligence.
3. Application performance speed is greatly increased using built-in application acceleration technology that can locally cache at a byte level.

Support for Data Modeling

Enterprises and service providers wish to drive down the operational cost (OpEx) of their networks and increase the agility and speed with which they deliver new services, furthered by investments in Software-Defined Networking (SDN) and Network Functions Virtualization (NFV). Cisco routers provide support for Netconf and YANG data modeling, with increasing model coverage in successive releases.

Cisco IOS Software Licensing and Packaging

Universal Cisco IOS XE Image

A single Cisco IOS XE Universal Image encompassing all functions is delivered with the platform. Advanced features can be enabled simply by activating a software license on the Universal Image. Technology packages and feature licenses, enabled through right-to-use licenses, simplify software delivery and decrease the operational costs of deploying new features.

Four major technology licenses are available on the Cisco 4000 Series; these licenses can be activated through the Cisco software activation process identified at <https://www.cisco.com/go/ta>. The following licenses are available:

- IP Base: This technology package is available as the default.
- Application Experience (APPX): This license includes data and application performance features.
- Unified Communications (UC):⁶ This license includes voice features.

⁶ Unified Communications is not supported by ISR4221

- Security (SEC) or Security with No Payload Encryption (SEC-NPE): This license includes features for securing network infrastructure.

The Cisco 4000 Series has a performance-on-demand license to increase the base forwarding throughput with no hardware changes. Also present is the High Security (HSEC) license, which removes the curtailment enforced by the U.S. government export restrictions on the encrypted tunnel count and encrypted throughput. The HSECK9 license is a separately required license for a feature to have full crypto functionality. Without the HSECK9 license, only 225 secure tunnels and 85 Mbps of crypto bandwidth would be available.

For additional information and details about Cisco IOS Software licensing and packaging on the Cisco 4000 Series, please visit

<https://www.cisco.com/c/en/us/td/docs/routers/access/4400/software/configuration/guide/isr4400swcfg.pdf>.

Cisco 4000 Series Bundles

Cisco 4000 Series routers are available in several attractive bundles. The AX bundles integrate Cisco Wide Area Application Services (WAAS), Security (SEC), and Data (DATA) licenses into a single bundle that is simple to order, configure, and deploy. For customers who are also interested in voice along with all of these features, AXV presents an attractive option. See Table 5 for details.

Table 5. Cisco 4000 Series Feature Bundles

Bundles	Features
Application Experience with Voice (AXV)	AX + Voice
Voice with Security (VSEC) ⁷	Voice + Security
Application Experience (AX)	IP Base + Security + advanced networking protocols: L2TPv3, BFD, MPLS, VRF, VXLAN ⁷ (bandwidth less than 100 Mbps) Application Experience: PIRv3, WAAS with AppNav, NBAR2, AVC, IPSLA Hybrid Cloud Connectivity: UISP, OTV5 (for bandwidth less than 100 Mbps), Virtual Private LAN Services (VPLS), Ethernet over MPLS Intelligent web caching: Akamai Connect
Voice (V)	IP Base + Unified Communications: Cisco Unified Communications Manager Express, Survivable Remote Site Telephony (SRST), CUBE
Security (SEC)	IP Base + Advanced Security: Zone-based firewall, IPsec VPN, EzVPN, Dynamic Multipoint VPN (DMVPN), FlexVPN

Note: The 4221/K9 does not support UC (voice). Hence, there are no V, VSEC, or AXV bundles for the 4221/K9 model.

More information on ISR AX bundles is available at <https://www.cisco.com/go/ex>.

A pay-as-you-grow licensing model lets you increase the performance level for the platforms from the base level to a higher level. So you can purchase at an attractive entry-level price point and increase the performance level as your business demand grows. Table 6 describes the performance licenses.

Table 6. Cisco 4000 Series Performance Licenses

Platform	Performance On-Demand License	Features
ISR4451	FL-44-PERF-K9	Increases the performance from base performance 1 Gbps to 2 Gbps
ISR4431	FL-44-PERF-K9	Increases the performance from base performance 500 Mbps to 1 Gbps
ISR4351	FL-4350-PERF-K9	Increases the performance from base performance 200 Mbps to 400 Mbps
ISR4331	FL-4330-PERF-K9	Increases the performance from base performance 100 Mbps to 300 Mbps

⁷ Supported only on the 4451 model

Platform	Performance-on-Demand License	Features
ISR4321	FL-4320-PERF-K9	Increases the performance from base performance 50 Mbps to 100 Mbps
ISR4221	FL-4220-PERF-K9	Increases the performance from base performance 35 Mbps to 75 Mbps

Ordering Information

The Cisco 4000 Series ISRs are orderable and shipping. To place an order, refer to Table 7 and visit the [Cisco Ordering Home Page](#).

Table 7. Cisco 4000 Series Ordering Information

Product Name	Product Description
ISR4451-K/K9	4451 ISR with 4 onboard GE, 3 NIM slots, 1 ISC slot, 2 SM slots, 8 GB flash memory default, 2 GB DRAM default (data plane), 4 GB DRAM default (control plane)
ISR4431/K9	4431 ISR with 4 onboard GE, 3 NIM slots, 1 ISC slot, 8 GB flash memory default, 2 GB DRAM default (data plane), 4 GB DRAM default (control plane)
ISR4351/K9	4351 ISR with 3 onboard GE, 3 NIM slots, 1 ISC slot, 2 SM slots, 4 GB flash memory default, 4 GB DRAM default
ISR4331/K9	4331 ISR with 3 onboard GE, 2 NIM slots, 1 ISC slot, 1 SM slot, 4 GB flash memory default, 4 GB DRAM default
ISR4321/K9	4321 ISR with 2 onboard GE, 2 NIM slots, 1 ISC slot, 4 GB flash memory default, 4 GB DRAM default
ISR4221/K9	4221 ISR with 2 onboard GE, 2 NIM slots, 1 ISC slot, 8 GB flash memory default, 4 GB DRAM default

[Cisco ONE Software for WAN](#) is available for the ISR 4000.

Cisco ONE Software offers a complete solution that delivers an optimal experience over any connection while helping you get the most from your WAN investment with secure, fault-tolerant connectivity.

Benefits:

- Connect branch offices and your campus securely at an optimal cost by improving application performance through application protocol acceleration and optimization techniques that offload the WAN.
- Integrate voice and video across branch offices and your campus to increase productivity.

For ordering information for Cisco ONE Software for the ISR 4000, go to <https://www.cisco.com/c/en/us/products/software/one-wan/wan-part-numbers.html>.

For additional product numbers, including the Cisco 4000 Series bundle offerings, please contact your local Cisco account representative. To place an order, visit the [Cisco Ordering Home Page](#). To download software, visit the [Cisco Software Center](#).

Integrated Services Router Migration Options

The Cisco 4000 Series is included in the standard Cisco Technology Migration Program (TMP). Refer to <https://www.cisco.com/go/tmp> and contact your local Cisco account representative for program details.

Warranty Information

The Cisco 4000 Series Integrated Services Routers have a 90-day limited liability warranty.

Cisco and Partner Services for the Branch Office

Services from Cisco and our certified partners help you transform the branch-office experience and accelerate business innovation and growth. We have the expertise to create a clear, replicable, optimized branch-office footprint across technologies. Planning and design services align technology with your business goals and can increase deployment efficiency. Technical services help you improve operational efficiency, save money, and mitigate risk. Optimization services help you continuously improve performance and succeed with new technologies. For more information, please visit <https://www.cisco.com/go/services>.

Cisco Smart Net Total Care™ technical support for the Cisco 4000 Series is available on a one-time or annual contract basis. Support options range from help-desk assistance to proactive, onsite consultation. All support contracts include:

- Major Cisco IOS Software updates for protocol, security, bandwidth, and feature improvements
- Full access rights to Cisco.com technical libraries for technical assistance, electronic commerce, and product information
- Access 24 hours a day to the industry's largest dedicated technical support staff

Cisco Capital

Financing to Help You Achieve Your Objectives

Cisco Capital® can help you acquire the technology you need to achieve your objectives and stay competitive. We can help you reduce CapEx. Accelerate your growth. Optimize your investment dollars and ROI. Cisco Capital financing gives you flexibility in acquiring hardware, software, services, and complementary third-party equipment. And there's just one predictable payment. Cisco Capital is available in more than 100 countries. [Learn more](#).

For More Information

For more information about the Cisco 4000 Series, visit <https://www.cisco.com/go/isr4k> or contact your local Cisco account representative.



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at <https://www.cisco.com/go/offices>.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: <http://www.cisco.com/go/trademarks>. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (111070)

Printed in USA

© 2017 Cisco and/or its affiliates. All rights reserved. This document is Cisco Public Information.

C78-73252-18 08/17

Page 14 of 14

0000137

SECRET

SECRET





Cisco RV320 Dual Gigabit WAN VPN Router

Product Overview

Network connectivity is at the heart of every small business, and secure access, firewall protection, and high performance are the cornerstones of every Cisco® Small Business RV Series Router. The Cisco RV320 Dual Gigabit WAN VPN Router, now with web filtering, is no exception. With an intuitive user interface, the Cisco RV320 enables you to be up and running in minutes. The Cisco RV320 provides reliable, highly secure access connectivity for you and your employees that is so transparent you will not know it is there.

Figure 1. Cisco RV320 Dual Gigabit WAN VPN Router



Features and Benefits

- New model with web filtering to guard against malicious or non-work-related websites.
- Dual Gigabit Ethernet WAN ports allow load balancing and business continuity.
- Affordable, high-performance Gigabit Ethernet ports enable rapid transfer of large files, supporting multiple users.
- Dual USB ports support a 3G/4G modem or flash drive. The WAN can also fail over to the 3G/4G modem connected to the USB port.
- SSL VPN and site-to-site VPN enable highly secure connectivity, making the Cisco RV320 perfect for remote employees and multiple offices.
- Stateful packet inspection (SPI) firewall and hardware encryption provide strong security.
- Easy-to-use wizard-based configuration tools can be used to establish network connectivity and manage security.

Your business and your employees are exposed to phishing, key loggers, spyware, drive-by malware, and other online threats. With the new RV320 with web filtering, you can keep your employees and users safe from unwanted content and malicious websites. This is accomplished without compromising the users' online experience and can even help boost employee productivity and network performance by limiting Internet surfing to appropriate site categories and eliminating unwanted network traffic. Users are also automatically protected from malicious/compromised websites, regardless of site categorization.

The Cisco RV320 Dual Gigabit WAN VPN Router is the choice for any network in which performance, security, reliability, and adaptability top the list of requirements. The Cisco RV320 supports two connections to one service provider, delivering high performance by using load balancing, or to two different providers to deliver business continuity. High-capacity virtual private networks (VPNs) connect multiple offices and enable dozens of employees to access the information they need from any geographic location just as securely as if they were working at your main office.

Product Specifications

Table 1 lists the product specifications for the Cisco RV320.

Table 1. Product Specifications

Description	Specification
Dual WAN	<ul style="list-style-type: none"> • Dual Gigabit Ethernet Ports • Failover • Load balancing
Standards	<ul style="list-style-type: none"> • 802.3, 802.3u • IPv4 (RFC 791) • IPv6 (RFC 2460)
WAN connectivity	<ul style="list-style-type: none"> • Dynamic Host Configuration Protocol (DHCP) server, DHCP client, DHCP relay agent • Static IP • Point-to-Point Protocol over Ethernet (PPPoE) • Point-to-Point Tunneling Protocol (PPTP) • Transparent bridge • DNS relay, Dynamic DNS (DynDNS.org, 3322.org), DNS local database • IPv6
Routing protocols	<ul style="list-style-type: none"> • Routing Information Protocol (RIP) v1 and v2, and RIP for IPv6 (RIPng) • Inter-VLAN routing • Static routing • VLANs supported: 7
Network Address Translation (NAT)	<ul style="list-style-type: none"> • Port Address Translation (PAT) • One-to-one NAT • NAT traversal
Protocol binding	Protocols can be bound to a specific WAN port for load-balancing purposes
Network edge (DMZ)	<ul style="list-style-type: none"> • DMZ port • DMZ host
Dual USB 2.0 ports	Storage and 3G/4G modem support
Security	
Firewall	<ul style="list-style-type: none"> • SPI firewall • Denial-of-service (DoS) prevention: ping of death, SYN flood, IP spoofing, WinNuke
Access rules	<ul style="list-style-type: none"> • Schedule-based access rules • Up to 50 entries
Port forwarding	Up to 30 entries
Port triggering	Up to 30 entries
Blocking	Java, cookies, ActiveX, HTTP proxy
Content filtering	Static URL blocking or keyword blocking
Secure management	<ul style="list-style-type: none"> • HTTPS web access to device manager • Username/password complexity enforcement

Description	Specification
VLAN	802.1Q VLAN 7 VLANs supported
Web filtering	Content filtering covering 27+ billion URLs
VPN	
IP Security (IPsec)	<ul style="list-style-type: none"> 25 IPsec site-to-site tunnels for branch office connectivity 25 IPsec VPN tunnels via third-party clients such as "The GreenBow" for remote-access VPN connectivity
SSL VPN	10 SSL VPN tunnels for remote client access
PPTP	10 PPTP tunnels for remote access
Encryption	<ul style="list-style-type: none"> Data Encryption Standard (DES) Triple Data Encryption Standard (3DES) Advanced Encryption Standard (AES) encryption: AES-128, AES-192, AES-256
Authentication	MD5/SHA1
IPsec NAT traversal	Supported for gateway-to-gateway and client-to-gateway tunnels
VPN pass-through	PPTP, Layer 2 Tunneling Protocol (L2TP), IPsec
Advanced VPN	<ul style="list-style-type: none"> Dead peer detection (DPD) Split DNS VPN backup Internet Key Exchange (IKE) with certificates
Quality of Service (QoS)	
Service-based QoS	Rate control or priority
Rate control	Upstream/downstream bandwidth per service
Prioritization types	Application-based priority on WAN port
Priority	Services mapped to one of two priority levels
Performance	
IPsec VPN throughput	100 Mbps
SSL VPN throughput	20 Mbps
Concurrent connections	20,000
Configuration	
Web user interface	Browser-based device manager (HTTP/HTTPS)
Management	
Management protocols	<ul style="list-style-type: none"> Web browser (HTTP/HTTPS) Simple Network Management Protocol (SNMP) v1, v2c, and v3 Bonjour
Event logging	<ul style="list-style-type: none"> Local log Syslog Email alert Short Message Service (SMS)
Upgradability	<ul style="list-style-type: none"> Firmware upgradable through the web browser Import or export configuration files from or to a USB flash drive

System Specifications

Table 2 lists the system specifications for the Cisco RV320.

Table 2. System Specifications

Description	Specification
Product dimensions (W x H x D)	206 x 132 x 44 mm (8.1 x 5.2 x 1.7 in)
Ports	Four 10/100/1000 Gigabit Ethernet RJ-45 ports One 10/100/1000 Gigabit Ethernet RJ-45 Internet (WAN) port One 10/100/1000 Gigabit Ethernet RJ-45 DMZ/Internet (WAN) port
Power supply	12V 1.5A
Certification	FCC Class B, CE Class B, UL, cUL, CB, CCC, BSMI, KC, Anatel
Operating temperature	0° to 40°C (32° to 104°F)
Storage temperature	0° to 70°C (32° to 158°F)
Operating humidity	10% to 85% noncondensing
Storage humidity	5% to 60% noncondensing

Warranty Information

Find warranty information on Cisco.com at the [Product Warranties](#) page.

Ordering Information

Help customers understand all the components or parts they need to purchase in order to install and use the product. Table 3 lists ordering information for the Cisco RV320. This section also provides a direct link to the Cisco Ordering Tool and lists part numbers for customer convenience.

To place an order, visit the [Cisco Ordering Home Page](#). To download software, visit the [Cisco Software Center](#).

Table 3. Ordering Information

Product Name	Part Number
RV320 Dual WAN VPN Router	RV320-WB-K9-NA
RV320 Dual WAN VPN Router	RV320-WB-K9-G5

Cisco Limited Lifetime Warranty for Cisco Small Business Products

This Cisco Small Business product comes with a limited lifetime hardware warranty. Product warranty terms and other information applicable to Cisco products are available at <https://www.cisco.com/go/warranty>.

Cisco Small Business Support Service

This optional service offers affordable, 3-year peace-of-mind coverage. This subscription-based, device-level service helps you protect your investment and derive maximum value from Cisco Small Business products. Delivered by Cisco and backed by your trusted partner, this comprehensive service includes software updates, extended access to the Cisco Small Business Support Center, and expedited hardware replacement, should it be required.

CONFIDENTIAL



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.
Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to the URL: www.cisco.com/go/trademarks. Third party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (11/03)

Printed in USA

11

Cisco Capital

Financing to Help You Achieve Your Objectives

Cisco Capital can help you acquire the technology you need to achieve your objectives and stay competitive. We can help you reduce CapEx. Accelerate your growth. Optimize your investment dollars and ROI. Cisco Capital financing gives you flexibility in acquiring hardware, software, services, and complementary third-party equipment. And there's just one predictable payment. Cisco Capital is available in more than 100 countries. [Learn more.](#)

For More Information

For more information on the Cisco RV320 Dual Gigabit WAN VPN Router, visit <https://www.cisco.com/go/rv320>.
For more information on Cisco Small Business products and solutions, visit <https://www.cisco.com/smallbusiness>.

CONFIDENTIAL

مجلس الوزراء
الرياض ١٤٢٤هـ





Cisco 110 Series Unmanaged Switches

Affordable, Easy-to-Use Switches for Small Business Networks, with Zero Configuration Required

Highlights

- Affordable 10/100/1000-Mbps speeds for even the most bandwidth-hungry applications
- 5- to 24-port models that are desktop or rack mountable
- Power over Ethernet models to provide power to IP phones, access points, and other devices
- Works right out of the box: plug and play and no setup

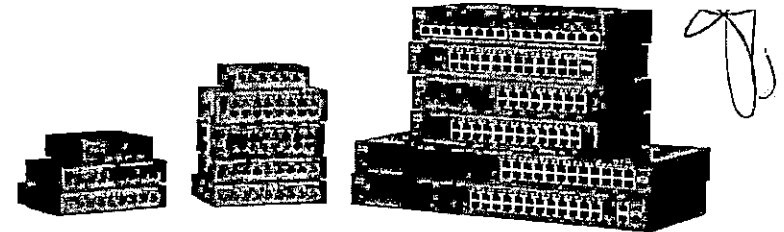
Product Overview

Give your office network a boost of speed and performance at a low price that takes almost no time to set up. Easily build a highly reliable network to connect your computers, printers, copiers, and other office equipment. If your business is like most small companies, you do not have an IT staff to set up your network for you. Now you can have a high-performance, business-class office network that just works, right out of the box, with the Cisco® 110 Series Unmanaged Switches. Users, workgroups, labs, departments, or growing offices can now deliver large amounts of multimedia, image, and video information across the network in almost no time.

Cisco 110 Series Unmanaged Switches deliver basic network connectivity and reliability for small businesses that is easy on the budget and without all the complexity. These switches provide all of the features, expandability, and investment protection you expect from Cisco, with no installation software and nothing to configure. Just plug it in, connect your computers and other business equipment, and get to work.

Cisco 110 Series Unmanaged Switches (Figure 1), part of the Cisco Small Business networking solutions, are a line of unmanaged switches that provide wire-speed Fast Ethernet and Gigabit Ethernet connectivity to connect your small business office. Available in desktop and rack-mount models, these switches are designed to suit any office space with basic network needs and to optimize power efficiency. They use less power and provide the robust, reliable connectivity your business demands, as well as support for advanced features such as quality of service (QoS), loop detection, and cable diagnostics, all in a switch that you can set up yourself in minutes. A business-class, affordable network solution, Cisco 110 Series switches bring the proven reliability and investment protection of Cisco networking solutions to your small business.

Figure 1. Cisco 110 Series Unmanaged Switches



Features

Cisco 110 Series switches provide an easy-to-use solution for your small business network. They offer:

- **Ease of use:** Cisco 110 Series switches work right out of the box, with no software to install and nothing to configure. Each switch port independently sets itself for the optimal speed and determines whether to run in half- or full-duplex mode automatically. As a standards-based Cisco solution, Cisco 110 Series switches are also designed to immediately accommodate all of the devices in your network, including:
 - Support for 10 megabits per second (Mbps), 100 Mbps, and up to 1 gigabit per second (1000 Mbps) devices in the same network
 - Automatic cable detection, so you do not have to worry about using the wrong cable type
 - Compatibility with network devices from other vendors
- **Simple setup:** Designed for small office spaces, Cisco 110 Series switches are available in both compact desktop and rack-mount models. The desktop models offer a wall-mount option for discreet mounting under a desk or on the wall of an office or conference room.
- **High performance:** Cisco 110 Series switches deliver the performance you need to run your business applications, including bandwidth-intensive video services, and avoid slow and sluggish networks. They support Gigabit Ethernet speeds, unlocking a new level of capacity and performance in your business network and letting you transfer large files in seconds.
- **Reduced energy costs:** Cisco 110 Series switches are designed to help conserve energy by optimizing power use without compromising performance, which protects our environment and reduces your energy costs. In addition, they support the Energy Efficient Ethernet (IEEE 802.3az) standard, which reduces energy consumption by monitoring the amount of traffic on an active link and putting the link into a sleep state during quiet periods. Most of the switches have no fans, so they run silently and unobtrusively while lowering energy costs.
- **Power over Ethernet (PoE):** Cisco 110 Series switches are available with PoE ports on both Fast Ethernet and Gigabit Ethernet models. This capability simplifies the deployment of IP telephony, wireless, video surveillance, and other solutions by allowing you to connect and power network endpoints over a single Ethernet cable. With no need to install separate power supplies for IP phones or wireless access points, you can take advantage of advanced communications technologies more quickly and at a lower cost.

- **Support for advanced technologies:** All switches include advanced Cisco traffic-handling features to keep your applications running at peak performance. Integrated QoS intelligence on all models automatically prioritizes delay-sensitive services such as voice or video to improve your network's performance. Loop detection helps discover loops in the network that you might have accidentally created, thus avoiding broadcast storms that will bring your network to a stall. Cable diagnostics help to quickly identify and troubleshoot network cabling faults and issues. Fast store-and-forward switching identifies damaged packets and prevents them from being passed on through the network. All of these features run automatically, with no management or configuration required.
- **Peace of mind:** Cisco 110 Series switches deliver the rock-solid reliability you expect from a Cisco switch. The solution has been rigorously tested to make sure of optimal uptime and performance. In addition, the limited lifetime hardware warranty provides peace of mind.

Specifications

Table 1 lists the specifications, package contents, and minimum requirements for the Cisco 110 Series.

Table 1. Specifications for Cisco 110 Series Switches

Specifications	Description
Standards	IEEE 802.3 10BASE-T Ethernet, IEEE 802.3u 100BASE-TX Fast Ethernet, IEEE 802.3ab 1000BASE-T Gigabit Ethernet, IEEE 802.3z Gigabit Ethernet, IEEE 802.3x Flow Control, 802.1p priority, Energy Efficient Ethernet, 802.3af, Power over Ethernet
Cabling type	Category 5e or better
LED Indicators	System/Power, Link/Activity, 100M, PoE, mMax PoE, cable diagnostics, loop detection, gigabit, mini-GBIC if present
Physical Interfaces	
Ports	10/100/1000 Ethernet, with support for 802.3af PoE, power port for AC adapter or power cord
Power supply	SF1100-05, SF1100-08: DC 12V, 500mA SF1100-16, SG1100-08, SG1100-05: DC 12V, 1.0A SF1100-08HP, SG1100-8HP: DC 48V, 1.25A SF110-16, SF110D-16HP, SF110-24, SF112-24, SG110-16, SG110-16HP, SG110-24, SG110-24HP, SG112-24, SG112-24HP: 50-60 Hz, Internal universal
Lock slot	Slot for Kensington lock
Physical Specifications	
Physical dimensions (W x D x H)	SF1100-05: 3.65 x 1.06 x 3.57 inches (92.6 x 27 x 90.6 mm) SF1100-08: 5.12 x 1.06 x 5.12 inches (130 x 27 x 130 mm) SF1100-08HP: 6.29 x 1.18 x 5.05 inches (160 x 30 x 128.5 mm) SF1100-16: 5.12 x 1.52 x 5.12 inches (130 x 38.5 x 130 mm) SF110-16: 11 x 1.75 x 6.7 inches (279.4 x 44.5 x 170 mm) SF110D-16HP: 6.29 x 3.54 x 1.69 inches (160 x 90 x 43 mm) SF110-24: 11 x 1.75 x 6.7 inches (279.4 x 44.5 x 170 mm) SF112-24: 17.35 x 1.74 x 7.99 inches (440.6 x 202.82 x 44.32 mm) SG110D-05: 4.33 x 1.18 x 3.83 inches (110 x 30 x 110 mm) SG110D-08: 5.51 x 1.31 x 5.51 inches (140 x 33.35 x 140 mm) SG110D-08HP: 6.29 x 1.18 x 5.05 inches (160 x 30 x 128.5 mm) SG110-16: 11 x 1.75 x 6.7 inches (279.4 x 44.5 x 170 mm) SG110-16HP: 11 x 1.75 x 6.7 inches (279.4 x 44.5 x 170 mm) SG110-24: 17.35 x 1.74 x 7.99 inches (440.6 x 202.82 x 44.32 mm) SG110-24HP: 17.35 x 1.74 x 7.99 inches (440.6 x 202.82 x 44.32 mm) SG112-24: 11 x 1.75 x 6.7 inches (279.4 x 44.5 x 170 mm)

Specifications	Description
Weight ¹	SF1100-05: 0.47 lb. (0.22 kg) SF1100-08: 0.83 lb. (0.38 kg) SF1100-08HP: 1.2 lb. (0.545 kg) SF1100-16: 1.03 lb. (0.46 kg) SF110-16: 2.79 lb. (1.25 kg) SF110D-16HP: 0.69 lb. (0.45 kg) SF110-24: 2.91 lb. (1.32 kg) SF112-24: 4.93 lb. (2.00 kg) SG110D-05: 0.70 lb. (0.32 kg) SG110D-08: 0.94 lb. (0.43 kg) SG110D-08HP: 1.2 lb. (0.55 kg) SG110-16: 3.15 lb. (2.13 kg) SG110-16HP: 4.15 lb. (1.43 kg) SG110-24: 3.69 lb. (1.63 kg) SG110-24HP: 4.59 lb. (2.43 kg) SG112-24: 5.05 lb. (2.3 kg)
Ports	SF1100-05: 5 RJ-45 connectors for 10BASE-T/100BASE-TX SF1100-08: 8 RJ-45 connectors for 10BASE-T/100BASE-TX SF1100-08HP: 8 RJ-45 connectors for 10BASE-T/100BASE-TX SF1100-16: 16 RJ-45 connectors for 10BASE-T/100BASE-TX SF1100-16HP: 16 RJ-45 connectors for 10BASE-T/100BASE-TX SF110-16: 16 RJ-45 connectors for 10BASE-T/100BASE-TX SF110-24: 24 RJ-45 connectors for 10BASE-T/100BASE-TX SF112-24: 24 RJ-45 connectors for 10BASE-T/100BASE-TX with 2 combo mini-GBIC slots SG110D-08: 8 RJ-45 connectors for 10BASE-T/100BASE-TX/1000BASE-T ports SG110D-08HP: 8 RJ-45 connectors for 10BASE-T/100BASE-TX/1000BASE-T ports SG110-16: 16 RJ-45 connectors for 10BASE-T/100BASE-TX/1000BASE-T ports SG110-16HP: 16 RJ-45 connectors for 10BASE-T/100BASE-TX/1000BASE-T ports SG110-24: 24 RJ-45 connectors for 10BASE-T/100BASE-TX/1000BASE-T ports with 2 combo mini-GBIC slots SG110-24HP: 24 RJ-45 connectors for 10BASE-T/100BASE-TX/1000BASE-T ports with 2 combo mini-GBIC slots SG112-24: 24 RJ-45 connectors for 10BASE-T/100BASE-TX/1000BASE-T ports with 2 combo mini-GBIC slots All units: automatic medium dependent Interface (MDI) and MDI crossover (MDI-X); autonegotiated port for connecting 10-, 100-, 1000-Mbps devices
Power over Ethernet (PoE)	Model Name ¹ Power Dedicated to PoE ² Number of PoE Ports ³ SF1100-08HP 32 watts 4 SF110D-16HP 64 watts 8 SG110D-08HP 32 watts 4 SG110-16HP 64 watts 8 SG110-24HP 100 watts 12
Fan/fanless models	All models have no fans and are fanless, except for SG110-24HP
Performance	
Switching capacity	SF1100-05: 1 Gbps SF1100-08: 1.6 Gbps SF1100-08HP: 1.6 Gbps SF1100-16: 3.2 Gbps SF110-16: 3.2 Gbps SF110-16HP: 3.2 Gbps SF110-24: 4.8 Gbps SF112-24: 8.6 Gbps SG110D-05: 10 Gbps SG110D-08: 16 Gbps SG110D-08HP: 16 Gbps SG110-16: 32 Gbps SG110-16HP: 32 Gbps

Specifications	Description
	SG110-24: 48 Gbps
	SG110-24HP: 48 Gbps
	SG112-24: 48 Gbps
Forwarding capacity	Forwarding rate in million packets per second (mpps) (based on 64-byte packets)
	SF110D-05: 0.74 mpps
	SF110D-08: 1.4 mpps
	SF110D-08HP: 1.2 mpps
	SF110D-16: 1.4 mpps
	SF110-16: 1.4 mpps
	SF110D-16HP: 1.4 mpps
	SF110-24: 3.6 mpps
	SF112-24: 6.5 mpps
	SG110D-05: 7.4 mpps
	SG110D-08: 11.9 mpps
	SG110D-08HP: 11.9 mpps
	SG110-16: 23.6 mpps
	SG110-16HP: 23.6 mpps
	SG110-24: 35.7 mpps
	SG110-24HP: 35.7 mpps
	SG112-24: 35.7 mpps
Capabilities	
Head-of-line (HOL) blocking	HOL blocking prevention
Jumbo frame	9216 bytes
Quality of service (QoS)	802.1p priority based, 4 hardware queues, priority queuing and weighted round-robin (WRR)
Loop detection	Helps discover loops in the network to avoid broadcast storms
Cable diagnostics	Quickly identify and troubleshoot network cable faults and/or shorts
Mounting and Physical Security	
Mounting options	Desktop or rack mount
Physical security lock	Keratinion lock slot
Environmental	
Compliance/certifications	UL (UL 60950), CSA (CSA 22.2), CE mark, FCC Part 15 (CFR 47) Class A, FCC Class B* *select models
Operating temperature	32° to 104°F (0° to 40°C)
Storage temperature	-4° to 158°F (-20° to 70°C)
Operating humidity	10% to 90%, relative, noncondensing
Storage humidity	5% to 90%, relative, noncondensing
System memory	128-MB RAM 128-MB Flash
Package Contents	<ul style="list-style-type: none"> Cisco 110 Series switch Power cord/power adapter Quick-start guide Mounting hardware
Minimum Requirements	<ul style="list-style-type: none"> Devices supporting 802.3 Ethernet, 802.3u Fast Ethernet, or 802.3ab Gigabit Ethernet Cat5 or better Ethernet cable Network Interface card for each computer
Warranty	
Cisco 110 Series switch	Limited Lifetime

Ordering Information

Table 2 gives ordering information for the Cisco 110 Series Unmanaged Switches.

Table 2. Ordering Information for Cisco 110 Series Unmanaged Switches

Part Number	Description
SF110D-05	Cisco SF110D-05 - 5-Port 10/100 Desktop Switch
SF110D-08	Cisco SF110D-08 8-port 10/100 Desktop Switch
SF110D-08HP	Cisco SF110D-08P 8-port 10/100 PoE Desktop Switch
SF110D-16	Cisco SF110D-16 16-port 10/100 Desktop Switch
SF110D-16HP	Cisco SF110D-16P 16-port 10/100 PoE Desktop Switch
SF110-16	Cisco SF110-16 16-Port 10/100 Switch
SF110-24	Cisco SF110-24 24-Port 10/100 Switch
SF112-24	Cisco SF112-24 24-port 10/100 + 2 Mini-GBIC & 2 GE Uplink
SG110D-05	Cisco SG110D-05 5-port Gigabit Desktop Switch
SG110D-08	Cisco SG110D-08 8-Port Gigabit Switch
SG110D-08HP	Cisco SG110D-08P 8-Port Gigabit PoE Switch
SG110-16	Cisco SG110-16 16-Port Gigabit Switch
SG110-16HP	Cisco SG110-16HP 16-Port PoE Gigabit Switch
SG112-24	Cisco SG112-24 COMPACT 24-port Gig Switch-2 Mini-GBIC Ports
SG110-24	Cisco SG110-24 24-port Gigabit Switch + 2 Mini GBIC Ports 1U
SG110-24HP	Cisco SG110-24HP 24-Port PoE Gigabit Switch

Cisco Limited Lifetime Warranty for Cisco Small Business Products

This Cisco Small Business product comes with a limited lifetime hardware warranty. Product warranty terms and other information applicable to Cisco products are available at <http://www.cisco.com/go/warranty>.

Services for Small Business

Reduce downtime with fast, expert technical support and flexible hardware coverage. Cisco Services improve network availability and help you get the most value from your Cisco products. Service plans for your Cisco Small Business products provide more support than a product warranty. A warranty protects you against product defects, and a majority of support calls are unrelated to faulty materials or manufacturing. Most callers ask about product features, technical problems, or how to expand their network.

Cisco offers an unlimited number of calls and no restrictions on call duration, so you can get the help you need and the most from your Cisco product.

For more information about Cisco Services, see <http://www.cisco.com/go/sbs>.

For More Information

For more information about Cisco Small Business products and solutions, visit <http://www.cisco.com/smallbusiness> or <http://www.cisco.com/go/110Switches>.

Handwritten mark resembling a stylized 'S' or '3'.

Handwritten mark resembling a stylized 'N'.

Handwritten mark resembling a stylized 'S'.



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

Recycling symbol: Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: www.cisco.com/go/trademarks. Third party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)

Printed in USA

C78-73460-00 07/15

Handwritten scribble and faint circular stamp.

CONFIDENTIAL stamp

Handwritten signature 'LLP'



Cisco 550X Series Stackable Managed Switches

Advanced Features for Demanding Environments at an Affordable Price

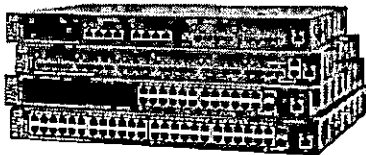
Your business is growing, and that means more customers, more opportunities, and more attention on your company. The only problem: Your network was built for a smaller operation. As you add more devices, applications, and users, your IT environment will become increasingly difficult and expensive to manage. Even worse, as the network becomes more complex and overloaded, your users are likely to see sluggish performance and even outages.

With customers and employees depending on your business more than ever before, a slow or unreliable network is not an option. You need an IT backbone that provides excellent performance, nonstop availability, and advanced security. The ideal network will be easy to manage, support advanced features that will grow with your company, and be at a price that's affordable.

Cisco 550X Series Stackable Managed Switches

The Cisco® 550X Series (Figure 1) are the next-generation stackable managed Ethernet switches that provide the advanced capabilities and superior performance you need to support a more demanding network environment at an affordable price. These switches incorporate fan and power hardware redundancy, increasing overall network availability. The SG550X and SF550X models provide 24 or 48 ports of Gigabit Ethernet and Fast Ethernet connectivity with 10 Gigabit uplinks. The SG550XG models provide 16, 24, or 48 ports of 10 Gigabit Ethernet with both copper and fiber connection options, providing a solid foundation for your current business applications, as well as those you are planning for the future. At the same time, these switches are easy to deploy and manage, without a large IT staff.

Figure 1. Cisco 550X Series Stackable Managed Switches



Cisco 550X Series switches are designed to protect your technology investment as your business grows. Unlike switches that claim to be stackable but have elements that are administered and troubleshot separately, the Cisco 550X Series provides true stacking capability, allowing you to configure, manage, and troubleshoot multiple physical switches as a single device and more easily expand your network.

A true stack delivers a unified data and control plane, in addition to a management plane, providing flexibility, scalability, and ease of use because the stack of units operate as a single entity constituting all the ports of the stack members. The switches also protect your technology investment with an enhanced warranty, dedicated technical support, and the ability to upgrade equipment in the future and receive credit for your Cisco 550X Series switch. Overall, the Cisco 550X Series provides the ideal technology foundation for a growing business.

Features and Benefits

Cisco 550X Series switches provide the advanced feature set that growing businesses require and that high-bandwidth applications and technologies demand. These switches can improve the availability of your critical applications, protect your business information, and optimize your network bandwidth to more effectively deliver information and support applications. The switches provide the following benefits.

High-Performance 10 Gigabit Ethernet

Cisco 550X Series switches break the barrier of 10 Gigabit Ethernet adoption by providing affordable and flexible configurations customized for the demanding network requirements of small and medium businesses.

With 10G copper ports on SG550XG switches, you can easily and cost-effectively enable 10G connections to servers and network storage devices with standard RJ45 Ethernet cable. You can also connect your SG550X access switches to the SG550XG aggregation with 10G SFP+ fiber, building a high-performance backbone to speed up the overall operation of your network.

High Reliability and Resiliency

In a growing business in which availability 24 hours a day, 7 days a week is critical, you need to assure that employees and customers can always access the data and resources whenever they need. In these environments, stackable switches can play an important role in eliminating downtime and improving network resiliency. For example, if a switch within a Cisco 550X Series stack fails, another switch immediately takes over, keeping your network up and running. You can also replace individual devices in the stack without taking your network offline or affecting employee productivity.

The Cisco 550X Series is designed to deliver hardware redundancy at the lowest incremental cost. Power redundancy is delivered with the Cisco RPS2300 external RPS system. If power to the switch is lost (through loss of AC power or power supply failure), the switch will automatically, and instantaneously, obtain its power from the RPS. This switchover occurs so quickly that there is no loss in traffic or reboot of the device. A Cisco RPS2300 system can be connected to up to six 550X Series switches to provide redundancy. Cooling fan redundancy is delivered through preinstalled N+1 configuration. A switch can fully support all its capabilities for the life of the product with only N fans. If one of the fans fails, the spare fan automatically takes over, without causing any downtime.

The Cisco 550X Series provides an additional layer of resiliency with support for the Virtual Router Redundancy Protocol (VRRP). VRRP lets you extend the same resiliency that stacking provides for individual switches to complete network domains. By running VRRP between two stacks, you can instantly cut over from one stack to another in the event of a problem and continue operating even after a failure.

The Cisco 550X Series also supports dual images, allowing you to perform software upgrades without having to take the network offline or worry about the network going down during the upgrade.

Power over Ethernet Plus (PoE+) and 60W PoE

Cisco 550X Series switches support the Power over Ethernet Plus (PoE+) standard (IEEE 802.3at), providing up to 30 watts per port. The switches also support 60W PoE on selected ports to power compact switches, high-power wireless access points, or connected lighting. The power is managed in a smart fashion such that only the amount of power the endpoint needs is delivered to it and not wasted. As a result, the switches can support devices that require more power, such as 802.11ac wireless access points, video-based IP phones, surveillance cameras, and more.

PoE capabilities simplify the deployment of advanced technologies by allowing you to connect and power network endpoints over a single Ethernet cable, without having to install separate power supplies. Cisco 550X Series switches are also fully backward compatible with IEEE 802.11af PoE and Cisco legacy PoE protocols.

Power Efficiency

The Cisco 550X Series integrates a variety of power-saving features across all models, providing the industry's most extensive energy-efficient switching portfolio. These switches are designed to conserve energy by optimizing power use, which helps protect the environment and reduce your energy costs. They provide an eco-friendly network solution without compromising performance. Cisco 550X Series switches feature:

- Support for the Energy Efficient Ethernet (IEEE 802.3az) standard, which reduces energy consumption by monitoring the amount of traffic on an active link and putting the link into a sleep state during quiet periods
- The latest application-specific integrated circuits (ASICs), which use low-power 28- or 40-nanometer technology and low-power, high-performance ARM CPUs
- Automatic power shutoff on ports when a link is down
- LEDs that can be turned off to save power
- Embedded intelligence to adjust signal strength based on the length of the connecting cable
- Smart fans in which fan speed is automatically adjusted according to switch temperature to decrease acoustic noise and save power

Advanced Stacking

Some switches claim to support stacking but in practice support only "clustering," meaning that each switch must still be managed and configured individually. Cisco 550X Series switches provide true stacking capability, allowing you to configure, manage, and troubleshoot all switches in a stack as a single unit, with a single IP address for up to a maximum of 400 Ethernet ports.

A true stack delivers a unified data and control plane, in addition to management plane, providing flexibility, scalability, and ease of use because the stack of units operates as a single entity constituting all the ports of the stack members. This capability can radically reduce complexity in a growing network environment while improving the resiliency and availability of network applications. True stacking also provides other cost savings and administrative benefits through features such as cross-stack QoS, VLANs, LAGs, and port mirroring, which clustered switches cannot support.

Using standard 10G fiber or copper connections, the Cisco 550X Series supports both local and horizontal stacking deployments and the flexibility of ring or chain topology. The switches also have the capability to use link aggregation ports as the stacking port, providing even higher stacking bandwidth for demanding applications.

Easy Deployment and Use

Cisco 550X Series switches are designed to be easy to use and manage by small and medium businesses, commercial customers, or the partners that serve them. Features include:

- Simple and advanced mode graphic user interfaces reduce the time required to deploy, troubleshoot, and manage the network and allow you to support sophisticated capabilities without increasing IT head count.
- Configuration wizards simplify the most common configuration tasks and provide the ultimate tool for anyone to easily setup and manage the network.

- The switches also support Textview, a full command-line interface (CLI) option for customers or partners that prefer it.
- The USB port on the switch enables easy image and configuration transfer for faster deployment or upgrade.
- Using Auto Smartports intelligence, the switch can detect a network device connected to any port and automatically configure the optimal security, quality of service (QoS), and availability on that port.
- Cisco Discovery Protocol discovers Cisco devices and allows devices to share critical configuration information, simplifying network setup and integration.
- Support for Simple Network Management Protocol (SNMP) allows you to setup and manage your switches and other Cisco devices remotely from a network management station, improving IT workflow and mass configurations.
- The Cisco FindIT utility, which works through a simple toolbar on the user's web browser, discovers Cisco devices in the network and displays basic information, such as serial numbers and IP addresses, to aid in configuration and deployment. (For more information and to download this free utility, visit <http://www.cisco.com/go/findit>.)

Simplified IT Operation

Cisco 550X Series switches help optimize your IT operations with built-in features that simplify day-to-day network operation:

- True stacking allows you to configure, manage, and troubleshoot multiple physical switches as a single entity.
- Cisco switches use common chipsets/software across all switching portfolios, so all Cisco switches within a series support the same feature set, making it easier to manage and support all switches across the network.

Strong Security

Cisco 550X Series switches provide the advanced security features you need to protect your business data and keep unauthorized users off the network:

- Embedded Secure Sockets Layer (SSL) encryption protects management data traveling to and from the switch.
- Extensive access control lists (ACLs) restrict sensitive portions of the network to keep out unauthorized users and guard against network attacks.
- Guest VLANs let you provide Internet connectivity to nonemployee users while isolating critical business services from guest traffic.
- Support for advanced network security applications such as IEEE 802.1X port security tightly limits access to specific segments of your network. Web-based authentication provides a consistent interface to authenticate all types of host devices and operating systems, without the complexity of deploying IEEE 802.1X clients on each endpoint.
- Advanced defense mechanisms, including dynamic Address Resolution Protocol (ARP) inspection, IP Source Guard, and Dynamic Host Configuration Protocol (DHCP) snooping, detect and block deliberate network attacks. Combinations of these protocols are also referred to as MAC port binding (IPMB).

- IPv6 First Hop Security extends the advanced threat protection to IPv6. This comprehensive security suite includes ND inspection, RA guard, DHCPv6 guard, and neighbor binding integrity check, providing unparalleled protection against a vast range of address spoofing and man-in-the-middle attacks on IPv6 networks.
- Time-based ACLs and port operation restrict access to the network during predesignated times, such as business hours.
- Uniform MAC address-based security can be applied automatically to mobile users as they roam between wireless access points.
- Secure Core Technology (SCT) helps ensure that the switch is able to process management traffic in the face of a denial-of-service (DoS) attack.
- Private VLAN provides Layer 2 isolation between devices on the same VLAN.
- Storm control can be applied to broadcast, multicast, and unknown unicast traffic.
- Protection of management sessions is possible using RADIUS, TACACS+, and local database authentication as well as secure management sessions over SSL, SSH, and SNMPv3.
- DoS attack prevention maximizes network uptime in the presence of an attack.

Advanced Layer 3 Traffic Management

The Cisco 550X Series enables a more advanced set of traffic management capabilities to help growing businesses organize their networks more effectively and efficiently. For example, the switches provide static Layer 3 routing, allowing you to segment your network into workgroups and communicate across VLANs without degrading application performance.

With these capabilities, you can boost the efficiency of your network by offloading internal traffic-handling tasks from your router and allowing it to manage primarily external traffic and security.

Additionally, Cisco 550X series provide dynamic Layer 3 routing features. With these capabilities, you can minimize the need to manually configure routing devices and simplify the ongoing operation of the network.

IPv6 Support

As the IP address scheme evolves to accommodate a growing number of network devices, the Cisco 550X Series can support the transition to the next generation of networking and operating systems. These switches continue to support previous-generation IPv4, allowing you to evolve to the new IPv6 standard at your own pace and helping ensure that your current network will continue to support your business applications in the future. Cisco 550X Series switches have successfully completed rigorous IPv6 testing and have received the USGv6 and IPv6 Gold certification.

Networkwide Automatic Voice Deployment

Using a combination of Cisco Discovery Protocol, LLDP-MED, Auto Smart ports, and Voice Services Discovery Protocol (VSDP, a unique Cisco protocol), customers can deploy an end-to-end voice network dynamically. The switches in the network automatically converge around a single voice VLAN and QoS parameters and then propagate them out to the phones on the ports where they are discovered. For example, automated voice VLAN capabilities let you plug any IP phone (including third-party phones) into your IP telephony network and receive an immediate dial tone. The switch automatically configures the device with the right VLAN and QoS parameters to prioritize voice traffic.

Peace of Mind and Investment Protection

Cisco 550X Series switches offer the reliable performance and peace of mind you expect from a Cisco switch. When you invest in the Cisco 550X Series, you gain the benefits of:

- Limited lifetime warranty with next-business-day (NBD) advance replacement (where available; otherwise same-day ship)
- A solution that has been rigorously tested to help ensure optimal network uptime to keep employees connected to primary resources and productive
- A solution designed and tested to easily and fully integrate with other Cisco voice, unified communications, security, and networking products as part of a comprehensive technology platform for your business

Cisco Limited Lifetime Hardware Warranty

Cisco 550X Series switches offer a limited lifetime hardware warranty with NBD advance replacement (where available; otherwise same-day ship) and a limited lifetime warranty for fans and power supplies.

In addition, Cisco offers telephone technical support at no charge for the first 12 months following the date of purchase and software application updates for bug fixes for the warranty term. To download software updates, go to <http://software.cisco.com/download/navigator.html>.

Product warranty terms and other information applicable to Cisco products are available at <http://www.cisco.com/go/warranty>.

World-Class Service and Support

Your time is valuable, especially when you have a problem affecting your business. Cisco 550X Series switches are backed by Cisco Small Business Support Service and Cisco Smart Net Total Care, which provide affordable peace-of-mind coverage. These subscription-based services help you protect your investment and derive maximum value from Cisco SMB products. Delivered by Cisco and backed by your trusted partner, Cisco Small Business Support Service includes software updates and access to the Cisco Small Business Support Center, and it extends technical service to three years. Cisco Smart Net Total Care offers a consistent service platform for customers with networks that combine traditional Cisco products with Cisco Small Business products. It also provides global coverage and flexibility of contract terms as well as multiple advance hardware replacement options.

Cisco SMB products are supported by professionals in the Cisco Support Center, a dedicated resource for small business customers and networks, with locations worldwide that are specifically trained to understand your needs. You also have access to extensive technical and product information through the Cisco Support Community, an online forum that enables you to collaborate with your peers and reach Cisco technical experts for support information.

Product Specifications

Table 1 describes product specifications.

Table 1. Product Specifications

Feature	Description																																																						
Performance																																																							
Switching capacity and forwarding rate All switches are wire-speed and nonblocking	<table border="1"> <thead> <tr> <th>Product Name</th> <th>Capacity in mpps (64-byte packets)</th> <th>Switching Capacity (Gbps)</th> </tr> </thead> <tbody> <tr><td>SF550X-24</td><td>63.09</td><td>84.8</td></tr> <tr><td>SF550X-24P</td><td>63.09</td><td>84.8</td></tr> <tr><td>SF550X-24MP</td><td>63.09</td><td>84.8</td></tr> <tr><td>SF550X-48</td><td>66.66</td><td>89.6</td></tr> <tr><td>SF550X-48P</td><td>66.66</td><td>89.6</td></tr> <tr><td>SF550X-48MP</td><td>66.66</td><td>89.6</td></tr> <tr><td>SG550X-24</td><td>95.23</td><td>128</td></tr> <tr><td>SG550X-24P</td><td>95.23</td><td>128</td></tr> <tr><td>SG550X-24MP</td><td>95.23</td><td>128</td></tr> <tr><td>SG550X-24MPP</td><td>95.23</td><td>128</td></tr> <tr><td>SG550X-48</td><td>130.94</td><td>176</td></tr> <tr><td>SG550X-48P</td><td>130.94</td><td>176</td></tr> <tr><td>SG550X-48MP</td><td>130.94</td><td>176</td></tr> <tr><td>SG550XG-8F8T</td><td>238.08</td><td>320</td></tr> <tr><td>SG550XG-24F</td><td>357.12</td><td>480</td></tr> <tr><td>SG550XG-24T</td><td>357.12</td><td>480</td></tr> <tr><td>SG550XG-48T</td><td>714.24</td><td>960</td></tr> </tbody> </table>	Product Name	Capacity in mpps (64-byte packets)	Switching Capacity (Gbps)	SF550X-24	63.09	84.8	SF550X-24P	63.09	84.8	SF550X-24MP	63.09	84.8	SF550X-48	66.66	89.6	SF550X-48P	66.66	89.6	SF550X-48MP	66.66	89.6	SG550X-24	95.23	128	SG550X-24P	95.23	128	SG550X-24MP	95.23	128	SG550X-24MPP	95.23	128	SG550X-48	130.94	176	SG550X-48P	130.94	176	SG550X-48MP	130.94	176	SG550XG-8F8T	238.08	320	SG550XG-24F	357.12	480	SG550XG-24T	357.12	480	SG550XG-48T	714.24	960
Product Name	Capacity in mpps (64-byte packets)	Switching Capacity (Gbps)																																																					
SF550X-24	63.09	84.8																																																					
SF550X-24P	63.09	84.8																																																					
SF550X-24MP	63.09	84.8																																																					
SF550X-48	66.66	89.6																																																					
SF550X-48P	66.66	89.6																																																					
SF550X-48MP	66.66	89.6																																																					
SG550X-24	95.23	128																																																					
SG550X-24P	95.23	128																																																					
SG550X-24MP	95.23	128																																																					
SG550X-24MPP	95.23	128																																																					
SG550X-48	130.94	176																																																					
SG550X-48P	130.94	176																																																					
SG550X-48MP	130.94	176																																																					
SG550XG-8F8T	238.08	320																																																					
SG550XG-24F	357.12	480																																																					
SG550XG-24T	357.12	480																																																					
SG550XG-48T	714.24	960																																																					
Layer 2 Switching																																																							
Spanning Tree Protocol	Standard 802.1d spanning tree support Fast convergence using 802.1w (Rapid Spanning Tree (RSTP)), enabled by default Multiple spanning tree instances using 802.1s (MSTP); 16 instances are supported																																																						
Port grouping/link aggregation	Support for IEEE 802.3ad Link Aggregation Control Protocol (LACP) • Up to 32 groups • Up to 8 ports per group with 16 candidate ports for each (dynamic) 802.3ad LAG																																																						
VLAN	Support for up to 4094 active VLANs simultaneously; port-based and 802.1Q tag-based VLANs; MAC-based VLAN Management VLAN Private VLAN with promiscuous, isolated, and community port Guest VLAN, unauthenticated VLAN, protocol-based VLAN, IP subnet-based VLAN, CPE VLAN Dynamic VLAN assignment using RADIUS server along with 802.1x client authentication																																																						
Voice VLAN	Voice traffic is automatically assigned to a voice-specific VLAN and treated with appropriate levels of CoS. Auto voice capabilities deliver networkwide zero-touch deployment of voice endpoints and call control devices.																																																						
Multicast TV VLAN	Multicast TV VLAN allows the single multicast VLAN to be shared in the network while subscribers remain in separate VLANs. This feature is also known as Multicast VLAN Registration (MVR).																																																						
Q-in-Q	VLANs transparently cross over a service provider network while isolating traffic among customers.																																																						
DVR/RARP	Generic VLAN Registration Protocol (GVRP) and Generic Attribute Registration Protocol (GARP) enable automatic propagation and configuration of VLANs in a bridged domain.																																																						
Unidirectional Link Detection (UDLD)	UDLD monitors physical connection to detect unidirectional links caused by incorrect wiring or port faults to prevent forwarding loops and blackholing of traffic in switched networks.																																																						
DHCP relay at Layer 2	Relay of DHCP traffic to DHCP server in a different VLAN. Works with DHCP option 82.																																																						

Feature	Description
IGMP (versions 1, 2, and 3) snooping	Internet Group Management Protocol (IGMP) limits bandwidth-intensive multicast traffic to only the requesters; supports 4K multicast groups (source-specific multicasting is also supported).
IGMP querier	IGMP querier is used to support a Layer 2 multicast domain of snooping switches in the absence of a multicast router.
HOL blocking	Head-of-line (HOL) blocking.
Layer 3	
IPv4 routing	Wirespeed routing of IPv4 packets Up to 7K routes and up to 256 IP interfaces
Wirespeed IPv6 static routing	Up to 7K routes and up to 256 IPv6 interfaces
Layer 3 interface	Configuration of Layer 3 interface on physical port, LAG, VLAN interface, or loopback interface
CIDR	Support for classless interdomain routing.
RIP v2	Support for Routing Information Protocol version 2 for dynamic routing
VRP	Virtual Router Redundancy Protocol (VRRP) delivers improved availability in a Layer 3 network by providing redundancy of the default gateway servicing hosts on the network. VRRP versions 2 and 3 are supported. Up to 255 virtual routers are supported.
Policy-based routing (PBR)	Flexible routing control to direct packets to different next hop based on IPv4 or IPv6 ACL
DHCP server	Switch functions as an IPv4 DHCP server serving IP addresses for multiple DHCP pools/scopes. Support for DHCP options
DHCP relay at Layer 3	Relay of DHCP traffic across IP domains
User Datagram Protocol (UDP) relay	Relay of broadcast information across Layer 3 domains for application discovery or relaying of BOOTP/DHCP packets.
Stacking	
Hardware stack	Up to 6 units in a stack. Up to 400 ports managed as a single system with hardware failover.
High availability	Fast stack failover delivers minimal traffic loss. Support link aggregation across multiple units in a stack.
Plug-and-play stacking configuration/management	Master/backuper for resilient stack control Autonumbering Hot swap of units in stack Ring and chain stacking options, autostacking port speed, flexible stacking port options
High-speed stack interconnects	Cost-effective high-speed 10G fiber and copper interfaces. Support LAG as stacking interconnects for even higher bandwidth.
Security	
SSH	SSH is a secure replacement for Telnet traffic. SCP also uses SSH. SSH versions 1 and 2 are supported.
SSL	Secure Sockets Layer (SSL) encrypts all HTTPS traffic, allowing secure access to the browser-based management GUI in the switch.
IEEE 802.1X (authenticator role)	RADIUS authentication and accounting, MD5 hash, guest VLAN, unauthenticated VLAN, single/multiple host mode, and single/multiple sessions. Supports time-based 802.1X dynamic VLAN assignment.
Web-based authentication	Web-based authentication provides network admission control through web browser to any host devices and operating systems.
STP BPDU Guard	A security mechanism to protect the networks from invalid configurations. A port enabled for Bridge Protocol Data Unit (BPDU) Guard is shut down if a BPDU message is received on that port. This avoids accidental topology loops.
STP Root Guard	This prevents edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes.
DHCP snooping	Filters out DHCP messages with unregistered IP addresses and/or from unexpected or untrusted interfaces. This prevents rogue devices from behaving as a DHCP server.
IP Source Guard (PSG)	When IP Source Guard is enabled at a port, the switch filters out IP packets received from the port if the source IP addresses of the packets have not been statically configured or dynamically learned from DHCP snooping. This prevents IP address spoofing.
Dynamic ARP Inspection (DAI)	The switch discards ARP packets from a port if there are no static or dynamic IP/MAC bindings or if there is a discrepancy between the source or destination address in the ARP packet. This prevents man-in-the-middle attacks.

Feature	Description
IP/MAC/Port Binding (IPMB)	The preceding features (DHCP Snooping, IP Source Guard, and Dynamic ARP Inspection) work together to prevent DoS attacks in the network, thereby increasing network availability.
Secure Core Technology (SCT)	Makes sure that the switch will receive and process management and protocol traffic no matter how much traffic is received.
Secure Sensitive Data (SSD)	A mechanism to manage sensitive data (such as passwords, keys, and so on) securely on the switch, populating this data to other devices, and secure autoconfig. Access to view the sensitive data is plaintext or encrypted is provided according to the user-configured access level and the access method of the user.
Private VLAN	Private VLAN provides security and isolation between switch ports, which helps ensure that users cannot snoop on other users' traffic; supports multiple uplinks.
Port security	Ability to lock source MAC addresses to ports and limit the number of learned MAC addresses.
RADIUS/TACACS+	Supports RADIUS and TACACS authentication. Switch functions as a client.
RADIUS accounting	The RADIUS accounting functions allow data to be sent at the start and end of services, indicating the amount of resources (such as time, packets, bytes, and so on) used during the session.
Storm control	Broadcast, multicast, and unknown unicast.
DoS prevention	Denial-of-service (DoS) attack prevention.
Multiple user privilege levels in CLI	Level 1, 7, and 15 privilege levels.
ACLs	Support for up to 2K entries on SG550X3 models. Support for up to 3K entries on all other models. Drop or rate limit based on source and destination MAC, VLAN ID or IP address, protocol, port, DSCP/IP precedence, TCP/UDP, Datagram Protocol (UDP) source and destination ports, 802.1p priority, Ethernet type, Internet Control Message Protocol (ICMP) packets, Internet Group Management Protocol (IGMP) packets, TCP flag. ACL can be applied on both ingress and egress sides. Time-based ACLs supported.
Quality of Service	
Priority levels	8 hardware queues
Scheduling	Strict priority and weighted round-robin (WRR)
Class of service	Port based; 802.1p VLAN priority based; IPv4/v6 IP precedence/ToS/DSCP based; DiffServ; classification and remarking ACLs, trusted CoS
Rate limiting	Queue assignment based on differentiated services code point (DSCP) and class of service (802.1p/CoS)
Congestion avoidance	Ingress policing, egress shaping and ingress rate control, per VLAN, per port, and flow based; 2R3C policing
	A TCP congestion avoidance algorithm is required to minimize and prevent global TCP loss synchronization.
Standards	IEEE 802.3 10BASE-T Ethernet, IEEE 802.3u 100BASE-TX Fast Ethernet, IEEE 802.3ab 1000BASE-T Gigabit Ethernet, IEEE 802.3ad Link Aggregation Control Protocol, IEEE 802.3z Gigabit Ethernet, IEEE 802.3ae 10 Gb/s Ethernet over fiber for LAN, IEEE 802.3an 10GBase-T 10 Gb/s Ethernet over copper twisted pair cable, IEEE 802.3x Flow Control, IEEE 802.1D (STP, RSTP, and QRP), IEEE 802.1Qp VLAN, IEEE 802.1w Rapid STP, IEEE 802.1s Multiple STP, IEEE 802.1X Port Access Authentication, IEEE 802.3af, IEEE 802.3at, IEEE 802.1AB Link Layer Discovery Protocol, IEEE 802.3az Energy Efficient Ethernet, RFC 768, RFC 783, RFC 791, RFC 792, RFC 783, RFC 813, RFC 826, RFC 879, RFC 896, RFC 854, RFC 855, RFC 856, RFC 858, RFC 894, RFC 919, RFC 920, RFC 922, RFC 950, RFC 951, RFC 1042, RFC 1071, RFC 1123, RFC 1141, RFC 1155, RFC 1157, RFC 1213, RFC 1215, RFC 1288, RFC 1350, RFC 1442, RFC 1451, RFC 1493, RFC 1533, RFC 1541, RFC 1542, RFC 1573, RFC 1524, RFC 1643, RFC 1700, RFC 1757, RFC 1887, RFC 1907, RFC 2011, RFC 2012, RFC 2013, RFC 2030, RFC 2191, RFC 2192, RFC 2233, RFC 2576, RFC 2616, RFC 2618, RFC 2665, RFC 2668, RFC 2674, RFC 2737, RFC 2819, RFC 2863, RFC 3164, RFC 3176, RFC 3411, RFC 3412, RFC 3413, RFC 3414, RFC 3415, RFC 3418, RFC 4330
IPv6	
IPv6	IPv6 host mode IPv6 over Ethernet dual IPv6/IPv4 stack IPv6 Neighbor and Router Discovery (ND), IPv6 Stateless Address Autoconfiguration, path MTU Discovery Duplicate Address Detection (DAD) ICMPv6 IPv6 over IPv4 network with ISATAP tunnel support USGv6 and IPv6 Gold Logo certified
IPv6 CoS	Prioritize IPv6 packets in hardware
IPv6 ACL	Drop or rate limit IPv6 packets in hardware

Feature	Description																																																										
IPv6 First Hop Security	RA guard ND inspection DHCPv6 guard Neighbor binding table (snoping and static entries) Neighbor binding integrity check																																																										
Multicast Listener Discovery (MLD v1/2) snooping	Deliver IPv6 multicast packets only to the required receivers																																																										
IPv6 applications	Web/SSL, Telnet Server/SSH, Ping, Traceroute, SNMP, TFTP, SNMP, RADIUS, Syslog, DNS client, DHCP Client, DHCP Autoconfig, IPv6 DHCP Relay, TACACS																																																										
IPv6 RFC supported	RFC 4443 (which obsoletes RFC 2483): ICMPv6 RFC 4291 (which obsoletes RFC 3513): IPv6 address architecture RFC 4291: IP Version 6 Addressing Architecture RFC 2460: IPv6 Specification RFC 4881 (which obsoletes RFC 2481): Neighbor Discovery for IPv6 RFC 4862 (which obsoletes RFC 2482): IPv6 Stateless Address Autoconfiguration RFC 1981: Path MTU Discovery RFC 4007: IPv6 Scoped Address Architecture RFC 3484: Default address selection mechanism RFC 5214 (which obsoletes RFC 4214): ISATAP tunneling RFC 4293: MIB IPv6: Textual Conventions and General Group RFC 3595: Textual Conventions for IPv6 Flow Label																																																										
Management																																																											
Web user interface	Built-in switch configuration utility for easy browser-based device configuration (HTTP/HTTPS). Supports simple and advanced mode, configuration, wizards, customizable dashboard, system maintenance, monitoring, online help, and universal search.																																																										
SNMP	SNMP versions 1, 2c, and 3 with support for traps, and SNMPv3 User-based Security Model (USM)																																																										
Standard MIBs	<table border="0"> <tr> <td>lldp-MIB</td> <td>rfc2668-MIB</td> </tr> <tr> <td>lldpextdot1-MIB</td> <td>rfc2737-MIB</td> </tr> <tr> <td>lldpextdot3-MIB</td> <td>rfc2925-MIB</td> </tr> <tr> <td>lldpextmed-MIB</td> <td>rfc3621-MIB</td> </tr> <tr> <td>rfc2074-MIB</td> <td>rfc4688-MIB</td> </tr> <tr> <td>rfc2575-MIB</td> <td>rfc4670-MIB</td> </tr> <tr> <td>rfc2573-MIB</td> <td>trunk-MIB</td> </tr> <tr> <td>rfc2233-MIB</td> <td>tunnel-MIB</td> </tr> <tr> <td>rfc2013-MIB</td> <td>udp-MIB</td> </tr> <tr> <td>rfc2012-MIB</td> <td>draft-ietf-bridge-802-1x-MIB</td> </tr> <tr> <td>rfc2011-MIB</td> <td>draft-ietf-bridge-mlpmb-04-MIB</td> </tr> <tr> <td>RFC-1212</td> <td>draft-ietf-hubmib-ethnif-mib-v3-00-MIB</td> </tr> <tr> <td>RFC-1215</td> <td>draft-ietf-syslog-device-MIB</td> </tr> <tr> <td>SNMPv2-CONF</td> <td>ianaaddrannumbers-MIB</td> </tr> <tr> <td>SNMPv2-TC</td> <td>ianaif-MIB</td> </tr> <tr> <td>p-bridge-MIB</td> <td>ianaip-MIB</td> </tr> <tr> <td>q-bridge-MIB</td> <td>inet-address-MIB</td> </tr> <tr> <td>rfc1349-MIB</td> <td>ip-forward-MIB</td> </tr> <tr> <td>rfc1483-MIB</td> <td>ip-MIB</td> </tr> <tr> <td>rfc1811-MIB</td> <td>RFC1155-SMI</td> </tr> <tr> <td>rfc1812-MIB</td> <td>RFC1213-MIB</td> </tr> <tr> <td>rfc1650-MIB</td> <td>SNMPv2-MIB</td> </tr> <tr> <td>rfc1807-MIB</td> <td>SNMPv2-SMI</td> </tr> <tr> <td>rfc2571-MIB</td> <td>SNMPv2-TM</td> </tr> <tr> <td>rfc2572-MIB</td> <td>RMON-MIB</td> </tr> <tr> <td>rfc2574-MIB</td> <td>rfc1724-MIB</td> </tr> <tr> <td>rfc2578-MIB</td> <td>dcb-aj-DCBX-MIB-1108-MIB</td> </tr> <tr> <td>rfc2613-MIB</td> <td>rfc1213-MIB</td> </tr> <tr> <td>rfc2665-MIB</td> <td>rfc1757-MIB</td> </tr> </table>	lldp-MIB	rfc2668-MIB	lldpextdot1-MIB	rfc2737-MIB	lldpextdot3-MIB	rfc2925-MIB	lldpextmed-MIB	rfc3621-MIB	rfc2074-MIB	rfc4688-MIB	rfc2575-MIB	rfc4670-MIB	rfc2573-MIB	trunk-MIB	rfc2233-MIB	tunnel-MIB	rfc2013-MIB	udp-MIB	rfc2012-MIB	draft-ietf-bridge-802-1x-MIB	rfc2011-MIB	draft-ietf-bridge-mlpmb-04-MIB	RFC-1212	draft-ietf-hubmib-ethnif-mib-v3-00-MIB	RFC-1215	draft-ietf-syslog-device-MIB	SNMPv2-CONF	ianaaddrannumbers-MIB	SNMPv2-TC	ianaif-MIB	p-bridge-MIB	ianaip-MIB	q-bridge-MIB	inet-address-MIB	rfc1349-MIB	ip-forward-MIB	rfc1483-MIB	ip-MIB	rfc1811-MIB	RFC1155-SMI	rfc1812-MIB	RFC1213-MIB	rfc1650-MIB	SNMPv2-MIB	rfc1807-MIB	SNMPv2-SMI	rfc2571-MIB	SNMPv2-TM	rfc2572-MIB	RMON-MIB	rfc2574-MIB	rfc1724-MIB	rfc2578-MIB	dcb-aj-DCBX-MIB-1108-MIB	rfc2613-MIB	rfc1213-MIB	rfc2665-MIB	rfc1757-MIB
lldp-MIB	rfc2668-MIB																																																										
lldpextdot1-MIB	rfc2737-MIB																																																										
lldpextdot3-MIB	rfc2925-MIB																																																										
lldpextmed-MIB	rfc3621-MIB																																																										
rfc2074-MIB	rfc4688-MIB																																																										
rfc2575-MIB	rfc4670-MIB																																																										
rfc2573-MIB	trunk-MIB																																																										
rfc2233-MIB	tunnel-MIB																																																										
rfc2013-MIB	udp-MIB																																																										
rfc2012-MIB	draft-ietf-bridge-802-1x-MIB																																																										
rfc2011-MIB	draft-ietf-bridge-mlpmb-04-MIB																																																										
RFC-1212	draft-ietf-hubmib-ethnif-mib-v3-00-MIB																																																										
RFC-1215	draft-ietf-syslog-device-MIB																																																										
SNMPv2-CONF	ianaaddrannumbers-MIB																																																										
SNMPv2-TC	ianaif-MIB																																																										
p-bridge-MIB	ianaip-MIB																																																										
q-bridge-MIB	inet-address-MIB																																																										
rfc1349-MIB	ip-forward-MIB																																																										
rfc1483-MIB	ip-MIB																																																										
rfc1811-MIB	RFC1155-SMI																																																										
rfc1812-MIB	RFC1213-MIB																																																										
rfc1650-MIB	SNMPv2-MIB																																																										
rfc1807-MIB	SNMPv2-SMI																																																										
rfc2571-MIB	SNMPv2-TM																																																										
rfc2572-MIB	RMON-MIB																																																										
rfc2574-MIB	rfc1724-MIB																																																										
rfc2578-MIB	dcb-aj-DCBX-MIB-1108-MIB																																																										
rfc2613-MIB	rfc1213-MIB																																																										
rfc2665-MIB	rfc1757-MIB																																																										

Feature	Description
Private MIBs	<ul style="list-style-type: none"> CISCOB-ldp-MIB CISCOB-brgmulticast-MIB CISCOB-bridgeminobjects-MIB CISCOB-bonjour-MIB CISCOB-dhcp-MIB CISCOB-ldp-MIB CISCOB-wancontroltop-MIB CISCOB-traceroute-MIB CISCOB-telnet-MIB CISCOB-stormctrl-MIB CISCOB-ssh-MIB CISCOB-socket-MIB CISCOB-enc-MIB CISCOB-emon-MIB CISCOB-phy-MIB CISCOB-multisessionterminal-MIB CISCOB-mib-MIB CISCOB-jumboframes-MIB CISCOB-gmp-MIB CISCOB-endofmib-MIB CISCOB-dot1x-MIB CISCOB-deviceparams-MIB CISCOB-cb-MIB CISCOB-cdb-MIB CISCOB-brgmactswitch-MIB CISCOB-3swzextables-MIB CISCOB-ema1Ports-MIB CISCOB-6-MIB CISCOB-macbaseprio-MIB CISCOB-ery_mib-MIB CISCOB-policy-MIB CISCOB-sensor-MIB CISCOB-esa-MIB CISCOB-application-MIB CISCOB-bridgesecurity-MIB CISCOB-copy-MIB CISCOB-CpuCounters-MIB CISCOB-Custom1BonjourService-MIB CISCOB-dhcp-MIB CISCOB-IT-MIB CISCOB-discf-MIB CISCOB-embweb-MIB CISCOB-ft-MIB CISCOB-File-MIB CISCOB-Interface-MIB CISCOB-Interface_recovery-MIB CISCOB-ig-MIB CISCOB-iproter-MIB CISCOB-ipv6-MIB CISCOB-mgmt-MIB CISCOB-ic-MIB
RMON	Embedded RMON software agent supports 4 RMON groups (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis
IPv4 and IPv6 dual stack	Coexistence of both protocol stacks to ease migration

Feature	Description
Firmware upgrade	<ul style="list-style-type: none"> Web browser upgrade (HTTP/HTTPS), and TFTP and SCP Upgrade can be initiated through console port as well Dual images for resilient firmware upgrades
Port mirroring	Traffic on a port or LAG can be mirrored to another port for analysis with a network analyzer or RMON probe. Up to 8 source ports can be mirrored to one destination port.
VLAN mirroring	Traffic from a VLAN can be mirrored to a port for analysis with a network analyzer or RMON probe. Up to 8 source VLANs can be mirrored to one destination port.
Flow-based redirection and mirroring	Redirect or mirror traffic to a destination port or mirroring session based on flow
Remote Switch Port Analyzer (RSPAN)	Traffic can be mirrored across Layer 2 domain to a remote port on a different switch for easier troubleshooting
sFlow agent	Switch can export sFlow sample to external collectors; sFlow provides visibility into network traffic down to flow level
DHCP (options 12, 85, 67, 82, 129, and 150)	DHCP options facilitate tighter control from a central point (DHCP server), to obtain IP address, autoconfiguration (with configuration file download), DHCP Relay, and host name.
Autoconfiguration with Secure Copy (SCP) file download	Enables secure mass deployment with protection of sensitive data.
Text-editable configs	Config files can be edited with a text editor and downloaded to another switch, facilitating easier mass deployment.
Smartports	Simplified configuration of QoS and security capabilities.
Auto Smartports	Automatically applies the intelligence delivered through the Smartports roles to the port based on the devices discovered over Cisco Discovery Protocol or LLDP-MED. This facilitates zero-touch deployments.
Secure Copy (SCP)	Securely transfer files to and from the switch.
Textview CLI	Scriptable CLI. A full CLI as well as a menu CLI are supported.
Cloud services	Support for Cisco Active Advisor
Localization	Localization of GUI and documentation into multiple languages
Login banner	Configurable multiple banners for web as well as CLI
Time-based port operation	Link up or down based on user-defined schedule (when the ports administratively up).
Other management	Traceroute; single IP management; HTTP/HTTPS; SSH; RADIUS; port mirroring; TFTP upgrade; DHCP client; Simple Network Time Protocol (SNTP); Modem upgrade; cable diagnostics; Ping; syslog; Telet client; SSH client; automatic time settings from Management Station.
Green (Power Efficiency)	
Energy detect	Automatically turns power off on RJ-45 port when detecting link down. Active mode is resumed without loss of any packets when the switch detects the link is up.
Cable length detection	Adjusts the signal strength based on the cable length. Reduces the power consumption for shorter cables.
EEE compliant (802.3az)	Supports IEEE 802.3az on all 10 Gigabit copper ports.
Disable port LEDs	LEDs can be manually turned off to save on energy.
General	
Jumbo frames	Frame sizes up to 9K bytes. The default MTU is 2K.
MAC table	64K addresses on S6500G models. 16K addresses on all other models.
Discovery	
Bonjour	The switch advertises itself using the Bonjour protocol.
LLDP (802.1ab) with LLDP-MED extensions	Link Layer Discovery Protocol (LLDP) allows the switch to advertise its identification, configuration, and capabilities to neighboring devices that store the data in a MIB. LLDP-MED is an enhancement to LLDP that adds the extensions needed for IP phones.
Cisco Discovery Protocol	The switch advertises itself using the Cisco Discovery Protocol. It also learns the connected device and its characteristics using Cisco Discovery Protocol.

Feature	Description																																																																											
Product Specifications																																																																												
Power over Ethernet	<p>The following switches support 802.3af PoE+, 802.3at PoE, and Cisco prestandard (legacy) PoE on any of the RJ45 network ports. 60W PoE is also supported on selected RJ-45 network ports.</p> <p>Maximum power of 60W is delivered to any of the 60W PoE ports, and maximum power of 30W is delivered to any of the other RJ45 network ports, until the PoE budget for the switch is reached.</p> <p>The total power available for PoE per switch is as follows.</p> <table border="1"> <thead> <tr> <th>Model</th> <th>Power Dedicated to PoE</th> <th>Number of Ports That Support PoE</th> </tr> </thead> <tbody> <tr> <td>SF550X-24P</td> <td>195W</td> <td>24 (8 support 60W PoE)</td> </tr> <tr> <td>SF550X-24MP</td> <td>382W</td> <td>24 (8 support 60W PoE)</td> </tr> <tr> <td>SF550X-48P</td> <td>382W</td> <td>48 (8 support 60W PoE)</td> </tr> <tr> <td>SF550X-48MP</td> <td>740W</td> <td>48 (8 support 60W PoE)</td> </tr> <tr> <td>SG550X-24P</td> <td>195W</td> <td>24 (8 support 60W PoE)</td> </tr> <tr> <td>SG550X-24MP</td> <td>382W</td> <td>24 (8 support 60W PoE)</td> </tr> <tr> <td>SG550X-24MPP</td> <td>740W</td> <td>24 (8 support 60W PoE)</td> </tr> <tr> <td>SG550X-48P</td> <td>382W</td> <td>48 (8 support 60W PoE)</td> </tr> <tr> <td>SG550X-48MP</td> <td>740W</td> <td>48 (8 support 60W PoE)</td> </tr> </tbody> </table>	Model	Power Dedicated to PoE	Number of Ports That Support PoE	SF550X-24P	195W	24 (8 support 60W PoE)	SF550X-24MP	382W	24 (8 support 60W PoE)	SF550X-48P	382W	48 (8 support 60W PoE)	SF550X-48MP	740W	48 (8 support 60W PoE)	SG550X-24P	195W	24 (8 support 60W PoE)	SG550X-24MP	382W	24 (8 support 60W PoE)	SG550X-24MPP	740W	24 (8 support 60W PoE)	SG550X-48P	382W	48 (8 support 60W PoE)	SG550X-48MP	740W	48 (8 support 60W PoE)																																													
Model	Power Dedicated to PoE	Number of Ports That Support PoE																																																																										
SF550X-24P	195W	24 (8 support 60W PoE)																																																																										
SF550X-24MP	382W	24 (8 support 60W PoE)																																																																										
SF550X-48P	382W	48 (8 support 60W PoE)																																																																										
SF550X-48MP	740W	48 (8 support 60W PoE)																																																																										
SG550X-24P	195W	24 (8 support 60W PoE)																																																																										
SG550X-24MP	382W	24 (8 support 60W PoE)																																																																										
SG550X-24MPP	740W	24 (8 support 60W PoE)																																																																										
SG550X-48P	382W	48 (8 support 60W PoE)																																																																										
SG550X-48MP	740W	48 (8 support 60W PoE)																																																																										
Power consumption (worst case)	<table border="1"> <thead> <tr> <th>Model Name</th> <th>Green Power (mode)</th> <th>System Power Consumption</th> <th>Power Consumption (with PoE)</th> <th>Heat Dissipation (BTU/hr)</th> </tr> </thead> <tbody> <tr> <td>SF550X-24</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=23.0W 220V=20.8W</td> <td>N/A</td> <td>76.87</td> </tr> <tr> <td>SF550X-24P</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=39.3W 220V=39.9W</td> <td>110V=242.1W 220V=239.2W</td> <td>828.08</td> </tr> <tr> <td>SF550X-24MP</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=41.2W 220V=42.0W</td> <td>110V=452.0W 220V=440.9W</td> <td>1,542.29</td> </tr> <tr> <td>SF550X-48</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=35.9W 220V=37.6W</td> <td>N/A</td> <td>128.30</td> </tr> <tr> <td>SF550X-48P</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=50.7W 220V=51.3W</td> <td>110V=481.6W 220V=448.9W</td> <td>1,575.73</td> </tr> <tr> <td>SF550X-48MP</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=54.7W 220V=54.4W</td> <td>110V=642.1W 220V=620.7W</td> <td>2,073.36</td> </tr> <tr> <td>SG550X-24</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=33.5W 220V=33.5W</td> <td>N/A</td> <td>114.31</td> </tr> <tr> <td>SG550X-24P</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=49.4W 220V=50.1W</td> <td>110V=269.2W 220V=260.1W</td> <td>918.55</td> </tr> <tr> <td>SG550X-24MP</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=53.6W 220V=54.6W</td> <td>110V=471.2W 220V=460.4W</td> <td>1,607.80</td> </tr> <tr> <td>SG550X-24MPP</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=62.3W 220V=62.2W</td> <td>110V=870.1W 220V=860.2W</td> <td>2,968.90</td> </tr> <tr> <td>SG550X-48</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=32.0W 220V=31.6W</td> <td>N/A</td> <td>177.43</td> </tr> <tr> <td>SG550X-48P</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=79.3W 220V=76.9W</td> <td>110V=494.3W 220V=483.1W</td> <td>1,688.62</td> </tr> <tr> <td>SG550X-48MP</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=82.9W 220V=82.9W</td> <td>110V=893.1W 220V=876.9W</td> <td>3,047.38</td> </tr> <tr> <td>SG550X-8F8T</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=84.3W 220V=84.0W</td> <td>N/A</td> <td>285.87</td> </tr> </tbody> </table>	Model Name	Green Power (mode)	System Power Consumption	Power Consumption (with PoE)	Heat Dissipation (BTU/hr)	SF550X-24	EEE, Energy Detect, Short Reach	110V=23.0W 220V=20.8W	N/A	76.87	SF550X-24P	EEE, Energy Detect, Short Reach	110V=39.3W 220V=39.9W	110V=242.1W 220V=239.2W	828.08	SF550X-24MP	EEE, Energy Detect, Short Reach	110V=41.2W 220V=42.0W	110V=452.0W 220V=440.9W	1,542.29	SF550X-48	EEE, Energy Detect, Short Reach	110V=35.9W 220V=37.6W	N/A	128.30	SF550X-48P	EEE, Energy Detect, Short Reach	110V=50.7W 220V=51.3W	110V=481.6W 220V=448.9W	1,575.73	SF550X-48MP	EEE, Energy Detect, Short Reach	110V=54.7W 220V=54.4W	110V=642.1W 220V=620.7W	2,073.36	SG550X-24	EEE, Energy Detect, Short Reach	110V=33.5W 220V=33.5W	N/A	114.31	SG550X-24P	EEE, Energy Detect, Short Reach	110V=49.4W 220V=50.1W	110V=269.2W 220V=260.1W	918.55	SG550X-24MP	EEE, Energy Detect, Short Reach	110V=53.6W 220V=54.6W	110V=471.2W 220V=460.4W	1,607.80	SG550X-24MPP	EEE, Energy Detect, Short Reach	110V=62.3W 220V=62.2W	110V=870.1W 220V=860.2W	2,968.90	SG550X-48	EEE, Energy Detect, Short Reach	110V=32.0W 220V=31.6W	N/A	177.43	SG550X-48P	EEE, Energy Detect, Short Reach	110V=79.3W 220V=76.9W	110V=494.3W 220V=483.1W	1,688.62	SG550X-48MP	EEE, Energy Detect, Short Reach	110V=82.9W 220V=82.9W	110V=893.1W 220V=876.9W	3,047.38	SG550X-8F8T	EEE, Energy Detect, Short Reach	110V=84.3W 220V=84.0W	N/A	285.87
Model Name	Green Power (mode)	System Power Consumption	Power Consumption (with PoE)	Heat Dissipation (BTU/hr)																																																																								
SF550X-24	EEE, Energy Detect, Short Reach	110V=23.0W 220V=20.8W	N/A	76.87																																																																								
SF550X-24P	EEE, Energy Detect, Short Reach	110V=39.3W 220V=39.9W	110V=242.1W 220V=239.2W	828.08																																																																								
SF550X-24MP	EEE, Energy Detect, Short Reach	110V=41.2W 220V=42.0W	110V=452.0W 220V=440.9W	1,542.29																																																																								
SF550X-48	EEE, Energy Detect, Short Reach	110V=35.9W 220V=37.6W	N/A	128.30																																																																								
SF550X-48P	EEE, Energy Detect, Short Reach	110V=50.7W 220V=51.3W	110V=481.6W 220V=448.9W	1,575.73																																																																								
SF550X-48MP	EEE, Energy Detect, Short Reach	110V=54.7W 220V=54.4W	110V=642.1W 220V=620.7W	2,073.36																																																																								
SG550X-24	EEE, Energy Detect, Short Reach	110V=33.5W 220V=33.5W	N/A	114.31																																																																								
SG550X-24P	EEE, Energy Detect, Short Reach	110V=49.4W 220V=50.1W	110V=269.2W 220V=260.1W	918.55																																																																								
SG550X-24MP	EEE, Energy Detect, Short Reach	110V=53.6W 220V=54.6W	110V=471.2W 220V=460.4W	1,607.80																																																																								
SG550X-24MPP	EEE, Energy Detect, Short Reach	110V=62.3W 220V=62.2W	110V=870.1W 220V=860.2W	2,968.90																																																																								
SG550X-48	EEE, Energy Detect, Short Reach	110V=32.0W 220V=31.6W	N/A	177.43																																																																								
SG550X-48P	EEE, Energy Detect, Short Reach	110V=79.3W 220V=76.9W	110V=494.3W 220V=483.1W	1,688.62																																																																								
SG550X-48MP	EEE, Energy Detect, Short Reach	110V=82.9W 220V=82.9W	110V=893.1W 220V=876.9W	3,047.38																																																																								
SG550X-8F8T	EEE, Energy Detect, Short Reach	110V=84.3W 220V=84.0W	N/A	285.87																																																																								

Feature	Description																																																																								
Ports	<table border="1"> <thead> <tr> <th>Model Name</th> <th>Total System Ports</th> <th>Network Ports</th> <th>Uplink Ports</th> </tr> </thead> <tbody> <tr> <td>SF550X-24</td> <td>24 FE + 4 10GE</td> <td>24 FE</td> <td>2 10GE copper/SFP+ combo + 2 SFP+</td> </tr> <tr> <td>SF550X-24P</td> <td>24 FE + 4 10GE</td> <td>24 FE</td> <td>2 10GE copper/SFP+ combo + 2 SFP+</td> </tr> <tr> <td>SF550X-24MP</td> <td>24 FE + 4 10GE</td> <td>24 FE</td> <td>2 10GE copper/SFP+ combo + 2 SFP+</td> </tr> <tr> <td>SF550X-48</td> <td>48 FE + 4 10GE</td> <td>48 FE</td> <td>2 10GE copper/SFP+ combo + 2 SFP+</td> </tr> <tr> <td>SF550X-48P</td> <td>48 FE + 4 10GE</td> <td>48 FE</td> <td>2 10GE copper/SFP+ combo + 2 SFP+</td> </tr> <tr> <td>SF550X-48MP</td> <td>48 FE + 4 10GE</td> <td>48 FE</td> <td>2 10GE copper/SFP+ combo + 2 SFP+</td> </tr> <tr> <td>SG550X-24</td> <td>24 GE + 4 10GE</td> <td>24 GE</td> <td>2 10GE copper/SFP+ combo + 2 SFP+</td> </tr> <tr> <td>SG550X-24P</td> <td>24 GE + 4 10GE</td> <td>24 GE</td> <td>2 10GE copper/SFP+ combo + 2 SFP+</td> </tr> <tr> <td>SG550X-24MP</td> <td>24 GE + 4 10GE</td> <td>24 GE</td> <td>2 10GE copper/SFP+ combo + 2 SFP+</td> </tr> <tr> <td>SG550X-24MPP</td> <td>24 GE + 4 10GE</td> <td>24 GE</td> <td>2 10GE copper/SFP+ combo + 2 SFP+</td> </tr> <tr> <td>SG550X-48</td> <td>48 GE + 4 10GE</td> <td>48 GE</td> <td>2 10GE copper/SFP+ combo + 2 SFP+</td> </tr> <tr> <td>SG550X-48P</td> <td>48 GE + 4 10GE</td> <td>48 GE</td> <td>2 10GE copper/SFP+ combo + 2 SFP+</td> </tr> <tr> <td>SG550X-48MP</td> <td>48 GE + 4 10GE</td> <td>48 GE</td> <td>2 10GE copper/SFP+ combo + 2 SFP+</td> </tr> <tr> <td>SG550X-8F8T</td> <td>8 10G copper + 8 10G SFP+ plus 1 GE OOB management</td> <td>8 10GE</td> <td>8 10GE SFP+ (dedicated)</td> </tr> <tr> <td>SG550X-24F</td> <td>22 10G SFP+ slots + 2 combo 10G copper/SFP+ plus 1 GE OOB management</td> <td>22 10GE SFP+</td> <td>2 10GE copper/SFP+ combo</td> </tr> <tr> <td>SG550X-24T</td> <td>22 10G copper + 2 combo 10G copper/SFP+ plus 1 GE OOB management</td> <td>22 10GE</td> <td>2 10GE copper/SFP+ combo</td> </tr> <tr> <td>SG550X-48T</td> <td>48 10G copper + 2 combo 10G copper/SFP+ plus 1 GE OOB management</td> <td>48 10GE</td> <td>2 10GE copper/SFP+ combo</td> </tr> </tbody> </table>	Model Name	Total System Ports	Network Ports	Uplink Ports	SF550X-24	24 FE + 4 10GE	24 FE	2 10GE copper/SFP+ combo + 2 SFP+	SF550X-24P	24 FE + 4 10GE	24 FE	2 10GE copper/SFP+ combo + 2 SFP+	SF550X-24MP	24 FE + 4 10GE	24 FE	2 10GE copper/SFP+ combo + 2 SFP+	SF550X-48	48 FE + 4 10GE	48 FE	2 10GE copper/SFP+ combo + 2 SFP+	SF550X-48P	48 FE + 4 10GE	48 FE	2 10GE copper/SFP+ combo + 2 SFP+	SF550X-48MP	48 FE + 4 10GE	48 FE	2 10GE copper/SFP+ combo + 2 SFP+	SG550X-24	24 GE + 4 10GE	24 GE	2 10GE copper/SFP+ combo + 2 SFP+	SG550X-24P	24 GE + 4 10GE	24 GE	2 10GE copper/SFP+ combo + 2 SFP+	SG550X-24MP	24 GE + 4 10GE	24 GE	2 10GE copper/SFP+ combo + 2 SFP+	SG550X-24MPP	24 GE + 4 10GE	24 GE	2 10GE copper/SFP+ combo + 2 SFP+	SG550X-48	48 GE + 4 10GE	48 GE	2 10GE copper/SFP+ combo + 2 SFP+	SG550X-48P	48 GE + 4 10GE	48 GE	2 10GE copper/SFP+ combo + 2 SFP+	SG550X-48MP	48 GE + 4 10GE	48 GE	2 10GE copper/SFP+ combo + 2 SFP+	SG550X-8F8T	8 10G copper + 8 10G SFP+ plus 1 GE OOB management	8 10GE	8 10GE SFP+ (dedicated)	SG550X-24F	22 10G SFP+ slots + 2 combo 10G copper/SFP+ plus 1 GE OOB management	22 10GE SFP+	2 10GE copper/SFP+ combo	SG550X-24T	22 10G copper + 2 combo 10G copper/SFP+ plus 1 GE OOB management	22 10GE	2 10GE copper/SFP+ combo	SG550X-48T	48 10G copper + 2 combo 10G copper/SFP+ plus 1 GE OOB management	48 10GE	2 10GE copper/SFP+ combo
Model Name	Total System Ports	Network Ports	Uplink Ports																																																																						
SF550X-24	24 FE + 4 10GE	24 FE	2 10GE copper/SFP+ combo + 2 SFP+																																																																						
SF550X-24P	24 FE + 4 10GE	24 FE	2 10GE copper/SFP+ combo + 2 SFP+																																																																						
SF550X-24MP	24 FE + 4 10GE	24 FE	2 10GE copper/SFP+ combo + 2 SFP+																																																																						
SF550X-48	48 FE + 4 10GE	48 FE	2 10GE copper/SFP+ combo + 2 SFP+																																																																						
SF550X-48P	48 FE + 4 10GE	48 FE	2 10GE copper/SFP+ combo + 2 SFP+																																																																						
SF550X-48MP	48 FE + 4 10GE	48 FE	2 10GE copper/SFP+ combo + 2 SFP+																																																																						
SG550X-24	24 GE + 4 10GE	24 GE	2 10GE copper/SFP+ combo + 2 SFP+																																																																						
SG550X-24P	24 GE + 4 10GE	24 GE	2 10GE copper/SFP+ combo + 2 SFP+																																																																						
SG550X-24MP	24 GE + 4 10GE	24 GE	2 10GE copper/SFP+ combo + 2 SFP+																																																																						
SG550X-24MPP	24 GE + 4 10GE	24 GE	2 10GE copper/SFP+ combo + 2 SFP+																																																																						
SG550X-48	48 GE + 4 10GE	48 GE	2 10GE copper/SFP+ combo + 2 SFP+																																																																						
SG550X-48P	48 GE + 4 10GE	48 GE	2 10GE copper/SFP+ combo + 2 SFP+																																																																						
SG550X-48MP	48 GE + 4 10GE	48 GE	2 10GE copper/SFP+ combo + 2 SFP+																																																																						
SG550X-8F8T	8 10G copper + 8 10G SFP+ plus 1 GE OOB management	8 10GE	8 10GE SFP+ (dedicated)																																																																						
SG550X-24F	22 10G SFP+ slots + 2 combo 10G copper/SFP+ plus 1 GE OOB management	22 10GE SFP+	2 10GE copper/SFP+ combo																																																																						
SG550X-24T	22 10G copper + 2 combo 10G copper/SFP+ plus 1 GE OOB management	22 10GE	2 10GE copper/SFP+ combo																																																																						
SG550X-48T	48 10G copper + 2 combo 10G copper/SFP+ plus 1 GE OOB management	48 10GE	2 10GE copper/SFP+ combo																																																																						
Console port	Cisco Standard RJ45 console port.																																																																								
OOB management port	Dedicated Gigabit management port for out-of-band management on SG550X models																																																																								
RPS	RPS connector																																																																								
USB slot	USB Type-A slot on the front panel of the switch for easy file and image management																																																																								
Buttons	Reset button																																																																								
Cabling type	Unshielded twisted pair (UTP) Category 5 or better, fiber options (SFP and MMF), coaxial SFP+																																																																								
LEDs	System, master, fan, RPS, stack ID, link speed per port																																																																								

Feature	Description
Flash	256 MB
CPU	800 MHz (dual-core) ARM
CPU memory	512 MB
Packet buffer	All numbers are aggregate across all ports because the buffers are dynamically shared.
	Model Name Packet Buffer
	SF550X-24 1.5 MB
	SF550X-24P 1.5 MB
	SF550X-24MP 1.5 MB
	SF550X-48 3 MB
	SF550X-48P 3 MB
	SF550X-48MP 3 MB
	SG550X-24 1.5 MB
	SG550X-24P 1.5 MB
	SG550X-24MP 1.5 MB
	SG550X-24MPP 1.5 MB
	SG550X-48 3 MB
	SG550X-48P 3 MB
	SG550X-48MP 3 MB
	SG550XG-8F8T 2 MB
	SG550XG-24F 2 MB
	SG550XG-24T 2 MB
	SG550XG-48T 4 MB
Supported SFP/SFP+ modules	SKU Media Speed Maximum Distance
	MGBBX1 Single-mode fiber 1000 Mbps 10 km
	MGBSX1 Multimode fiber 1000 Mbps 500 m
	MGBLH1 Single-mode fiber 1000 Mbps 40 km
	MGBLX1 Single-mode fiber 1000 Mbps 10 km
	MGBT1 UTP cat 5e 1000 Mbps 100 m
	SFP-H10GB-CU1M Copper coax 10 Gig 1 m
	SFP-H10GB-CU3M Copper coax 10 Gig 3 m
	SFP-H10GB-CU5M Copper coax 10 Gig 5 m
	SFP-10G-SR Multimode fiber 10 Gig 26 m - 400 m
	SFP-10G-LR Single-mode fiber 10 Gig 10 km
	SFP-10G-SR-S Multimode fiber 10 Gig 26 m - 400 m
	SFP-10G-LR-S Single-mode fiber 10 Gig 10 km
Environmental	
Unit dimensions (W x H x D)	Model Name Unit Dimensions
	SF550X-24 440 x 44 x 257 mm (17.3 x 1.7 x 10.12 in)
	SF550X-24P 440 x 44 x 350 mm (17.3 x 1.7 x 13.78 in)
	SF550X-24MP 440 x 44 x 350 mm (17.3 x 1.7 x 13.78 in)
	SF550X-48 440 x 44 x 257 mm (17.3 x 1.7 x 10.12 in)
	SF550X-48P 440 x 44 x 350 mm (17.3 x 1.7 x 13.78 in)
	SF550X-48MP 440 x 44 x 350 mm (17.3 x 1.7 x 13.78 in)

Feature	Description
	SG550X-24 440 x 44 x 257 mm (17.3 x 1.7 x 10.12 in)
	SG550X-24P 440 x 44 x 350 mm (17.3 x 1.7 x 13.78 in)
	SG550X-24MP 440 x 44 x 350 mm (17.3 x 1.7 x 13.78 in)
	SG550X-24MPP 440 x 44 x 450 mm (17.3 x 1.7 x 17.72 in)
	SG550X-48 440 x 44 x 257 mm (17.3 x 1.7 x 10.12 in)
	SG550X-48P 440 x 44 x 350 mm (17.3 x 1.7 x 13.78 in)
	SG550X-48MP 440 x 44 x 450 mm (17.3 x 1.7 x 17.72 in)
	SG550XG-8F8T 440 x 44 x 350 mm (17.3 x 1.7 x 13.78 in)
	SG550XG-24F 440 x 44 x 350 mm (17.3 x 1.7 x 13.78 in)
	SG550XG-24T 440 x 44 x 450 mm (17.3 x 1.7 x 17.72 in)
	SG550XG-48T 440 x 44 x 450 mm (17.3 x 1.7 x 17.72 in)
Unit weight	Unit Weight
	SF550X-24 3.09 kg (6.81 lb)
	SF550X-24P 4.14 kg (9.13 lb)
	SF550X-24MP 4.74 kg (10.45 lb)
	SF550X-48 3.54 kg (7.80 lb)
	SF550X-48P 5.09 kg (11.22 lb)
	SF550X-48MP 5.16 kg (11.39 lb)
	SG550X-24 3.27 kg (7.21 lb)
	SG550X-24P 4.72 kg (10.41 lb)
	SG550X-24MP 5.33 kg (11.75 lb)
	SG550X-24MPP 6.19 kg (13.65 lb)
	SG550X-48 3.73 kg (8.22 lb)
	SG550X-48P 5.82 kg (12.83 lb)
	SG550X-48MP 6.69 kg (14.75 lb)
	SG550XG-8F8T 5.23 kg (11.53 lb)
	SG550XG-24F 4.16 kg (9.17 lb)
	SG550XG-24T 6.36 kg (14.07 lb)
	SG550XG-48T 7.43 kg (16.38 lb)
Power	100 - 240V 47 - 63 Hz, Internal, universal
Certification	UL (UL 60950), CSA (CSA 22.2), CE mark, FCC Part 15 (CFR 47) Class A
Operating temperature	32° to 122°F (0° to 50°C)
Storage temperature	-4° to 158°F (-20° to 70°C)
Operating humidity	10% to 90%, relative, noncondensing
Storage humidity	10% to 90%, relative, noncondensing
Acoustic noise and mean time between failures (MTBF)	Model Name Fan (Number) Acoustic Noise MTBF at 50°C (Hours)
	SF550X-24 1 + 1 (redundant) 0°C - 30°C: 35.2dB 581,004 50°C: 38.3dB
	SF550X-24P 2 + 1 (redundant) 0°C - 25°C: 36.3dB 573,369 50°C: 41.6dB
	SF550X-24MP 3 + 1 (redundant) 0°C - 30°C: 37.9dB 575,569 50°C: 41.2dB
	SF550X-48 1 + 1 (redundant) 0°C - 25°C: 35.7dB 504,328 50°C: 40.8dB

Feature	Description			
	SF550X-48P	3 + 1 (redundant)	0°C - 25°C: 37.2dB 50°C: 43.8dB	495,695
	SF550X-48MP	4 + 1 (redundant)	0°C - 25°C: 42.5dB 50°C: 48.5dB	472,180
	SG550X-24	1 + 1 (redundant)	0°C - 30°C: 34.2dB 50°C: 49.3dB	375,790
	SG550X-24P	3 + 1 (redundant)	0°C - 25°C: 41.0dB 50°C: 52.9dB	299,949
	SG550X-24MP	3 + 1 (redundant)	0°C - 30°C: 43.9dB 50°C: 52.3dB	178,768
	SG550X-24MPP	4 + 1 (redundant)	0°C - 30°C: 43.1dB 50°C: 53.2dB	170,213
	SG550X-48	1 + 1 (redundant)	0°C - 30°C: 35.0dB 50°C: 51.7dB	248,097
	SG550X-48P	3 + 1 (redundant)	0°C - 25°C: 43.8dB 50°C: 52.1dB	159,129
	SG550X-48MP	4 + 1 (redundant)	0°C - 30°C: 43.1dB 50°C: 53.2dB	163,264
	SG550XG-8F8T	3 + 1 (redundant)	0°C - 30°C: 39.2dB 50°C: 49.6dB	434,724
	SG550XG-24F	4 + 1 (redundant)	0°C - 30°C: 40.0dB 50°C: 49.1dB	642,449
	SG550XG-24T	4 + 1 (redundant)	0°C - 30°C: 40.1dB 50°C: 50.5dB	217,485
	SG550XG-48T	4 + 1 (redundant)	0°C - 25°C: 44.5dB 50°C: 58.9dB	111,323
Warranty	Limited lifetime with next-business-day advance replacement (where available, otherwise same day ship)			

Package Contents
<ul style="list-style-type: none"> • Cisco 550X Series Stackable Managed Switch • Power cord • Mounting kit included with all models • Serial cable • CD-ROM with user documentation (PDF) included • Quick Start Guide
Minimum Requirements
<ul style="list-style-type: none"> • Web browser: Mozilla Firefox version 34 or later; Microsoft Internet Explorer version 9 or later; Chrome version 40 or later; Safari version 5 or later. • Category 5 Ethernet network cable for 10/100 speeds at up to 100m; Category 5e Ethernet network cable for Gigabit speeds at up to 100m; Category 6a Ethernet network cable for 10G speeds at up to 100m. • TCP/IP, network adaptor, and network operating system (such as Microsoft Windows, Linux, or Mac OS X) installed.

Ordering Information

Table 2 provides ordering information.

Table 2. Ordering Information

Model Name	Product Order ID Number	Description
10-Gigabit		
SF550X-24	SF550X-24-K9	<ul style="list-style-type: none"> • 24 x 10/100 ports • 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)
SF550X-24P	SF550X-24P-K9	<ul style="list-style-type: none"> • 24 x 10/100 PoE+ ports with 195W power budget • 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)
SF550X-24MP	SF550X-24MP-K9	<ul style="list-style-type: none"> • 24 x 10/100 PoE+ ports with 382W power budget • 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)
SF550X-48	SF550X-48-K9	<ul style="list-style-type: none"> • 48 x 10/100 ports • 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)
SF550X-48P	SF550X-48P-K9	<ul style="list-style-type: none"> • 48 x 10/100 PoE+ ports with 382W power budget • 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)
SF550X-48MP	SF550X-48MP-K9	<ul style="list-style-type: none"> • 48 x 10/100 PoE+ ports with 740W power budget • 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)
SG550X-24	SG550X-24-K9	<ul style="list-style-type: none"> • 24 x 10/100/1000 ports • 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)
SG550X-24P	SG550X-24P-K9	<ul style="list-style-type: none"> • 24 x 10/100/1000 PoE+ ports with 195W power budget • 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)
SG550X-24MP	SG550X-24MP-K9	<ul style="list-style-type: none"> • 24 x 10/100/1000 PoE+ ports with 382W power budget • 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)
SG550X-24MPP	SG550X-24MPP-K9	<ul style="list-style-type: none"> • 24 x 10/100/1000 PoE+ ports with 740W power budget • 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)
SG550X-48	SG550X-48-K9	<ul style="list-style-type: none"> • 48 x 10/100/1000 ports • 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)
SG550X-48P	SG550X-48P-K9	<ul style="list-style-type: none"> • 48 x 10/100/1000 PoE+ ports with 382W power budget • 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)
SG550X-48MP	SG550X-48MP-K9	<ul style="list-style-type: none"> • 48 x 10/100/1000 PoE+ ports with 740W power budget • 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)
SG550XG-8F8T	SG550XG-8F8T-K9	<ul style="list-style-type: none"> • 8 x 10 Gigabit Ethernet 10GBase-T copper port • 8 x 10 Gigabit Ethernet SFP+ (dedicated) • 1 x Gigabit Ethernet management port
SG550XG-24F	SG550XG-24F-K9	<ul style="list-style-type: none"> • 24 x 10 Gigabit Ethernet SFP+ • 2 x 10 Gigabit Ethernet 10GBase-T copper port (combo with 2 SFP+) • 1 x Gigabit Ethernet management port
SG550XG-24T	SG550XG-24T-K9	<ul style="list-style-type: none"> • 24 x 10 Gigabit Ethernet 10GBase-T copper port • 2 x 10 Gigabit Ethernet SFP+ (combo with 2 copper ports) • 1 x Gigabit Ethernet management port
SG550XG-48T	SG550XG-48T-K9	<ul style="list-style-type: none"> • 48 x 10 Gigabit Ethernet 10GBase-T copper port • 2 x 10 Gigabit Ethernet SFP+ (combo with 2 copper ports) • 1 x Gigabit Ethernet management port

Each combo port has one 10 Gigabit Ethernet copper port and one 10 Gigabit Ethernet SFP+ slot, with one port active at a time.

000146

> =



An Advanced Technology Backbone for Growing Businesses

Growth is never a bad thing. However, as you gain new customers and a higher profile, you need a business technology platform capable of delivering a higher level of service and reliability. With more users, more devices and applications, and more exposure to security threats, a switching platform designed for a smaller operation simply cannot meet your growing needs. It's time for a network that will support your business as you take it to the next level. Cisco 550X Series switches provide the advanced feature set, reliability, and investment protection your business needs, today and in the future.

**Cisco Capital
Financing to Help You Achieve Your Objectives**

Cisco Capital[®] financing can help you acquire the technology you need to achieve your objectives and stay competitive. We can help you reduce CapEx. Accelerate your growth. Optimize your investment dollars and ROI. Cisco Capital financing gives you flexibility in acquiring hardware, software, services, and complementary third-party equipment. And there's just one predictable payment. Cisco Capital is available in more than 100 countries. [Learn more.](#)

For More Information

To find out more about the Cisco 550X Series switches, visit <http://www.cisco.com/go/550Xswitches>.

✓ US

7



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

© Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: www.cisco.com/go/trademarks. Third party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)

Printed in USA

C78-735874-01 09/16

© 2016 Cisco and/or its affiliates. All rights reserved. This document is Cisco Public Information.

Page 19 of 19

Handwritten scribble and stamp at the bottom right of the page.

Handwritten signature at the bottom right of the page.



Cisco 300 Series Switches Cisco Small Business

Easy-to-Use Managed Switches that Provide the Ideal Combination of Features and Affordability

To stay ahead in a competitive marketplace, small businesses need to make every dollar count. That means getting the most value from your technology investments, but it also means making sure that employees have fast, reliable access to the business tools and information they need. Every minute an employee waits for an unresponsive application – and every minute your network is down – has an impact on your bottom line. The importance of maintaining a strong and dependable business network only grows as your business adds more employees, applications, and network complexity.

When your business needs advanced security and features but value is still a top consideration, you're ready for the new generation of Cisco® Small Business managed switches: the Cisco 300 Series.



Cisco 300 Series Switches

The Cisco 300 Series, part of the Cisco Small Business line of network solutions, is a portfolio of affordable managed switches that provides a reliable foundation for your business network. These switches deliver the features you need to improve the availability of your critical business applications, protect your sensitive information, and optimize your network bandwidth to deliver information and applications more effectively. Easy to set up and use, the Cisco 300 Series provides the ideal combination of affordability and capabilities for small businesses, and helps you create a more efficient, better-connected workforce.

The Cisco 300 Series is broad portfolio of fixed-configuration managed Ethernet switches. Models are available with 8 to 48 ports of Fast Ethernet and 10 to 52 ports of Gigabit Ethernet connectivity, providing optimal flexibility to create exactly the right network foundation for your business. However, unlike other small business switching solutions that provide managed network capabilities only in the costliest models, all Cisco 300 Series Switches support the advanced security management capabilities and network features you need to support business-class data, voice, security, and wireless technologies. At the same time, these switches are simple to deploy and configure, allowing you to take advantage of the managed network services your business needs.

Business Applications

Whether you need a basic high-performance network to connect employee computers or a solution to deliver data, voice, and video services, the Cisco 300 Series offers a solution to meet your needs. Possible deployment scenarios include:

- **Secure desktop connectivity:** Cisco 300 Series Switches can simply and securely connect employees working in small offices with each other and with all of the servers, printers, and other devices they use. High performance and reliable connectivity helps speed file transfers and data processing, improves network uptime, and keeps your employees connected and productive.
- **Secure Wireless connectivity:** With its advanced Security features, Power over Ethernet, Auto Smartports, CoS, VLAN and Access Control features, the Cisco 300 Series Switches are the perfect foundation to add Business Grade wireless to an SMB network.
- **Unified communications:** As a managed network solution, the Cisco 300 Series provides the performance and advanced traffic-handling intelligence you need to deliver all communications and data over a single network. Cisco offers a complete portfolio of IP telephony and other unified communications products designed for small businesses. Cisco 300 Series Switches have been rigorously tested to help ensure easy integration and full compatibility with these and other products, providing a complete small business solution.
- **Highly secure guest connectivity.** Cisco 300 Series Switches let you extend highly secure network connectivity to guests in a variety of settings, such as a hotel, an office waiting room, or any other area open to nonemployee users. Using powerful but easy-to-configure security and traffic segmentation capabilities, you can isolate your vital business traffic from guest services and keep guests' network sessions private from each other.

Features and Benefits

Cisco 300 Series Switches provide security, performance, traffic management, and other capabilities – optimized and customized, and at the right price for small businesses. The Cisco 300 Series provides:

- **High performance and reliability:** Cisco 300 Series Switches have been rigorously tested to deliver the high availability and performance you expect from a Cisco switch. The solutions speed up file transfer times and improve slow, sluggish networks, while keeping your vital business applications available and preventing costly downtime. As a managed switching solution, the Cisco 300 Series also gives you the flexibility to manage and prioritize high-bandwidth traffic such as voice. That means you can empower your employees with state-of-the-art communication and productivity solutions, without draining the performance of your other business applications.
- **Fast, easy setup and configuration:** Cisco 300 Series Switches are designed to be easy to use and manage by small businesses and the partners who serve them. The included device manager software provides an intuitive, web-based interface to simplify setup, security, and quality of service (QoS) traffic prioritization, allowing even users without IT expertise to configure the switch in minutes. Cisco also provides a Cisco FindIT Network Discovery Utility. This utility that works through a simple toolbar on the user's web browser to discover Cisco devices in the network and display basic information, such as serial numbers and IP addresses, to aid in the configuration and deployment of Cisco Small Business products. For more information, and to download the utility, please visit <http://www.cisco.com/go/findit>. These switches use Cisco Discovery Protocol as well as Link Layer Discovery Protocol (LLDP-MED) to automatically detect all the devices connected to your network, and then automatically configure them selves for the appropriate connectivity and instructs the devices to use appropriate voice VLAN or

QoS parameters. For more advanced capabilities and hands-on control, the switches support Smartports which configure the ports with specific levels of Security, QoS, and availability according to the type of connected device, based on Cisco best practices and pretested configurations. The Auto Smartports feature applies the intelligence delivered through the Smartportroles and applies it automatically to the port based on the devices discovered over CDP or LLDP-MED. This facilitates zero touch deployments. Although the Cisco 300 Series is designed to be deployed without using a command-line interface (CLI), Cisco Textview Is available for those who prefer to use text-based configuration. Together, these features reduce the time your staff must devote to network deployment, management, and troubleshooting.

- **Strong security:** The Cisco 300 Series Switches provide a high level of security and give you fine-grained control to safeguard your network from unauthorized users. Advanced security features include:
 - **Embedded security** to protect management data traveling to and from the switch and encrypt network communications.
 - **Extensive access control lists (ACLs)** to restrict sensitive portions of the network from unauthorized users and guard against network attacks.
 - **Guest Virtual LANs (VLANs)** to let you provide Internet connectivity to nonemployee users while isolating critical business services from guest traffic.
 - **Support for advanced network security applications** such as IEEE 802.1X port security to tightly limit access to specific segments of your network. Web based authentication provides a consistent interface to authenticate all types of host devices and operating systems, without the complexity of deploying IEEE 802.1X clients on each endpoint.
 - **Time based ACLs and Port Operation** restrict access to the network during predesignated times, such as business hours.
 - **Security mechanisms** such as, Bridge Protocol Data Unit (BPDU) Guard and broadcast/multicast/unknown unicast storm control, protect the network from invalid configurations or malicious intent.
 - **Secure Core Technology (SCT)** helps ensure that the switch will receive and process management and protocol traffic no matter how much traffic is received.
 - **Advanced defense mechanisms**, including Dynamic ARP Inspection (DAI), IP Source Guard, and Dynamic Host Configuration Protocol (DHCP) snooping, detect and block deliberate network attacks. Combinations of these protocols are also referred to as IPMB (IP-MAC-port binding).
 - **IPv6 First Hop Security** extends the advanced threat protection to IPv6. This comprehensive security suite includes ND inspection, RA guard, DHCPv6 guard and neighbor binding integrity check, providing unparalleled protection against a vast range of address spoofing and man in the middle attack on IPv6 networks.
 - **DOS (denial-of-service) attack prevention** maximizes network uptime in the presence of an attack.
 - **Protection of management sessions** using Radius, TACACS+ and local database authentication as well as secure management sessions over SSL, SSH, and SNMPv3.

- **Power over Ethernet:** Cisco 300 Series Switches are available with up to 48 PoE ports of Fast Ethernet or Gigabit Ethernet connectivity. This capability simplifies advanced technology deployments such as IP telephony, wireless, and IP surveillance by allowing you to connect and power network endpoints over a single Ethernet cable. With no need to install separate power supplies for IP phones or wireless access points, you can take advantage of advanced communications technologies more quickly, and at a lower cost. Some models support both IEEE 802.3af PoE and IEEE 802.3at PoE+ while others support IEEE 802.3af PoE only.
- **IP telephony support:** Cisco 300 Series Switches include embedded QoS intelligence to prioritize delay-sensitive services such as voice and video, simplify unified communications deployments, and help ensure consistent network performance for all services. For example, automated voice VLAN capabilities let you plug any IP phone (including third-party phones) into your IP telephony network and receive an immediate dial tone. The switch automatically configures the device with the right VLAN and QoS parameters to prioritize voice traffic.
- **Networkwide Automatic Voice Deployment:** Using a combination of CDP, LLDP-MED, Auto Smartports, and VSDP (Voice Services Discovery Protocol – a unique patent-pending Cisco protocol), customers can deploy an end-to-end voice network dynamically. The switches in the network automatically converge around a single voice VLAN and QoS parameters and then propagate them out to the phones on the ports where they are discovered. For example, automated voice VLAN capabilities let you plug any IP phone (including third-party phones) into your IP telephony network and receive an immediate dial tone. The switch automatically configures the device with the right VLAN and QoS parameters to prioritize voice traffic.
- **Advanced network management capabilities:** As managed switches, the Cisco 300 Series lets you use a variety of advanced features to control traffic over your network. Features include:
 - **Static routing/ Layer 3 switching between VLANs:** This capability allows you to segment your network into separate workgroups and communicate across VLANs without degrading application performance. As a result, you can manage internal routing with your switches and dedicate your router to external traffic and security, helping your network run more efficiently.
 - **IPv6 support:** As the IP network addressing scheme evolves to accommodate more devices, you can make sure that your network is ready. The Cisco 300 Series provides native support for IPv6, the newest version of the Internet Protocol, as well as the previous IPv4 standard. As a result, you will be able to move up to the next generation of networking applications and operating systems without an extensive equipment upgrade.
 - **Dual image support:** With the ability to maintain dual images of your switches, you can perform software upgrades without having to take the network offline and without worrying about an outage during an upgrade.
 - **Dual configuration files support:** Allows configuring the device, validating that it is configured correctly and then saving this configuration to become effective after reboot. Additionally, a mirror configuration file, providing automatic back-up of the latest stable configuration file, maximizes network uptime.
 - **Remote management:** Using Simple Network Management Protocol (SNMP), you can setup and manage all switches and other Cisco devices in your network remotely, instead of having to directly connect to them.
 - **Additional management options:** The switches can be fully managed using the Web GUI or, using a full command-line interface (CLI).

- Optimal energy efficiency:** Cisco 300 Series Switches are designed with a variety of power-saving features across all models, providing the industry's broadest portfolio of "green" switches. These switches optimize power use to protect the environment and reduce energy costs, without compromising performance. Power-saving features include:
 - The latest application-specific integrated circuits (ASICs), using low-power 65-nanometer technology (these chipsets allow for lower power consumption and thinner, more efficient designs).
 - Support for the Energy Efficient Ethernet (IEEE 802.3az) standard, which reduces energy consumption by monitoring the amount of traffic on an active link and putting the link into a sleep state during quiet periods.
 - Automatic power shutoff on ports when a link is down.
 - Embedded intelligence to adjust signal strength based on cable length.
 - Fanless design in most models, which reduces power consumption, increases reliability, and provides quieter operation.
 - LEDs can be turned off to conserve power.
- Expansion ports:** The Cisco 300 Series provides more ports per Gigabit Ethernet switch than traditional switch models, giving you more flexibility to connect and empower your business. Gigabit Ethernet models feature 26- and 52-port switches, versus traditional devices that offer 20 or 44 ports with four shared ports giving you more value. The Cisco 300 Series also offers mini gigabit interface converter (mini-GBIC) expansion slots that give you the option to add fiber-optic or Gigabit Ethernet uplink connectivity to the switch. With the ability to increase the connectivity range of the switches, you have more flexibility to design your network around your unique business environment, and to easily connect switches on different floors or across the business.
- Multiple languages:** The Cisco 300 Series is available in seven languages: English, French, German, Italian, Spanish, Japanese, and simplified Chinese. All product user interfaces and documentation are translated, giving you the ability to select your preferred language.
- Peace of mind and investment protection:** Cisco 300 Series Switches offer the reliable performance, investment protection, and peace of mind you expect from a Cisco switch. When you invest in the Cisco 300 Series, you gain the benefit of:
 - Cisco limited lifetime warranty with next business day advance replacement (where available).
 - Rigorous testing to help ensure easy integration and compatibility with other Cisco networking and communications products, including the complete Cisco Small Business portfolio.
- Service and Support:** Cisco 300 Series Switches are backed by the Cisco Small Business Support Service, which provides affordable peace-of-mind coverage. This subscription-based service helps you protect your investment and derive maximum value from Cisco Small Business products. Delivered by Cisco and backed by your trusted partner, this comprehensive service includes software updates, access to the Cisco Small Business Support Center, and extends technical service to three years. Cisco Small Business products are supported by professionals in Cisco Small Business Support Center locations worldwide who are specifically trained to understand your needs. The Cisco Small Business Support Community, an online forum, enables you to collaborate with your peers and reach Cisco technical experts for support information.

- Cisco Limited Lifetime Hardware Warranty:** Cisco 300 Series Switches offer hardware warranty with next business day advance replacement (where available) and a limited lifetime warranty for fans and power supplies. In addition, Cisco offers software application updates for bug fixes for the warranty term, and telephone technical support at no charge for the first 12 months following the date of purchase. To download software updates, go to: www.cisco.com/cisco/web/download/index.htm.

Product warranty terms and other information applicable to Cisco products are available at www.cisco.com/go/warranty.

Product Specifications

Table 1 gives the product specifications for the Cisco 300 Series Switches.

Table 1. Product Specifications

Feature	Description	Capacity in Millions of Packets per Second (mpps) (64-byte packets)	Switching Capacity in Gigabits per Second (Gbps)
Performance Switching capacity and forwarding rate All switches are wire-speed and non-blocking	Model Name		
	SF300-08	1.19	1.8
	SF302-08	4.17	5.6
	SF302-08P	4.17	5.6
	SF302-08PP	4.17	5.6
	SF302-08MP	4.17	5.6
	SF302-08MPP	4.17	5.6
	SF300-24	9.52	12.8
	SF300-24P	9.52	12.8
	SF300-24PP	9.52	12.8
	SF300-24MP	9.52	12.8
	SF300-48	13.10	17.6
	SF300-48P	13.10	17.6
	SF300-48PP	13.10	17.6
	SG300-10	14.88	20.0
	SG300-10SFP	14.88	20.0
	SG300-10P	14.88	20.0
	SG300-10PP	14.88	20.0
	SG300-10MP	14.88	20.0
	SG300-10MPP	14.88	20.0
	SG300-20	29.78	40.0
	SG300-28	41.67	56.0
	SG300-28P	41.67	56.0
SG300-28PP	41.67	56.0	
SG300-28MP	41.67	56.0	
SG300-52	77.38	104.0	
SG300-52P	77.38	104.0	
SG300-52MP	77.38	104.0	
SG300-28SFP	41.67	56.0	

Feature	Description
Layer 2 Switching	
Spanning Tree Protocol (STP)	Standard 802.1d Spanning Tree support Fast convergence using 802.1w (Rapid Spanning Tree [RSTP]), enabled by default 8 instances are supported Multiple Spanning Tree instances using 802.1s (MSTP)
Port grouping	Support for IEEE 802.3ad Link Aggregation Control Protocol (LACP) • Up to 8 groups • Up to 8 ports per group with 16 candidate ports for each (dynamic) 802.3ad link aggregation
VLAN	Support for up to 4096 VLANs simultaneously Port-based and 802.1Q tag-based VLANs MAC-based VLAN Management VLAN Private VLAN Edge (PVE), also known as protected ports, with multiple uplinks Guest VLAN Unauthenticated VLAN Dynamic VLAN assignment via Radius server along with 802.1x client authentication CPE VLAN
Voice VLAN	Voice traffic is automatically assigned to a voice-specific VLAN and treated with appropriate levels of QoS Auto voice capabilities deliver network-wide zero touch deployment of voice endpoints and call control devices
Multicast TV VLAN	Multicast TV VLAN allows the single multicast VLAN to be shared in the network while subscribers remain in separate VLANs (Also known as MVR)
Q-in-Q VLAN	VLANs transparently cross a service provider network while isolating traffic among customers
Generic VLAN Registration Protocol (GVRP)/Generic Attribute Registration Protocol (GARP)	Protocols for automatically propagating and configuring VLANs in a bridged domain
Unidirectional Link Detection (UDLD)	UDLD monitors physical connection to detect unidirectional links caused by incorrect wiring or cable/port faults to prevent forwarding loops and blackholing of traffic in switched networks
Dynamic Host Configuration Protocol (DHCP) Relay at Layer 2	Relay of DHCP traffic to DHCP server in different VLAN. Works with DHCP Option 82
Internet Group Management Protocol (IGMP) versions 1, 2, and 3 snooping	IGMP limits bandwidth-intensive multicast traffic to only the requesters; supports 1K multicast groups (source-specific multicasting is also supported)
IGMP Querier	IGMP querier is used to support a Layer 2 multicast domain of snooping switches in the absence of a multicast router
Head-of-line (HOL) blocking	HOL blocking prevention
Jumbo Frames	Up to 9K (9216) bytes
Layer 3	
IPv4 routing	Wirespeed routing of IPv4 packets Up to 512 static routes and up to 128 IP interfaces
Classless Inter-Domain Routing (CIDR)	Support for CIDR
Layer 3 Interface	Configuration of Layer 3 interface on physical port, LAG, VLAN interface or Loopback interface
DHCP relay at Layer 3	Relay of DHCP traffic across IP domains
User Datagram Protocol (UDP) relay	Relay of broadcast information across Layer 3 domains for application discovery or relaying of BootP/DHCP packets
DHCP Server	Switch functions as an IPv4 DHCP Server serving IP addresses for multiple DHCP pools/scopes Support for DHCP options
Security	
Secure Shell (SSH) Protocol	SSH is a secure replacement for Telnet traffic. SCP also uses SSH. SSH v1 and v2 are supported
Secure Sockets Layer (SSL)	SSL support. Encrypts all HTTPS traffic, allowing highly secure access to the browser-based management GUI in the switch
IEEE 802.1X (Authenticator role)	802.1X RADIUS authentication and accounting, MD5 hash, guest VLAN, unauthenticated VLAN, single/multiple host mode and single/multiple sessions Supports time-based 802.1X Dynamic VLAN assignment

Feature	Description
Web Based Authentication	Web based authentication provides network admission control through web browser to any host devices and operating systems.
STP Bridge Protocol Data Unit (BPDU) Guard	A security mechanism to protect the network from invalid configurations. A port enabled for BPDU Guard is shut down if a BPDU message is received on that port.
STP Root Guard	This prevents edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes.
DHCP snooping	Filters out DHCP messages with unregistered IP addresses and/or from unexpected or untrusted interfaces. This prevents rogue devices from behaving as a DHCP Server.
IP Source Guard (IPSG)	When IP Source Guard is enabled at a port, the switch filters out IP packets received from the port if the source IP addresses of the packets have not been statically configured or dynamically learned from DHCP snooping. This prevents IP Address Spoofing.
Dynamic ARP Inspection (DAI)	The switch discards ARP packets from a port if there is no static or dynamic IP/MAC bindings or if there is a discrepancy between the source or destination address in the ARP packet. This prevents man-in-the-middle attacks.
IP/Mac/Port Binding (IPMB)	The features (DHCP Snooping, IP Source Guard, and Dynamic ARP Inspection) above work together to prevent DOS attacks in the network, thereby increasing network availability.
Secure Core Technology (SCT)	Ensures that the switch will receive and process management and protocol traffic no matter how much traffic is received.
Secure Sensitive Data (SSD)	A mechanism to manage sensitive data (such as passwords, keys, etc) securely on the switch, populating this data to other devices, and secure autoconfig. Access to view the sensitive data as plaintext or encrypted is provided according to the user configured access level and the access method of the user.
Layer 2 Isolation Private VLAN Edge (PVE) with community VLAN	PVE (also known as protected ports) provides Layer 2 isolation between devices in the same VLAN, supports multiple uplinks.
Port security	The ability to lock Source MAC addresses to ports, and limits the number of learned MAC addresses.
RADIUS/TACACS+	Supports RADIUS and TACACS+ authentication. Switch functions as a client.
Storm control	Broadcast, multicast, and unknown unicast
RADIUS accounting	The RADIUS accounting functions allow data to be sent at the start and end of services, indicating the amount of resources (such as time, packets, bytes, and so on) used during the session.
DoS prevention	Denial-of-Service (DOS) attack prevention Support for up to 512 rates
ACLs	Drop or rate limit based on source and destination MAC, VLAN ID or IP address, protocol, port, differentiated services code point (DSCP)/IP precedence, TCP/UDP source and destination ports, 802.1p priority, Ethernet type, Internet Control Message Protocol (ICMP) packets, IGMP packets, TCP flag, Time-based ACLs supported.
Quality of Service	
Priority levels	4 hardware queues
Scheduling	Strict priority and weighted round-robin (WRR) Queue assignment based on DSCP and class of service (802.1p/CoS)
Class of service	Port based; 802.1p VLAN priority based; IPv4/v6 IP precedence/type of service (ToS)/DSCP based; Differentiated Services (DiffServ); classification and re-marking ACLs; trusted CoS.
Rate limiting	Ingress policer, egress shaping and rate control, per VLAN, per port, and flow based.
Congestion avoidance	A TCP congestion avoidance algorithm is required to minimize and prevent global TCP loss synchronization.
Standards	
Standards	IEEE 802.3 10BASE-T Ethernet, IEEE 802.3z 100BASE-TX Fast Ethernet, IEEE 802.3ab 100BASE-T Gigabit Ethernet, IEEE 802.3ad LACP, IEEE 802.3z Gigabit Ethernet, IEEE 802.3p Flow Control, IEEE 802.1D (STP), GARP, and GVRP, IEEE 802.1Q/p VLAN, IEEE 802.1w RSTP, IEEE 802.1s Multiple STP, IEEE 802.1X Port Access Authentication, IEEE 802.3af IEEE 802.3at, RFC 768, RFC 783, RFC 791, RFC 792, RFC 793, RFC 813, RFC 879, RFC 896, RFC 826, RFC 854, RFC 858, RFC 859, RFC 854, RFC 919, RFC 922, RFC 920, RFC 930, RFC 1042, RFC 1071, RFC 1123, RFC 1141, RFC 1155, RFC 1157, RFC 1157, RFC 1350, RFC 1533, RFC 1541, RFC 1624, RFC 1700, RFC 1867, RFC 2030, RFC 2816, RFC 2131, RFC 2132, RFC 3164, RFC 3411, RFC 3412, RFC 3413, RFC 3414, RFC 3415, RFC 2578, RFC 4330, RFC 1213, RFC 1215, RFC 1266, RFC 1442, RFC 1451, RFC 1493, RFC 1573, RFC 1643, RFC 1794, RFC 1907, RFC 2011, RFC 2012, RFC 2013, RFC 2233, RFC 2818, RFC 2885, RFC 2669, RFC 2674, RFC 2737, RFC 2819, RFC 2963, RFC 1157, RFC 1493, RFC 1215, RFC 3416, RFC 3417

LM

Feature	Description																								
IPv6	IPv6 host mode																								
IPv6	IPv6 over Ethernet Dual IPv6/IPv4 stack																								
IPv6	IPv6 neighbor and router discovery (ND) IPv6 stateless address auto-configuration																								
IPv6	Path maximum transmission unit (MTU) discovery																								
IPv6	Duplicate address detection (DAD) ICMP version 6																								
IPv6	IPv6 over IPv4 network with Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) support																								
IPv6	USOv6 and IPv6 Gold Logo certified																								
IPv6 CoS	Prioritize IPv6 packets in hardware																								
IPv6 ACL	Drop or rate limit IPv6 packets in hardware																								
IPv6 First Hop Security	RA guard ND inspection DHCPv6 guard Neighbor binding table (Snooping and static entries) Neighbor binding integrity check																								
Multicast Listener Discovery (MLD v1/2) snooping	Deliver IPv6 multicast packets only to the required receivers																								
IPv6 applications	Web/SSL, Telnet server/SSH, ping, traceroute, Simple Network Time Protocol (SNTP), Trivial File Transfer Protocol (TFTP), SNMP, RADIUS, syslog, DNS client, Telnet Client, DHCP Client, DHCP Autoconfig, IPv6 DHCP Relay, TACACS																								
IPv6 RFCs supported	RFC 4443 (which obsoletes RFC 2463) - ICMP version 6 RFC 4291 (which obsoletes RFC 3513) - IPv6 address architecture RFC 4291 - IPv6 addressing architecture RFC 2460 - IPv6 specification RFC 4861 (which obsoletes RFC 2461) - Neighbor discovery for IPv6 RFC 4862 (which obsoletes RFC 2462) - IPv6 stateless address auto-configuration RFC 1981 - Path MTU discovery RFC 4007 - IPv6 scoped address architecture RFC 3484 - Default address selection mechanism RFC 5214 (which obsoletes RFC 4214) - ISATAP tunneling RFC 4283 - MIB IPv6: Textual conventions and general group RFC 3585 - Textual conventions for IPv6 flowlabel																								
Management																									
Web user interface	Built-in switch configuration utility for easy browser-based device configuration (HTTP/HTTPS). Supports configuration, system dashboard, system maintenance, and monitoring																								
SNMP	SNMP versions 1, 2c, and 3 with support for traps, and SNMP version 3 user-based security model (USM)																								
Standard MIBs	<table border="0"> <tr> <td>draft-ietf-bridge-8021x-MIB</td> <td>rfc2012-MIB</td> </tr> <tr> <td>draft-ietf-bridge-istpmb-04-MIB</td> <td>rfc2011-MIB</td> </tr> <tr> <td>draft-ietf-automib-etherif-MIB-v3-00-MIB</td> <td>draft-ietf-entmib-ensec-MIB</td> </tr> <tr> <td>draft-ietf-syslog-device-MIB</td> <td>rdp-MIB, rdpsid01-MIB</td> </tr> <tr> <td>ianaifmnumbers-MIB</td> <td>rdpext013-MIB</td> </tr> <tr> <td>lanality-MIB</td> <td>rdpextmed-MIB p-bridge-MIB</td> </tr> <tr> <td>laneport-MIB</td> <td>q-bridge-MIB</td> </tr> <tr> <td>inet-address-MIB</td> <td>rfc1389-MIB</td> </tr> <tr> <td>in-forward-MIB</td> <td>rfc1493-MIB</td> </tr> <tr> <td>ip-MIB</td> <td>rfc1811-MIB</td> </tr> <tr> <td>RFC1155-SMI</td> <td>rfc1812-MIB</td> </tr> <tr> <td>RFC1213-MIB</td> <td>rfc1850-MIB</td> </tr> </table>	draft-ietf-bridge-8021x-MIB	rfc2012-MIB	draft-ietf-bridge-istpmb-04-MIB	rfc2011-MIB	draft-ietf-automib-etherif-MIB-v3-00-MIB	draft-ietf-entmib-ensec-MIB	draft-ietf-syslog-device-MIB	rdp-MIB, rdpsid01-MIB	ianaifmnumbers-MIB	rdpext013-MIB	lanality-MIB	rdpextmed-MIB p-bridge-MIB	laneport-MIB	q-bridge-MIB	inet-address-MIB	rfc1389-MIB	in-forward-MIB	rfc1493-MIB	ip-MIB	rfc1811-MIB	RFC1155-SMI	rfc1812-MIB	RFC1213-MIB	rfc1850-MIB
draft-ietf-bridge-8021x-MIB	rfc2012-MIB																								
draft-ietf-bridge-istpmb-04-MIB	rfc2011-MIB																								
draft-ietf-automib-etherif-MIB-v3-00-MIB	draft-ietf-entmib-ensec-MIB																								
draft-ietf-syslog-device-MIB	rdp-MIB, rdpsid01-MIB																								
ianaifmnumbers-MIB	rdpext013-MIB																								
lanality-MIB	rdpextmed-MIB p-bridge-MIB																								
laneport-MIB	q-bridge-MIB																								
inet-address-MIB	rfc1389-MIB																								
in-forward-MIB	rfc1493-MIB																								
ip-MIB	rfc1811-MIB																								
RFC1155-SMI	rfc1812-MIB																								
RFC1213-MIB	rfc1850-MIB																								

67100149

Feature	Description																																																																												
Standard MIBs (continued)	<table border="0"> <tr> <td>SNMPv2-MIB</td> <td>rfc1907-MIB</td> </tr> <tr> <td>SNMPv2-SMI</td> <td>rfc2571-MIB</td> </tr> <tr> <td>SNMPv2-TM</td> <td>rfc2572-MIB</td> </tr> <tr> <td>RMON-MIB.my</td> <td>rfc2574-MIB</td> </tr> <tr> <td>dcbr-raj-DCBR-MIB-1108-MIB</td> <td>rfc2576-MIB</td> </tr> <tr> <td>rfc1724-MIB</td> <td>rfc2613-MIB</td> </tr> <tr> <td>RFC-1212.my_for_MG-Soft</td> <td>rfc2663-MIB</td> </tr> <tr> <td>rfc1213-MIB</td> <td>rfc2668-MIB</td> </tr> <tr> <td>rfc1757-MIB</td> <td>rfc2737-MIB</td> </tr> <tr> <td>RFC-1215.my</td> <td>rfc2925-MIB</td> </tr> <tr> <td>SNMPv2-CONF.my</td> <td>rfc3621-MIB</td> </tr> <tr> <td>SNMPv2-TC.my</td> <td>rfc4868-MIB</td> </tr> <tr> <td>rfc2674-MIB</td> <td>rfc4670-MIB</td> </tr> <tr> <td>rfc2573-MIB</td> <td>trunk-MIB</td> </tr> <tr> <td>rfc2573-MIB</td> <td>tunnel-MIB</td> </tr> <tr> <td>rfc2233-MIB</td> <td>udp-MIB</td> </tr> <tr> <td>rfc2013-MIB</td> <td></td> </tr> </table>	SNMPv2-MIB	rfc1907-MIB	SNMPv2-SMI	rfc2571-MIB	SNMPv2-TM	rfc2572-MIB	RMON-MIB.my	rfc2574-MIB	dcbr-raj-DCBR-MIB-1108-MIB	rfc2576-MIB	rfc1724-MIB	rfc2613-MIB	RFC-1212.my_for_MG-Soft	rfc2663-MIB	rfc1213-MIB	rfc2668-MIB	rfc1757-MIB	rfc2737-MIB	RFC-1215.my	rfc2925-MIB	SNMPv2-CONF.my	rfc3621-MIB	SNMPv2-TC.my	rfc4868-MIB	rfc2674-MIB	rfc4670-MIB	rfc2573-MIB	trunk-MIB	rfc2573-MIB	tunnel-MIB	rfc2233-MIB	udp-MIB	rfc2013-MIB																																											
SNMPv2-MIB	rfc1907-MIB																																																																												
SNMPv2-SMI	rfc2571-MIB																																																																												
SNMPv2-TM	rfc2572-MIB																																																																												
RMON-MIB.my	rfc2574-MIB																																																																												
dcbr-raj-DCBR-MIB-1108-MIB	rfc2576-MIB																																																																												
rfc1724-MIB	rfc2613-MIB																																																																												
RFC-1212.my_for_MG-Soft	rfc2663-MIB																																																																												
rfc1213-MIB	rfc2668-MIB																																																																												
rfc1757-MIB	rfc2737-MIB																																																																												
RFC-1215.my	rfc2925-MIB																																																																												
SNMPv2-CONF.my	rfc3621-MIB																																																																												
SNMPv2-TC.my	rfc4868-MIB																																																																												
rfc2674-MIB	rfc4670-MIB																																																																												
rfc2573-MIB	trunk-MIB																																																																												
rfc2573-MIB	tunnel-MIB																																																																												
rfc2233-MIB	udp-MIB																																																																												
rfc2013-MIB																																																																													
Private MIBs	<table border="0"> <tr> <td>CISCO-SB-arp-MIB</td> <td>CISCO-SB-ip-MIB</td> </tr> <tr> <td>CISCO-SB-brgmcast-MIB</td> <td>CISCO-SB-iprovider-MIB</td> </tr> <tr> <td>CISCO-SB-bridge-mibobjets-MIB</td> <td>CISCO-SB-ipv6-MIB</td> </tr> <tr> <td>CISCO-SB-bonjour-MIB</td> <td>CISCO-SB-mngint-MIB</td> </tr> <tr> <td>CISCO-SB-dhcpcl-MIB</td> <td>CISCO-SB-isis-MIB</td> </tr> <tr> <td>CISCO-SB-MIB</td> <td>CISCO-SB-localization-MIB</td> </tr> <tr> <td>CISCO-SB-wrاندmtdrop-MIB</td> <td>CISCO-SB-physdescription-MIB</td> </tr> <tr> <td>CISCO-SB-traceroute-MIB</td> <td>CISCO-SB-mng-MIB</td> </tr> <tr> <td>CISCO-SB-telnet-MIB</td> <td>CISCO-SB-physdescription-MIB</td> </tr> <tr> <td>CISCO-SB-ethermtl-MIB</td> <td>CISCO-SB-Poe-MIB</td> </tr> <tr> <td>CISCO-SB-ssh-MIB</td> <td>CISCO-SB-protectedport-MIB</td> </tr> <tr> <td>CISCO-SB-socket-MIB</td> <td>CISCO-SB-rmon-MIB</td> </tr> <tr> <td>CISCO-SB-ntp-MIB</td> <td>CISCO-SB-rs232-MIB</td> </tr> <tr> <td>CISCO-SB-emon-MIB</td> <td>CISCO-SB-SecuritySuite-MIB</td> </tr> <tr> <td>CISCO-SB-phy-MIB</td> <td>CISCO-SB-snmplib-MIB</td> </tr> <tr> <td>CISCO-SB-multisessionterminal-MIB</td> <td>CISCO-SB-specialbdu-MIB</td> </tr> <tr> <td>CISCO-SB-mr-MIB</td> <td>CISCO-SB-banner-MIB</td> </tr> <tr> <td>CISCO-SB-jumboframes-MIB</td> <td>CISCO-SB-syslog-MIB</td> </tr> <tr> <td>CISCO-SB-gvrp-MIB</td> <td>CISCO-SB-TcpSession-MIB</td> </tr> <tr> <td>CISCO-SB-endofmib-MIB</td> <td>CISCO-SB-traps-MIB</td> </tr> <tr> <td>CISCO-SB-dot1x-MIB</td> <td>CISCO-SB-trunk-MIB</td> </tr> <tr> <td>CISCO-SB-deviceparams-MIB</td> <td>CISCO-SB-tuning-MIB</td> </tr> <tr> <td>CISCO-SB-cb-MIB</td> <td>CISCO-SB-tunnel-MIB</td> </tr> <tr> <td>CISCO-SB-cdb-MIB</td> <td>CISCO-SB-udp-MIB</td> </tr> <tr> <td>CISCO-SB-brgmactswitch-MIB</td> <td>CISCO-SB-vlan-MIB</td> </tr> <tr> <td>CISCO-SB-3sw2swtables-MIB</td> <td>CISCO-SB-ipstactl-MIB</td> </tr> <tr> <td>CISCO-SB-smartPorts-MIB</td> <td>CISCO-SM-MIB</td> </tr> <tr> <td>CISCO-SB-tbl-MIB</td> <td>CISCO-SB-DebugCapabilities-MIB</td> </tr> <tr> <td>CISCO-SB-macbaseprio-MIB</td> <td>CISCO-SB-CDP-MIB</td> </tr> <tr> <td>CISCO-SB-policy-MIB</td> <td>CISCO-SB-vlanVoice-MIB</td> </tr> <tr> <td>CISCO-SB-env_mib</td> <td>CISCO-SB-EVENTS-MIB</td> </tr> <tr> <td>CISCO-SB-ensec-MIB</td> <td>CISCO-SB-sysmng-MIB</td> </tr> <tr> <td>CISCO-SB-aaa-MIB</td> <td>CISCO-SB-ect-MIB</td> </tr> <tr> <td>CISCO-SB-application-MIB</td> <td>CISCO-TC-MIB</td> </tr> <tr> <td>CISCO-SB-bridgesecurity-MIB</td> <td>CISCO-VTP-MIB</td> </tr> <tr> <td>CISCO-SB-copy-MIB</td> <td>CISCO-CDP-MIB</td> </tr> <tr> <td>CISCO-SB-CpuCounters-MIB</td> <td>CISCO-SB-eee-MIB</td> </tr> <tr> <td>CISCO-SB-CustomSecurityService-MIB</td> <td>CISCO-SB-est-MIB</td> </tr> </table>	CISCO-SB-arp-MIB	CISCO-SB-ip-MIB	CISCO-SB-brgmcast-MIB	CISCO-SB-iprovider-MIB	CISCO-SB-bridge-mibobjets-MIB	CISCO-SB-ipv6-MIB	CISCO-SB-bonjour-MIB	CISCO-SB-mngint-MIB	CISCO-SB-dhcpcl-MIB	CISCO-SB-isis-MIB	CISCO-SB-MIB	CISCO-SB-localization-MIB	CISCO-SB-wrاندmtdrop-MIB	CISCO-SB-physdescription-MIB	CISCO-SB-traceroute-MIB	CISCO-SB-mng-MIB	CISCO-SB-telnet-MIB	CISCO-SB-physdescription-MIB	CISCO-SB-ethermtl-MIB	CISCO-SB-Poe-MIB	CISCO-SB-ssh-MIB	CISCO-SB-protectedport-MIB	CISCO-SB-socket-MIB	CISCO-SB-rmon-MIB	CISCO-SB-ntp-MIB	CISCO-SB-rs232-MIB	CISCO-SB-emon-MIB	CISCO-SB-SecuritySuite-MIB	CISCO-SB-phy-MIB	CISCO-SB-snmplib-MIB	CISCO-SB-multisessionterminal-MIB	CISCO-SB-specialbdu-MIB	CISCO-SB-mr-MIB	CISCO-SB-banner-MIB	CISCO-SB-jumboframes-MIB	CISCO-SB-syslog-MIB	CISCO-SB-gvrp-MIB	CISCO-SB-TcpSession-MIB	CISCO-SB-endofmib-MIB	CISCO-SB-traps-MIB	CISCO-SB-dot1x-MIB	CISCO-SB-trunk-MIB	CISCO-SB-deviceparams-MIB	CISCO-SB-tuning-MIB	CISCO-SB-cb-MIB	CISCO-SB-tunnel-MIB	CISCO-SB-cdb-MIB	CISCO-SB-udp-MIB	CISCO-SB-brgmactswitch-MIB	CISCO-SB-vlan-MIB	CISCO-SB-3sw2swtables-MIB	CISCO-SB-ipstactl-MIB	CISCO-SB-smartPorts-MIB	CISCO-SM-MIB	CISCO-SB-tbl-MIB	CISCO-SB-DebugCapabilities-MIB	CISCO-SB-macbaseprio-MIB	CISCO-SB-CDP-MIB	CISCO-SB-policy-MIB	CISCO-SB-vlanVoice-MIB	CISCO-SB-env_mib	CISCO-SB-EVENTS-MIB	CISCO-SB-ensec-MIB	CISCO-SB-sysmng-MIB	CISCO-SB-aaa-MIB	CISCO-SB-ect-MIB	CISCO-SB-application-MIB	CISCO-TC-MIB	CISCO-SB-bridgesecurity-MIB	CISCO-VTP-MIB	CISCO-SB-copy-MIB	CISCO-CDP-MIB	CISCO-SB-CpuCounters-MIB	CISCO-SB-eee-MIB	CISCO-SB-CustomSecurityService-MIB	CISCO-SB-est-MIB
CISCO-SB-arp-MIB	CISCO-SB-ip-MIB																																																																												
CISCO-SB-brgmcast-MIB	CISCO-SB-iprovider-MIB																																																																												
CISCO-SB-bridge-mibobjets-MIB	CISCO-SB-ipv6-MIB																																																																												
CISCO-SB-bonjour-MIB	CISCO-SB-mngint-MIB																																																																												
CISCO-SB-dhcpcl-MIB	CISCO-SB-isis-MIB																																																																												
CISCO-SB-MIB	CISCO-SB-localization-MIB																																																																												
CISCO-SB-wrاندmtdrop-MIB	CISCO-SB-physdescription-MIB																																																																												
CISCO-SB-traceroute-MIB	CISCO-SB-mng-MIB																																																																												
CISCO-SB-telnet-MIB	CISCO-SB-physdescription-MIB																																																																												
CISCO-SB-ethermtl-MIB	CISCO-SB-Poe-MIB																																																																												
CISCO-SB-ssh-MIB	CISCO-SB-protectedport-MIB																																																																												
CISCO-SB-socket-MIB	CISCO-SB-rmon-MIB																																																																												
CISCO-SB-ntp-MIB	CISCO-SB-rs232-MIB																																																																												
CISCO-SB-emon-MIB	CISCO-SB-SecuritySuite-MIB																																																																												
CISCO-SB-phy-MIB	CISCO-SB-snmplib-MIB																																																																												
CISCO-SB-multisessionterminal-MIB	CISCO-SB-specialbdu-MIB																																																																												
CISCO-SB-mr-MIB	CISCO-SB-banner-MIB																																																																												
CISCO-SB-jumboframes-MIB	CISCO-SB-syslog-MIB																																																																												
CISCO-SB-gvrp-MIB	CISCO-SB-TcpSession-MIB																																																																												
CISCO-SB-endofmib-MIB	CISCO-SB-traps-MIB																																																																												
CISCO-SB-dot1x-MIB	CISCO-SB-trunk-MIB																																																																												
CISCO-SB-deviceparams-MIB	CISCO-SB-tuning-MIB																																																																												
CISCO-SB-cb-MIB	CISCO-SB-tunnel-MIB																																																																												
CISCO-SB-cdb-MIB	CISCO-SB-udp-MIB																																																																												
CISCO-SB-brgmactswitch-MIB	CISCO-SB-vlan-MIB																																																																												
CISCO-SB-3sw2swtables-MIB	CISCO-SB-ipstactl-MIB																																																																												
CISCO-SB-smartPorts-MIB	CISCO-SM-MIB																																																																												
CISCO-SB-tbl-MIB	CISCO-SB-DebugCapabilities-MIB																																																																												
CISCO-SB-macbaseprio-MIB	CISCO-SB-CDP-MIB																																																																												
CISCO-SB-policy-MIB	CISCO-SB-vlanVoice-MIB																																																																												
CISCO-SB-env_mib	CISCO-SB-EVENTS-MIB																																																																												
CISCO-SB-ensec-MIB	CISCO-SB-sysmng-MIB																																																																												
CISCO-SB-aaa-MIB	CISCO-SB-ect-MIB																																																																												
CISCO-SB-application-MIB	CISCO-TC-MIB																																																																												
CISCO-SB-bridgesecurity-MIB	CISCO-VTP-MIB																																																																												
CISCO-SB-copy-MIB	CISCO-CDP-MIB																																																																												
CISCO-SB-CpuCounters-MIB	CISCO-SB-eee-MIB																																																																												
CISCO-SB-CustomSecurityService-MIB	CISCO-SB-est-MIB																																																																												

APPROVED FOR PUBLICATION

CUP

Feature	Description																		
Private MIBs (continued)	<table border="0"> <tr> <td>CISCOB-dhcp-MIB</td> <td>CISCOB-qoscmib-MIB</td> </tr> <tr> <td>CISCOB-df-MIB</td> <td>CISCOB-digitalkeymanage-MIB</td> </tr> <tr> <td>CISCOB-dnscl-MIB</td> <td>CISCOB-ftp-MIB</td> </tr> <tr> <td>CISCOB-embweb-MIB</td> <td>CISCOB-MIB</td> </tr> <tr> <td>CISCOB-fft-MIB</td> <td>CISCOB-secd-MIB</td> </tr> <tr> <td>CISCOB-file-MIB</td> <td>CISCOB-draft-ietf-entmib-sensor-MIB</td> </tr> <tr> <td>CISCOB-greeneth-MIB</td> <td>CISCOB-draft-ietf-syslog-device-MIB</td> </tr> <tr> <td>CISCOB-interfaces-MIB</td> <td>CISCOB-rtc2325-MIB</td> </tr> <tr> <td>CISCOB-interfaces_recovery-MIB</td> <td></td> </tr> </table>	CISCOB-dhcp-MIB	CISCOB-qoscmib-MIB	CISCOB-df-MIB	CISCOB-digitalkeymanage-MIB	CISCOB-dnscl-MIB	CISCOB-ftp-MIB	CISCOB-embweb-MIB	CISCOB-MIB	CISCOB-fft-MIB	CISCOB-secd-MIB	CISCOB-file-MIB	CISCOB-draft-ietf-entmib-sensor-MIB	CISCOB-greeneth-MIB	CISCOB-draft-ietf-syslog-device-MIB	CISCOB-interfaces-MIB	CISCOB-rtc2325-MIB	CISCOB-interfaces_recovery-MIB	
CISCOB-dhcp-MIB	CISCOB-qoscmib-MIB																		
CISCOB-df-MIB	CISCOB-digitalkeymanage-MIB																		
CISCOB-dnscl-MIB	CISCOB-ftp-MIB																		
CISCOB-embweb-MIB	CISCOB-MIB																		
CISCOB-fft-MIB	CISCOB-secd-MIB																		
CISCOB-file-MIB	CISCOB-draft-ietf-entmib-sensor-MIB																		
CISCOB-greeneth-MIB	CISCOB-draft-ietf-syslog-device-MIB																		
CISCOB-interfaces-MIB	CISCOB-rtc2325-MIB																		
CISCOB-interfaces_recovery-MIB																			
Remote Monitoring (RMON)	Embedded RMON software agent supports 4 RMON groups (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis																		
IPv4 and IPv6 dual stack	Coexistence of both protocol stacks to ease migration																		
Firmware upgrade	<ul style="list-style-type: none"> Web browser upgrade (HTTP/HTTPS) and TFTP and upgrade over SCP running over SSH Upgrade can be initiated through console port as well Dual images for resilient firmware upgrades 																		
Port mirroring	Traffic on a port can be mirrored to another port for analysis with a network analyzer or RMON probe. Up to 8 source ports can be mirrored to one destination port. A single session is supported.																		
VLAN mirroring	Traffic from a VLAN can be mirrored to a port for analysis with a network analyzer or RMON probe. Up to 8 source VLANs can be mirrored to one destination port. A single session is supported.																		
DHCP (Options 12, 66, 87, 82, 129, and 150)	DHCP Options facilitate tighter control from a central point (DHCP server) to obtain IP address, auto-configuration (with configuration file download), DHCP relay, and hostname.																		
Secure Copy (SCP)	Securely transfer files to and from the switch																		
Autoconfiguration with Secure Copy (SCP) file download	Enables secure mass deployment with protection of sensitive data																		
Text-editable config files	Config files can be edited with a text editor and downloaded to another switch, facilitating easier mass deployment																		
Smartports	Simplified configuration of QoS and security capabilities																		
Auto Smartports	Applies the intelligence delivered through the Smartport roles and applies it automatically to the port based on the devices discovered over CDP or LLDP-MED. This facilitates zero-touch deployments.																		
Textview CLI	Scriptable command-line interface. A full CLI as well as a menu-based CLI is supported. User privilege levels 1, 7, and 15 is supported for the CLI.																		
Cloud services	Support for Cisco Small Business FindIT Network and Cisco OnPlus																		
Localization	Localization of GUI and documentation into multiple languages																		
Other management	Traceroute; single IP management; HTTP/HTTPS; SSH; RADIUS; port mirroring; TFTP upgrade; DHCP client; BOOTP; SNMP; Xmodem upgrade; cable diagnostics; ping; syslog; Telnet client (SSH secure support)																		
Time-based port operation	Link up or down based on user-defined schedule (when the port is administratively up)																		
Login banner	Configurable multiple banners for web as well as CLI																		
Power Efficiency																			
EEE Compliant (802.3az)	Supports 802.3az on all copper ports (SG300 models)																		
Energy Detect	Automatically turns off power off on Gigabit Ethernet and 10/100 RJ-45 port when detecting link down																		
Cable length detection	Active mode is resumed without loss of any packets when the switch detects the link up																		
Cable length detection	Adjusts the signal strength based on the cable length for Gigabit Ethernet models. Reduces the power consumption for cables shorter than 10m.																		
Disable port LEDs	LEDs can be manually turned off to save on Energy																		
General																			
Jumbo frames	Frame sizes up to 9K (9216) bytes supported on 10/100 and Gigabit interfaces																		
MAC table	Up to 16K (16384) MAC addresses																		
Discovery																			
Bonjour	The switch advertises itself using the Bonjour protocol.																		
Link Layer Discovery Protocol (LLDP) (802.1ab) with LLDP-MED extensions	LLDP allows the switch to advertise its identification, configuration, and capabilities to neighboring devices that store the data in a MIB. LLDP-MED is an enhancement to LLDP that adds the extensions needed for IP phones.																		

Feature	Description																																																									
Cisco Discovery Protocol (CDP)	The switch advertises itself using the Cisco Discovery Protocol. It also learns the connected device and its characteristics via CDP.																																																									
Power over Ethernet (PoE)	Switches support 802.3at PoE+, 802.3af, and Cisco pre-standard (legacy) PoE. Maximum power of 30.0W to any 10/100 or Gigabit Ethernet port for PoE+ supported devices and 15.4W for PoE supported devices, until the PoE budget for the switch is reached. The total power available for PoE per switch is as follows:																																																									
	<table border="1"> <thead> <tr> <th>Model Name</th> <th>Power Dedicated to PoE</th> <th>Number of Ports That Support PoE</th> </tr> </thead> <tbody> <tr> <td>SF302-08P</td> <td>62W</td> <td>8</td> </tr> <tr> <td>SF302-08PP</td> <td>62W (PoE+ supported)</td> <td>8</td> </tr> <tr> <td>SF302-08MP</td> <td>124W</td> <td>8</td> </tr> <tr> <td>SF302-08MPP</td> <td>124W (PoE+ supported)</td> <td>8</td> </tr> <tr> <td>SF300-24P</td> <td>180W</td> <td>24</td> </tr> <tr> <td>SF300-24PP</td> <td>180W (PoE+ supported)</td> <td>24</td> </tr> <tr> <td>SF300-24MP</td> <td>375W (PoE+ supported)</td> <td>24</td> </tr> <tr> <td>SF300-48P</td> <td>375W</td> <td>48</td> </tr> <tr> <td>SF300-48PP</td> <td>375W (PoE+ supported)</td> <td>48</td> </tr> <tr> <td>SG300-10P</td> <td>62W</td> <td>8</td> </tr> <tr> <td>SG300-10PP</td> <td>62W (PoE+ supported)</td> <td>8</td> </tr> <tr> <td>SG300-10MP</td> <td>124W</td> <td>8</td> </tr> <tr> <td>SG300-10MPP</td> <td>124W (PoE+ supported)</td> <td>8</td> </tr> <tr> <td>SG300-28P</td> <td>180W</td> <td>24</td> </tr> <tr> <td>SG300-28PP</td> <td>180W (PoE+ supported)</td> <td>24</td> </tr> <tr> <td>SG300-28MP</td> <td>375W (PoE+ supported)</td> <td>24</td> </tr> <tr> <td>SG300-52P</td> <td>375W (PoE+ supported)</td> <td>48</td> </tr> <tr> <td>SG300-52MP</td> <td>740W (PoE+ supported)</td> <td>48</td> </tr> </tbody> </table>	Model Name	Power Dedicated to PoE	Number of Ports That Support PoE	SF302-08P	62W	8	SF302-08PP	62W (PoE+ supported)	8	SF302-08MP	124W	8	SF302-08MPP	124W (PoE+ supported)	8	SF300-24P	180W	24	SF300-24PP	180W (PoE+ supported)	24	SF300-24MP	375W (PoE+ supported)	24	SF300-48P	375W	48	SF300-48PP	375W (PoE+ supported)	48	SG300-10P	62W	8	SG300-10PP	62W (PoE+ supported)	8	SG300-10MP	124W	8	SG300-10MPP	124W (PoE+ supported)	8	SG300-28P	180W	24	SG300-28PP	180W (PoE+ supported)	24	SG300-28MP	375W (PoE+ supported)	24	SG300-52P	375W (PoE+ supported)	48	SG300-52MP	740W (PoE+ supported)	48
Model Name	Power Dedicated to PoE	Number of Ports That Support PoE																																																								
SF302-08P	62W	8																																																								
SF302-08PP	62W (PoE+ supported)	8																																																								
SF302-08MP	124W	8																																																								
SF302-08MPP	124W (PoE+ supported)	8																																																								
SF300-24P	180W	24																																																								
SF300-24PP	180W (PoE+ supported)	24																																																								
SF300-24MP	375W (PoE+ supported)	24																																																								
SF300-48P	375W	48																																																								
SF300-48PP	375W (PoE+ supported)	48																																																								
SG300-10P	62W	8																																																								
SG300-10PP	62W (PoE+ supported)	8																																																								
SG300-10MP	124W	8																																																								
SG300-10MPP	124W (PoE+ supported)	8																																																								
SG300-28P	180W	24																																																								
SG300-28PP	180W (PoE+ supported)	24																																																								
SG300-28MP	375W (PoE+ supported)	24																																																								
SG300-52P	375W (PoE+ supported)	48																																																								
SG300-52MP	740W (PoE+ supported)	48																																																								
Power consumption (worst case)	<table border="1"> <thead> <tr> <th>Model Name</th> <th>Power Savings Mode</th> <th>System Power Consumption</th> <th>Power Consumption: Case (with PoE)</th> <th>Heat Dissipation Worst Case (BTU/hr)</th> </tr> </thead> <tbody> <tr> <td>SF300-08</td> <td>Energy Detect</td> <td>110V=8.1W 220V=7.2W</td> <td>N/A</td> <td>24.57</td> </tr> <tr> <td>SF302-08</td> <td>Energy Detect</td> <td>110V=8.0W 220V=8.6W</td> <td>N/A</td> <td>29.34</td> </tr> <tr> <td>SF302-08P</td> <td>Energy Detect</td> <td>110V=10.3W 220V=11.5W</td> <td>110V=81.3W 220V=82.1W</td> <td>280.13</td> </tr> <tr> <td>SF302-08PP</td> <td>Energy Detect</td> <td>110V=9.12W 220V=9.31W</td> <td>110V=80.68W 220V=79.62W</td> <td>271.67</td> </tr> <tr> <td>SF302-08MP</td> <td>Energy Detect</td> <td>110V=9.5W 220V=10.3W</td> <td>110V=150.1W 220V=149.9W</td> <td>512.14</td> </tr> <tr> <td>SF302-08MPP</td> <td>Energy Detect</td> <td>110V=9.66W 220V=9.83W</td> <td>110V=143.89W 220V=142.97W</td> <td>487.83</td> </tr> <tr> <td>SF300-24</td> <td>Energy Detect</td> <td>110V=15.4W 220V=17.1W</td> <td>N/A</td> <td>58.35</td> </tr> <tr> <td>SF300-24P</td> <td>Energy Detect</td> <td>110V=25.6W 220V=27.3W</td> <td>110V=223W 220V=217.8W</td> <td>960.88</td> </tr> <tr> <td>SF300-24PP</td> <td>Energy Detect</td> <td>110V=26.7W 220V=27.9W</td> <td>110V=218.57W 220V=213.35W</td> <td>727.98</td> </tr> <tr> <td>SF300-24MP</td> <td>Energy Detect Short Reach</td> <td>110V=37.0W 220V=38.0W</td> <td>110V=441W 220V=431W</td> <td>1504.69</td> </tr> </tbody> </table>	Model Name	Power Savings Mode	System Power Consumption	Power Consumption: Case (with PoE)	Heat Dissipation Worst Case (BTU/hr)	SF300-08	Energy Detect	110V=8.1W 220V=7.2W	N/A	24.57	SF302-08	Energy Detect	110V=8.0W 220V=8.6W	N/A	29.34	SF302-08P	Energy Detect	110V=10.3W 220V=11.5W	110V=81.3W 220V=82.1W	280.13	SF302-08PP	Energy Detect	110V=9.12W 220V=9.31W	110V=80.68W 220V=79.62W	271.67	SF302-08MP	Energy Detect	110V=9.5W 220V=10.3W	110V=150.1W 220V=149.9W	512.14	SF302-08MPP	Energy Detect	110V=9.66W 220V=9.83W	110V=143.89W 220V=142.97W	487.83	SF300-24	Energy Detect	110V=15.4W 220V=17.1W	N/A	58.35	SF300-24P	Energy Detect	110V=25.6W 220V=27.3W	110V=223W 220V=217.8W	960.88	SF300-24PP	Energy Detect	110V=26.7W 220V=27.9W	110V=218.57W 220V=213.35W	727.98	SF300-24MP	Energy Detect Short Reach	110V=37.0W 220V=38.0W	110V=441W 220V=431W	1504.69		
Model Name	Power Savings Mode	System Power Consumption	Power Consumption: Case (with PoE)	Heat Dissipation Worst Case (BTU/hr)																																																						
SF300-08	Energy Detect	110V=8.1W 220V=7.2W	N/A	24.57																																																						
SF302-08	Energy Detect	110V=8.0W 220V=8.6W	N/A	29.34																																																						
SF302-08P	Energy Detect	110V=10.3W 220V=11.5W	110V=81.3W 220V=82.1W	280.13																																																						
SF302-08PP	Energy Detect	110V=9.12W 220V=9.31W	110V=80.68W 220V=79.62W	271.67																																																						
SF302-08MP	Energy Detect	110V=9.5W 220V=10.3W	110V=150.1W 220V=149.9W	512.14																																																						
SF302-08MPP	Energy Detect	110V=9.66W 220V=9.83W	110V=143.89W 220V=142.97W	487.83																																																						
SF300-24	Energy Detect	110V=15.4W 220V=17.1W	N/A	58.35																																																						
SF300-24P	Energy Detect	110V=25.6W 220V=27.3W	110V=223W 220V=217.8W	960.88																																																						
SF300-24PP	Energy Detect	110V=26.7W 220V=27.9W	110V=218.57W 220V=213.35W	727.98																																																						
SF300-24MP	Energy Detect Short Reach	110V=37.0W 220V=38.0W	110V=441W 220V=431W	1504.69																																																						

104

Feature	Description	Power (W)	Power (W)	Power (W)
SF300-48	Energy Detect	110V=24.8W 220V=24.8W	N/A	84.82
SF300-48P	Energy Detect	110V=48.4W 220V=48.3W	110V=48.5W 220V=44.9W	1531.99
SF300-48PP	Energy Detect	110V=47.7W 220V=48.2W	110V=421.36W 220V=412.43W	1407.23
SG300-10	Energy Detect Short Reach	110V=10.33W 220V=10.27W	N/A	35.25
SG300-10SFP	Energy Detect Short Reach	110V=18.10W 220V=17.71W	N/A	61.76
SG300-10P	Energy Detect Short Reach	110V=13.13W 220V=13.48W	110V=81.44W 220V=81.18W	277.87
SG300-10PP	Energy Detect Short Reach	110V=13.37W 220V=12.69W	110V=83.47W 220V=81.58W	278.36
SG300-10MP	Energy Detect Short Reach	110V=12.21W 220V=12.25W	110V=154.38W 220V=152.42W	526.68
SG300-10MPP	Energy Detect Short Reach	110V=13.41W 220V=13.72W	110V=145.7W 220V=144.5W	493.05
SG300-20	Energy Detect Short Reach	110V=18.05W 220V=18.26W	N/A	55.48
SG300-20P	Energy Detect Short Reach	110V=19.6W 220V=20.6W	N/A	70.29
SG300-28P	Energy Detect Short Reach	110V=29.7W 220V=30.7W	110V=214.4W 220V=210W	731.53
SG300-28PP	Energy Detect Short Reach	110V=31.9W 220V=33.0W	110V=222W 220V=217W	740.43
SG300-28MP	Energy Detect Short Reach	110V=42.4W 220V=43.1W	110V=445W 220V=436W	1487.63
SG300-28SFP	Energy Detect Short Reach	110V=28W 220V=28.2W	N/A	96.2 BTU/hr
SG300-52	Energy Detect Short Reach	110V=45.9W 220V=45.3W	N/A	158.61
SG300-52P	Energy Detect Short Reach	110V=81.25W 220V=81.46W	110V=473.62W 220V=481.88W	1817.29
SG300-52MP	Energy Detect Short Reach	110V=64.24W 220V=68.80W	110V=873.05W 220V=843.57W	2978.85

Ports	Model Name	Total System Ports	RJ-45 Ports	Combo Ports (RJ-45 + SFP)
	SF300-08	8 Fast Ethernet	8 Fast Ethernet	N/A
	SF302-08	8 Fast Ethernet + 2 Gigabit Ethernet	8 Fast Ethernet	2 Gigabit Ethernet combo
	SF302-08P	8 Fast Ethernet + 2 Gigabit Ethernet	8 Fast Ethernet	2 Gigabit Ethernet combo
	SF302-08PP	8 Fast Ethernet + 2 Gigabit Ethernet	8 Fast Ethernet	2 Gigabit Ethernet combo
	SF302-08MP	8 Fast Ethernet + 2 Gigabit Ethernet	8 Fast Ethernet	2 Gigabit Ethernet combo
	SF302-08MPP	8 Fast Ethernet + 2 Gigabit Ethernet	8 Fast Ethernet	2 Gigabit Ethernet combo
	SF300-24	24 Fast Ethernet + 4 Gigabit Ethernet	24 Fast Ethernet	2 Gigabit Ethernet combo

Feature	Description	Power (W)	Power (W)	Power (W)
SF300-24P	24 Fast Ethernet + 4 Gigabit Ethernet		24 Fast Ethernet 2 Gigabit Ethernet	2 Gigabit Ethernet combo
SF300-24PP	24 Fast Ethernet + 4 Gigabit Ethernet		24 Fast Ethernet 2 Gigabit Ethernet	2 Gigabit Ethernet combo
SF300-24MP	24 Fast Ethernet + 4 Gigabit Ethernet		24 Fast Ethernet + 2 Gigabit Ethernet	2 Gigabit Ethernet combo
SF300-48	48 Fast Ethernet + 4 Gigabit Ethernet		48 Fast Ethernet 2 Gigabit Ethernet	2 Gigabit Ethernet combo
SF300-48P	48 Fast Ethernet + 4 Gigabit Ethernet		48 Fast Ethernet 2 Gigabit Ethernet	2 Gigabit Ethernet combo
SF300-48PP	48 Fast Ethernet + 4 Gigabit Ethernet		48 Fast Ethernet 2 Gigabit Ethernet	2 Gigabit Ethernet combo
SG300-10	10 Gigabit Ethernet		8 Gigabit Ethernet	2 Gigabit Ethernet combo
SG300-10SFP	10 Gigabit Ethernet		8 SFP	2 Gigabit Ethernet combo
SG300-10P	10 Gigabit Ethernet		8 Gigabit Ethernet	2 Gigabit Ethernet combo
SG300-10PP	10 Gigabit Ethernet		8 Gigabit Ethernet	2 Gigabit Ethernet combo
SG300-10MP	10 Gigabit Ethernet		8 Gigabit Ethernet	2 Gigabit Ethernet combo
SG300-10MPP	10 Gigabit Ethernet		8 Gigabit Ethernet	2 Gigabit Ethernet combo
SG300-20	20 Gigabit Ethernet		18 Gigabit Ethernet	2 Gigabit Ethernet combo
SG300-28	28 Gigabit Ethernet		28 Gigabit Ethernet	2 Gigabit Ethernet combo
SG300-28P	28 Gigabit Ethernet		28 Gigabit Ethernet	2 Gigabit Ethernet combo
SG300-28SFP	28 Gigabit Ethernet		28 SFP	2 Gigabit Ethernet combo
SG300-28PP	28 Gigabit Ethernet		26 Gigabit Ethernet	2 Gigabit Ethernet combo
SG300-28MP	28 Gigabit Ethernet		28 Gigabit Ethernet	2 Gigabit Ethernet combo
SG300-52	52 Gigabit Ethernet		50 Gigabit Ethernet	2 Gigabit Ethernet combo
SG300-52P	52 Gigabit Ethernet		50 Gigabit Ethernet	2 Gigabit Ethernet combo
SG300-52MP	52 Gigabit Ethernet		50 Gigabit Ethernet	2 Gigabit Ethernet combo

Buttons	Reset button	
Cabling type	Unshielded twisted pair (UTP) Category 5 or better for 10BASE-T/100BASE-TX UTP Category 5 Ethernet or better for 1000BASE-T System, LinkAct, PoE, Speed, LED power saving option	
LEDs		
Flash	16 MB	
CPU memory	128 MB	
Packet buffer	All numbers are aggregate across all ports as the buffers are dynamically shared:	
	Model Name	Packet Buffer
	SF300-08	8 Mb
	SF302-08	8 Mb
	SF302-08P	8 Mb

Feature	Description																																				
	SF302-08PP 8 Mb																																				
	SF302-08MP 8 Mb																																				
	SF302-08MPP 8 Mb																																				
	SF300-24 8 Mb																																				
	SF300-24P 8 Mb																																				
	SF300-24PP 8 Mb																																				
	SF300-24MP 8 Mb																																				
	SF300-48 8 Mb/2																																				
	SF300-48P 8 Mb/2																																				
	SF300-48PP 8 Mb/2																																				
	SG300-10 8 Mb																																				
	SG300-10SFP 8 Mb																																				
	SG300-10P 8 Mb																																				
	SG300-10PP 8 Mb																																				
	SG300-10MP 8 Mb																																				
	SG300-10MPP 8 Mb																																				
	SG300-20 8 Mb																																				
	SG300-28 8 Mb																																				
	SG300-28SFP 8 Mb																																				
	SG300-28P 8 Mb																																				
	SG300-28PP 8 Mb																																				
	SG300-28MP 8 Mb																																				
	SG300-52 8 Mb/2																																				
	SG300-52P 8 Mb/2																																				
	SG300-52MP 8 Mb/2																																				
Supported SFP modules	<table border="1"> <thead> <tr> <th>SKU</th> <th>Media</th> <th>Speed</th> <th>Maximum Distance</th> </tr> </thead> <tbody> <tr><td>MFEFX1</td><td>Multimode fiber</td><td>100 Mbps</td><td>2 km</td></tr> <tr><td>MFELX1</td><td>Single-mode fiber</td><td>100 Mbps</td><td>10 km</td></tr> <tr><td>MFEBX1</td><td>Single-mode fiber</td><td>100 Mbps</td><td>20 km</td></tr> <tr><td>MGBBX1</td><td>Single-mode fiber</td><td>1000 Mbps</td><td>40 km</td></tr> <tr><td>MGBSX1</td><td>Multimode fiber</td><td>1000 Mbps</td><td>300 m</td></tr> <tr><td>MGBLH1</td><td>Single-mode fiber</td><td>1000 Mbps</td><td>40 km</td></tr> <tr><td>MGBLX1</td><td>Single-mode fiber</td><td>1000 Mbps</td><td>10 km</td></tr> <tr><td>MGBT1</td><td>UTP cat 5</td><td>1000 Mbps</td><td>100 m</td></tr> </tbody> </table>	SKU	Media	Speed	Maximum Distance	MFEFX1	Multimode fiber	100 Mbps	2 km	MFELX1	Single-mode fiber	100 Mbps	10 km	MFEBX1	Single-mode fiber	100 Mbps	20 km	MGBBX1	Single-mode fiber	1000 Mbps	40 km	MGBSX1	Multimode fiber	1000 Mbps	300 m	MGBLH1	Single-mode fiber	1000 Mbps	40 km	MGBLX1	Single-mode fiber	1000 Mbps	10 km	MGBT1	UTP cat 5	1000 Mbps	100 m
SKU	Media	Speed	Maximum Distance																																		
MFEFX1	Multimode fiber	100 Mbps	2 km																																		
MFELX1	Single-mode fiber	100 Mbps	10 km																																		
MFEBX1	Single-mode fiber	100 Mbps	20 km																																		
MGBBX1	Single-mode fiber	1000 Mbps	40 km																																		
MGBSX1	Multimode fiber	1000 Mbps	300 m																																		
MGBLH1	Single-mode fiber	1000 Mbps	40 km																																		
MGBLX1	Single-mode fiber	1000 Mbps	10 km																																		
MGBT1	UTP cat 5	1000 Mbps	100 m																																		
Environmental																																					
Dimensions (W x H x D)	<p>SF300-08, SF302-08, SF302-08P, SF302-08PP, SF302-08MP, SF302-08MPP, SG300-10SFP, SG300-10, SG300-10P, SG300-10PP, SG300-10MP, SG300-10MPP</p> <p>11 x 1.45 x 6.7 in. (279.4 x 44.45 x 170 mm)</p> <p>SG300-20</p> <p>17.3 x 1.45 x 7.97 in. (440 x 44.45 x 202.5 mm)</p> <p>SF300-24, SF300-24P, SF300-24PP, SF300-48, SG300-28, SG300-28P, SG300-28PP, SG300-52, SG300-28SFP</p> <p>17.3 x 1.45 x 10.1 in. (440 x 44.45 x 257 mm)</p> <p>SF300-24MP, SG300-28MP, SF300-48P, SF300-48PP, SG300-52P, SG300-52MP</p> <p>17.3 x 1.45 x 13.78 in. (440 x 44.45 x 350 mm)</p>																																				

Feature	Description																																																																												
Unitweight	<table border="1"> <tr><td>SF300-08: 2.58 lb (1.16 kg)</td><td>SG300-10: 2.58 lb (1.16 kg)</td></tr> <tr><td>SF302-08: 2.6 lb (1.18 kg)</td><td>SG300-10SFP: 4.88 lb (2.125 kg)</td></tr> <tr><td>SF302-08P: 2.67 lb (1.21 kg)</td><td>SG300-10P: 2.73 lb (1.24 kg)</td></tr> <tr><td>SF302-08PP: 2.60 lb (1.18 kg)</td><td>SG300-10PP: 2.73 lb (1.24 kg)</td></tr> <tr><td>SF302-08MP: 2.67 lb (1.21 kg)</td><td>SG300-10MP: 2.73 lb (1.24 kg)</td></tr> <tr><td>SF302-08MPP: 2.60 lb (1.18 kg)</td><td>SG300-10MPP: 2.73 lb (1.24 kg)</td></tr> <tr><td>SF300-24: 8.01 lb (3.69 kg)</td><td>SG300-20: 4.78 lb (2.17 kg)</td></tr> <tr><td>SF300-24P: 8.22 lb (3.73 kg)</td><td>SG300-28: 7.23 lb (3.28 kg)</td></tr> <tr><td>SF300-24PP: 8.25 lb (3.74 kg)</td><td>SG300-28P: 9.08 lb (4.11 kg)</td></tr> <tr><td>SF300-24MP: 11.2 lb (5.08 kg)</td><td>SF300-28SFP: 7.4 lb (3.34 kg)</td></tr> <tr><td>SF300-48: 7.47 lb (3.39 kg)</td><td>SG300-28PP: 8.71 lb (3.95 kg)</td></tr> <tr><td>SF300-48P: 12.94 lb (5.87 kg)</td><td>SG300-28MP: 11.6 lb (5.26 kg)</td></tr> <tr><td>SF300-48PP: 11.99 lb (5.44 kg)</td><td>SG300-52: 8.82 lb (3.91 kg)</td></tr> <tr><td></td><td>SG300-52P: 11.68 lb (5.3 kg)</td></tr> <tr><td></td><td>SG300-52MP: 11.73 lb (5.32 kg)</td></tr> </table>	SF300-08: 2.58 lb (1.16 kg)	SG300-10: 2.58 lb (1.16 kg)	SF302-08: 2.6 lb (1.18 kg)	SG300-10SFP: 4.88 lb (2.125 kg)	SF302-08P: 2.67 lb (1.21 kg)	SG300-10P: 2.73 lb (1.24 kg)	SF302-08PP: 2.60 lb (1.18 kg)	SG300-10PP: 2.73 lb (1.24 kg)	SF302-08MP: 2.67 lb (1.21 kg)	SG300-10MP: 2.73 lb (1.24 kg)	SF302-08MPP: 2.60 lb (1.18 kg)	SG300-10MPP: 2.73 lb (1.24 kg)	SF300-24: 8.01 lb (3.69 kg)	SG300-20: 4.78 lb (2.17 kg)	SF300-24P: 8.22 lb (3.73 kg)	SG300-28: 7.23 lb (3.28 kg)	SF300-24PP: 8.25 lb (3.74 kg)	SG300-28P: 9.08 lb (4.11 kg)	SF300-24MP: 11.2 lb (5.08 kg)	SF300-28SFP: 7.4 lb (3.34 kg)	SF300-48: 7.47 lb (3.39 kg)	SG300-28PP: 8.71 lb (3.95 kg)	SF300-48P: 12.94 lb (5.87 kg)	SG300-28MP: 11.6 lb (5.26 kg)	SF300-48PP: 11.99 lb (5.44 kg)	SG300-52: 8.82 lb (3.91 kg)		SG300-52P: 11.68 lb (5.3 kg)		SG300-52MP: 11.73 lb (5.32 kg)																																														
SF300-08: 2.58 lb (1.16 kg)	SG300-10: 2.58 lb (1.16 kg)																																																																												
SF302-08: 2.6 lb (1.18 kg)	SG300-10SFP: 4.88 lb (2.125 kg)																																																																												
SF302-08P: 2.67 lb (1.21 kg)	SG300-10P: 2.73 lb (1.24 kg)																																																																												
SF302-08PP: 2.60 lb (1.18 kg)	SG300-10PP: 2.73 lb (1.24 kg)																																																																												
SF302-08MP: 2.67 lb (1.21 kg)	SG300-10MP: 2.73 lb (1.24 kg)																																																																												
SF302-08MPP: 2.60 lb (1.18 kg)	SG300-10MPP: 2.73 lb (1.24 kg)																																																																												
SF300-24: 8.01 lb (3.69 kg)	SG300-20: 4.78 lb (2.17 kg)																																																																												
SF300-24P: 8.22 lb (3.73 kg)	SG300-28: 7.23 lb (3.28 kg)																																																																												
SF300-24PP: 8.25 lb (3.74 kg)	SG300-28P: 9.08 lb (4.11 kg)																																																																												
SF300-24MP: 11.2 lb (5.08 kg)	SF300-28SFP: 7.4 lb (3.34 kg)																																																																												
SF300-48: 7.47 lb (3.39 kg)	SG300-28PP: 8.71 lb (3.95 kg)																																																																												
SF300-48P: 12.94 lb (5.87 kg)	SG300-28MP: 11.6 lb (5.26 kg)																																																																												
SF300-48PP: 11.99 lb (5.44 kg)	SG300-52: 8.82 lb (3.91 kg)																																																																												
	SG300-52P: 11.68 lb (5.3 kg)																																																																												
	SG300-52MP: 11.73 lb (5.32 kg)																																																																												
Power	<p>100-240V 47-63 Hz, internal, universal - SF300-24, SF300-24PP, SG300-20, SG300-28, SG300-28P, SG300-28PP, SG300-52</p> <p>100-240V 50-60 Hz, internal, universal - SF300-24MP, SF300-48PP, SG300-28MP, SG300-52P, SG300-52MP, SG300-28SFP</p> <p>100-240V 50-60 Hz, 0.5A, external - SF300-08, SF302-08, SG300-10, SG300-10SFP</p> <p>100-240V 50-60 Hz, 2A, external - SF302-08P, SF300-08PP, SG300-10P, SG300-10PP</p> <p>100-240V 50-60 Hz, 2.5A, external - SF302-08MP, SF302-08MPP, SG300-10MP, SG300-10MPP</p>																																																																												
Certification	UL (UL 60850), CSA (CSA 22.2), CE mark, FCC Part 15 (CFR 47) Class A																																																																												
Operating temperature	<p>SF300-08, SF302-08, SF302-08P, SF302-08PP, SF300-24, SF300-24P, SF300-24PP, SF300-48, SF300-48P, SG300-10, SG300-10P, SG300-10PP, SG300-10MP, SG300-20, SG300-28, SG300-28P, SG300-52</p> <p>32° to 104°F (0° to 40°C)</p> <p>SF302-08MPP, SF302-08PP, SF300-24PP, SG300-52P, SG300-52MP, SG300-10SFP, SG300-10MPP, SG300-10PP, SG300-28PP</p> <p>32° to 113°F (0° to 45°C)</p> <p>SF300-24MP, SF300-48PP, SG300-28MP, SG300-28SFP</p> <p>32° to 122°F (0° to 50°C)</p>																																																																												
Storage temperature	-4° to 158°F (-20° to 70°C)																																																																												
Operating humidity	10% to 90%, relative, noncondensing																																																																												
Storage humidity	10% to 90%, relative, noncondensing																																																																												
Acoustic Noise and MTBF	<table border="1"> <thead> <tr> <th>Model Name</th> <th>FAN (Number)</th> <th>Acoustic Noise</th> <th>MTBF @40°C (hr)</th> </tr> </thead> <tbody> <tr><td>SF300-08</td><td>Fanless</td><td>N/A</td><td>71,006</td></tr> <tr><td>SF302-08</td><td>Fanless</td><td>N/A</td><td>89,825</td></tr> <tr><td>SF302-08P</td><td>Fanless</td><td>N/A</td><td>65,527</td></tr> <tr><td>SF302-08PP</td><td>Fanless</td><td>N/A</td><td>899,905</td></tr> <tr><td>SF302-08MP</td><td>Fanless</td><td>N/A</td><td>63,569</td></tr> <tr><td>SF302-08MPP</td><td>Fanless</td><td>N/A</td><td>899,905</td></tr> <tr><td>SF300-24</td><td>Fanless</td><td>N/A</td><td>282,775.3</td></tr> <tr><td>SF300-24P</td><td>2 pcs</td><td>41.0 dB</td><td>241,995.9</td></tr> <tr><td>SF300-24PP</td><td>2 pcs</td><td>40.4 dB</td><td>171,504 (at 50°C)</td></tr> <tr><td>SF300-24MP</td><td>4 pcs</td><td>41.6 dB at 30°C</td><td>135,669.9 (at 50°C)</td></tr> <tr><td></td><td></td><td>53.9dB at 50°C</td><td></td></tr> <tr><td>SF300-48</td><td>Fanless</td><td>N/A</td><td>199,684.2</td></tr> <tr><td>SF300-48P</td><td>3 pcs w/Fan speed control</td><td>43.1 dB at 30°C</td><td>182,540.0</td></tr> <tr><td></td><td></td><td>43.1 dB at 40°C</td><td></td></tr> <tr><td>SF300-48PP</td><td>4 pcs w/Fan speed control</td><td>43.5 dB at 30°C</td><td>113,892 (at 50°C)</td></tr> <tr><td></td><td></td><td>54.1 dB at 40°C</td><td></td></tr> <tr><td>SG300-10</td><td>Fanless</td><td>N/A</td><td>74,294</td></tr> <tr><td>SG300-10SFP</td><td>Fanless</td><td>N/A</td><td>132,151 (at 45°C)</td></tr> </tbody> </table>	Model Name	FAN (Number)	Acoustic Noise	MTBF @40°C (hr)	SF300-08	Fanless	N/A	71,006	SF302-08	Fanless	N/A	89,825	SF302-08P	Fanless	N/A	65,527	SF302-08PP	Fanless	N/A	899,905	SF302-08MP	Fanless	N/A	63,569	SF302-08MPP	Fanless	N/A	899,905	SF300-24	Fanless	N/A	282,775.3	SF300-24P	2 pcs	41.0 dB	241,995.9	SF300-24PP	2 pcs	40.4 dB	171,504 (at 50°C)	SF300-24MP	4 pcs	41.6 dB at 30°C	135,669.9 (at 50°C)			53.9dB at 50°C		SF300-48	Fanless	N/A	199,684.2	SF300-48P	3 pcs w/Fan speed control	43.1 dB at 30°C	182,540.0			43.1 dB at 40°C		SF300-48PP	4 pcs w/Fan speed control	43.5 dB at 30°C	113,892 (at 50°C)			54.1 dB at 40°C		SG300-10	Fanless	N/A	74,294	SG300-10SFP	Fanless	N/A	132,151 (at 45°C)
Model Name	FAN (Number)	Acoustic Noise	MTBF @40°C (hr)																																																																										
SF300-08	Fanless	N/A	71,006																																																																										
SF302-08	Fanless	N/A	89,825																																																																										
SF302-08P	Fanless	N/A	65,527																																																																										
SF302-08PP	Fanless	N/A	899,905																																																																										
SF302-08MP	Fanless	N/A	63,569																																																																										
SF302-08MPP	Fanless	N/A	899,905																																																																										
SF300-24	Fanless	N/A	282,775.3																																																																										
SF300-24P	2 pcs	41.0 dB	241,995.9																																																																										
SF300-24PP	2 pcs	40.4 dB	171,504 (at 50°C)																																																																										
SF300-24MP	4 pcs	41.6 dB at 30°C	135,669.9 (at 50°C)																																																																										
		53.9dB at 50°C																																																																											
SF300-48	Fanless	N/A	199,684.2																																																																										
SF300-48P	3 pcs w/Fan speed control	43.1 dB at 30°C	182,540.0																																																																										
		43.1 dB at 40°C																																																																											
SF300-48PP	4 pcs w/Fan speed control	43.5 dB at 30°C	113,892 (at 50°C)																																																																										
		54.1 dB at 40°C																																																																											
SG300-10	Fanless	N/A	74,294																																																																										
SG300-10SFP	Fanless	N/A	132,151 (at 45°C)																																																																										

Model Name	Description			
SG300-10P	Fanless	N/A	67,009	
SG300-10PP	Fanless	N/A	945,042	
SG300-10MP	Fanless	N/A	67,005	
SG300-10MPP	Fanless	N/A	945,042	
SG300-20	Fanless	N/A	144,237	
SG300-28	Fanless	N/A	179,141.0	
SG300-28SFP	2 pcs	40.8 dB	814,062 (at 50°C)	
SG300-28P	2 pcs	40.6 dB	187,334.9	
SG300-28PP	2 pcs	40.4 dB	310,755 (at 45°C)	
SG300-28MP	4 pcs	41.7dB at 30°C 54dB at 50°C	138,678.92 (at 50°C)	
SG300-52	2 pcs	40.1dB	206,005.8	
SG300-52P	4 pcs	46.8dB	100,262 (at 45°C) 80,562 (at 50°C)	
SG300-52MP	4 pcs	47.4dB	117,130 (at 45°C) 83,152 (at 50°C)	
Warranty	Limited lifetime with next business day advance replacement (where available)			

Package Contents
<ul style="list-style-type: none"> Cisco 300-series Ethernet Switch Power Cord (Power Adapter for Desktop SKUs) Mounting Kit included in all SKUs, including Desktop models Serial Cable CD-ROM with user documentation (PDF) included Quick Start Guide
Minimum Requirements
<ul style="list-style-type: none"> Web browser: Mozilla Firefox version 8 or later; Microsoft Internet Explorer version 7 or later; Safari, Chrome Category 5 Ethernet network cable TCP/IP, network adapter, and network operating system (such as Microsoft Windows, Linux, or Mac OS X) installed on each computer in the network

Ordering Information

Table 2 provides ordering information for the Cisco 300 Series Switches.

Table 2. Cisco 300 Series Switches Ordering Information

Model Name	Order Product ID Number	Description
Fast Ethernet		
SF300-08	SRW208-K9	• 8 10/100 ports
SF302-08	SRW208G-K9	• 8 10/100 ports
SF302-08P	SRW208P-K9	• 2 combo mini-GbIC ports • 8 10/100 PoE ports with 62W power budget
SF302-08PP	SF302-08PP-K9	• 2 combo mini-GbIC ports • 8 10/100 PoE+ ports with 62W power budget
SF302-08MP	SRW208MP-K9	• 8 10/100 Maximum PoE ports with 124W power budget
SF302-08MPP	SF302-08MPP-K9	• 2 combo mini-GbIC ports • 8 10/100 Maximum PoE+ ports with 124W power budget

Model Name	Order Product ID Number	Description
SF300-24	SRW224G4-K9	• 24 10/100 ports • 2 10/100/1000 ports • 2 combo mini-GbIC ports
SF300-24P	SRW224G4P-K9	• 24 10/100 PoE ports with 180W power budget • 2 10/100/1000 ports • 2 combo mini-GbIC ports
SF300-24PP	SF300-24PP-K9	• 24 10/100 PoE+ ports with 180W power budget • 2 10/100/1000 ports • 2 combo mini-GbIC ports
SF300-24MP	SF300-24MP-K9	• 24 10/100 PoE+ ports with 375W power budget • 2 10/100/1000 ports • 2 combo mini-GbIC
SF300-48	SRW248G4-K9	• 48 10/100 ports • 2 10/100/1000 ports • 2 combo mini-GbIC
SF300-48P	SRW248G4P-K9	• 48 10/100 PoE ports with 375W power budget • 2 10/100/1000 ports • 2 combo mini-GbIC ports
SF300-48PP	SF300-48PP-K9	• 48 10/100 PoE+ ports with 375W power budget • 2 10/100/1000 ports • 2 combo mini-GbIC ports
Gigabit Ethernet		
SG300-10	SRW2008-K9	• 8 10/100/1000 ports • 2 combo mini-GbIC ports
SG300-10SFP	SG300-10SFP-K9	• 8 10/100/1000 ports (SFP) • 2 Combo mini-GbIC ports
SG300-10P	SRW2008P-K9	• 8 10/100/1000 PoE ports with 62W power budget • 2 Combo mini-GbIC ports
SG300-10PP	SG300-10PP-K9	• 8 10/100/1000 PoE+ ports with 62W power budget • 2 Combo mini-GbIC ports
SG300-10MP	SRW2008MP-K9	• 8 10/100/1000 Maximum PoE ports with 124W power budget • 2 combo mini-GbIC ports
SG300-10MPP	SG300-10MPP-K9	• 8 10/100/1000 Maximum PoE+ ports with 124W power budget • 2 combo mini-GbIC ports
SG300-20	SRW2016-K9	• 16 10/100/1000 ports • 2 combo mini-GbIC ports
SG300-28	SRW2024-K9	• 26 10/100/1000 ports • 2 combo mini-GbIC ports
SG300-28SFP	SG300-28SFP-K9	• 26 10/100/1000 ports (SFP) • 2 combo mini-GbIC ports
SG300-28P	SRW2024P-K9	• 26 10/100/1000 ports (24 PoE ports with 160W power budget) • 2 combo mini-GbIC ports
SG300-28PP	SG300-28PP-K9	• 26 10/100/1000 ports (24 PoE+ ports with 160W power budget) • 2 combo mini-GbIC ports
SG300-28MP	SG300-28MP-K9	• 26 10/100/1000 ports (24 PoE+ ports with 375W power budget) • 2 combo mini-GbIC ports
SG300-52	SRW2048-K9	• 50 10/100/1000 ports • 2 combo mini-GbIC ports
SG300-52P	SG300-52P-K9	• 50 10/100/1000 ports (48 PoE+ ports with 375W power budget) • 2 combo mini-GbIC ports
SG300-52MP	SG300-52MP-K9	• 50 10/100/1000 ports (48 PoE+ ports with 740W power budget) • 2 combo mini-GbIC ports

Each combo mini-GbIC port has one 10/100/1000 Ethernet port and one mini-GbIC/SFP/Gigabit Ethernet slot, with one port active at a time.

Table 3. MFE and MGE Transceiver Ordering Information

MFE Transceivers	
MFEBX1	100BASE-BX-20U SFP transceiver for single-mode fiber, 1310 nm wav length, support up to 20 km
MFELX1	100BASE-LX SFP transceiver, for single-mode fiber, 1310 nm wav length, support up to 10 km
MFEFX1	100BASE-FX SFP transceiver, for multimode fiber, 1310 nm wav length, support up to 2 km
MGE Transceivers	
MGBBX1	100BASE-BX-20U SFP transceiver, for single-mode fiber, 1310 nm wav length, support up to 40 km
MGBLH1	100BASE-LH SFP transceiver, for single-mode fiber, 1310 nm wav length, support up to 40 km
MGBLX1	100BASE-LX SFP transceiver, for single-mode fiber, 1310 nm wav length, support up to 10 km
MGBSX1	100BASE-SX SFP transceiver, for multimode fiber, 850 nm wav length, support up to 550 m

A Powerful, Affordable Foundation for Your Small Business Network

As you strive to make your employees as productive and effective as possible, your business applications and information—and the network that delivers them—become an ever more vital part of your business. You need a technology foundation that can meet your business's needs today and in the future, and that delivers the right feature set at the right price. The Cisco 300 Series portfolio of managed switches provides the reliability, performance, security, and capabilities you need to power your business.

For More Information

To find out more about the Cisco 300 Series, visit www.cisco.com/go/300switches.



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: www.cisco.com/go/trademarks. Third party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)

Printed in USA

C75-610061-08 07/14

© 2014 Cisco and/or its affiliates. All rights reserved. This document is Cisco Public Information.

Page 19 of 19

ЗАПЕЧАТОВАНА

Handwritten signature



Cisco 350X Series Stackable Managed Switches

Managed Switches That Provide the Ideal Combination of Features and Affordability

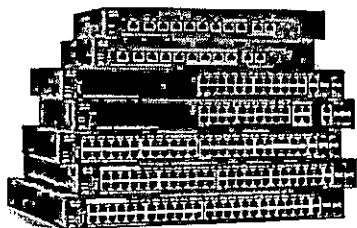
To stay ahead in a competitive marketplace, small businesses need to make every dollar count. That means getting the most value from your technology investments, but it also means making sure that employees have fast, reliable access to the business tools and information they need. Every minute an employee waits for an unresponsive application – and every minute your network is down – has an impact on your bottom line. The importance of maintaining a strong and dependable business network only grows as your business adds more employees, applications, and network complexity.

When your business needs advanced security and features but value is still a top consideration, you're ready for the new generation of Cisco® Small Business managed switches: The Cisco 350X Series.

Cisco 350X Series Stackable Managed Switches

The Cisco® 350X Series Stackable Managed Switches (Figure 1) are a new line of stackable managed Ethernet switches that provide the rich capabilities you need to support a more demanding network environment at a very affordable price. The SG350X models provide 24 or 48 ports of Gigabit and Multigigabit Ethernet connectivity with 10 Gigabit uplinks. The Cisco 350XG models provide 12, 24, or 48 ports of all 10 Gigabit Ethernet, providing a solid foundation for your current business applications as well as those you are planning for the future. In addition, these switches are easy to deploy and manage without a large IT staff. The SG350X platforms are Cisco's most cost-effective platforms with 10 Gigabit Ethernet and stacking.

Figure 1. Cisco 350X Series Stackable Managed Switches



Cisco 350X Series switches are designed to protect your technology investment as your business grows. Unlike switches that claim to be stackable but have elements that are administered and troubleshot separately, the Cisco 350X Series provides true stacking capability, allowing you to configure, manage, and troubleshoot multiple physical switches as a single device and more easily expand your network.

A true stack delivers a unified data and control plane, in addition to management plane, providing flexibility, scalability, and ease of use because the stack of units operates as a single entity constituting all the ports of the stack members. The switches also protect your technology investment with an enhanced warranty, dedicated technical support, and the ability to upgrade equipment in the future. Overall, the Cisco 350X Series provides the ideal technology foundation for a growing business.

Features and Benefits

Cisco 350X Series switches provide the advanced feature set that growing businesses require and that high-bandwidth applications and technologies demand. These switches can improve the availability of your critical applications, protect your business information, and optimize your network bandwidth to more effectively deliver information and support applications. The switches provide the following benefits.

High-Performance 10 Gigabit Ethernet

Cisco 350X Series switches break the barrier of 10 Gigabit Ethernet adoption by providing affordable and flexible configurations customized for the demanding network requirements of small and medium businesses.

With 10G copper ports on SG350XG switches, you can easily and cost-effectively enable 10G connections to servers and network storage devices with standard RJ45 Ethernet cable. You can also connect your SG350X access switches to the SG350XG aggregation with 10G SFP+ fiber connections, building a high-performance backbone to speed up the overall operation of your network.

Multigigabit Performance

Network needs are changing quickly. Thanks to evolving wireless standards and the rising number of wireless devices, keeping up with data rates and growing traffic can be a challenge. Your traditional Ethernet infrastructure can support speeds up to 1 Gigabit per second (Gbps), but competing today requires much more capacity. One option is completely replacing your older cabling infrastructure and upgrading your hardware. But wouldn't it be better to increase network speed and traffic capacity in a way that's quick, inexpensive, and efficient?

Cisco's new Multigigabit Ethernet switches offer just that: an easy-to-deploy, budget-friendly solution that allows you to increase network speed and bandwidth using your existing cables. By partnering with other industry leaders to form the NBASE-T Alliance, Cisco uses NBASE-T technology to help you get more out of your existing infrastructure. Save time and money by avoiding upgrades and extending the life of your installed cable plants. And discover the benefits of meeting consumer demand for increased bandwidth and speeds without a large initial investment.

Multigigabit Ethernet technology uses capabilities in your existing cabling infrastructure to meet bandwidth requirements and provide up to five times the performance. The technology enables intermediate data rates of 2.5 and 5 Gbps to ease the jump between traditional rates of 1 Gbps and 10 Gbps. These intermediate rates run on most installed cables and preserve older UTP wiring, which is good for 802.11ac wireless LAN applications.

The technology also supports Power over Ethernet (PoE) forms, including PoE+ and 80W PoE. Cisco Multigigabit Ethernet switches help you avoid having to run multiple cables between switches and access points and let your networks welcome next-generation traffic speeds and data rates.

350X52

EXHIBIT

(Handwritten signature)



Ease of Management and Deployment

Cisco 350 Series switches are designed to be easy to use and manage by commercial customers or the partners that serve them. They feature:

- Cisco Smart Network Application (SNA) is an innovative network-level monitoring and management tool embedded in Cisco 100 to 500 Series switches. It can discover network topology, display link status, monitor events, apply configurations, and upgrade software images across multiple switches in the network.
- The FindIT Network Manager and Probe are designed to manage Cisco 100 to 500 Series switches, routers, and wireless access points. The Manager lets you proactively manage the network instead of just reacting to events. FindIT Network Management is the perfect addition to your business network. For more information, visit <https://www.cisco.com/go/findit>.
- The Cisco FindIT Network Discovery Utility works through a simple toolbar on your web browser to discover Cisco devices on the network and display basic device information, inventory, and new firmware updates to aid in the configuration and speed the deployment of Cisco Small Business products. For more information, visit <https://www.cisco.com/go/findit>.
- The USB port on the front panel of the switch enables easy image and configuration transfer for faster deployment or upgrade.
- Simple-to-use graphical interfaces reduce the time required to deploy, troubleshoot, and manage the network and allow you to support sophisticated capabilities without increasing IT head count.
- The switches also support Textview, a full Command-Line Interface (CLI) option for partners that prefer it.
- Using Auto Smartports intelligence, the switch can detect a network device connected to any port and automatically configure the optimal security, Quality of Service (QoS), and availability on that port.
- Cisco Discovery Protocol discovers Cisco devices and allows devices to share critical configuration information, simplifying network setup and integration.
- Support for Simple Network Management Protocol (SNMP) allows you to set up and manage your switches and other Cisco devices remotely from a network management station, improving IT workflow and mass configurations.
- The Cisco FindIT utility, which works through a simple toolbar on the user's web browser, discovers Cisco devices in the network and displays basic information, such as serial numbers and IP addresses, to aid in configuration and deployment. (For more information and to download this free utility, visit <https://www.cisco.com/go/findit>.)

Power over Ethernet Plus (PoE+) and 60W PoE

PoE capabilities simplify the deployment of advanced technologies by allowing you to connect and power network endpoints over a single Ethernet cable, without having to install separate power supplies. Cisco 350X Series switches are also fully backward compatible with Cisco legacy PoE protocols.

Cisco 350X Series switches support the Power over Ethernet Plus (PoE+) standard (IEEE 802.3at), providing up to 30 watts per port. The switches also support 60W PoE on select ports to power compact switches, high-power wireless access points, or connected lighting. The PoE power is intelligently managed in a way such that only the amount of power needed by endpoints is delivered to it and not wasted. As a result, the switches can support devices that require more power, such as 802.11ac wireless access points, video-based IP phones, surveillance cameras, and more.



Multigigabit Performance

Network needs are changing quickly. Thanks to evolving wireless standards and the rising number of wireless devices, keeping up with data rates and growing traffic can be a challenge. Your traditional Ethernet infrastructure can support speeds up to 1 Gigabit per second (Gbps), but competing today requires much more capacity. One option is completely replacing your older cabling infrastructure and upgrading your hardware. But wouldn't it be better to increase network speed and traffic capacity in a way that's quick, inexpensive, and efficient?

Cisco's new Multigigabit Ethernet switches offer just that: an easy-to-deploy, budget-friendly solution that allows you to increase network speed and bandwidth using your existing cables. By partnering with other industry leaders to form the NBASE-T Alliance, Cisco uses NBASE-T technology to help you get more out of your existing infrastructure. Save time and money by avoiding upgrades and extending the life of your installed cable plants. And discover the benefits of meeting consumer demand for increased bandwidth and speeds without a large initial investment.

Multigigabit Ethernet technology uses capabilities in your existing cabling infrastructure to meet bandwidth requirements and provide up to five times the performance. The technology enables intermediate data rates of 2.5 and 5 Gbps to ease the jump between traditional rates of 1 Gbps and 10 Gbps. These intermediate rates run on most installed cables and preserve older UTP wiring, which is good for 802.11ac wireless LAN applications.

The technology also supports Power over Ethernet (PoE) forms, including PoE+ and 60W PoE. Cisco Multigigabit Ethernet switches help you avoid having to run multiple cables between switches and access points and let your networks welcome next-generation traffic speeds and data rates.


High Reliability and Resiliency

In a growing business where availability 24 hours a day, 7 days a week is critical, you need to assure that employees can always access the data and resources they need. In these environments, stackable switches can play an important role in eliminating downtime and improving network resiliency. For example, if a switch within a Cisco 350X Series stack fails, another switch immediately takes over, keeping your network up and running. You can also replace individual devices in the stack without taking your network offline or affecting employee productivity.

The Cisco 350X Series also supports dual images, allowing you to perform software upgrades without having to take the network offline or worry about the network going down during the upgrade.

Simplified IT Operation

Cisco 350X Series switches help optimize your IT operations with built-in features that simplify and streamline day-to-day network operation:

- True stacking allows you to troubleshoot, configure, and manage multiple physical switches as a single entity.
 - Cisco switches use common chipsets/software across all switching portfolios, so all Cisco switches within a category support the same feature set, making it easier to manage and support all switches across the network.
- 
- 5/24/18 10:11

True Stacking

Some switches claim to support stacking but in practice support only "clustering," meaning that each switch must still be managed and configured individually. Cisco 350X Series switches provide true stacking capability, allowing you to configure, manage, and troubleshoot all switches in a stack as a single unit, with a single IP address, for up to 4 units and a maximum of 208 Ethernet ports.

A true stack delivers a unified data and control plane, in addition to management plane, providing flexibility, scalability, and ease of use because the stack of units operate as a single entity constituting all the ports of the stack members. This capability can radically reduce complexity in a growing network environment while improving the resiliency and availability of network applications. True stacking also provides other cost savings and administrative benefits through features such as cross-stack QoS, VLANs, LAGs, and port mirroring, which clustered switches can't support.

Strong Security

Cisco 350X Series switches provide the advanced security features you need to protect your business data and keep unauthorized users off the network:

- Embedded Secure Sockets Layer (SSL) encryption protects management data traveling to and from the switch.
- Extensive Access Control Lists (ACLs) restrict sensitive portions of the network to keep out unauthorized users and guard against network attacks.
- Guest VLANs let you provide Internet connectivity to nonemployee users while isolating critical business services from guest traffic.
- Support for advanced network security applications such as IEEE 802.1X port security tightly limits access to specific segments of your network. Web-based authentication provides a consistent interface to authenticate all types of host devices and operating systems, without the complexity of deploying IEEE 802.1X clients on each endpoint.
- Advanced defense mechanisms, including dynamic Address Resolution Protocol (ARP) inspection, IP Source Guard, and Dynamic Host Configuration Protocol (DHCP) snooping, detect and block deliberate network attacks. Combinations of these protocols are also referred to as IP-MAC port binding (IPMB).
- IPv6 First Hop Security extends the advanced threat protection to IPv6. This comprehensive security suite includes ND inspection, RA guard, DHCPv6 guard, and neighbor binding integrity check, providing unparalleled protection against a vast range of address spoofing and man-in-the-middle attacks on IPv6 networks.
- Time-based ACLs and port operation restrict access to the network during pre-designated times such as business hours.
- Uniform MAC address-based security can be applied automatically to mobile users as they roam between wireless access points.
- Secure Core Technology (SCT) helps ensure that the switch is able to process management traffic in the face of a Denial-of-Service (DoS) attack.
- Private VLAN Edge (PVE) provides Layer 2 isolation between devices on the same VLAN.
- Storm control can be applied to broadcast, multicast, and unknown unicast traffic.

- Protection of management sessions occurs using RADIUS, TACACS+, and local database authentication as well as secure management sessions over SSL, SSH, and SNMPv3.
- DoS attack prevention maximizes network uptime in the presence of an attack.

Networkwide Automatic Voice Deployment

Using a combination of Cisco Discovery Protocol, LLDP-MED, Auto Smartports, and Voice Services Discovery Protocol (or VSDP, a unique Cisco protocol), customers can deploy an end-to-end voice network dynamically. The switches in the network automatically converge around a single voice VLAN and QoS parameters and then propagate them out to the phones on the ports, where they are discovered. For example, automated voice VLAN capabilities let you plug any IP phone (including third-party phones) into your IP telephony network and receive an immediate dial tone. The switch automatically configures the device with the right VLAN and QoS parameters to prioritize voice traffic.

IPv6 Support

As the IP address scheme evolves to accommodate a growing number of network devices, the Cisco 350X Series can support the transition to the next generation of networking and operating systems such as Windows 7, Vista, and Linux. These switches continue to support previous-generation IPv4, allowing you to evolve to the new IPv6 standard at your own pace, and helping ensure that your current network will continue to support your business applications in the future. Cisco 350X Series switches have successfully completed rigorous IPv6 testing and have received the USGv6 and IPv6 Gold certification.

Advanced Layer 3 Traffic Management

The Cisco 350X Series enables a more advanced set of traffic management capabilities to help growing businesses organize their networks more effectively and efficiently. The switches provide static LAN Layer 3 routing, allowing you to segment your network into workgroups and communicate across VLANs without degrading application performance. With these capabilities, you can boost the efficiency of your network by offloading internal traffic-handling tasks from your router and allowing it to manage primarily external traffic and security. You can minimize the need to manually configure routing devices and simplify the ongoing operation of the network.

Power Efficiency

The Cisco 350X Series integrates a variety of power-saving features across all models, providing the industry's most extensive energy-efficient switching portfolio. These switches are designed to conserve energy by optimizing power use, which helps protect the environment and reduce your energy costs. They provide an eco-friendly network solution without compromising performance. Cisco 350X Series switches feature:

- Support for the Energy Efficient Ethernet (IEEE 802.3az) standard, which reduces energy consumption by monitoring the amount of traffic on an active link and putting the link into a sleep state during quiet periods
- The latest Application-Specific Integrated Circuits (ASICs), which use low-power 65/40-nanometer technology and low-power, high-performance ARM CPUs
- Automatic power shutoff on ports when a link is down
- LEDs that can be turned off to save power
- Embedded intelligence to adjust signal strength based on the length of the connecting cable

Peace of Mind and Investment Protection

Cisco 350X Series switches offer the reliable performance and peace of mind you expect from a Cisco switch. When you invest in the Cisco 350 Series, you gain the benefit of:

- Limited lifetime warranty with Next-Business-Day (NBD) advance replacement (where available; otherwise same day ship)
- A solution that has been rigorously tested to help ensure optimal network uptime to keep employees connected to primary resources and productive
- A solution designed and tested to easily and fully integrate with other Cisco voice, unified communications, security, and networking products, as part of a comprehensive technology platform for your business

Cisco Limited Lifetime Hardware Warranty

Cisco 350X Series switches offer a limited lifetime hardware warranty with NBD advance replacement (where available; otherwise same day ship) and a limited lifetime warranty for fans and power supplies.

In addition, Cisco offers software application updates for bug fixes for the warranty term and telephone technical support at no charge for the first 12 months following the date of purchase. To download software updates, go to <https://software.cisco.com/download/navigator.html>.

Product warranty terms and other information applicable to Cisco products are available at <https://www.cisco.com/go/warranty>.

World-Class Service and Support

Your time is valuable, especially when you have a problem affecting your business. Cisco 350X Series switches are backed by the Cisco SMARTnet[®] Total Care, which provides affordable peace-of-mind coverage. This subscription-based service helps you protect your investment and derive maximum value from Cisco SMB products. Delivered by Cisco and backed by your trusted partner, this comprehensive service includes software updates and access to the Cisco Support Center, and it extends technical service to three years.

Cisco SMB products are supported by professionals in the Cisco Support Center, a dedicated resource for small business customers and networks, with locations worldwide that are specifically trained to understand your needs. You also have access to extensive technical and product information through the Cisco Support Community, an online forum that enables you to collaborate with your peers and reach Cisco technical experts for support information.

Product Specifications

Table 1 describes product specifications.

Table 1. Specifications

Feature	Description
Performance	
Switching capacity and forwarding rate	Product Name Capacity in Mpps (64-Byte Packets) Switching Capacity (Gbps)
All switches are wire speed and nonblocking	SG350X-8PMD 29.76 80
	SG350X-24 85.23 128
	SG350X-24P 85.23 128
	SG350X-24MP 85.23 128

Feature	Description
	SG350X-24PD 104.18 140
	SG350X-48 130.84 176
	SG350X-48P 130.84 176
	SG350X-48MP 130.84 176
	SG350XG-2F10 178.56 240
	SG350XG-24F 357.12 480
	SG350XG-24T 357.12 480
	SG350XG-48T 714.24 960
Layer 2 switching	
Spanning Tree Protocol	Standard 802.1d spanning tree support Fast convergence using 802.1w (Rapid Spanning Tree Protocol (RSTP)), enabled by default Multiple spanning tree instances using 802.1s (MSTP); 16 instances are supported
Port grouping/link aggregation	Support for IEEE 802.3ad Link Aggregation Control Protocol (LACP) • Up to 8 groups • Up to 8 ports per group with 16 candidate ports for each (dynamic) 802.3ad LAG
VLAN	Support for up to 4094 active VLANs simultaneously; port-based and 802.1Q tag-based VLANs; MAC-based VLAN Management VLAN Private VLAN with promiscuous, isolated, and community port Guest VLAN, unauthenticated VLAN, protocol-based VLAN, IP subnet-based VLAN, CPE VLAN Dynamic VLAN assignment using RADIUS server along with 802.1x client authentication
Voice VLAN	Voice traffic is automatically assigned to a voice-specific VLAN and treated with appropriate levels of QoS. Autovoice capabilities deliver networkwide zero-touch deployment of voice endpoints and call control devices
Multicast TV VLAN	Multicast TV VLAN allows the single multicast VLAN to be shared in the network while subscribers remain in separate VLANs. This feature is also known as Multicast VLAN Registration (MVR)
Q-in-Q	VLANs transparently cross over a service provider network while isolating traffic among customers
GVRP/GARP	Generic VLAN Registration Protocol (GVRP) and Generic Attribute Registration Protocol (GARP) enable automatic propagation and configuration of VLANs in a bridged domain
Unidirectional Link Detection (UDLD)	UDLD monitors physical connection to detect unidirectional links caused by incorrect wiring or port faults to prevent forwarding loops and blackholing of traffic in switched networks
DHCP relay at Layer 2	Relay of DHCP traffic to DHCP server in a different VLAN. Works with DHCP option 82
IGMP (versions 1, 2, and 3) snooping	Internet Group Management Protocol (IGMP) limits bandwidth-intensive multicast traffic to only the requester; supports 4K multicast groups (source-specific multicasting is also supported)
IGMP querier	IGMP querier is used to support a Layer 2 multicast domain of snooping switches in the absence of a multicast router
Loopback Detection	Loopback detection provides protection against loops by transmitting loop protocol packets out of ports on which loop protection has been enabled. It operates independently of STP.
HOL blocking	Head-Of-Line (HOL) blocking
Layer 3	
IPv4 routing	Wirespeed routing of IPv4 packets Up to 8K static routes and up to 256 IP interfaces
IPv6 routing	Wirespeed routing of IPv6 packets
Layer 3 interface	Configuration of Layer 3 interface on physical port, LAG, VLAN interface, or loopback interface
CIDR	Support for classless interdomain routing
DHCP server	Switch functions as an IPv4 DHCP server serving IP addresses for multiple DHCP pools/scopes Support for DHCP options
DHCP relay at Layer 3	Relay of DHCP traffic across IP domains
User Datagram Protocol (UDP) relay	Relay of broadcast information across Layer 3 domains for application discovery or relaying of BOOTP/DHCP packets

000154

Feature	Description
Stacking	
Hardware stack	Up to 4 units in a stack. Up to 208 ports managed as a single system with hardware failover
High availability	Fast stack failover delivers minimal traffic loss. Support link aggregation across multiple units in a stack
Plug-and-play stacking configuration/management	Master/backup for resilient stack control Autonumbering Hot swap of units in stack Ring and chain stacking options, autostacking port speed, flexible stacking port options
High-speed stack interconnects	Cost-effective high-speed 10G fiber and copper interfaces. Support LAG as stacking interconnects for even higher bandwidth
Security	
SSH	SSH is a secure replacement for Telnet traffic. SCP also uses SSH. SSH versions 1 and 2 are supported
SSL	Secure Sockets Layer (SSL) encrypts all HTTPS traffic, allowing secure access to the browser-based management GUI in the switch
IEEE 802.1X (authenticator role)	RADIUS authentication and accounting, MDS hash, guest VLAN, unauthenticated VLAN, single/multiple host mode, and single/multiple sessions Supports time-based 802.1X dynamic VLAN assignment
Web-based authentication	Web-based authentication provides network admission control through web browser to any host devices and operating systems
STP BPDU Guard	A security mechanism to protect the network from invalid configurations. A port enabled for Bridge Protocol Data Unit (BPDU) Guard is shut down if a BPDU message is received on that port. This avoids accidental topology loops
STP Root Guard	This prevents edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes
DHCP snooping	Filters out DHCP messages with unregistered IP addresses and/or from unexpected or untrusted interfaces. This prevents rogue devices from behaving as a DHCP server
IP Source Guard (IPSG)	When IP Source Guard is enabled at a port, the switch filters out IP packets received from the port if the source IP addresses of the packets have not been statically configured or dynamically learned from DHCP snooping. This prevents IP address spoofing
Dynamic ARP Inspection (DAI)	The switch discards ARP packets from a port if there are no static or dynamic IP/MAC bindings or if there is a discrepancy between the source or destination address in the ARP packet. This prevents man-in-the-middle attacks
IP/MAC/port binding (PMFB)	The preceding features (DHCP snooping, IP Source Guard, and Dynamic ARP Inspection) work together to prevent DoS attacks in the network, thereby increasing network availability
Secure Core Technology (SCT)	Makes sure that the switch will receive and process management and protocol traffic no matter how much traffic is received
Secure Sensitive Data (SSD)	A mechanism to manage sensitive data (such as passwords, keys, and so on) securely on the switch, populating this data to other devices, and secure autoconfig. Access to view the sensitive data as plaintext or encrypted is provided according to the user-configured access level and the access method of the user
Private VLAN	Private VLAN provides security and isolation between switch ports, which helps ensure that users cannot snoop on other users' traffic; supports multiple uplinks
Port security	Ability to lock source MAC addresses to ports and limit the number of learned MAC addresses
RADIUS/TACACS+	Supports RADIUS and TACACS authentication. Switch functions as a client
RADIUS accounting	The RADIUS accounting functions allow data to be sent at the start and end of services, indicating the amount of resources (such as time, packets, bytes, and so on) used during the session
Storm control	Broadcast, multicast, and unknown unicast
DoS prevention	Denial-of-Service (DoS) attack prevention
Multiple user privilege levels in CLI	Level 1, 7, and 15 privilege levels
ACLs	Support for up to 2K entries Drop or rate limit based on source and destination MAC, VLAN ID or IP address, protocol, port, DSCP/IP precedence, TCP/UDP source and destination ports, 802.1p priority, Ethernet type, Internet Control Message Protocol (ICMP) packets, Internet Group Management Protocol (IGMP) packets, TCP flag; ACL can be applied on both ingress and egress sides Time-based ACLs supported

Feature	Description
Quality of service	
Priority levels	8 hardware queues
Scheduling	Strict priority and Weighted Round-Robin (WRR)
Class of service	Port based, 802.1p VLAN priority based, IPv4/IPv6 IP precedence/ToS/DSCP based, DiffServ, classification and remarking ACLs, trusted QoS
Rate limiting	Queue assignment based on Differentiated Services Code Point (DSCP) and class of service (802.1p/CoS)
Congestion avoidance	Ingress policer; egress shaping and ingress rate control; per VLAN, per port, and flow based; 2R3C policing A TCP congestion avoidance algorithm is required to minimize and prevent global TCP loss synchronization
Standards	
Standards	IEEE 802.3 10BASE-T Ethernet, IEEE 802.3u 100BASE-TX Fast Ethernet, IEEE 802.3ab 1000BASE-T Gigabit Ethernet, IEEE 802.3ad Link Aggregation Control Protocol, IEEE 802.3z Gigabit Ethernet, IEEE 802.3ae 10 Gbit/s Ethernet over fiber for LAN, IEEE 802.3an 10GBase-T 10 Gbit/s Ethernet over copper twisted pair cable, IEEE 802.3x Flow Control, IEEE 802.1D (STP, GARP, and GVRP), IEEE 802.1Qp VLAN, IEEE 802.1w Rapid STP, IEEE 802.1s Multiple STP, IEEE 802.1X Port Access Authentication, IEEE 802.3af, IEEE 802.3at, IEEE 802.1AB Link Layer Discovery Protocol, IEEE 802.3az Energy Efficient Ethernet, RFC 768, RFC 783, RFC 791, RFC 792, RFC 793, RFC 813, RFC 826, RFC 879, RFC 896, RFC 854, RFC 855, RFC 856, RFC 858, RFC 894, RFC 810, RFC 920, RFC 922, RFC 950, RFC 951, RFC 1042, RFC 1071, RFC 1123, RFC 1141, RFC 1155, RFC 1157, RFC 1213, RFC 1215, RFC 1286, RFC 1350, RFC 1442, RFC 1451, RFC 1483, RFC 1533, RFC 1541, RFC 1542, RFC 1573, RFC 1524, RFC 1643, RFC 1700, RFC 1757, RFC 1867, RFC 1807, RFC 2011, RFC 2012, RFC 2013, RFC 2030, RFC 2131, RFC 2132, RFC 2233, RFC 2576, RFC 2578, RFC 2579, RFC 2580, RFC 2581, RFC 2582, RFC 2583, RFC 2584, RFC 2585, RFC 2586, RFC 2587, RFC 2737, RFC 2819, RFC 2883, RFC 3164, RFC 3176, RFC 3411, RFC 3412, RFC 3413, RFC 3414, RFC 3415, RFC 3416, RFC 4330
IPv6	
IPv6	IPv6 host mode IPv6 over Ethernet dual IPv6/IPv4 stack IPv6 Neighbor and Router Discovery (ND), IPv6 Stateless Address Autoconfiguration, path MTU Discovery Duplicate Address Detection (DAD) ICMPv6 IPv6 over IPv4 network with ISATAP tunnel support USGv6 and IPv6 Gold Logo certified
IPv6 QoS	Prioritize IPv6 packets in hardware
IPv6 ACL	Drop or rate limit IPv6 packets in hardware
IPv6 first hop security	RA guard ND inspection DHCPv6 guard Neighbor binding table (snooping and static entries) Neighbor binding integrity check
Multicast Listener Discovery (MLD v1/2) snooping	Deliver IPv6 multicast packets only to the required receivers
IPv6 applications	Web/SSL, Telnet/Server/SSH, Ping, Traceroute, SNMP, TFTP, SNMP, RADIUS, Syslog, DNS client, DHCP Client, DHCP Autoconfig, IPv6 DHCP, Relay, TACACS
IPv6 RFC supported	RFC 4443 (which obsoletes RFC 2463): ICMPv6 RFC 4291 (which obsoletes RFC 3513): IPv6 address architecture RFC 4291: IP Version 6 Addressing Architecture RFC 2460: IPv6 Specification RFC 4861 (which obsoletes RFC 2481): Neighbor Discovery for IPv6 RFC 4862 (which obsoletes RFC 2482): IPv6 Stateless Address Autoconfiguration RFC 1981: Path MTU Discovery RFC 4007: IPv6 Scoped Address Architecture RFC 3484: Default address selection mechanism RFC 5214 (which obsoletes RFC 4214): ISATAP tunneling RFC 4293: MIB IPv6: Textual Conventions and General Group RFC 3595: Textual Conventions for IPv6 Flow Label

Feature	Description																																																										
Management																																																											
Web user Interface	Built-in switch configuration utility for easy browser-based device configuration (HTTP/HTTPS). Supports simple and advanced mode, configuration, wizards, customizable dashboard, system maintenance, monitoring, online help, and universal search.																																																										
Smart Network Application	Smart Network Application (SNA) is an innovative network-level monitoring and management tool embedded in Cisco 100 to 500 Series switches. It can discover network topology, display link status, monitor events, apply configurations, and upgrade software images across multiple switches in the network. (Note: Management of your network using Smart Network Application requires the use of either a 350, 350X, or 550X Series switch model as a part of your network.)																																																										
SNMP	SNMP versions 1, 2c, and 3 with support for traps, and SNMP v3 User-based Security Model (USM)																																																										
Standard MIBs	<table border="0"> <tr><td>lldp-MIB</td><td>rfc2668-MIB</td></tr> <tr><td>lldpxdot1-MIB</td><td>rfc2737-MIB</td></tr> <tr><td>lldpxdot3-MIB</td><td>rfc2925-MIB</td></tr> <tr><td>lldpxmed-MIB</td><td>rfc3621-MIB</td></tr> <tr><td>rfc2674-MIB</td><td>rfc4668-MIB</td></tr> <tr><td>rfc2575-MIB</td><td>rfc4670-MIB</td></tr> <tr><td>rfc2573-MIB</td><td>trunk-MIB</td></tr> <tr><td>rfc2233-MIB</td><td>tunnel-MIB</td></tr> <tr><td>rfc2013-MIB</td><td>udp-MIB</td></tr> <tr><td>rfc2012-MIB</td><td>draft-ietf-bridge-8021x-MIB</td></tr> <tr><td>rfc2011-MIB</td><td>draft-ietf-bridge-istmb-d4-MIB</td></tr> <tr><td>RFC-1212</td><td>draft-ietf-submibethanll-mib-v3-00-MIB</td></tr> <tr><td>RFC-1215</td><td>draft-ietf-syslog-device-MIB</td></tr> <tr><td>SNMPv2-CONF</td><td>ianaaddrfamnumbers-MIB</td></tr> <tr><td>SNMPv2-TC</td><td>ianaauth-MIB</td></tr> <tr><td>p-bridge-MIB</td><td>ianaipprot-MIB</td></tr> <tr><td>q-bridge-MIB</td><td>inet-address-MIB</td></tr> <tr><td>rfc1389-MIB</td><td>ip-forward-MIB</td></tr> <tr><td>rfc1493-MIB</td><td>ip-MIB</td></tr> <tr><td>rfc1611-MIB</td><td>RFC1155-SMI</td></tr> <tr><td>rfc1612-MIB</td><td>RFC1213-MIB</td></tr> <tr><td>rfc1850-MIB</td><td>SNMPv2-MIB</td></tr> <tr><td>rfc1907-MIB</td><td>SNMPv2-SMI</td></tr> <tr><td>rfc2571-MIB</td><td>SNMPv2-TM</td></tr> <tr><td>rfc2572-MIB</td><td>RMON-MIB</td></tr> <tr><td>rfc2574-MIB</td><td>rfc1724-MIB</td></tr> <tr><td>rfc2576-MIB</td><td>dcb-1e1-DCBX-MIB-1108-MIB</td></tr> <tr><td>rfc2613-MIB</td><td>rfc1213-MIB</td></tr> <tr><td>rfc2665-MIB</td><td>rfc1757-MIB</td></tr> </table>	lldp-MIB	rfc2668-MIB	lldpxdot1-MIB	rfc2737-MIB	lldpxdot3-MIB	rfc2925-MIB	lldpxmed-MIB	rfc3621-MIB	rfc2674-MIB	rfc4668-MIB	rfc2575-MIB	rfc4670-MIB	rfc2573-MIB	trunk-MIB	rfc2233-MIB	tunnel-MIB	rfc2013-MIB	udp-MIB	rfc2012-MIB	draft-ietf-bridge-8021x-MIB	rfc2011-MIB	draft-ietf-bridge-istmb-d4-MIB	RFC-1212	draft-ietf-submibethanll-mib-v3-00-MIB	RFC-1215	draft-ietf-syslog-device-MIB	SNMPv2-CONF	ianaaddrfamnumbers-MIB	SNMPv2-TC	ianaauth-MIB	p-bridge-MIB	ianaipprot-MIB	q-bridge-MIB	inet-address-MIB	rfc1389-MIB	ip-forward-MIB	rfc1493-MIB	ip-MIB	rfc1611-MIB	RFC1155-SMI	rfc1612-MIB	RFC1213-MIB	rfc1850-MIB	SNMPv2-MIB	rfc1907-MIB	SNMPv2-SMI	rfc2571-MIB	SNMPv2-TM	rfc2572-MIB	RMON-MIB	rfc2574-MIB	rfc1724-MIB	rfc2576-MIB	dcb-1e1-DCBX-MIB-1108-MIB	rfc2613-MIB	rfc1213-MIB	rfc2665-MIB	rfc1757-MIB
lldp-MIB	rfc2668-MIB																																																										
lldpxdot1-MIB	rfc2737-MIB																																																										
lldpxdot3-MIB	rfc2925-MIB																																																										
lldpxmed-MIB	rfc3621-MIB																																																										
rfc2674-MIB	rfc4668-MIB																																																										
rfc2575-MIB	rfc4670-MIB																																																										
rfc2573-MIB	trunk-MIB																																																										
rfc2233-MIB	tunnel-MIB																																																										
rfc2013-MIB	udp-MIB																																																										
rfc2012-MIB	draft-ietf-bridge-8021x-MIB																																																										
rfc2011-MIB	draft-ietf-bridge-istmb-d4-MIB																																																										
RFC-1212	draft-ietf-submibethanll-mib-v3-00-MIB																																																										
RFC-1215	draft-ietf-syslog-device-MIB																																																										
SNMPv2-CONF	ianaaddrfamnumbers-MIB																																																										
SNMPv2-TC	ianaauth-MIB																																																										
p-bridge-MIB	ianaipprot-MIB																																																										
q-bridge-MIB	inet-address-MIB																																																										
rfc1389-MIB	ip-forward-MIB																																																										
rfc1493-MIB	ip-MIB																																																										
rfc1611-MIB	RFC1155-SMI																																																										
rfc1612-MIB	RFC1213-MIB																																																										
rfc1850-MIB	SNMPv2-MIB																																																										
rfc1907-MIB	SNMPv2-SMI																																																										
rfc2571-MIB	SNMPv2-TM																																																										
rfc2572-MIB	RMON-MIB																																																										
rfc2574-MIB	rfc1724-MIB																																																										
rfc2576-MIB	dcb-1e1-DCBX-MIB-1108-MIB																																																										
rfc2613-MIB	rfc1213-MIB																																																										
rfc2665-MIB	rfc1757-MIB																																																										
Private MIBs	<table border="0"> <tr><td>CISCOB-ldp-MIB</td><td>CISCOB-prouter-MIB</td></tr> <tr><td>CISCOB-brgmullcast-MIB</td><td>CISCOB-ipv6-MIB</td></tr> <tr><td>CISCOB-bridgenbobject-MIB</td><td>CISCOB-mngnt4-MIB</td></tr> <tr><td>CISCOB-borjour-MIB</td><td>CISCOB-ldl-MIB</td></tr> <tr><td>CISCOB-dhcpd-MIB</td><td>CISCOB-localization-MIB</td></tr> <tr><td>CISCOB-MIB</td><td>CISCOB-mcmng-MIB</td></tr> <tr><td>CISCOB-wrandomtalldrop-MIB</td><td>CISCOB-localization-MIB</td></tr> <tr><td>CISCOB-traceroute-MIB</td><td>CISCOB-mcmng-MIB</td></tr> <tr><td>CISCOB-teinet-MIB</td><td>CISCOB-mng-MIB</td></tr> <tr><td>CISCOB-atomat-MIB</td><td>CISCOB-physdescription-MIB</td></tr> <tr><td>CISCOB-sah-MIB</td><td>CISCOB-PaE-MIB</td></tr> <tr><td>CISCOB-socket-MIB</td><td>CISCOB-protectedport-MIB</td></tr> <tr><td>CISCOB-antp-MIB</td><td>CISCOB-mon-MIB</td></tr> <tr><td>CISCOB-amon-MIB</td><td>CISCOB-rs232-MIB</td></tr> <tr><td>CISCOB-phy-MIB</td><td>CISCOB-SecuritySuite-MIB</td></tr> </table>	CISCOB-ldp-MIB	CISCOB-prouter-MIB	CISCOB-brgmullcast-MIB	CISCOB-ipv6-MIB	CISCOB-bridgenbobject-MIB	CISCOB-mngnt4-MIB	CISCOB-borjour-MIB	CISCOB-ldl-MIB	CISCOB-dhcpd-MIB	CISCOB-localization-MIB	CISCOB-MIB	CISCOB-mcmng-MIB	CISCOB-wrandomtalldrop-MIB	CISCOB-localization-MIB	CISCOB-traceroute-MIB	CISCOB-mcmng-MIB	CISCOB-teinet-MIB	CISCOB-mng-MIB	CISCOB-atomat-MIB	CISCOB-physdescription-MIB	CISCOB-sah-MIB	CISCOB-PaE-MIB	CISCOB-socket-MIB	CISCOB-protectedport-MIB	CISCOB-antp-MIB	CISCOB-mon-MIB	CISCOB-amon-MIB	CISCOB-rs232-MIB	CISCOB-phy-MIB	CISCOB-SecuritySuite-MIB																												
CISCOB-ldp-MIB	CISCOB-prouter-MIB																																																										
CISCOB-brgmullcast-MIB	CISCOB-ipv6-MIB																																																										
CISCOB-bridgenbobject-MIB	CISCOB-mngnt4-MIB																																																										
CISCOB-borjour-MIB	CISCOB-ldl-MIB																																																										
CISCOB-dhcpd-MIB	CISCOB-localization-MIB																																																										
CISCOB-MIB	CISCOB-mcmng-MIB																																																										
CISCOB-wrandomtalldrop-MIB	CISCOB-localization-MIB																																																										
CISCOB-traceroute-MIB	CISCOB-mcmng-MIB																																																										
CISCOB-teinet-MIB	CISCOB-mng-MIB																																																										
CISCOB-atomat-MIB	CISCOB-physdescription-MIB																																																										
CISCOB-sah-MIB	CISCOB-PaE-MIB																																																										
CISCOB-socket-MIB	CISCOB-protectedport-MIB																																																										
CISCOB-antp-MIB	CISCOB-mon-MIB																																																										
CISCOB-amon-MIB	CISCOB-rs232-MIB																																																										
CISCOB-phy-MIB	CISCOB-SecuritySuite-MIB																																																										

Feature	Description																																																																								
	<table border="0"> <tr><td>CISCOB-multisessionterminal-MIB</td><td>CISCOB-emp-MIB</td></tr> <tr><td>CISCOB-mi-MIB</td><td>CISCOB-pedalbpu-MIB</td></tr> <tr><td>CISCOB-jumboframes-MIB</td><td>CISCOB-banner-MIB</td></tr> <tr><td>CISCOB-gvrp-MIB</td><td>CISCOB-syslog-MIB</td></tr> <tr><td>CISCOB-endofmib-MIB</td><td>CISCOB-TcpSession-MIB</td></tr> <tr><td>CISCOB-dot1x-MIB</td><td>CISCOB-traps-MIB</td></tr> <tr><td>CISCOB-deviceparams-MIB</td><td>CISCOB-trunk-MIB</td></tr> <tr><td>CISCOB-dl-MIB</td><td>CISCOB-tunnel-MIB</td></tr> <tr><td>CISCOB-cdb-MIB</td><td>CISCOB-udp-MIB</td></tr> <tr><td>CISCOB-brgmactwitch-MIB</td><td>CISCOB-van-MIB</td></tr> <tr><td>CISCOB-3ew2wtables-MIB</td><td>CISCOB-van-MIB</td></tr> <tr><td>CISCOB-smartPorts-MIB</td><td>CISCOB-petdad-MIB</td></tr> <tr><td>CISCOB-04-MIB</td><td>CISCOB-eee-MIB</td></tr> <tr><td>CISCOB-macbaseprio-MIB</td><td>CISCOB-est-MIB</td></tr> <tr><td>CISCOB-env_mib-MIB</td><td>CISCOB-digitalkeymanage-MIB</td></tr> <tr><td>CISCOB-policy-MIB</td><td>CISCOB-qoscmib-MIB</td></tr> <tr><td>CISCOB-sensor-MIB</td><td>CISCOB-4bp-MIB</td></tr> <tr><td>CISCOB-aaa-MIB</td><td>CISCOB-stack-MIB</td></tr> <tr><td>CISCOB-application-MIB</td><td>CISCOB-MIB</td></tr> <tr><td>CISCOB-bridgesecurity-MIB</td><td>CISCOB-ecad-MIB</td></tr> <tr><td>CISCOB-copy-MIB</td><td>CISCOB-draft-ietf-entmib-sensor-MIB</td></tr> <tr><td>CISCOB-CpuCounters-MIB</td><td>CISCOB-draft-ietf-syslog-device-MIB</td></tr> <tr><td>CISCOB-Custom1BnYourService-MIB</td><td>CISCOB-rc2925-MIB</td></tr> <tr><td>CISCOB-dhcp-MIB</td><td>CISCO-SMI-MIB</td></tr> <tr><td>CISCOB-df-MIB</td><td>CISCOB-DebugCapabilities-MIB</td></tr> <tr><td>CISCOB-dnscl-MIB</td><td>CISCOB-COP-MIB</td></tr> <tr><td>CISCOB-embweb-MIB</td><td>CISCOB-vanVoice-MIB</td></tr> <tr><td>CISCOB-r-MIB</td><td>CISCOB-EVENTS-MIB</td></tr> <tr><td>CISCOB-ite-MIB</td><td>CISCOB-sysmng-MIB</td></tr> <tr><td>CISCOB-interfaces-MIB</td><td>CISCOB-act-MIB</td></tr> <tr><td>CISCOB-interfaces_recovery-MIB</td><td>CISCO-TC-MIB</td></tr> <tr><td>CISCOB-1p-MIB</td><td>CISCO-VTP-MIB</td></tr> <tr><td>CISCOB-lprouter-MIB</td><td>CISCO-CDP-MIB</td></tr> <tr><td>CISCOB-1pv6-MIB</td><td></td></tr> <tr><td>CISCOB-mngnt-MIB</td><td></td></tr> <tr><td>CISCOB-ldl-MIB</td><td></td></tr> </table>	CISCOB-multisessionterminal-MIB	CISCOB-emp-MIB	CISCOB-mi-MIB	CISCOB-pedalbpu-MIB	CISCOB-jumboframes-MIB	CISCOB-banner-MIB	CISCOB-gvrp-MIB	CISCOB-syslog-MIB	CISCOB-endofmib-MIB	CISCOB-TcpSession-MIB	CISCOB-dot1x-MIB	CISCOB-traps-MIB	CISCOB-deviceparams-MIB	CISCOB-trunk-MIB	CISCOB-dl-MIB	CISCOB-tunnel-MIB	CISCOB-cdb-MIB	CISCOB-udp-MIB	CISCOB-brgmactwitch-MIB	CISCOB-van-MIB	CISCOB-3ew2wtables-MIB	CISCOB-van-MIB	CISCOB-smartPorts-MIB	CISCOB-petdad-MIB	CISCOB-04-MIB	CISCOB-eee-MIB	CISCOB-macbaseprio-MIB	CISCOB-est-MIB	CISCOB-env_mib-MIB	CISCOB-digitalkeymanage-MIB	CISCOB-policy-MIB	CISCOB-qoscmib-MIB	CISCOB-sensor-MIB	CISCOB-4bp-MIB	CISCOB-aaa-MIB	CISCOB-stack-MIB	CISCOB-application-MIB	CISCOB-MIB	CISCOB-bridgesecurity-MIB	CISCOB-ecad-MIB	CISCOB-copy-MIB	CISCOB-draft-ietf-entmib-sensor-MIB	CISCOB-CpuCounters-MIB	CISCOB-draft-ietf-syslog-device-MIB	CISCOB-Custom1BnYourService-MIB	CISCOB-rc2925-MIB	CISCOB-dhcp-MIB	CISCO-SMI-MIB	CISCOB-df-MIB	CISCOB-DebugCapabilities-MIB	CISCOB-dnscl-MIB	CISCOB-COP-MIB	CISCOB-embweb-MIB	CISCOB-vanVoice-MIB	CISCOB-r-MIB	CISCOB-EVENTS-MIB	CISCOB-ite-MIB	CISCOB-sysmng-MIB	CISCOB-interfaces-MIB	CISCOB-act-MIB	CISCOB-interfaces_recovery-MIB	CISCO-TC-MIB	CISCOB-1p-MIB	CISCO-VTP-MIB	CISCOB-lprouter-MIB	CISCO-CDP-MIB	CISCOB-1pv6-MIB		CISCOB-mngnt-MIB		CISCOB-ldl-MIB	
CISCOB-multisessionterminal-MIB	CISCOB-emp-MIB																																																																								
CISCOB-mi-MIB	CISCOB-pedalbpu-MIB																																																																								
CISCOB-jumboframes-MIB	CISCOB-banner-MIB																																																																								
CISCOB-gvrp-MIB	CISCOB-syslog-MIB																																																																								
CISCOB-endofmib-MIB	CISCOB-TcpSession-MIB																																																																								
CISCOB-dot1x-MIB	CISCOB-traps-MIB																																																																								
CISCOB-deviceparams-MIB	CISCOB-trunk-MIB																																																																								
CISCOB-dl-MIB	CISCOB-tunnel-MIB																																																																								
CISCOB-cdb-MIB	CISCOB-udp-MIB																																																																								
CISCOB-brgmactwitch-MIB	CISCOB-van-MIB																																																																								
CISCOB-3ew2wtables-MIB	CISCOB-van-MIB																																																																								
CISCOB-smartPorts-MIB	CISCOB-petdad-MIB																																																																								
CISCOB-04-MIB	CISCOB-eee-MIB																																																																								
CISCOB-macbaseprio-MIB	CISCOB-est-MIB																																																																								
CISCOB-env_mib-MIB	CISCOB-digitalkeymanage-MIB																																																																								
CISCOB-policy-MIB	CISCOB-qoscmib-MIB																																																																								
CISCOB-sensor-MIB	CISCOB-4bp-MIB																																																																								
CISCOB-aaa-MIB	CISCOB-stack-MIB																																																																								
CISCOB-application-MIB	CISCOB-MIB																																																																								
CISCOB-bridgesecurity-MIB	CISCOB-ecad-MIB																																																																								
CISCOB-copy-MIB	CISCOB-draft-ietf-entmib-sensor-MIB																																																																								
CISCOB-CpuCounters-MIB	CISCOB-draft-ietf-syslog-device-MIB																																																																								
CISCOB-Custom1BnYourService-MIB	CISCOB-rc2925-MIB																																																																								
CISCOB-dhcp-MIB	CISCO-SMI-MIB																																																																								
CISCOB-df-MIB	CISCOB-DebugCapabilities-MIB																																																																								
CISCOB-dnscl-MIB	CISCOB-COP-MIB																																																																								
CISCOB-embweb-MIB	CISCOB-vanVoice-MIB																																																																								
CISCOB-r-MIB	CISCOB-EVENTS-MIB																																																																								
CISCOB-ite-MIB	CISCOB-sysmng-MIB																																																																								
CISCOB-interfaces-MIB	CISCOB-act-MIB																																																																								
CISCOB-interfaces_recovery-MIB	CISCO-TC-MIB																																																																								
CISCOB-1p-MIB	CISCO-VTP-MIB																																																																								
CISCOB-lprouter-MIB	CISCO-CDP-MIB																																																																								
CISCOB-1pv6-MIB																																																																									
CISCOB-mngnt-MIB																																																																									
CISCOB-ldl-MIB																																																																									
RMON	Embedded RMON software agent supports 4 RMON groups (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis.																																																																								
IPv4 and IPv6 dual stack	Coexistence of both protocol stacks to ease migration.																																																																								
Firmware upgrade	<ul style="list-style-type: none"> Web browser upgrade (HTTP/HTTPS) and TFTP and SCP Upgrade can be initiated through console port as well Dual images for resilient firmware upgrades 																																																																								
Port mirroring	Traffic on a port or LAG can be mirrored to another port for analysis with a network analyzer or RMON probe. Up to 8 source ports can be mirrored to one destination port.																																																																								
VLAN mirroring	Traffic from a VLAN can be mirrored to a port for analysis with a network analyzer or RMON probe. Up to 8 source VLANs can be mirrored to one destination port.																																																																								
Flow-based redirection and mirroring	Redirect or mirror traffic to a destination port or mirroring session based on flow.																																																																								
Remote Switch Port Analyzer (RSPAN)	Traffic can be mirrored across Layer 2 domain to a remote port on a different switch for easier troubleshooting.																																																																								
sFlow agent	Switch can export sFlow sample to external collectors. sFlow provides visibility into network traffic down to flow level.																																																																								
DHCP (options 12, 68, 67, 82, 129, and 150)	DHCP options facilitate tighter control from a central point (DHCP server), to obtain IP address, autoconfiguration (with configuration file download), DHCP Relay, and host name.																																																																								

Feature	Description																												
Autoconfiguration with Secure Copy (SCP) file download	Enables secure mass deployment with protection of sensitive data																												
Text-editable configs	Config files can be edited with a text editor and downloaded to another switch, facilitating easier mass deployment																												
Smartports	Simplified configuration of QoS and security capabilities																												
Auto Smartports	Automatically applies the intelligence delivered through the Smartports roles to the port based on the devices discovered over Cisco Discovery Protocol or LLDP-MED. This facilitates zero-touch deployments.																												
Secure Copy (SCP)	Securely transfer files to and from the switch																												
Textview CLI	Scriptable CLI. A full CLI as well as a menu CLI are supported																												
Cloud services	Support for Cisco Active Advisor																												
Localization	Localization of GUI and documentation into multiple languages																												
Login banner	Configurable multiple banners for web as well as CLI																												
Time-based port operation	Link up or down based on user-defined schedule (when the port is administratively up)																												
Time-based PoE	Capability for power to be on or off based on a user-defined schedule to save energy																												
Other management	Timers: single IP management; HTTP/HTTPS; SSH; RADIUS; port mirroring; TFTP upgrade; DHCP client; Simple Network Time Protocol (SNTP); Kismet upgrade; cable diagnosis; Ping, syslog; Telet client; SSH client; automatic time settings from Management Station																												
Green (power efficiency)																													
Energy detect	Automatically turns power off on RJ-45 port when detecting link down. Active mode is resumed without loss of any packets when the switch detects the link is up																												
Cable length detection	Adjusts the signal strength based on the cable length. Reduces the power consumption for shorter cables.																												
EEE compliant (802.3az)	Supports IEEE 802.3az on all 10 Gigabit copper ports																												
Disable port LEDs	LEDs can be manually turned off to save on energy																												
General																													
Jumbo frames	Frame sizes up to 9K bytes. The default MTU is 2K																												
NAC table	64K addresses																												
Discovery																													
Bonjour	The switch advertises itself using the Bonjour protocol																												
LLDP (802.1ab) with LLDP-MED extensions	Link Layer Discovery Protocol (LLDP) allows the switch to advertise its identification, configuration, and capabilities to neighboring devices that store the data in a MIB. LLDP-MED is an enhancement to LLDP that adds the extensions needed for IP phones																												
Cisco Discovery Protocol	The switch advertises itself using the Cisco Discovery Protocol. It also learns the connected device and its characteristics using Cisco Discovery Protocol																												
Product specifications																													
Power over Ethernet	The following switches support 802.3at PoE+, 802.3af PoE, and Cisco prestandard (legacy) PoE on any of the RJ45 network ports. 60W PoE is also supported on selected RJ-45 network ports Maximum power of 60W is delivered to any of the 60W PoE ports, and maximum power of 30W is delivered to any of the other RJ45 network ports, until the PoE budget for the switch is reached The total power available for PoE per switch is as follows																												
	<table border="1"> <thead> <tr> <th>Model</th> <th>Power Dedicated to PoE</th> <th>Number of Ports That Support PoE+ and PoE</th> <th>Number of Ports That Support 60W PoE, PoE+ and PoE</th> </tr> </thead> <tbody> <tr> <td>SG350X-6PMD</td> <td>240W</td> <td>8</td> <td>4</td> </tr> <tr> <td>SG350X-24P</td> <td>195W</td> <td>16</td> <td>8</td> </tr> <tr> <td>SG350X-24MP</td> <td>382W</td> <td>16</td> <td>8</td> </tr> <tr> <td>SG350X-24PD</td> <td>375W</td> <td>20</td> <td>4</td> </tr> <tr> <td>SG350X-48P</td> <td>382W</td> <td>32</td> <td>16</td> </tr> <tr> <td>SG350X-48MP</td> <td>740W</td> <td>32</td> <td>16</td> </tr> </tbody> </table>	Model	Power Dedicated to PoE	Number of Ports That Support PoE+ and PoE	Number of Ports That Support 60W PoE, PoE+ and PoE	SG350X-6PMD	240W	8	4	SG350X-24P	195W	16	8	SG350X-24MP	382W	16	8	SG350X-24PD	375W	20	4	SG350X-48P	382W	32	16	SG350X-48MP	740W	32	16
Model	Power Dedicated to PoE	Number of Ports That Support PoE+ and PoE	Number of Ports That Support 60W PoE, PoE+ and PoE																										
SG350X-6PMD	240W	8	4																										
SG350X-24P	195W	16	8																										
SG350X-24MP	382W	16	8																										
SG350X-24PD	375W	20	4																										
SG350X-48P	382W	32	16																										
SG350X-48MP	740W	32	16																										

200155

Feature	Description																																																																	
Power consumption (worst case)	<table border="1"> <thead> <tr> <th>Model Name</th> <th>Green Power (Mode)</th> <th>System Power Consumption</th> <th>Power Consumption (with PoE)</th> <th>Heat Dissipation (BTU/hr)</th> </tr> </thead> <tbody> <tr> <td>SG350X-6PMD</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=32.5W 220V=32.5W</td> <td>N/A</td> <td>1065.3</td> </tr> <tr> <td>SG350X-24</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=32.5W 220V=32.5W</td> <td>N/A</td> <td>83.39</td> </tr> <tr> <td>SG350X-24P</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=48.8W 220V=49.3W</td> <td>110V=268.3W 220V=260.1W</td> <td>784.18</td> </tr> <tr> <td>SG350X-24MP</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=53.2W 220V=54.1W</td> <td>110V=488.3W 220V=458.8W</td> <td>1,607.80</td> </tr> <tr> <td>SG350X-24PD</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=54.3W 220V=64.8W</td> <td>110V=476.6W 220V=450.6W</td> <td>1625.3</td> </tr> <tr> <td>SG350X-48</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=52.0W 220V=51.8W</td> <td>N/A</td> <td>177.43</td> </tr> <tr> <td>SG350X-48P</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=78.3W 220V=76.9W</td> <td>110V=494.3W 220V=483.1W</td> <td>1,686.62</td> </tr> <tr> <td>SG350X-48MP</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=82.9W 220V=82.9W</td> <td>110V=893.1W 220V=878.0W</td> <td>3,047.38</td> </tr> <tr> <td>SG350XG-2F10</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=84.3W 220V=84.6W</td> <td>N/A</td> <td>288.67</td> </tr> <tr> <td>SG350XG-24F</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=76.6W 220V=77.5W</td> <td>N/A</td> <td>264.44</td> </tr> <tr> <td>SG350XG-24T</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=143.9W 220V=142.6W</td> <td>N/A</td> <td>491.01</td> </tr> <tr> <td>SG350XG-48T</td> <td>EEE, Energy Detect, Short Reach</td> <td>110V=284.4W 220V=255.8W</td> <td>N/A</td> <td>902.17</td> </tr> </tbody> </table>	Model Name	Green Power (Mode)	System Power Consumption	Power Consumption (with PoE)	Heat Dissipation (BTU/hr)	SG350X-6PMD	EEE, Energy Detect, Short Reach	110V=32.5W 220V=32.5W	N/A	1065.3	SG350X-24	EEE, Energy Detect, Short Reach	110V=32.5W 220V=32.5W	N/A	83.39	SG350X-24P	EEE, Energy Detect, Short Reach	110V=48.8W 220V=49.3W	110V=268.3W 220V=260.1W	784.18	SG350X-24MP	EEE, Energy Detect, Short Reach	110V=53.2W 220V=54.1W	110V=488.3W 220V=458.8W	1,607.80	SG350X-24PD	EEE, Energy Detect, Short Reach	110V=54.3W 220V=64.8W	110V=476.6W 220V=450.6W	1625.3	SG350X-48	EEE, Energy Detect, Short Reach	110V=52.0W 220V=51.8W	N/A	177.43	SG350X-48P	EEE, Energy Detect, Short Reach	110V=78.3W 220V=76.9W	110V=494.3W 220V=483.1W	1,686.62	SG350X-48MP	EEE, Energy Detect, Short Reach	110V=82.9W 220V=82.9W	110V=893.1W 220V=878.0W	3,047.38	SG350XG-2F10	EEE, Energy Detect, Short Reach	110V=84.3W 220V=84.6W	N/A	288.67	SG350XG-24F	EEE, Energy Detect, Short Reach	110V=76.6W 220V=77.5W	N/A	264.44	SG350XG-24T	EEE, Energy Detect, Short Reach	110V=143.9W 220V=142.6W	N/A	491.01	SG350XG-48T	EEE, Energy Detect, Short Reach	110V=284.4W 220V=255.8W	N/A	902.17
Model Name	Green Power (Mode)	System Power Consumption	Power Consumption (with PoE)	Heat Dissipation (BTU/hr)																																																														
SG350X-6PMD	EEE, Energy Detect, Short Reach	110V=32.5W 220V=32.5W	N/A	1065.3																																																														
SG350X-24	EEE, Energy Detect, Short Reach	110V=32.5W 220V=32.5W	N/A	83.39																																																														
SG350X-24P	EEE, Energy Detect, Short Reach	110V=48.8W 220V=49.3W	110V=268.3W 220V=260.1W	784.18																																																														
SG350X-24MP	EEE, Energy Detect, Short Reach	110V=53.2W 220V=54.1W	110V=488.3W 220V=458.8W	1,607.80																																																														
SG350X-24PD	EEE, Energy Detect, Short Reach	110V=54.3W 220V=64.8W	110V=476.6W 220V=450.6W	1625.3																																																														
SG350X-48	EEE, Energy Detect, Short Reach	110V=52.0W 220V=51.8W	N/A	177.43																																																														
SG350X-48P	EEE, Energy Detect, Short Reach	110V=78.3W 220V=76.9W	110V=494.3W 220V=483.1W	1,686.62																																																														
SG350X-48MP	EEE, Energy Detect, Short Reach	110V=82.9W 220V=82.9W	110V=893.1W 220V=878.0W	3,047.38																																																														
SG350XG-2F10	EEE, Energy Detect, Short Reach	110V=84.3W 220V=84.6W	N/A	288.67																																																														
SG350XG-24F	EEE, Energy Detect, Short Reach	110V=76.6W 220V=77.5W	N/A	264.44																																																														
SG350XG-24T	EEE, Energy Detect, Short Reach	110V=143.9W 220V=142.6W	N/A	491.01																																																														
SG350XG-48T	EEE, Energy Detect, Short Reach	110V=284.4W 220V=255.8W	N/A	902.17																																																														
Ports	<table border="1"> <thead> <tr> <th>Model Name</th> <th>Total System Ports</th> <th>Network Ports</th> <th>Uplink Ports</th> </tr> </thead> <tbody> <tr> <td>SG350X-6PMD</td> <td>8 2.5GE + 2 10GE</td> <td>8 2.5GE</td> <td>2 10GE copper/SFP+ combo</td> </tr> <tr> <td>SG350X-24</td> <td>24 GE + 4 10GE</td> <td>24 GE</td> <td>2 10GE copper/SFP+ combo + 2 SFP+</td> </tr> <tr> <td>SG350X-24P</td> <td>24 GE + 4 10GE</td> <td>24 GE</td> <td>2 10GE copper/SFP+ combo + 2 SFP+</td> </tr> <tr> <td>SG350X-24MP</td> <td>24 GE + 4 10GE</td> <td>24 GE</td> <td>2 10GE copper/SFP+ combo + 2 SFP+</td> </tr> <tr> <td>SG350X-24PD</td> <td>20 GE + 4 2.5GE + 4 10GE</td> <td>20 GE + 4 2.5GE</td> <td>2 10GE copper/SFP+ combo + 2 SFP+</td> </tr> <tr> <td>SG350X-48</td> <td>48 GE + 4 10GE</td> <td>48 GE</td> <td>2 10GE copper/SFP+ combo + 2 SFP+</td> </tr> <tr> <td>SG350X-48P</td> <td>48 GE + 4 10GE</td> <td>48 GE</td> <td>2 10GE copper/SFP+ combo + 2 SFP+</td> </tr> <tr> <td>SG350X-48MP</td> <td>48 GE + 4 10GE</td> <td>48 GE</td> <td>2 10GE copper/SFP+ combo + 2 SFP+</td> </tr> <tr> <td>SG350XG-2F10</td> <td>10 10G copper + 2 10G SFP+ plus 1 GE OOB management</td> <td>10 10GE</td> <td>2 10GE SFP+ (dedicated)</td> </tr> <tr> <td>SG350XG-24F</td> <td>22 10G SFP+ slots + 2 combo 10G copper/SFP+ plus 1 GE OOB management</td> <td>22 10GE SFP+</td> <td>2 10GE copper/SFP+ combo</td> </tr> <tr> <td>SG350XG-24T</td> <td>22 10G copper + 2 combo 10G copper/SFP+ plus 1 GE OOB management</td> <td>22 10GE</td> <td>2 10GE copper/SFP+ combo</td> </tr> </tbody> </table>	Model Name	Total System Ports	Network Ports	Uplink Ports	SG350X-6PMD	8 2.5GE + 2 10GE	8 2.5GE	2 10GE copper/SFP+ combo	SG350X-24	24 GE + 4 10GE	24 GE	2 10GE copper/SFP+ combo + 2 SFP+	SG350X-24P	24 GE + 4 10GE	24 GE	2 10GE copper/SFP+ combo + 2 SFP+	SG350X-24MP	24 GE + 4 10GE	24 GE	2 10GE copper/SFP+ combo + 2 SFP+	SG350X-24PD	20 GE + 4 2.5GE + 4 10GE	20 GE + 4 2.5GE	2 10GE copper/SFP+ combo + 2 SFP+	SG350X-48	48 GE + 4 10GE	48 GE	2 10GE copper/SFP+ combo + 2 SFP+	SG350X-48P	48 GE + 4 10GE	48 GE	2 10GE copper/SFP+ combo + 2 SFP+	SG350X-48MP	48 GE + 4 10GE	48 GE	2 10GE copper/SFP+ combo + 2 SFP+	SG350XG-2F10	10 10G copper + 2 10G SFP+ plus 1 GE OOB management	10 10GE	2 10GE SFP+ (dedicated)	SG350XG-24F	22 10G SFP+ slots + 2 combo 10G copper/SFP+ plus 1 GE OOB management	22 10GE SFP+	2 10GE copper/SFP+ combo	SG350XG-24T	22 10G copper + 2 combo 10G copper/SFP+ plus 1 GE OOB management	22 10GE	2 10GE copper/SFP+ combo																	
Model Name	Total System Ports	Network Ports	Uplink Ports																																																															
SG350X-6PMD	8 2.5GE + 2 10GE	8 2.5GE	2 10GE copper/SFP+ combo																																																															
SG350X-24	24 GE + 4 10GE	24 GE	2 10GE copper/SFP+ combo + 2 SFP+																																																															
SG350X-24P	24 GE + 4 10GE	24 GE	2 10GE copper/SFP+ combo + 2 SFP+																																																															
SG350X-24MP	24 GE + 4 10GE	24 GE	2 10GE copper/SFP+ combo + 2 SFP+																																																															
SG350X-24PD	20 GE + 4 2.5GE + 4 10GE	20 GE + 4 2.5GE	2 10GE copper/SFP+ combo + 2 SFP+																																																															
SG350X-48	48 GE + 4 10GE	48 GE	2 10GE copper/SFP+ combo + 2 SFP+																																																															
SG350X-48P	48 GE + 4 10GE	48 GE	2 10GE copper/SFP+ combo + 2 SFP+																																																															
SG350X-48MP	48 GE + 4 10GE	48 GE	2 10GE copper/SFP+ combo + 2 SFP+																																																															
SG350XG-2F10	10 10G copper + 2 10G SFP+ plus 1 GE OOB management	10 10GE	2 10GE SFP+ (dedicated)																																																															
SG350XG-24F	22 10G SFP+ slots + 2 combo 10G copper/SFP+ plus 1 GE OOB management	22 10GE SFP+	2 10GE copper/SFP+ combo																																																															
SG350XG-24T	22 10G copper + 2 combo 10G copper/SFP+ plus 1 GE OOB management	22 10GE	2 10GE copper/SFP+ combo																																																															

Feature	Description																										
	SG350XG-48T 48 10G copper + 2 combo 10G copper/SFP+ plus 1 GE OOB management																										
Console port	Cisco Standard RJ45 console port																										
OOB management port	Dedicated Gigabit management port for out-of-band management on SG350XG models																										
USB slot	USB Type-A slot on the front panel of the switch for easy file and image management																										
Buttons	Reset button																										
Cabling type	Unshielded Twisted Pair (UTP) Category 5 or better; fiber options (SFP and MMF); coaxial SFP+																										
LEDs	System, master, stack ID, link/speed per port																										
Flash	256 MB																										
CPU	800 MHz (dual-core) ARM																										
CPU memory	512 MB																										
Packet buffer	All numbers are aggregate across all ports because the buffers are dynamically shared																										
	<table border="1"> <thead> <tr> <th>Model Name</th> <th>Packet Buffer</th> </tr> </thead> <tbody> <tr><td>SG350X-8PMD</td><td>12 MB</td></tr> <tr><td>SG350X-24</td><td>12 MB</td></tr> <tr><td>SG350X-24P</td><td>12 MB</td></tr> <tr><td>SG350X-24MP</td><td>12 MB</td></tr> <tr><td>SG350X-24PD</td><td>24 MB</td></tr> <tr><td>SG350X-48</td><td>24 MB</td></tr> <tr><td>SG350X-48P</td><td>24 MB</td></tr> <tr><td>SG350X-48MP</td><td>24 MB</td></tr> <tr><td>SG350XG-2F10</td><td>2 MB</td></tr> <tr><td>SG350XG-24F</td><td>2 MB</td></tr> <tr><td>SG350XG-24T</td><td>2 MB</td></tr> <tr><td>SG350XG-48T</td><td>4 MB</td></tr> </tbody> </table>	Model Name	Packet Buffer	SG350X-8PMD	12 MB	SG350X-24	12 MB	SG350X-24P	12 MB	SG350X-24MP	12 MB	SG350X-24PD	24 MB	SG350X-48	24 MB	SG350X-48P	24 MB	SG350X-48MP	24 MB	SG350XG-2F10	2 MB	SG350XG-24F	2 MB	SG350XG-24T	2 MB	SG350XG-48T	4 MB
Model Name	Packet Buffer																										
SG350X-8PMD	12 MB																										
SG350X-24	12 MB																										
SG350X-24P	12 MB																										
SG350X-24MP	12 MB																										
SG350X-24PD	24 MB																										
SG350X-48	24 MB																										
SG350X-48P	24 MB																										
SG350X-48MP	24 MB																										
SG350XG-2F10	2 MB																										
SG350XG-24F	2 MB																										
SG350XG-24T	2 MB																										
SG350XG-48T	4 MB																										
Environmental																											
Unit dimensions (W x H x D)	<table border="1"> <thead> <tr> <th>Model Name</th> <th>Unit Dimensions</th> </tr> </thead> <tbody> <tr><td>SG350X-8PMD</td><td>344 x 44 x 252.5 mm (13.6 x 1.45 x 9.94 in)</td></tr> <tr><td>SG350X-24</td><td>440 x 44 x 257 mm (17.3 x 1.45 x 10.12 in)</td></tr> <tr><td>SG350X-24P</td><td>440 x 44 x 350 mm (17.3 x 1.45 x 13.78 in)</td></tr> <tr><td>SG350X-24MP</td><td>440 x 44 x 350 mm (17.3 x 1.45 x 13.78 in)</td></tr> <tr><td>SG350X-24PD</td><td>440 x 44 x 257 mm (17.3 x 1.45 x 10.12 in)</td></tr> <tr><td>SG350X-48</td><td>440 x 44 x 257 mm (17.3 x 1.45 x 10.12 in)</td></tr> <tr><td>SG350X-48P</td><td>440 x 44 x 350 mm (17.3 x 1.45 x 13.78 in)</td></tr> <tr><td>SG350X-48MP</td><td>440 x 44 x 450 mm (17.3 x 1.45 x 17.72 in)</td></tr> <tr><td>SG350XG-2F10</td><td>440 x 44 x 350 mm (17.3 x 1.45 x 13.78 in)</td></tr> <tr><td>SG350XG-24F</td><td>440 x 44 x 350 mm (17.3 x 1.45 x 13.78 in)</td></tr> <tr><td>SG350XG-24T</td><td>440 x 44 x 450 mm (17.3 x 1.45 x 17.72 in)</td></tr> <tr><td>SG350XG-48T</td><td>440 x 44 x 450 mm (17.3 x 1.45 x 17.72 in)</td></tr> </tbody> </table>	Model Name	Unit Dimensions	SG350X-8PMD	344 x 44 x 252.5 mm (13.6 x 1.45 x 9.94 in)	SG350X-24	440 x 44 x 257 mm (17.3 x 1.45 x 10.12 in)	SG350X-24P	440 x 44 x 350 mm (17.3 x 1.45 x 13.78 in)	SG350X-24MP	440 x 44 x 350 mm (17.3 x 1.45 x 13.78 in)	SG350X-24PD	440 x 44 x 257 mm (17.3 x 1.45 x 10.12 in)	SG350X-48	440 x 44 x 257 mm (17.3 x 1.45 x 10.12 in)	SG350X-48P	440 x 44 x 350 mm (17.3 x 1.45 x 13.78 in)	SG350X-48MP	440 x 44 x 450 mm (17.3 x 1.45 x 17.72 in)	SG350XG-2F10	440 x 44 x 350 mm (17.3 x 1.45 x 13.78 in)	SG350XG-24F	440 x 44 x 350 mm (17.3 x 1.45 x 13.78 in)	SG350XG-24T	440 x 44 x 450 mm (17.3 x 1.45 x 17.72 in)	SG350XG-48T	440 x 44 x 450 mm (17.3 x 1.45 x 17.72 in)
Model Name	Unit Dimensions																										
SG350X-8PMD	344 x 44 x 252.5 mm (13.6 x 1.45 x 9.94 in)																										
SG350X-24	440 x 44 x 257 mm (17.3 x 1.45 x 10.12 in)																										
SG350X-24P	440 x 44 x 350 mm (17.3 x 1.45 x 13.78 in)																										
SG350X-24MP	440 x 44 x 350 mm (17.3 x 1.45 x 13.78 in)																										
SG350X-24PD	440 x 44 x 257 mm (17.3 x 1.45 x 10.12 in)																										
SG350X-48	440 x 44 x 257 mm (17.3 x 1.45 x 10.12 in)																										
SG350X-48P	440 x 44 x 350 mm (17.3 x 1.45 x 13.78 in)																										
SG350X-48MP	440 x 44 x 450 mm (17.3 x 1.45 x 17.72 in)																										
SG350XG-2F10	440 x 44 x 350 mm (17.3 x 1.45 x 13.78 in)																										
SG350XG-24F	440 x 44 x 350 mm (17.3 x 1.45 x 13.78 in)																										
SG350XG-24T	440 x 44 x 450 mm (17.3 x 1.45 x 17.72 in)																										
SG350XG-48T	440 x 44 x 450 mm (17.3 x 1.45 x 17.72 in)																										

Feature	Description																																																				
Unit weight	<table border="1"> <thead> <tr> <th>Model Name</th> <th>Unit Weight</th> </tr> </thead> <tbody> <tr><td>SG350X-8PMD</td><td>2.74 kg (6.04 lb)</td></tr> <tr><td>SG350X-24</td><td>4.92 kg (9.52 lb)</td></tr> <tr><td>SG350X-24P</td><td>4.93 kg (10.41 lb)</td></tr> <tr><td>SG350X-24MP</td><td>5.69 kg (11.76 lb)</td></tr> <tr><td>SG350X-24PD</td><td>3.99 kg (8.79 lb)</td></tr> <tr><td>SG350X-48</td><td>3.73 kg (8.22 lb)</td></tr> <tr><td>SG350X-48P</td><td>5.82 kg (12.83 lb)</td></tr> <tr><td>SG350X-48MP</td><td>6.69 kg (14.75 lb)</td></tr> <tr><td>SG350XG-2F10</td><td>4.03 kg (8.88 lb)</td></tr> <tr><td>SG350XG-24F</td><td>4.16 kg (9.17 lb)</td></tr> <tr><td>SG350XG-24T</td><td>5.57 kg (12.28 lb)</td></tr> <tr><td>SG350XG-48T</td><td>7.43 kg (16.38 lb)</td></tr> </tbody> </table>	Model Name	Unit Weight	SG350X-8PMD	2.74 kg (6.04 lb)	SG350X-24	4.92 kg (9.52 lb)	SG350X-24P	4.93 kg (10.41 lb)	SG350X-24MP	5.69 kg (11.76 lb)	SG350X-24PD	3.99 kg (8.79 lb)	SG350X-48	3.73 kg (8.22 lb)	SG350X-48P	5.82 kg (12.83 lb)	SG350X-48MP	6.69 kg (14.75 lb)	SG350XG-2F10	4.03 kg (8.88 lb)	SG350XG-24F	4.16 kg (9.17 lb)	SG350XG-24T	5.57 kg (12.28 lb)	SG350XG-48T	7.43 kg (16.38 lb)																										
Model Name	Unit Weight																																																				
SG350X-8PMD	2.74 kg (6.04 lb)																																																				
SG350X-24	4.92 kg (9.52 lb)																																																				
SG350X-24P	4.93 kg (10.41 lb)																																																				
SG350X-24MP	5.69 kg (11.76 lb)																																																				
SG350X-24PD	3.99 kg (8.79 lb)																																																				
SG350X-48	3.73 kg (8.22 lb)																																																				
SG350X-48P	5.82 kg (12.83 lb)																																																				
SG350X-48MP	6.69 kg (14.75 lb)																																																				
SG350XG-2F10	4.03 kg (8.88 lb)																																																				
SG350XG-24F	4.16 kg (9.17 lb)																																																				
SG350XG-24T	5.57 kg (12.28 lb)																																																				
SG350XG-48T	7.43 kg (16.38 lb)																																																				
Power	100 - 240V 47 - 63 Hz, Internal, universal																																																				
Certification	UL (UL 60950), CSA (CSA 22.2), CE mark, FCC Part 15 (CFR 47) Class A																																																				
Operating temperature	SG350X-8PMD, SG350XG-2F10, SG350X-24PD, SG350XG-24F, SG350XG-24T, SG350XG-48T 32° to 122°F (0° to 50°C)																																																				
Storage temperature	-4° to 158°F (-20° to 70°C)																																																				
Operating humidity	10% to 90%, relative, noncondensing																																																				
Storage humidity	10% to 90%, relative, noncondensing																																																				
Acoustic noise and Mean Time Between Failures (MTBF)	<table border="1"> <thead> <tr> <th>Model Name</th> <th>Fan (Number)</th> <th>Acoustic Noise</th> <th>MTBF at 50°C (Hours)</th> </tr> </thead> <tbody> <tr><td>SG350X-8PMD</td><td>1</td><td>42.9 at 45°C</td><td>474,265</td></tr> <tr><td>SG350X-24</td><td>1</td><td>0°C - 30°C: 36.3dB 50°C: 49.3dB</td><td>365,289</td></tr> <tr><td>SG350X-24P</td><td>2</td><td>0°C - 30°C: 41.0dB 50°C: 52.9dB</td><td>244,654</td></tr> <tr><td>SG350X-24MP</td><td>2</td><td>0°C - 30°C: 43.3dB 50°C: 52.3dB</td><td>144,617</td></tr> <tr><td>SG350X-24PD</td><td>3</td><td>45.1 at 45°C</td><td>426,741</td></tr> <tr><td>SG350X-48</td><td>1</td><td>0°C - 30°C: 35.0dB 50°C: 51.7dB</td><td>248,842</td></tr> <tr><td>SG350X-48P</td><td>3</td><td>0°C - 30°C: 43.8dB 50°C: 52.1dB</td><td>184,614</td></tr> <tr><td>SG350X-48MP</td><td>4</td><td>0°C - 30°C: 43.2dB 50°C: 53.2dB</td><td>171,530</td></tr> <tr><td>SG350XG-2F10</td><td>3</td><td>0°C - 30°C: 38.9dB 50°C: 49.7dB</td><td>291,883</td></tr> <tr><td>SG350XG-24F</td><td>4</td><td>0°C - 25°C: 36.4dB</td><td>194,544</td></tr> <tr><td>SG350XG-24T</td><td>4</td><td>0°C - 30°C: 40.7dB 50°C: 51.7dB</td><td>347,052</td></tr> <tr><td>SG350XG-48T</td><td>4</td><td>0°C - 30°C: 47.7dB 50°C: 58.9dB</td><td>131,787</td></tr> </tbody> </table>	Model Name	Fan (Number)	Acoustic Noise	MTBF at 50°C (Hours)	SG350X-8PMD	1	42.9 at 45°C	474,265	SG350X-24	1	0°C - 30°C: 36.3dB 50°C: 49.3dB	365,289	SG350X-24P	2	0°C - 30°C: 41.0dB 50°C: 52.9dB	244,654	SG350X-24MP	2	0°C - 30°C: 43.3dB 50°C: 52.3dB	144,617	SG350X-24PD	3	45.1 at 45°C	426,741	SG350X-48	1	0°C - 30°C: 35.0dB 50°C: 51.7dB	248,842	SG350X-48P	3	0°C - 30°C: 43.8dB 50°C: 52.1dB	184,614	SG350X-48MP	4	0°C - 30°C: 43.2dB 50°C: 53.2dB	171,530	SG350XG-2F10	3	0°C - 30°C: 38.9dB 50°C: 49.7dB	291,883	SG350XG-24F	4	0°C - 25°C: 36.4dB	194,544	SG350XG-24T	4	0°C - 30°C: 40.7dB 50°C: 51.7dB	347,052	SG350XG-48T	4	0°C - 30°C: 47.7dB 50°C: 58.9dB	131,787
Model Name	Fan (Number)	Acoustic Noise	MTBF at 50°C (Hours)																																																		
SG350X-8PMD	1	42.9 at 45°C	474,265																																																		
SG350X-24	1	0°C - 30°C: 36.3dB 50°C: 49.3dB	365,289																																																		
SG350X-24P	2	0°C - 30°C: 41.0dB 50°C: 52.9dB	244,654																																																		
SG350X-24MP	2	0°C - 30°C: 43.3dB 50°C: 52.3dB	144,617																																																		
SG350X-24PD	3	45.1 at 45°C	426,741																																																		
SG350X-48	1	0°C - 30°C: 35.0dB 50°C: 51.7dB	248,842																																																		
SG350X-48P	3	0°C - 30°C: 43.8dB 50°C: 52.1dB	184,614																																																		
SG350X-48MP	4	0°C - 30°C: 43.2dB 50°C: 53.2dB	171,530																																																		
SG350XG-2F10	3	0°C - 30°C: 38.9dB 50°C: 49.7dB	291,883																																																		
SG350XG-24F	4	0°C - 25°C: 36.4dB	194,544																																																		
SG350XG-24T	4	0°C - 30°C: 40.7dB 50°C: 51.7dB	347,052																																																		
SG350XG-48T	4	0°C - 30°C: 47.7dB 50°C: 58.9dB	131,787																																																		
Warranty	Limited lifetime with next-business-day advance replacement (where available, otherwise same day ship)																																																				

CONFIDENTIAL

Package Contents
<ul style="list-style-type: none"> • Cisco Small Business 350X Series Stackable Managed Switch • Power cord • Mounting kit included with all models • Serial cable • Quick Start Guide
Minimum Requirements
<ul style="list-style-type: none"> • Web browser: Mozilla Firefox version 8 or later, Microsoft Internet Explorer version 7 or later, Safari, Chrome • Category 6a Ethernet network cable for 10 Gbps speeds at up to 100m • TCP/IP, network adapter, and network operating system (such as Microsoft Windows, Linux, or Mac OS X) installed

Ordering Information

Table 2 provides ordering information.

Table 2. Ordering Information

Model Name	Product Order ID Number	Description
SG350X-8PMD	SG350X-8PMD-K9	<ul style="list-style-type: none"> • 8 x 10/100/1000/2500 PoE+ ports with 240W power budget • 2 x 10GBase-T/SFP+ combo
SG350X-24	SG350X-24-K9	<ul style="list-style-type: none"> • 24 x 10/100/1000 ports • 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)
SG350X-24P	SG350X-24P-K9	<ul style="list-style-type: none"> • 24 x 10/100/1000 PoE+ ports with 195W power budget • 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)
SG350X-24MP	SG350X-24MP-K9	<ul style="list-style-type: none"> • 24 x 10/100/1000 PoE+ ports with 382W power budget • 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)
SG350X-24PD	SG350X-24PD-K9	<ul style="list-style-type: none"> • 20 x 10/100/1000 PoE+ ports with 375W power budget • 4 x 10/100/1000/2500 PoE+ (80W) ports • 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)
SG350X-48	SG350X-48-K9	<ul style="list-style-type: none"> • 48 x 10/100/1000 ports • 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)
SG350X-48P	SG350X-48P-K9	<ul style="list-style-type: none"> • 48 x 10/100/1000 PoE+ ports with 382W power budget • 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)
SG350X-48MP	SG350X-48MP-K9	<ul style="list-style-type: none"> • 48 x 10/100/1000 PoE+ ports with 740W power budget • 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)
SG350XG-2F10	SG350XG-2F10-K9	<ul style="list-style-type: none"> • 10 x 10 Gigabit Ethernet 10GBase-T copper port • 2 x 10 Gigabit Ethernet SFP+ (dedicated) • 1 x Gigabit Ethernet management port
SG350XG-24F	SG350XG-24F-K9	<ul style="list-style-type: none"> • 24 x 10 Gigabit Ethernet SFP+ • 2 x 10 Gigabit Ethernet 10GBase-T copper port (combo with 2 SFP+) • 1 x Gigabit Ethernet management port
SG350XG-24T	SG350XG-24T-K9	<ul style="list-style-type: none"> • 24 x 10 Gigabit Ethernet 10GBase-T copper port • 2 x 10 Gigabit Ethernet SFP+ (combo with 2 copper ports) • 1 x Gigabit Ethernet management port
SG350XG-48T	SG350XG-48T-K9	<ul style="list-style-type: none"> • 48 x 10 Gigabit Ethernet 10GBase-T copper port • 2 x 10 Gigabit Ethernet SFP+ (combo with 2 copper ports) • 1 x Gigabit Ethernet management port

Each combo port has one 10/100/1000/10000 copper Ethernet port and one SFP+ Gigabit Ethernet slot, with one port active at a time.

The -xx in the Product Order ID Number is a country/region-specific suffix. For example, the complete P.O. ID of SG350X-28P for the United States is SG350X-28P-K9-NA. Please refer to Table 2 for the correct suffix to use for your country/region.

Table 3. Country/Region Suffix for Product Order ID Number

Suffix	Country/Region
-NA	• USA, Canada, Mexico, Colombia, Chile and rest of LATAM
-BR	• Brazil
-AR	• Argentina
-EU	• EU, Russia, Ukraine, Israel, UAE, Turkey, Egypt, South Africa, Indonesia, Philippines, Vietnam, Thailand, India, Korea
-UK	• United Kingdom, Saudi Arabia, Qatar, Kuwait, Singapore, Hong Kong, Malaysia
-AU	• Australia, New Zealand
-CN	• China
-IN	• India
-JP	• Japan
-KR	• Korea

The products may also be available in a country/region not listed in Table 3. Not all product models are offered in all countries/regions. For India, either -EU or -IN suffix will be used depending on product models. For Korea, either -EU or -KR suffix will be used depending on product models. Please consult with your local Cisco sales representative or Cisco partners for more details.

An Advanced Technology Backbone for Growing Businesses

Growth is never a bad thing. But as you gain new customers and a higher profile, you need a business technology platform capable of delivering a higher level of service and reliability. With more users, more devices and applications, and more exposure to security threats, a switching platform designed for a smaller operation simply cannot meet your growing needs. It's time for a network that will support your business as you take it to the next level. Cisco 350X Series switches provide the advanced feature set, reliability, and investment protection your business needs, today and in the future.

For More Information

To find out more about the Cisco 350X Series, visit <https://www.cisco.com/go/350Xswitches>.

To learn about other products and solutions in the Cisco Small Business portfolio, visit <https://www.cisco.com/go/smallbusiness>.

Cisco Capital

Financing to Help You Achieve Your Objectives

Cisco Capital can help you acquire the technology you need to achieve your objectives and stay competitive. We can help you reduce CapEx. Accelerate your growth. Optimize your investment dollars and ROI. Cisco Capital financing gives you flexibility in acquiring hardware, software, services, and complementary third-party equipment. And there's just one predictable payment. Cisco Capital is available in more than 100 countries. [Learn more.](#)




Americas Headquarters
 Cisco Systems, Inc.
 San Jose, CA

Asia Pacific Headquarters
 Cisco Systems (USA) Pte. Ltd.
 Singapore

Europe Headquarters
 Cisco Systems International BV Amsterdam,
 The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at <https://www.cisco.com/go/offices>.

 Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: <https://www.cisco.com/go/trademarks>. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (11189)

Printed in USA

C78-73596-02 03/10



CONFIDENTIAL



Cisco Catalyst 9500 Series Switches

Built for Security, IoT, and Cloud

The Cisco Catalyst 9500 Series Switches are the next generation of enterprise-class core and aggregation layer switches, supporting full programmability and serviceability. Based on an x86 CPU, the Catalyst 9500 Series is Cisco's lead purpose-built fixed core and aggregation enterprise switching platform, built for security, IoT, and cloud. The switches come with a 4-core, 2.4-GHz CPU, 16-GB DDR4 memory, and 16-GB internal storage.

The Catalyst 9500 Series is the industry's first purpose-built 40 Gigabit Ethernet line of switches targeted for the enterprise campus. These switches deliver unmatched table scale (MAC/route/ACL) and buffering for enterprise applications. The Catalyst 9500 Series includes nonblocking 40G Quad Small Form-factor Pluggable (QSFP+) and 1G/10G Small Form-factor Pluggable Plus (SFP/SFP+) switches with granular port densities that fit diverse campus needs. The switches support advanced routing and infrastructure services (such as Multiprotocol Label Switching [MPLS] Layer 2 and Layer 3 VPNs, Multicast VPN [MVPN], and Network Address Translation [NAT]); software-defined access border capabilities (such as a host tracking database, cross-domain connectivity, and VPN Routing and Forwarding [VRF]-aware Locator/ID Separation Protocol [LISP]); and network system virtualization with Cisco StackWise virtual technology that are critical for their placement in the campus core. The platform also supports all the foundational high-availability capabilities such as patching, Graceful Insertion and Removal (GIR), Cisco Nonstop Forwarding with Stateful Switchover (NSF/SSO), redundant platinum-rated power supplies, and fans.

The foundation of Software-Defined Access

Advanced persistent security threats. The exponential growth of Internet of Things (IoT) devices. Mobility everywhere. Cloud adoption. All of these require a network fabric that integrates advanced hardware and software innovations to automate, secure, and simplify customer networks. The goal of this network fabric is to enable customer revenue growth by accelerating the rollout of business services.

The Cisco Digital Network Architecture (Cisco DNA) with Software-Defined Access (SD-Access) is the network fabric that powers business. It is an open and extensible, software-driven architecture that accelerates and simplifies your enterprise network operations. The programmable architecture frees your IT staff from time-consuming, repetitive network configuration tasks so they can focus instead on innovation that positively transforms your business. SD-Access enables policy-based automation from edge to cloud with foundational capabilities. These include:

- Simplified device deployment
- Unified management of wired and wireless networks
- Network virtualization and segmentation
- Group-based policies
- Context-based analytics

The Cisco Catalyst 9500 Series switches form the foundational building block for Software-Defined Access—Cisco's leading enterprise architecture.

Cisco ONE Software

Cisco ONE Software offers a valuable and flexible way to buy software for the access, WAN, and data center domains. At each stage in the product lifecycle, Cisco ONE Software helps make buying, managing, and upgrading your network and infrastructure software easier. Cisco ONE Software provides:

- Flexible licensing models to smoothly distribute customers' software spending over time
- Investment protection for software purchases through software services-enabled license portability
- Access to updates, upgrades, and new technology from Cisco through Cisco Software Support Services (SWSS)
- Lower cost of entry with the new Cisco ONE Subscription for Switching model

Cisco ONE for Access lets you manage your entire switching structure as a single, converged component. With one management system and one policy for wired and wireless networks, it offers an efficient way to provide more secure access.

Product overview: features

Product highlights

- Cisco Unified Access™ Data Plane (UADP) 2.0 Application-Specific Integrated Circuit (ASIC) ready for next-generation technologies with its programmable pipeline, microengine capabilities, and template-based, configurable allocation of Layer 2 and Layer 3 forwarding, Access Control Lists (ACLs), and QoS entries
- Intel® 2.4-GHz x86 CPU with up to 120 GB of USB 3.0 SSD storage for container-based application hosting
- Up to 960-Gbps switching capacity (IPV4) with up to 1440 Mpps of throughput
- Up to 24 nonblocking 40 Gigabit Ethernet QSFP ports
- Platinum-rated AC power supplies
- Up to 512,000 Flexible NetFlow (FNF) entries in hardware
- Up to 32 MB of shared buffer per ASIC
- Up to 64,000 routing entries for high-end campus access and aggregation deployments
- IPv6 support in hardware, providing wire-rate forwarding for IPv6 networks
- Dual-stack support for IPv4/IPv6 and dynamic hardware forwarding table allocations, for ease of IPv4-to-IPv6 migration
- Support for both static and dynamic NAT and Port Address Translation (PAT)
- Scalable routing (IPv4, IPv6, and multicast) tables and Layer 2 tables
- Open IOS-XE, a modern operating system for the enterprise with support for model-driven programmability, on-box Python scripting, streaming telemetry, container-based application hosting, and patching for critical bug fixes. The OS also has built-in defenses to protect against runtime attacks
- StackWise virtual technology, a network system virtualization technology that increases operational efficiency and boosts nonstop communications and scaled system bandwidth

- **SD-Access:** With the Catalyst 9500 Series, you can be part of the future of networking with features that include:
 - Policy-based automation from edge to cloud
 - Segmentation and micro-segmentation made easy, with predictable performance and scalability
 - Automation through the Cisco Application Policy Infrastructure Controller Enterprise Module (APIC-EM)
 - Policy through the Cisco Identity Services Engine (ISE)
 - Network assurance through the Network Data Platform
 - Faster launch of new business services and significantly improved issue resolution time
- **Plug and Play (PnP) enabled:** A simple, secure, unified, and integrated offering to ease new branch or campus device rollouts or updates to an existing network
- **Advanced security:**
 - **Encrypted Traffic Analytics (ETA):** You benefit from the power of machine learning to identify and take actions toward threats or anomalies in your network, including malware detection in encrypted traffic and distributed anomaly detection. Additionally, ETA is able to detect vulnerable implementations in encrypted traffic
 - Support for AES-256 with the powerful MACsec 256-bit encryption algorithm available on all models
 - **Trustworthy systems:** Secure Unique Device Identification (SUDI) support for Plug and Play, enabling tamper-proof device identity capability, which secures zero-touch provisioning by allowing your device to show a certificate to the server to be able to get onto your network

Platform details

Switch models and configurations

All switches ship with the 950W AC power supply. Figure 1 shows the Cisco Catalyst 9500 Series Switches.

Figure 1. Cisco Catalyst 9500 Series Switches – 24 x 40 Gigabit Ethernet



Figure 2. Cisco Catalyst 9500 Series Switches – 12 x 40 Gigabit Ethernet

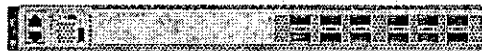


Figure 3. Cisco Catalyst 9500 Series Switches – 40 x 1/10 Gigabit Ethernet

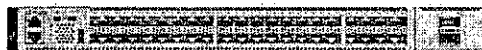


Table 1 shows the Cisco Catalyst 9500 Series configurations.

Table 1. Cisco Catalyst 9500 Series configurations

Model	Description	(S) QSFP or SFP+ Ports
C9500-24Q	Cisco Catalyst 9500 Series 24-port 40 Gigabit Ethernet with QSFP+	24 QSFP+ (or up to 24 SFP+ with GSA adapter)
C9500-12Q	Cisco Catalyst 9500 Series 12-port 40 Gigabit Ethernet with QSFP+	12 QSFP+ (or up to 12 SFP+ with GSA adapter)
C9500-40X	Cisco Catalyst 9500 Series 40-port 1/10 Gigabit Ethernet with SFP/SFP+	40 SFP/SFP+

Network modules

The Cisco Catalyst 9500 Series Switches support optional network modules for uplink ports only on the 40-port 10 Gigabit Ethernet switch. The default switch configuration does not include the network module. When you purchase the switch, you can choose from the network modules described in Table 2.

Figure 4 shows the available network modules.

Figure 4. Cisco Catalyst 9500 Series network module 8-port 10 Gigabit Ethernet with SFP+



Figure 5. Cisco Catalyst 9500 Series network module 2-port 40 Gigabit Ethernet with QSFP+



Table 2. Network module numbers and descriptions

Network Module	Description
C9500-NM-8X	Cisco Catalyst 9500 Series Network Module 8-port 1/10 Gigabit Ethernet with SFP/SFP+
C9500-NM-2Q	Cisco Catalyst 9500 Series Network Module 2-port 40 Gigabit Ethernet with QSFP+

Power supplies

The Cisco Catalyst 9500 Series Switches support dual 1+1 redundant power supplies. The switches ship with one power supply by default. The second power supply can be purchased at the time the switch is ordered or at a later time. If only one power supply is installed, it should always be in power supply bay #1. The switches also ship with five field-replaceable variable-speed fans. These have front-to-back airflow and can operate with up to one individual fan failure. The fan trays support fan-tray Online Insertion and Removal (OIR) for up to 120 seconds and can support a maximum fan speed of 2400 RPM.

CONFIDENTIAL

Figure 6. Shows the 950W AC power supply.



Table 3 provides more details on the Catalyst 9500 Series power supply.

Table 3. Power supply specifications

Power Supply Feature	Support in the Catalyst 9500 Series
AC power max rating	950W
System power consumption	850W max
Input-voltage range and frequency	AC 115 to 230 VAC, 50 to 60 Hz
Power supply efficiency	94%
Total output BTU (Note: 1000 BTU/hr = 293W)	2901 BTU/hr (850W) max
Input current	AC 10A at 115VAC, 5 A at 230VAC
Output ratings	12V at 79A, 12V at 3A
Output holdup time	AC = 10 ms at maximum load
Power-supply input receptacles	AC IEC 60320 C18
Power cord rating	AC 15A

Table 4 shows the different power supplies available in these switches.

Table 4. Power supply models

Models	Default Power Supply
Cisco Catalyst 9500 Series 12-port 40 Gigabit Ethernet with QSFP	PWR-C4-950WAC-R
Cisco Catalyst 9500 Series 24-port 40 Gigabit Ethernet with QSFP+	PWR-C4-950WAC-R
Cisco Catalyst 9500 Series 40-port 1/10 Gigabit Ethernet with SFP/SFP+	PWR-C4-950WAC-R

Switch performance

Table 5 shows performance specifications for the Cisco Catalyst 9500 Series switches.

Table 5. Performance specifications

Performance Numbers for All Switch Models	C9500-12Q	C9500-24Q	C9500-40X
Switching capacity	Up to 960 Gbps full duplex	Up to 1920 Gbps full duplex	Up to 960 Gbps full duplex
Forwarding rate	Up to 720 Mpps	Up to 1440 Mpps	Up to 720 Mpps
Total number of MAC addresses	Up to 64,000		
Total number of IPv4 routes (Address Resolution Protocol [ARP] plus learned routes)	Up to 64,000 indirect Up to 32,000 host		
Total number of IPv6 routes	Up to 32,000 indirect Up to 18,000 host		
Multicast scale	Up to 48,000		

Performance Numbers for All Switch Models	C9500-12Q	C9500-24Q	C9500-40X
QoS ACL scale	Up to 18000		
Security ACL scale	Up to 18000		
FNF entries	Up to 512,000		
DRAM	18 GB		
Flash	18 GB		
VLAN IDs	4000		
Total Switched Virtual Interfaces (SVIs)	4000		
Jumbo frame	9198 bytes		

*Varies based on selected flexible ASIC template.

Flexible ASIC templates

Flexible ASIC templates enable universal deployments by leveraging the UADP 2.0 XL's ability to create resources to optimize table sizes for different places in the network. Based on how the switch is used in the network, an appropriate flexible ASIC template may be selected to configure the switch for specific features.

The following flexible ASIC templates are supported on the Cisco Catalyst 9500 Series.

- Access-edge for switches deployed in the access layer or fabric edge (ASIC resources are optimized for client scale)
- Core-border for switches deployed in the core layer or fabric border (ASIC resources are optimized for Layer 3 and cross-domain policies)
- Aggregation for switches deployed in the distribution and aggregation layer (ASIC resources are optimized for a mixture of Layer 2 and Layer 3 capabilities)
- Collapsed-core-WAN for switches deployed in a collapsed core and WAN edge (ASIC resources are optimized for Layer 3 and NAT)

Table 6 describes the ASIC templates.

Table 6. ASIC template descriptions

Template Numbers for C9500 Models	Aggregation Template	NAT Template	Core Template	Border Template
IPv4/IPv6 LPM	0-64K / 0-32K	0-64K / 0-32K	0-64K / 0-32K	0-64K / 0-32K
IPv4/IPv6 host	48K-112K / 24K-56K	48K-112K / 24K-56K	32K-80K / 16K-48K	80K-144K / 40K-72K
Multicast route	16K (IPv4) 8K (IPv6)	16K (IPv4) 8K (IPv6)	16K (IPv4) 8K (IPv6)	16K (IPv4) 8K (IPv6)
IGMP/MLD snooping	16K	16K	16K	16K
MAC address	64K	16K	16K	16K
SGT label	8K	8K	8K	8K
NetFlow	128K/ASIC	128K/ASIC	128K/ASIC	128K/ASIC
Security ACL	18K	18K	18K	18K
QoS ACL	18K	3K	18K	18K
PBR/NAT	2K	16K	2K	2K
Tunnel	1K	1K	1K	1K
LISP	1K	1K	1K	1K
MACsec	1K	1K	1K	1K

Template Name	Number of Config Models	Aggregation Template	NAT Template	Core Template	Border Template
SPAN	1K	1K	1K	1K	1K
CoPP	1K	1K	1K	1K	1K
NetFlow	1K Ingress, 2K Egress	1K Ingress, 2K Egress	1K Ingress, 2K Egress	1K Ingress, 2K Egress	1K Ingress, 2K Egress
Microflow policer	0.5K Input, 1K output	0.5K Input, 1K output	0.5K Input, 1K output	0.5K Input, 1K output	0.5K Input, 1K output

SD-Access architecture

Enterprises are in search of ways to transform their operations to add digital capabilities that enhance service delivery and asset management. Cisco SD-Access provides this transformational shift in building and managing networks. It provides faster, easier, and improved business efficiency with investment protection for enhanced business outcomes. By decoupling network functions from hardware, SD-Access helps ensure policy compliance, allows you to launch new business services faster, and improves issue resolution times significantly. At the same time, it is open and extensible and can significantly reduce your operational expenses.

Cisco SD-Access enables policy-based automation from edge to cloud with foundational capabilities. These include simplified device deployment, unified management of wired and wireless networks, network virtualization and segmentation, group-based policies, and context-based analytics. With these fundamental features in place, key use cases can now be orchestrated. These use cases include user mobility, secure segmentation, user onboarding and policies, IoT integration, guest access, context-based troubleshooting, and data center and cloud integration.

Cisco StackWise Virtual

StackWise Virtual is an advanced stacking technology that supports both access and distribution deployments through multiple topologies (such as two nodes or a ring). It provides higher scale for system virtualization at the network layer. The Catalyst 9500 Series supports StackWise Virtual with a 2-node topology. StackWise Virtual in the distribution layer of the network interacts with the access and core layer switches as if it were a single logical switch. An access/core switch connects to both switches of the StackWise Virtual switch using one logical port channel called a Multichassis EtherChannel (MEC). The MEC enables the StackWise Virtual switches to provide redundancy and load balancing on the port channel.

This capability enables a loop-free Layer 2 network topology, since the StackWise Virtual switches are treated as one logical switch for both access and core switches. The StackWise Virtual switch also simplifies the Layer 3 network topology by presenting itself as one logical switch, thus reducing the number of routing peers in the network.

Model	Description	StackWise Virtual
C9500-24Q	Cisco Catalyst 9500 Series 24-port 40 Gigabit Ethernet with QSFP+	Supported
C9500-12Q	Cisco Catalyst 9500 Series 12-port 40 Gigabit Ethernet with QSFP+	Not Supported Yet
C9500-40X	Cisco Catalyst 9500 Series 40-port 1/10 Gigabit Ethernet with SFP/SFP+	Not Supported Yet

Platform benefits

Open IOS-XE

The Cisco Catalyst 9500 Series opens a completely new paradigm in network configuration, operation, and monitoring through network automation. Cisco's automation solution is open, standards-based, and extensible across the entire lifecycle of a network device. The various mechanisms that bring about network automation are outlined below, based on a device lifecycle.

- Automated device provisioning:** This is the ability to automate the process of upgrading software images and installing configuration files on Cisco Catalyst switches when they are being deployed in the network for the first time. Cisco provides both turnkey solutions such as Plug and Play and off-the-shelf tools such as Zero-Touch Provisioning (ZTP) and Preboot Execution Environment (PXE) that enable an effortless and automated deployment
- API-driven configuration:** Modern network switches such as the Catalyst 9500 Series support a wide range of automation features and provide robust open APIs over Network Configuration Protocol (NETCONF) and RESTCONF using YANG data models for external tools, both off-the-shelf and custom built, to automatically provision network resources
- Granular visibility:** Model-driven telemetry provides a mechanism to stream data from a switch to a destination. The data to be streamed is driven through subscription to a data set in a YANG model. The subscribed data set is streamed out to the destination at configured intervals. Additionally, Open IOS-XE enables the push model, which provides near-real-time monitoring of the network, leading to quick detection and rectification of failures
- Seamless software upgrades and patching:** To enhance OS resilience, Open IOS-XE supports patching, which provides fixes for critical bugs and security vulnerabilities between regular maintenance. This support allows customers to add patches without having to wait for the next maintenance

Security

- Encrypted Traffic Analytics (ETA):** ETA is a unique capability for identifying malware in encrypted traffic coming from the access layer. Since more and more traffic is becoming encrypted, the visibility this feature provides related to threat detection is critical for keeping your network secure at different layers
- Advanced Encryption Standard (AES)-256 MACsec encryption:** AES is the IEEE 802.1AE standard for authenticating and encrypting packets between switches and endpoints. The Catalyst 9500 Series switches support 256-bit and 128-bit AES on all ports at all speeds, providing the most secure link encryption
- Trustworthy systems:** Cisco Trust Anchor Technologies provide a highly secure foundation for Cisco products. With the Catalyst 9500 Series, these trustworthy systems enable hardware and software authenticity assurance for supply chain trust and strong mitigation against man-in-the-middle attacks on software and firmware. Trust Anchor capabilities include:
- Image signing:** Cryptographically signed images provide assurance that the firmware, BIOS, and other software are authentic and unmodified. As the system boots, the system's software signatures are checked for integrity
- Secure Boot:** Cisco Secure Boot technology anchors the boot sequence chain of trust to immutable hardware, mitigating threats against a system's foundational state and the software that is to be loaded, regardless of a user's privilege level. It provides layered protection against the persistence of illicitly modified firmware
- Cisco Trust Anchor module:** A tamper-resistant, strong cryptographic, single-chip solution provides hardware authenticity assurance to uniquely identify the product so that its origin can be confirmed to Cisco, providing assurance that the product is genuine

Handwritten signatures and stamps, including a large circular stamp and a rectangular stamp with the word "EXPORT" visible.

Resiliency and high availability

- **Front-panel stacking:** The Catalyst 9500 Series is the only switching platform in the industry with support for front-panel stacking. This enables the switch to be optimized for a variety of deployments
- **High availability:** The Cisco Catalyst 9500 Series supports high-availability features, including the following:
 - Cross-stack EtherChannel provides the ability to configure Cisco EtherChannel technology across different members of the stack for high resiliency
 - IEEE 802.1s Multiple Spanning Tree Protocol (MSTP) provides rapid spanning tree convergence independent of spanning tree timers and also offers the benefit of Layer 2 load balancing and distributed processing
 - Per-VLAN Rapid Spanning Tree (PVRST+) allows rapid spanning tree (IEEE 802.1w) reconvergence on a per-VLAN spanning tree basis, providing simpler configuration than MSTP. In both MSTP and PVRST+ modes, stacked units behave as a single spanning tree node
 - Switch-port autorecovery ("err-disable" recovery) automatically attempts to reactivate a link that is disabled because of a network error

Flexible NetFlow

- **Flexible NetFlow (FNF):** Cisco IOS® Software FNF is the next generation in flow visibility technology, allowing optimization of the network infrastructure, reducing operation costs, and improving capacity planning and security incident detection with increased flexibility and scalability. The Catalyst 9500 Series is capable of up to 512,000 flow entries

Application visibility and control

- **Next-Generation Network Based Application Recognition (NBAR2):** NBAR2 enables advanced application classification techniques, accuracy with up to 1400 predefined and well-known application signatures and up to 150 encrypted applications on the Cisco Catalyst 9000 Series. Some of the most popular applications included are Skype, Office 365, Microsoft Lync, Cisco WebEx®, and Facebook. Many others are already predefined and easy to configure. NBAR2 provides the network administrator with an important tool to identify, control, and monitor end-user application usage while helping ensure a quality user experience and securing the network from malicious attacks. It uses FNF to report application performance and activities within the network to any supported NetFlow collector, such as Cisco Prime®, Cisco Stealthwatch®, or any compliant third-party tool

QoS

- **Superior QoS:** The Cisco Catalyst 9500 Series offers Gigabit Ethernet speed with intelligent services that keep traffic flowing smoothly, even at 10 times the normal network speed. Industry-leading mechanisms for cross-stack marking, classification, and scheduling deliver superior performance for data, voice, and video traffic—all at wire speed. This includes granular wireless bandwidth management and fair sharing, 802.1p Class of Service (CoS) and Differentiated Services Code Point (DSCP) field classification, Shaped Round Robin (SRR) scheduling, and Committed Information Rate (CIR)

Service discovery

- **Constrained Application Protocol (CoAP):** This Internet application protocol enables constrained devices (including IoT devices with limited processing and storage such as smart lights and IP phones) to communicate efficiently with each other and also with the Internet through translation to HTTP. The simple and lean protocol also provides multicast support, an important aspect in IoT management
- **Multicast DNS (mDNS) gateway:** This service discovery gateway capability facilitates the sharing of services advertised using the Apple mDNS (Bonjour) protocol (such as printers, Apple TVs and file services across the network). Additionally, the administrator can create policies defining which services can be seen and accessed by the users in the network. This capability facilitates a Bring-Your-Own-Device (BYOD) rollout

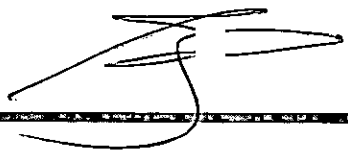
Smart operation

- **Bluetooth ready:** The Catalyst 9500 Series has hardware support to connect a Bluetooth dongle to your switch, enabling you to use this wireless interface as a management port. This port functions as an IP management interface and can be used for configuration and troubleshooting using the WebUI or the Command-Line Interface (CLI), and to transfer images and configurations
- **WebUI:** WebUI is an embedded GUI-based device-management tool that provides the ability to provision the device, to simplify device deployment and manageability and to enhance the user experience. WebUI comes with the default image. There is no need to enable anything or install any license on the device. You can use WebUI to build a day-1 configuration and from then on monitor and troubleshoot the device without having to know how to use the CLI
- **RFID tags:** The Catalyst 9500 Series switches have an embedded RFID tag that facilitates easy asset and inventory management using commercial RFID readers
- **Blue beacon:** The Catalyst 9500 Series switches support a blue beacon LED for easy identification of the switch being accessed

High-performance IP routing

The Cisco Express Forwarding hardware routing architecture delivers extremely high-performance IP routing in the Cisco Catalyst 9500 Series Switches, based on.

- IP unicast routing protocols (including static, Routing Information Protocol Version 1 [RIPv1], RIPv2, RIPv3, and Open Shortest Path First [OSPF] routed access) are supported for small network routing applications with the Network Essentials stack. Equal-cost routing facilitates Layer 3 load balancing and redundancy across the stack
- Advanced IP unicast routing protocols (such as OSPF, Enhanced Interior Gateway Routing Protocol [EIGRP], Border Gateway Protocol Version 4 [BGPv4], and Intermediate System-to-Intermediate System Version 4 [IS-ISv4]) are supported for load balancing and for constructing scalable LANs. IPv6 routing (using OSPFv3 and EIGRPv6) is supported in hardware for maximum performance
- Protocol-Independent Multicast (PIM) for IP multicast routing is supported, including PIM Sparse Mode (PIM SM), and Source-Specific Multicast (SSM)
- IPv6 addressing is supported on interfaces with appropriate show commands for monitoring and troubleshooting



Software requirements

- The Cisco Catalyst 9500 Series Switches run on Open IOS-XE version 16.5.1 or later. This software release includes all the features listed earlier in the Platform Benefits section

Packaging

The Cisco Catalyst 9300, 9400, and 9500 Series introduce new packaging that includes vastly simplified base network packages (Network Essentials and Network Advantage) and term-based software packages (Cisco DNA Essentials, Cisco DNA Advantage) as add-ons. The Cisco DNA packages, in addition to on-box capabilities, also unlock additional functionality in Cisco DNA Center, enabling controller-based software-defined automation in your network.

License consumption is further simplified to following two combinations:

Essentials: This consists of Perpetual Network Essentials and a term-based (3-, 5-, or 7-year) Cisco DNA Essentials package.

Advantage: This consists of Perpetual Network Advantage and a term-based (3-, 5-, or 7-year) Cisco DNA Advantage package.

Note that it is not required to deploy Cisco DNA Center just to use one of the above packages. Refer to <https://switching.cisco.com/faqs> for additional details about the Essentials and Advantage packages.

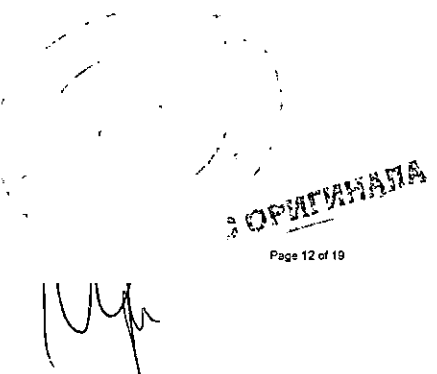
Tables 7 and 8 show functionalities included in the two packages.

Table 7. Network Essentials and Network Advantage packages

Features	Network Essentials	Network Advantage
Switch fundamentals STP, Trunking, Private VLAN (PVLAN), Q-in-Q, IPv6, OSPF, RIP, Policy-Based Routing (PBR), Virtual Router Redundancy Protocol (VRRP), Internet Group Management Protocol (IGMP), PIM Stub, Weighted Random Early Detection (WRED), Cisco UPOE, First Hop Security (FHS), 802.1X, MACsec-128, Control Plane Policing (CoPP), SSO	✓	✓
Advanced switch capabilities and scale BGP, BGP, Hot Standby Router Protocol (HSRP), IS-IS, Bootstrap Router (BSR), Multicast Source Discovery Protocol (MSDP), Class-Based Weighted Fair Queuing (CBWFQ), MACsec-256	✓	✓
Management automation NETCONF/YANG, PhP, ZTP/Open PhP	✓	✓
Capacity planning, performance monitoring, and troubleshooting Streaming telemetry, sampled NetFlow, Switched Port Analyzer (SPAN), Remote SPAN (RSPAN)	✓	✓
Flexible network segmentation for isolation VPN Routing and Forwarding (VRF), MPLS VPNs – Layer 3 VPN (L3VPN), Ethernet over MPLS (EoMPLS), Hierarchical Virtual Private LAN Services (H-VPLS), IPv6 Provider Edge (SPE), IPv6 on Virtual Provider Edge (SVPE), Multicast VPN (MVFN)	✓	✓
High availability and resiliency Nonstop Routing (NSR), GIG, Stackwise Virtual	✓	✓
Enhanced security controls MACsec-256, CoPP	✓	✓
IoT Integration CoAP	✓	✓

Table 8. Cisco DNA Essentials and DNA Advantage packages

Features	Cisco DNA Essentials	Cisco DNA Advantage
Add-on for Network Essentials	✓	✓
Add-on for Network Advantage	✓	✓
Subscription based (3, 5, 7, or 10 years) with ongoing updates	✓	✓
On-Box Features		
Flexible automation Containers, Python, Embedded Event Manager (EEM), Autonomic Networking Infrastructure (ANI)	✓	✓
Advanced telemetry and visibility Flexible NetFlow, MPLS, Multicast, CoPP, shared NetFlow policies, NetFlow with EEM, Wireshark	✓	✓
Advanced telemetry and visibility Encapsulated Remote SPAN (ERSPAN), Application Visibility and Control (AVC), NBAR2	✓	✓
Optimized network deployments LISP with Virtual Extensible LAN (VXLAN), Cisco TrustSec, Security Group Tag (SGT) caching, Security Group Access Control List (SGACL), FEW, Dynamic Host Configuration Protocol (DHCP), DNS, mDNS gateway, NAT and Port Address Translation (PAT)	✓	✓
Comprehensive security ETA	✓	✓
Cisco DNA Center Features		
Day 0 network bring-up automation Cisco network PhP application, network settings, device credentials	✓	✓
Element management Discovery, inventory, topology, software image, patch, licensing, and configuration management	✓	✓
Network monitoring Product Security Incident Response Team (PSIRT) compliance; end of life/end of sale reporting; telemetry quotient; Client 360; Device 360; top talkers/application reporting; syslog, Simple Network Management Protocol (SNMP), NetFlow, streaming telemetry collection and correlation	✓	✓
QoS configuration and monitoring EasyQoS application	✓	✓
Policy-based automation SD-Access, group-based policy for access, app prioritization, monitoring, and path selection	✓	✓
SD-Access with integrated wireless, IoT, Bonjour, Stealthwatch, firewalls, IT Service Management (ITSM) integration, third-party IP Address Management (IPAM) integration	✓	✓
Network assurance and analytics Regulatory and config compliance	✓	✓
Application visibility and performance monitoring Network issue and trends visualization and correlation with contextual graphs, time machine, and topology and site-based views	✓	✓
API and firehose-based data integration with Splunk and ServiceNow Collector for syslog, SNMP, NetFlow, and streaming telemetry	✓	✓



Dimensions, physical specifications, weight, and Mean Time Between Failures (MTBF)

Table 9 lists the dimensions, physical specifications, weight, and MTBF for the Cisco Catalyst 9500 Series Switches.

Table 9. Dimensions, physical specifications, weight, and MTBF

Description	Specifications						
Dimensions (H x W x D)	1.73 x 17.5 x 21.52 in						
Rack units (RU)	1 RU						
Chassis with 2 power supplies and built-in fan	25.75 lb (11.68 kg)						
Input voltage	90 to 264 VAC						
Operating temperature	32°F to 104°F (0° to 40°C)						
Storage temperature	-4° to 149°F (-20° to 65°C)						
Relative humidity operating and nonoperating noncondensing	Ambient (noncondensing) operating: 5% to 90% Ambient (noncondensing) nonoperating and storage: 5% to 95%						
Altitude	Operation up to 6000 ft						
MTBF (hours)	<table border="1"> <tr> <td>C9500-12Q</td> <td>C9500-24Q</td> <td>C9500-40X</td> </tr> <tr> <td>179,660</td> <td>127,660</td> <td>180,640</td> </tr> </table>	C9500-12Q	C9500-24Q	C9500-40X	179,660	127,660	180,640
C9500-12Q	C9500-24Q	C9500-40X					
179,660	127,660	180,640					

Connectors

Table 10 shows the supported connectors for the Catalyst 9500 Series.

Table 10. Connectors

Connectors and cabling	Specifications
	<ul style="list-style-type: none"> 10GBASE-SR, LR, LRM, ER, ZR, DWDM SFP+ transceivers; LC fiber connectors (single-mode or multimode fiber) QSFP CX1 cable assemblies; SFP+ connector

For the latest Cisco transceiver module compatibility information, refer to <https://www.cisco.com/c/en/us/support/interfaces-modules/transceiver-modules/products-device-support-tables-list.html>.

Management and standards support

Table 11 shows management and standards support for the Cisco Catalyst 9500 Series.

Table 11. Management and standards support

Description	Specification																				
Management	<table border="1"> <tr> <td>BRIDGE-MIB</td> <td>CISCO-SNMP-TARGET-EXT-MIB</td> </tr> <tr> <td>CISCO-AUTH-FRAMEWORK-MIB</td> <td>CISCO-STACKMAKER-MIB</td> </tr> <tr> <td>CISCO-BGP4-MIB, BGP4-MIB</td> <td>CISCO-MEMORY-POOL-MIB</td> </tr> <tr> <td>CISCO-BRIDGE-EXT-MIB</td> <td>CISCO-STP-EXTENSIONS-MIB</td> </tr> <tr> <td>CISCO-BULK-FILE-MIB</td> <td>CISCO-SYSLOG-MIB</td> </tr> <tr> <td>CISCO-CABLE-DIAG-MIB</td> <td>CISCO-TCP-MIB</td> </tr> <tr> <td>CISCO-CALLHOME-MIB</td> <td>CISCO-UDLD-MIB</td> </tr> <tr> <td>CISCO-CEF-MIB</td> <td>CISCO-VLANHFTABLE-RELATIONSHIP-MIB</td> </tr> <tr> <td>CISCO-CIRCUIT-INTERFACE-MIB</td> <td>CISCO-VLAN-MEMBERSHIP-MIB</td> </tr> <tr> <td>CISCO-ENTITY-VENDORTYPE-OKD-MIB</td> <td>CISCO-VTP-MIB</td> </tr> </table>	BRIDGE-MIB	CISCO-SNMP-TARGET-EXT-MIB	CISCO-AUTH-FRAMEWORK-MIB	CISCO-STACKMAKER-MIB	CISCO-BGP4-MIB, BGP4-MIB	CISCO-MEMORY-POOL-MIB	CISCO-BRIDGE-EXT-MIB	CISCO-STP-EXTENSIONS-MIB	CISCO-BULK-FILE-MIB	CISCO-SYSLOG-MIB	CISCO-CABLE-DIAG-MIB	CISCO-TCP-MIB	CISCO-CALLHOME-MIB	CISCO-UDLD-MIB	CISCO-CEF-MIB	CISCO-VLANHFTABLE-RELATIONSHIP-MIB	CISCO-CIRCUIT-INTERFACE-MIB	CISCO-VLAN-MEMBERSHIP-MIB	CISCO-ENTITY-VENDORTYPE-OKD-MIB	CISCO-VTP-MIB
BRIDGE-MIB	CISCO-SNMP-TARGET-EXT-MIB																				
CISCO-AUTH-FRAMEWORK-MIB	CISCO-STACKMAKER-MIB																				
CISCO-BGP4-MIB, BGP4-MIB	CISCO-MEMORY-POOL-MIB																				
CISCO-BRIDGE-EXT-MIB	CISCO-STP-EXTENSIONS-MIB																				
CISCO-BULK-FILE-MIB	CISCO-SYSLOG-MIB																				
CISCO-CABLE-DIAG-MIB	CISCO-TCP-MIB																				
CISCO-CALLHOME-MIB	CISCO-UDLD-MIB																				
CISCO-CEF-MIB	CISCO-VLANHFTABLE-RELATIONSHIP-MIB																				
CISCO-CIRCUIT-INTERFACE-MIB	CISCO-VLAN-MEMBERSHIP-MIB																				
CISCO-ENTITY-VENDORTYPE-OKD-MIB	CISCO-VTP-MIB																				

Description	Specification	Standards
CISCO-CONTEXT-MAPPING-MIB	EtherLike-MIB	
CISCO-DEVICE-LOCATION-MIB	HC-RMON-MIB	
CISCO-DHCP-SNOOPING-MIB	IEEE8021-PAE-MIB	
CISCO-EIGRP-MIB	IEEE8023-LAG-MIB	
CISCO-EMBEDDED-EVENT-MGR-MIB	IF-MIB	
CISCO-ENTITY-FRU-CONTROL-MIB	IGMP-MIB	
CISCO-ENTITY-SENSOR-MIB	IGMP-STD-MIB	
ENTITY-MIB	IP-FORWARD-MIB	
CISCO-ERR-DISABLE-MIB	IP-MIB	
CISCO-CONFIG-COPY-MIB	IPMRROUTE-STD-MIB	
CISCO-FLOW-MONITOR-MIB	LLDP-EXT-MED-MIB	
CISCO-FTP-CLIENT-MIB	LLDP-MIB	
CISCO-HSRP-EXT-MIB	NOTIFICATION-LOG-MIB	
CISCO-HSRP-MIB	OLD-CISCO-MEMORY-MIB	
CISCO-IETF-ISIS-MIB	CISCO-CDP-MIB	
CISCO-IF-EXTENSION-MIB	POWER-ETHERNET-MIB	
CISCO-IGMP-FILTER-MIB	RMON2-MIB	
CISCO-CONFIG-MAN-MIB	RMON-MIB	
CISCO-IP-CBR-METRICS-MIB	SNMP-COMMUNITY-MIB	
CISCO-IPMRROUTE-MIB	SNMP-FRAMEWORK-MIB	
CISCO-IP-STAT-MIB	SNMP-MPD-MIB	
CISCO-IP-URPF-MIB	SNMP-NOTIFICATION-MIB	
CISCO-L2L3-INTERFACE-CONFIG-MIB	SNMP-PROXY-MIB	
CISCO-LAG-MIB	SNMP-TARGET-MIB	
CISCO-LICENSE-MGMT-MIB	SNMP-USM-MIB	
CISCO-MAC-AUTH-BYPASS-MIB	SNMPV2-MIB	
CISCO-MAC-NOTIFICATION-MIB	SNMP-VIEW-BASED-ACM-MIB	
CISCO-MDI-METRICS-MIB	TCP-MIB	
CISCO-FLASH-MIB	UDP-MIB	
CISCO-OSPF-MIB	CISCO-IMAGE-MIB	
CISCO-OSPF-TRAP-MIB	CISCO-STACKWISE-MIB	
CISCO-PAE-MIB	CISCO-ENVMON-MIB	
CISCO-PAGP-MIB		
CISCO-PIM-MIB		
CISCO-PING-MIB		
CISCO-PORT-QOS-MIB		
CISCO-PORT-SECURITY-MIB		
CISCO-PORT-STORM-CONTROL-MIB		
CISCO-POWER-ETHERNET-EXT-MIB		
CISCO-PRIVATE-VLAN-MIB		
CISCO-PROCESS-MIB		
CISCO-PRODUCTS-MIB		
CISCO-RF-MIB		
CISCO-RTP-METRICS-MIB		
CISCO-RTTMON-MIB		
Standards	IEEE 802.1a	RMON I and II standards
	IEEE 802.1w	SNMPv1, SNMPv2c, and SNMPv3
	IEEE 802.1x	
	IEEE 802.3ae for 10G SKU	
	IEEE 802.3ae, IEEE 802.3ba on the 40G SKU	
	IEEE 802.1x-Rev	
	IEEE 802.3ad	
	IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX and 1000BASE-T ports	

Description	Specification
	IEEE 802.1D Spanning Tree Protocol
	IEEE 802.1p CoS prioritization
	IEEE 802.1Q VLAN
	IEEE 802.3.10BASE-T specification
	IEEE 802.3u 100BASE-TX specification
	IEEE 802.3ab 1000BASE-T specification
	IEEE 802.3z 1000BASE-X specification

Pending final verification.

Safety and compliance

Table 12 lists the safety and compliance information for the Cisco Catalyst 9500 Series.

Table 12. Safety and compliance information

Description	Specification
Safety certifications	UL 60950-1
	CAN/CSA-C22.2 No. 60950-1
	EN 60950-1
	IEC 60950-1
	AS/NZS 60950-1
EMI and EMC compliance	GB4943
	47CFR Part 15 (CFR 47) Class A
	AS/NZS CISPR22 Class A
	CISPR22 Class A
	EN55022 Class A
	ICES003 Class A
	VCCI Class A
	EN61000-3-2
	EN61000-3-3
	KN22 Class A
	CNS13438 Class A
	EN50082-1
	EN61000-6-1
	EN55024
	CISPR24
	EN300388
	KN24
KN 61000-4 series	

Cisco enhanced limited lifetime hardware warranty

The Cisco Catalyst 9500 Series Switches come with an enhanced limited Lifetime Warranty (E-LLW) that includes Next-Business-Day (NBD) delivery of replacement hardware where available and 90 days of 8x5 Cisco Technical Assistance Center (TAC) support. Your formal warranty statement, including the warranty applicable to Cisco software, appears in the information packet that accompanies your Cisco product. We encourage you to carefully review the warranty statement shipped with your specific product before use. Cisco reserves the right to refund the purchase price as its exclusive warranty remedy. For further information about warranty terms, visit <https://www.cisco.com/go/warranty>.

Table 13 provides information about the E-LLW.

Table 13. E-LLW Details

	Cisco E-LLW
Devices covered	Applies to Cisco Catalyst 9500 Series Switches.
Warranty duration	As long as the original customer owns the product.
End-of-life policy	In the event of discontinuance of product manufacture, Cisco warranty support is limited to 5 years from the announcement of discontinuance.
Hardware replacement	Cisco or its service center will use commercially reasonable efforts to ship a replacement for NBD delivery, where available. Otherwise, a replacement will be shipped within 10 working days after receipt of the Return Materials Authorization (RMA) request. Actual delivery times might vary depending on customer location.
Effective date	Hardware warranty commences from the date of shipment to customer (and in case of resale by a Cisco reseller, not more than 90 days after original shipment by Cisco).
TAC support	Cisco will provide during business hours, 8 hours per day, 5 days per week, basic configuration, diagnosis, and troubleshooting of device-level problems for up to a 90-day period from the date of shipment of the originally purchased Cisco Catalyst 9500 Series product. This support does not include solution or network-level support beyond the specific device under consideration.
Cisco.com access	Warranty allows guest access only to Cisco.com.

Cisco and partner services for next-generation Cisco catalyst fixed switches

Cisco and partner services offer various personalized services to enable IoT, cloud and secure networks. You can purchase advanced services designed to meet your business needs and help you maintain high-quality network performance while controlling operational costs. Please refer to Table 14 for more information on Cisco's Technical Services available for the Cisco Catalyst 9500 Series Switches.

Table 14. Technical services

Cisco Technical Services
Cisco Smart Net Total Care¹ Service <ul style="list-style-type: none"> • Around-the-clock, global access to the Cisco TAC • Unrestricted access to the extensive Cisco.com knowledge base and tools • NBD, 8x5x4, 24x7x4, and 24x7x2 advance hardware replacement and onsite parts replacement and installation available • Ongoing operating system software updates within the licensed feature set² • Proactive diagnostics and real-time alerts on Smart Call Home-enabled devices
Cisco Smart Foundation Service <ul style="list-style-type: none"> • NBD advance hardware replacement is available • Access during business hours to Small and Medium-sized Business (SMB) TAC (access levels vary by region) • Access to Cisco.com SMB knowledge base • Online technical resources through Smart Foundation portal • Operating system software bug fixes and patches
Cisco SP Base Service <ul style="list-style-type: none"> • Around-the-clock, global access to the Cisco TAC • Registered access to Cisco.com • NBD, 8x5x4, 24x7x4, and 24x7x2 advance hardware replacement; return to factory option available² • Ongoing operating system software updates¹
Cisco Focused Technical Support Services <ul style="list-style-type: none"> • Three levels of premium, high-touch services are available: <ul style="list-style-type: none"> • Cisco High-Touch Operations Management Service • Cisco High-Touch Technical Support Service • Cisco High-Touch Engineering Service • Valid Cisco Smart Net Total Care or SP Base contracts are required on all network equipment

¹ Cisco operating system updates include the following: maintenance releases, minor updates, and major updates within the licensed feature set.

² Advance hardware replacement is available in various service-level combinations. For example, 6x5xNBD indicates that shipment will be initiated during the standard 8-hour business day, 5 days a week (the generally accepted business days within the relevant region), with NBD delivery. Where NBD is not available, same-day shipping is provided. Restrictions apply. For details, review the appropriate service descriptions.

[Learn more about available services.](#)

Software policy for Cisco Catalyst 9500 Series Switches

[Cisco ONE Software for Access Switching](#) is available for the Cisco Catalyst 9500.

Cisco ONE Software for Access Switching offers comprehensive solutions for the enterprise campus and branch offices. Cisco ONE for Access Switching introduces a simpler and more economical way to deploy access, aggregation, and core switches across enterprise campus and branch locations.

The Cisco ONE Subscription for Switching offer delivers an unbound network on an open and extensible architecture to help you navigate the digital journey. This subscription offer simplifies the buying process and includes lower initiation costs and flexible terms. It includes: Cisco ONE Advantage with full Cisco Digital Network Architecture (DNA) capabilities and Cisco Software-Defined Access (SD-Access).

For ordering information for Cisco ONE Software for the Cisco Catalyst 9500, go to <https://www.cisco.com/c/en/us/products/software/one-access/switching-part-numbers.html>.

Software policy for network stack components

Customers with the Network Essential Stack and Network Advantage Stack software feature sets will be provided with maintenance updates and bug fixes. These are designed to maintain compliance of the software with published specifications, release notes, and industry standards as long as the original end user continues to own or use the product or for up to one year from the end-of-sale date for the product, whichever occurs earlier.

Cisco Embedded Support for Cisco DNA term components

Cisco Embedded Support delivers the right support for Cisco software products and suites. It will keep your business applications performing as expected and protect your investment. Cisco Embedded Support for the DNA Essentials and DNA Advantage term components is included as part of the switch value. Embedded Support provides access to TAC support, major software updates, maintenance and minor software releases, and the Cisco Software Support site, for increased productivity with anytime access.

Ordering information

To place an order, visit the Cisco Ordering home page at:

https://www.cisco.com/en/US/ordering/or13/or8/order_customer_help/how_to_order_listing.html.

Table 15 lists ordering information for the Cisco Catalyst 9500 Series.

Table 15. Ordering information

Product Number	Product Description
C9500-24Q-E	Cisco Catalyst 9500 24-port 40G switch, NW Ess. License
C9500-24Q-A	Cisco Catalyst 9500 24-port 40G switch, NW Adv. License
C9500-12Q-E	Cisco Catalyst 9500 12-port 40G switch, NW Ess. License
C9500-12Q-A	Cisco Catalyst 9500 12-port 40G switch, NW Adv. License
C9500-40X-E	Cisco Catalyst 9500 40-port 1/10G switch, NW Ess. License

Product Number	Product Description
C9500-40X-A	Cisco Catalyst 9500 40-port 1/10G switch, NW Adv. License
C9500-NM-2Q	Cisco Catalyst 9500 2 x 40GE Network Module
C9500-NM-8X	Cisco Catalyst 9500 8 x 1/10GE Network Module
C9500-NM-2Q-S	Cisco Catalyst 9500 2 x 40GE Network Module Spare
C9500-NM-8X-S	Cisco Catalyst 9500 8 x 1/10GE Network Module Spare
C9500-48X-A	Cisco Catalyst 9500 40-port 1/10G switch, 8 x 10GE Network Module, NW Adv. License
C9500-48X-E	Cisco Catalyst 9500 40-port 1/10G switch, 8 x 10GE Network Module, NW Ess. License
C9500-40X-2Q-A	Cisco Catalyst 9500 40-port 1/10G switch, 2 x 40GE Network Module, NW Adv. License
C9500-40X-2Q-E	Cisco Catalyst 9500 40-port 1/10G switch, 2 x 40GE Network Module, NW Ess. License
DNA Term Licenses	
C9500-DNA-E-3Y	Catalyst 9500 NW & DNA Essentials, license (3Y)
C9500-DNA-E-5Y	Catalyst 9500 NW & DNA Essentials, license (5Y)
C9500-DNA-E-7Y	Catalyst 9500 NW & DNA Essentials, license (7Y)
C9500-DNA-A-3Y	Catalyst 9500 NW & DNA Advantage license (3Y)
C9500-DNA-A-5Y	Catalyst 9500 NW & DNA Advantage license (5Y)
C9500-DNA-A-7Y	Catalyst 9500 NW & DNA Advantage license (7Y)
C9500-DNA-L-E-3Y	Catalyst 9500 NW & DNA Essentials, low port density license (3Y) for 12P40G SKU
C9500-DNA-L-E-5Y	Catalyst 9500 NW & DNA Essentials, low port density license (5Y) for 12P40G SKU
C9500-DNA-L-E-7Y	Catalyst 9500 NW & DNA Essentials, low port density license (7Y) for 12P40G SKU
C9500-DNA-L-A-3Y	Catalyst 9500 NW & DNA Advantage low port density license (3Y) for 12P40G SKU
C9500-DNA-L-A-5Y	Catalyst 9500 NW & DNA Advantage low port density license (5Y) for 12P40G SKU
C9500-DNA-L-A-7Y	Catalyst 9500 NW & DNA Advantage low port density license (7Y) for 12P40G SKU
Power Supplies, Cables, and Fan for the Cisco Catalyst 9500 Series	
FAN-T4-R	Catalyst 9500 Type 4 front to back cooling Fan
PWR-C4-950WAC-R	950W AC Config 4 Power Supply front to back cooling
PWR-C4-950WAC-R/2	950W AC Config 4 Power Supply front to back cooling, Redundant
PWR-C4-BLANK	Catalyst 9500 power supply blank cover
CAB-C15-CBN-JP	Japan Cabinet Jumper Power Cord, 250 VAC 12A, C14-C15
CAB-TA-250V-JP	Japan 250V AC Type A Power Cable
CAB-TA-AP	Australia AC Type A Power Cable
CAB-TA-AR	Argentina AC Type A Power Cable
CAB-TA-DN	Denmark AC Type A Power Cable
CAB-TA-EU	Europe AC Type A Power Cable
CAB-TA-IN	India AC Type A Power Cable
CAB-TA-IS	Israel AC Type A Power Cable
CAB-TA-IT	Italy AC Type A Power Cable
CAB-TA-SW	Switzerland AC Type A Power Cable
CAB-TA-UK	United Kingdom AC Type A Power Cable
CAB-TA-NA	North America AC Type A Power Cable
CAB-C15-CBN	Cabinet Jumper Power Cord, 250 VAC 13A, C14-C15 Connectors
CAB-TA-JP	Japan AC Type A Power Cable

11/16/14

11/16/14

Wep

Handwritten mark resembling a stylized 'A' or 'E'.

Product Number	Product Description
Spares Accessory and Rack Mount Kits for the Cisco Catalyst 9500 Series	
C9500-ACC-KIT-19#	Accessory Kit for Cisco Catalyst 9500 Series - 19" rack mount
C9500-ACC-KIT-23#	Accessory Kit for Cisco Catalyst 9500 Series - 23" rack mount
C9500-APT-KIT#	Extension rails and brackets for four-point mounting for Cisco Catalyst 9500 Series
SSD-120G	Cisco pluggable USB3.0 SSD storage

For ordering information for Cisco ONE™ Software for the Cisco Catalyst 9500 Series Switches, go to <https://www.cisco.com/c/en/us/products/software/one-access/switching-part-numbers.html>.

Optics support

The Cisco Catalyst 9500 Series supports a wide range of optics. Because the list of supported optics is updated on a regular basis, please consult the tables available here for the latest compatibility information:

<https://www.cisco.com/c/en/us/support/interfaces-modules/transceiver-modules/products-device-support-tables-list.html>

Cisco Capital

Financing to help you achieve your objectives

Cisco Capital® financing can help you acquire the technology you need to achieve your objectives and stay competitive. We can help you reduce capital expenditures. Accelerate your growth. Optimize your investment dollars and Return On Investment (ROI). Cisco Capital financing gives you flexibility in acquiring hardware, software, services and complementary third-party equipment. And there's just one predictable payment. Cisco Capital is available in more than 100 countries. [Learn more.](#)

Handwritten signature or initials.

Handwritten mark resembling a stylized 'S' or '7'.



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV, Amsterdam,
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at <https://www.cisco.com/go/offices>.

© Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: <https://www.cisco.com/go/trademarks>. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)

CONFIDENTIAL

Handwritten signature and a circular stamp.

This site uses cookies for analytics, personalized content and ads. By continuing to browse this site, you agree to this use.

Learn more

Windows Server Catalog



Search

Go

Home Software Hardware SVVP

Home
Server

Software

- [Business Management](#)
- [Business Solutions](#)
- [Communications, Internet & Collaboration](#)
- [Engineering](#)
- [Enterprise Solutions](#)
- [Financial Applications](#)
- [Infrastructure Solutions](#)
- [Security](#)
- [Vertical Applications](#)
- [Other](#)

Hardware

- [Audio](#)
- [Bus Controllers and Ports](#)
- [Cameras, Video Capture and Streaming](#)
- [Graphics](#)
- [Input Devices](#)
- [Modems](#)
- [Monitors](#)
- [Networking](#)
- [Printers](#)
- [Scanners](#)
- [Security and File System Software](#)
- [Servers](#)
- [Storage](#)
- [Windows Server Compatible Hardware](#)



ProLiant ML110 Gen9
by Hewlett Packard Enterprise Company

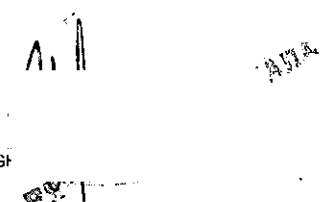
Compatible with the following versions of Microsoft Windows

	Windows Server 2016 x64	Certified for Windows • Hardware Assurance
	Windows Server 2012 R2 x64	Certified for Windows
	Windows Server 2012 x64	Certified for Windows
	Windows Server 2008 R2 x64	Certified for Windows

Submission Details

Baseboard manufacturer	HP
Baseboard product name	ProLiant ML110 Gen9
Firmware manufacturer	HP
Firmware release date	12/27/2015
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	256 GB (268435456 KB)
Processor socket count	1
System sleep states	S5
Tested memory size during certification	256 GB (274607493120 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-1620 v4 @ 3.50GHz
Tested processor speed	3496 MHz
Submission	1152921504626699532 (Mar 15 2016 8:02PM)
Baseboard manufacturer	HP
Baseboard product name	ProLiant ML110 Gen9
Firmware manufacturer	HP
Firmware release date	12/27/2015
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	256 GB (268435456 KB)
Processor socket count	1
System sleep states	S5
Tested memory size during certification	256 GB (274599641088 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-1620 v4 @ 3.50GHz
Tested processor speed	1190 MHz
Submission	1152921504626699488 (Mar 15 2016 7:59PM)
Baseboard manufacturer	HP
Baseboard product name	ProLiant ML110 Gen9
Firmware manufacturer	HP
Firmware release date	07/20/2016
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	1024 GB (1073741824 KB)
Processor socket count	1
System sleep states	S5
Tested memory size during certification	256 GB (274607493120 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-1620 v4 @ 3.50GHz
Tested processor speed	3496 MHz

Feedback



Submission [1152921504626699369](#)(Oct 2 2016 11:06PM)

Baseboard manufacturer HP

Baseboard product name ProLiant ML110 Gen9

Firmware manufacturer HP

Firmware release date 07/20/2016

Firmware type UEFI

Firmware version HP - 1

Maximum memory supported 1024 GB (1073741824 KB)

Processor socket count 1

System sleep states S5

Tested memory size during certification 256 GB (274607493120 bytes)

Tested memory speed during certification 2400 MHz

Tested processor name during certification Intel(R) Xeon(R) CPU E5-1650 v4 @ 3.60GHz

Tested processor speed 3596 MHz

Submission [1152921504626699281](#)(Sep 30 2016 4:47PM)

Baseboard manufacturer HP

Baseboard product name ProLiant ML110 Gen9

Firmware manufacturer HP

Firmware release date 05/05/2016

Firmware type UEFI

Firmware version HP - 1

Maximum memory supported 1024 GB (1073741824 KB)

Processor socket count 1

System sleep states S5

Tested memory size during certification 256 GB (274741706752 bytes)

Tested memory speed during certification 2400 MHz

Tested processor name during certification Intel(R) Xeon(R) CPU E5-1650 v4 @ 3.60GHz

Tested processor speed 3596 MHz

Submission [1152921504626693731](#)(Aug 25 2016 11:11PM)

Baseboard manufacturer HP

Baseboard product name ProLiant ML110 Gen9

Firmware manufacturer HP

Firmware release date 07/20/2016

Firmware type UEFI

Firmware version HP - 1

Maximum memory supported 1024 GB (1073741824 KB)

Processor socket count 1

System sleep states S5

Tested memory size during certification 256 GB (274607493120 bytes)

Tested memory speed during certification 2400 MHz

Tested processor name during certification Intel(R) Xeon(R) CPU E5-1620 v4 @ 3.50GHz

Tested processor speed 3496 MHz

Product and support URL <http://www.hpe.com/>

Submission [1901574](#)(Oct 2 2016 11:06PM)

Baseboard manufacturer HP

Baseboard product name ProLiant ML110 Gen9

Firmware manufacturer HP

Firmware release date 07/20/2016

Firmware type UEFI

Firmware version HP - 1

Maximum memory supported 1024 GB (1073741824 KB)

Processor socket count 1

System sleep states S5

Tested memory size during certification 256 GB (274607493120 bytes)

Tested memory speed during certification 2400 MHz

Tested processor name during certification Intel(R) Xeon(R) CPU E5-1650 v4 @ 3.60GHz

Tested processor speed 3596 MHz

Product and support URL <http://www.hpe.com>

Submission [1900489](#)(Sep 30 2016 4:47PM)

Baseboard manufacturer HP

Baseboard product name ProLiant ML110 Gen9

Firmware manufacturer HP

Firmware release date 05/05/2016

Firmware type UEFI

Windows Server Catalog

Firmware version	HP - 1
Maximum memory supported	1024 GB (1073741824 KB)
Processor socket count	1
System sleep states	S5
Tested memory size during certification	256 GB (274741706752 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-1650 v4 @ 3.60GHz
Tested processor speed	3596 MHz
Product and support URL	http://www.hpe.com
Submission	<u>1885986</u> (Aug 25 2016 11:11PM)
Baseboard manufacturer	HP
Baseboard product name	ProLiant ML110 Gen9
Firmware manufacturer	HP
Firmware release date	12/27/2015
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	256 GB (268435456 KB)
Processor socket count	1
System sleep states	S5
Tested memory size during certification	256 GB (274607493120 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-1620 v4 @ 3.50GHz
Tested processor speed	3496 MHz
Product and support URL	http://www.hpe.com
Submission	<u>1820416</u> (Mar 15 2016 8:02PM)
Baseboard manufacturer	HP
Baseboard product name	ProLiant ML110 Gen9
Firmware manufacturer	HP
Firmware release date	12/27/2015
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	256 GB (268435456 KB)
Processor socket count	1
System sleep states	S5
Tested memory size during certification	256 GB (274599641088 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-1620 v4 @ 3.50GHz
Tested processor speed	1190 MHz
Product and support URL	http://www.hpe.com
Submission	<u>1820414</u> (Mar 15 2016 7:59PM)
Baseboard manufacturer	HP
Baseboard product name	ProLiant ML110 Gen9
Firmware manufacturer	HP
Firmware release date	12/24/2014
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	512 GB (536870912 KB)
Processor socket count	1
System sleep states	S5
Tested memory size during certification	256 GB (274609065984 bytes)
Tested memory speed during certification	2133 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2623 v3 @ 3.00GHz
Tested processor speed	1198 MHz
Product and support URL	http://www.hpe.com
Submission	<u>1715448</u> (Nov 4 2015 8:13AM)
Baseboard manufacturer	HP
Baseboard product name	ProLiant ML110 Gen9
Firmware manufacturer	HP
Firmware release date	12/24/2014
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	512 GB (536870912 KB)
Processor socket count	1
System sleep states	S5

Feedback

DATA

000163

Windows Server Catalog

Tested memory size during certification	256 GB (274609065984 bytes)
Tested memory speed during certification	2133 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-1650 v3 @ 3.50GHz
Tested processor speed	3496 MHz
Product and support URL	http://www.hp.com
Submission	1715442(Nov 4 2015 8:04AM)

Merchandise pictures and descriptions are provided by the manufacturers of the merchandise. Microsoft makes no representations or warranties regarding the merchandise, manufacturers or compatibility of the merchandise depicted or described. Check system requirements before you purchase any merchandise or download any software described on this site. Use of all software is governed by the end user license agreement, if any, which accompanies or is included with the software.

© 2018 Microsoft Corporation. All rights reserved. | [Terms of use](#) | [Privacy statement](#) | [About this Site](#) | [Tell us what you think](#) | [FAQ](#)

Feedback



Windows Server Catalog



Search Go

Home Software Hardware SVVP

Home
Server

Software

- [Business Management](#)
- [Business Solutions](#)
- [Communications Internet & Collaboration](#)
- [Engineering](#)
- [Enterprise Solutions](#)
- [Financial Applications](#)
- [Infrastructure Solutions](#)
- [Security](#)
- [Vertical Applications](#)
- [Other](#)

Hardware

- [Audio](#)
- [Bus Controllers and Ports](#)
- [Cameras Video Capture and Streaming](#)
- [Graphics](#)
- [Input Devices](#)
- [Modems](#)
- [Monitors](#)
- [Networking](#)
- [Printers](#)
- [Scanners](#)
- [Security and File System Software](#)
- [Servers](#)
- [Storage](#)
- [Windows Server Compatible Hardware](#)



ProLiant ML150 Gen9
by Hewlett Packard Enterprise Company

Compatible with the following versions of Microsoft Windows

	Windows Server 2016 x64	Certified for Windows • Hardware Assurance
	Windows Server 2012 R2 x64	Certified for Windows
	Windows Server 2012 x64	Certified for Windows
	Windows Server 2008 R2 x64	Certified for Windows

Submission Details

Baseboard manufacturer	HP
Baseboard product name	ProLiant ML150 Gen9
Firmware manufacturer	HP
Firmware release date	05/05/2016
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	2048 GB (2147483648 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	512 GB (549619617792 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2640 v4 @ 2.40GHz
Tested processor speed	2397 MHz
Submission	1152921504626695302 (Sep 2 2016 3:02AM)
Baseboard manufacturer	HP
Baseboard product name	ProLiant ML150 Gen9
Firmware manufacturer	HP
Firmware release date	12/27/2015
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	512 GB (536870912 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	512 GB (549477543936 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2640 v4 @ 2.40GHz
Tested processor speed	2397 MHz
Submission	1152921504626694705 (Apr 14 2016 12:25AM)
Baseboard manufacturer	HP
Baseboard product name	ProLiant ML150 Gen9
Firmware manufacturer	HP
Firmware release date	12/27/2015
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	512 GB (536870912 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	448 GB (480765923328 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
Tested processor speed	2397 MHz

Feedback

Handwritten marks: two slanted lines and a large 'D' shape.

Handwritten text: '1152921504626694705' and 'HP'.

Submission [1152921504626693947](#)(Jun 21 2016 10:59PM)
 Baseboard manufacturer HP
 Baseboard product name ProLiant ML150 Gen9
 Firmware manufacturer HP
 Firmware release date 12/27/2015
 Firmware type UEFI
 Firmware version HP - 1
 Maximum memory supported 512 GB (536870912 KB)
 Processor socket count 2
 System sleep states S5
 Tested memory size during certification 512 GB (549477548032 bytes)
 Tested memory speed during certification 2400 MHz
 Tested processor name during certification Intel(R) Xeon(R) CPU E5-2680 v4@ 2.40GHz
 Tested processor speed 2400 MHz

Handwritten mark: a large stylized 'L' or '4' with a horizontal line extending to the right.

Submission [1152921504626693969](#)(Jun 21 2016 10:57PM)
 Baseboard manufacturer HP
 Baseboard product name ProLiant ML150 Gen9
 Firmware manufacturer HP
 Firmware release date 12/27/2015
 Firmware type UEFI
 Firmware version HP - 1
 Maximum memory supported 512 GB (536870912 KB)
 Processor socket count 2
 System sleep states S5
 Tested memory size during certification 512 GB (549477548032 bytes)
 Tested memory speed during certification 2400 MHz
 Tested processor name during certification Intel(R) Xeon(R) CPU E5-2640 v4 @ 2.40GHz
 Tested processor speed 2400 MHz

Submission [1152921504626693826](#)(Apr 7 2016 12:38AM)
 Baseboard manufacturer HP
 Baseboard product name ProLiant ML150 Gen9
 Firmware manufacturer HP
 Firmware release date 05/05/2016
 Firmware type UEFI
 Firmware version HP - 1
 Maximum memory supported 2048 GB (2147483648 KB)
 Processor socket count 2
 System sleep states S5
 Tested memory size during certification 512 GB (549619617792 bytes)
 Tested memory speed during certification 2400 MHz
 Tested processor name during certification Intel(R) Xeon(R) CPU E5-2640 v4 @ 2.40GHz
 Tested processor speed 2397 MHz
 Product and support URL <http://www.hpe.com>

Submission [1889461](#)(Sep 2 2016 3:02AM)
 Baseboard manufacturer HP
 Baseboard product name ProLiant ML150 Gen9
 Firmware manufacturer HP
 Firmware release date 12/27/2015
 Firmware type UEFI
 Firmware version HP - 1
 Maximum memory supported 512 GB (536870912 KB)
 Processor socket count 2
 System sleep states S5
 Tested memory size during certification 448 GB (480765923328 bytes)
 Tested memory speed during certification 2400 MHz
 Tested processor name during certification Intel(R) Xeon(R) CPU E5-2680 v4@ 2.40GHz
 Tested processor speed 2397 MHz
 Product and support URL <http://www.hpe.com>

Handwritten mark: two vertical lines.

Handwritten mark: a large stylized 'X' or 'N'.

Submission [1855633](#)(Jun 21 2016 10:59PM)
 Product and support URL <http://www.hpe.com/>
 Submission [1855632](#)(Jun 21 2016 10:57PM)
 Baseboard manufacturer HP
 Baseboard product name ProLiant ML150 Gen9
 Firmware manufacturer HP

Handwritten signature and date stamp: '11/11/16' and a signature.

Feedback

Firmware release date	12/27/2015
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	512 GB (536870912 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	512 GB (549477543936 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2640 v4 @ 2.40GHz
Tested processor speed	2397 MHz
Product and support URL	http://www.hp.com/
Submission	1831357 (Apr 14 2016 12:25AM)
Baseboard manufacturer	HP
Baseboard product name	ProLiant ML150 Gen9
Firmware manufacturer	HP
Firmware release date	12/27/2015
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	512 GB (536870912 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	512 GB (549477548032 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2640 v4 @ 2.40GHz
Tested processor speed	2400 MHz
Product and support URL	http://www.hp.com
Submission	1827897 (Apr 7 2016 12:38AM)
Baseboard manufacturer	HP
Baseboard product name	ProLiant ML150 Gen9
Firmware manufacturer	HP
Firmware release date	08/26/2014
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	1024 GB (1073741824 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	256 GB (274609065984 bytes)
Tested memory speed during certification	2133 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2637 v3 @ 3.50GHz
Tested processor speed	1188 MHz
Product and support URL	http://www.hp.com
Submission	1689318 (Nov 3 2015 11:50AM)
Baseboard manufacturer	HP
Baseboard product name	ProLiant ML150 Gen9
Firmware manufacturer	HP
Firmware release date	08/26/2014
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	1024 GB (1073741824 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	256 GB (274601213952 bytes)
Tested memory speed during certification	2133 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2637 v3 @ 3.50GHz
Tested processor speed	3500 MHz
Product and support URL	http://www.hp.com
Submission	1689011 (Nov 3 2015 11:47AM)

Merchandise pictures and descriptions are provided by the manufacturers of the merchandise. Microsoft makes no representations or warranties regarding the merchandise, manufacturers or compatibility of the merchandise depicted or described. Check system requirements before you purchase any merchandise or download any software described on this site. Use of all software is governed by the end user license agreement, if any, which accompanies or is included with the software.

000165

RECEIVED

Feedback

Handwritten mark resembling a stylized 'L' or '7' with a small loop at the top.

A single horizontal line.

A small checkmark or hook-shaped mark.



A single vertical line.

A complex handwritten mark consisting of several overlapping loops and a long tail extending downwards.

A small, rectangular, textured mark, possibly a stamp or a smudge.

A complex handwritten mark with multiple overlapping strokes, similar in style to the mark in the bottom left.

This site uses cookies for analytics, personalized content and ads. By continuing to browse this site, you agree to this use.

Learn more

Windows Server Catalog



Search

Go

Home

Software

Hardware

SVVP

Home
Server

Software

- [Business Management](#)
- [Business Solutions](#)
- [Communications Internet & Collaboration](#)
- [Engineering](#)
- [Enterprise Solutions](#)
- [Financial Applications](#)
- [Infrastructure Solutions](#)
- [Security](#)
- [Vertical Applications](#)
- [Other](#)

Hardware

- [Audio](#)
- [Bus Controllers and Ports](#)
- [Cameras Video Capture and Streaming](#)
- [Graphics](#)
- [Input Devices](#)
- [Modems](#)
- [Monitors](#)
- [Networking](#)
- [Printers](#)
- [Scanners](#)
- [Security and File System Software](#)
- [Servers](#)
- [Storage](#)
- [Windows Server Compatible Hardware](#)



ProLiant DL20 Gen9
by Hewlett Packard Enterprise Company

Compatible with the following versions of Microsoft Windows

	Windows Server 2016 x64	Certified for Windows • Hardware Assurance
	Windows Server 2012 R2 x64	Certified for Windows
	Windows Server 2012 x64	Certified for Windows

Submission Details

Baseboard manufacturer	
Baseboard product name	ProLiant DL20 Gen9
Firmware manufacturer	HP
Firmware release date	09/24/2015
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	64 GB (67108864 KB)
Processor socket count	1
System sleep states	S5
Tested memory size during certification	64 GB (68489764864 bytes)
Tested memory speed during certification	2133 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E3-1280 v5 @ 3.70GHz
Tested processor speed	3696 MHz
Submission	1152921504626698590 (Nov 17 2015 6:33PM)
Baseboard manufacturer	HP
Baseboard product name	ProLiant DL20 Gen9
Firmware manufacturer	HP
Firmware release date	05/06/2016
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	64 GB (67108864 KB)
Processor socket count	1
System sleep states	S5
Tested memory size during certification	64 GB (68623986688 bytes)
Tested memory speed during certification	2133 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E3-1280 v5 @ 3.70GHz
Tested processor speed	3696 MHz
Submission	1152921504626693611 (Aug 25 2016 6:35AM)
Baseboard manufacturer	HP
Baseboard product name	ProLiant DL20 Gen9
Firmware manufacturer	HP
Firmware release date	01/17/2017
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	64 GB (67108864 KB)
Processor socket count	1
System sleep states	S5
Tested memory size during certification	64 GB (68489801728 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E3-1280 v6 @ 3.30GHz
Tested processor speed	3912 MHz
Submission	1152921504626468370 (Apr 12 2017 7:06PM)

Feedback

000166

Handwritten notes and signatures, including a date stamp 'APR 12 2017'.

Baseboard manufacturer HP
 Baseboard product name ProLiant DL20 Gen9
 Firmware manufacturer HP
 Firmware release date 01/17/2017
 Firmware type UEFI
 Firmware version HP - 1
 Maximum memory supported 64 GB (67108864 KB)
 Processor socket count 1
 System sleep states S5
 Tested memory size during certification 64 GB (68489801728 bytes)
 Tested memory speed during certification 2400 MHz
 Tested processor name during certification Intel(R) Xeon(R) CPU E3-1280 v6 @ 3.90GHz
 Tested processor speed 3912 MHz
 Submission [1152921504826463643](#)(Apr 11 2017 12:26AM)

Handwritten mark: a large 'u' with a checkmark above it.

Baseboard manufacturer HP
 Baseboard product name ProLiant DL20 Gen9
 Firmware manufacturer HP
 Firmware release date 05/06/2016
 Firmware type UEFI
 Firmware version HP - 1
 Maximum memory supported 64 GB (67108864 KB)
 Processor socket count 1
 System sleep states S5
 Tested memory size during certification 64 GB (68623986688 bytes)
 Tested memory speed during certification 2133 MHz
 Tested processor name during certification Intel(R) Xeon(R) CPU E3-1280 v5 @ 3.70GHz
 Tested processor speed 3696 MHz
 Product and support URL <http://www.hp.com>
 Submission [1885393](#)(Aug 25 2016 6:35AM)

Baseboard manufacturer HP
 Baseboard product name ProLiant DL20 Gen9
 Firmware manufacturer HP
 Firmware release date 09/24/2015
 Firmware type UEFI
 Firmware version HP- 1
 Maximum memory supported 64 GB (67108864 KB)
 Processor socket count 1
 System sleep states S5
 Tested memory size during certification 64 GB (68489764864 bytes)
 Tested memory speed during certification 2133 MHz
 Tested processor name during certification Intel(R) Xeon(R) CPU E3-1280 v5 @ 3.70GHz
 Tested processor speed 3696 MHz
 Product and support URL <http://www.hp.com>
 Submission [1778706](#)(Nov 17 2015 8:33PM)

Merchandise pictures and descriptions are provided by the manufacturers of the merchandise. Microsoft makes no representations or warranties regarding the merchandise, manufacturers or compatibility of the merchandise depicted or described. Check system requirements before you purchase any merchandise or download any software described on this site. Use of all software is governed by the end user license agreement, if any, which accompanies or is included with the software.

Feedback

Handwritten marks: a large 'M' and a large 'D' with a checkmark above it.

Handwritten stamp: "RECEIVED"

Handwritten signature or initials.

This site uses cookies for analytics, personalized content and ads. By continuing to browse this site, you agree to this use.

Learn more

Windows Server Catalog



Search

[Home](#) [Software](#) [Hardware](#) [SVVP](#)

Server

Software

- [Business Management](#)
- [Business Solutions](#)
- [Communications, Internet & Collaboration](#)
- [Engineering](#)
- [Enterprise Solutions](#)
- [Financial Applications](#)
- [Infrastructure Solutions](#)
- [Security](#)
- [Vertical Applications](#)
- [Other](#)

Hardware

- [Audio](#)
- [Bus Controllers and Ports](#)
- [Cameras, Video Capture and Streaming](#)
- [Graphics](#)
- [Input Devices](#)
- [Modems](#)
- [Monitors](#)
- [Networking](#)
- [Printers](#)
- [Scanners](#)
- [Security and File System Software](#)
- [Servers](#)
- [Storage](#)
- [Windows Server Compatible Hardware](#)



ProLiant DL180 Gen9
by Hewlett Packard Enterprise Company

Compatible with the following versions of Microsoft Windows

	Windows Server 2016 x64	Certified for Windows • Hardware Assurance
	Windows Server 2012 R2 x64	Certified for Windows
	Windows Server 2012 x64	Certified for Windows
	Windows Server 2008 R2 x64	Certified for Windows

Submission Details

Baseboard manufacturer	HP
Baseboard product name	ProLiant DL180 Gen9
Firmware manufacturer	HP
Firmware release date	05/05/2016
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	2048 GB (2147483648 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	896 GB (961936478208 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2623 v4 @ 2.60GHz
Tested processor speed	2597 MHz
Submission	1152921504626696617 (Sep 9 2016 10:27AM)
Baseboard manufacturer	HP
Baseboard product name	ProLiant DL180 Gen9
Firmware manufacturer	HP
Firmware release date	05/05/2016
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	2048 GB (2147483648 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	896 GB (961936478208 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2623 v4 @ 2.60GHz
Tested processor speed	2597 MHz
Product and support URL	http://www.hp.com
Submission	1892683 (Sep 9 2016 10:27AM)
Baseboard manufacturer	ProLiant DL180 Gen9
Baseboard product name	ProLiant DL180 Gen9
Firmware manufacturer	HP
Firmware release date	08/26/2014
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	1024 GB (1073741824 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	512 GB (549486972928 bytes)
Tested memory speed during certification	2133 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2623 v3 @ 3.00GHz

Feedback

J

A 1



HP
EX 1/1
000167

Tested processor speed	1198 MHz
Product and support URL	http://www.hp.com
Submission	1686159 (Nov 3 2015 1:46PM)
Baseboard manufacturer	
Baseboard product name	ProLiant DL160 Gen9
Firmware manufacturer	HP
Firmware release date	08/26/2014
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	1024 GB (1073741824 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	512 GB (549479120896 bytes)
Tested memory speed during certification	2133 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2623 v3 @ 3.00GHz
Tested processor speed	3000 MHz
Product and support URL	http://www.hp.com
Submission	1686143 (Nov 3 2015 1:40PM)

Merchandise pictures and descriptions are provided by the manufacturers of the merchandise. Microsoft makes no representations or warranties regarding the merchandise, manufacturers or compatibility of the merchandise depicted or described. Check system requirements before you purchase any merchandise or download any software description. Use of all software is governed by the end user license agreement, if any, which accompanies or is included with the software.

Feedback

Handwritten marks resembling the letters 'AA' and 'UX'.

Handwritten scribbles and a large checkmark.

Handwritten signature and a stamp that reads 'ASSEMBLY'.

Windows Server Catalog



Search

Go

Home Software Hardware SVVP

Home
Server

Software

- [Business Management](#)
- [Business Solutions](#)
- [Communications Internet & Collaboration](#)
- [Engineering](#)
- [Enterprise Solutions](#)
- [Financial Applications](#)
- [Infrastructure Solutions](#)
- [Security](#)
- [Vertical Applications](#)
- [Other](#)

Hardware

- [Audio](#)
- [Bus Controllers and Ports](#)
- [Cameras Video Capture and Streaming](#)
- [Graphics](#)
- [Input Devices](#)
- [Modems](#)
- [Monitors](#)
- [Networking](#)
- [Printers](#)
- [Scanners](#)
- [Security and File System Software](#)
- [Servers](#)
- [Storage](#)
- [Windows Server Compatible Hardware](#)



ProLiant DL360 Gen9
by Hewlett Packard Enterprise Company

Compatible with the following versions of Microsoft Windows

	Windows Server 2016 x64	Certified for Windows • Hardware Assurance
	Windows Server 2012 R2 x64	Certified for Windows
	Windows Server 2012 x64	Certified for Windows
	Windows Server 2008 R2 x64	Certified for Windows

Submission Details

Baseboard manufacturer	HP
Baseboard product name	ProLiant DL360 Gen9
Firmware manufacturer	HP
Firmware release date	12/27/2015
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	3072 GB (3221225472 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	1536 GB (1649123393536 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2637 v4@ 3.50GHz
Tested processor speed	3500 MHz
Submission	1152921504626696847 (Feb 26 2016 6:59AM)
Baseboard manufacturer	HP
Baseboard product name	ProLiant DL360 Gen9
Firmware manufacturer	HP
Firmware release date	12/27/2015
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	3072 GB (3221225472 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	1536 GB (1649131245568 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2637 v4@ 3.50GHz
Tested processor speed	3496 MHz
Submission	1152921504626696823 (Feb 26 2016 6:56AM)
Baseboard manufacturer	HP
Baseboard product name	ProLiant DL360 Gen9
Firmware manufacturer	HP
Firmware release date	12/27/2015
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	3072 GB (3221225472 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	3072 GB (3298398687232 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2637 v4@ 3.50GHz
Tested processor speed	3496 MHz

Feedback

J

11

11

HP
 1152921504626696847
 1152921504626696823
 1152921504626696847

Submission [1152921504626696020](#)(Apr 21 2016 4:02PM)
 Baseboard manufacturer HP
 Baseboard product name ProLiant DL380 Gen9
 Firmware manufacturer HP
 Firmware release date 06/02/2016
 Firmware type UEFI
 Firmware version HP - 1
 Maximum memory supported 3072 GB (3221225472 KB)
 Processor socket count 2
 System sleep states S5
 Tested memory size during certification 3072 GB (3298398687232 bytes)
 Tested memory speed during certification 2400 MHz
 Tested processor name during certification Intel(R) Xeon(R) CPU E5-2637 v4 @ 3.50GHz
 Tested processor speed 3496 MHz



Submission [1152921504626692817](#)(Aug 21 2016 7:34AM)
 Baseboard manufacturer HP
 Baseboard product name ProLiant DL380 Gen9
 Firmware manufacturer HP
 Firmware release date 06/02/2016
 Firmware type UEFI
 Firmware version HP - 1
 Maximum memory supported 3072 GB (3221225472 KB)
 Processor socket count 2
 System sleep states S5
 Tested memory size during certification 3072 GB (3298398687232 bytes)
 Tested memory speed during certification 2400 MHz
 Tested processor name during certification Intel(R) Xeon(R) CPU E5-2637 v4 @ 3.50GHz
 Tested processor speed 3496 MHz
 Product and support URL <http://www.hpe.com>

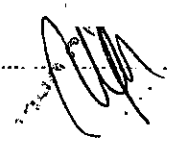


Submission [1883815](#)(Aug 21 2016 7:34AM)
 Baseboard manufacturer HP
 Baseboard product name ProLiant DL360 Gen9
 Firmware manufacturer HP
 Firmware release date 12/27/2015
 Firmware type UEFI
 Firmware version HP - 1
 Maximum memory supported 3072 GB (3221225472 KB)
 Processor socket count 2
 System sleep states S5
 Tested memory size during certification 3072 GB (3298398687232 bytes)
 Tested memory speed during certification 2400 MHz
 Tested processor name during certification Intel(R) Xeon(R) CPU E5-2637 v4 @ 3.50GHz
 Tested processor speed 3496 MHz
 Product and support URL <http://www.hpe.com>

Submission [1833922](#)(Apr 21 2016 4:02PM)
 Baseboard manufacturer HP
 Baseboard product name ProLiant DL360 Gen9
 Firmware manufacturer HP
 Firmware release date 12/27/2015
 Firmware type UEFI
 Firmware version HP - 1
 Maximum memory supported 3072 GB (3221225472 KB)
 Processor socket count 2
 System sleep states S5
 Tested memory size during certification 1536 GB (1649123393536 bytes)
 Tested memory speed during certification 2400 MHz
 Tested processor name during certification Intel(R) Xeon(R) CPU E5-2637 v4 @ 3.50GHz
 Tested processor speed 3500 MHz
 Product and support URL <http://www.hp.com>



Submission [1816621](#)(Feb 26 2016 6:59AM)
 Baseboard manufacturer HP
 Baseboard product name ProLiant DL360 Gen9
 Firmware manufacturer HP
 Firmware release date 12/27/2015



Feedback



Handwritten scribbles in the top left margin.

Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	3072 GB (3221225472 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	1536 GB (1649131245568 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2637 v4@ 3.50GHz
Tested processor speed	3496 MHz
Product and support URL	http://www.hp.com
Submission	1816620 (Feb 26 2016 6:56AM)
Baseboard manufacturer	
Baseboard product name	ProLiant DL360 Gen9
Firmware manufacturer	HP
Firmware release date	12/24/2014
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	1536 GB (1610612736 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	1024 GB (1099377004544 bytes)
Tested memory speed during certification	2133 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2637 v3 @ 3.50GHz
Tested processor speed	1188 MHz
Product and support URL	http://www.hp.com
Submission	1720012 (Nov 4 2015 9:09AM)
Baseboard manufacturer	
Baseboard product name	ProLiant DL360 Gen9
Firmware manufacturer	HP
Firmware release date	12/24/2014
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	1536 GB (1610612736 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	1024 GB (1099369152512 bytes)
Tested memory speed during certification	2133 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2637 v3 @ 3.50GHz
Tested processor speed	3500 MHz
Product and support URL	http://www.hp.com
Submission	1720010 (Nov 4 2015 8:59AM)

Feedback

Merchandise pictures and descriptions are provided by the manufacturers of the merchandise. Microsoft makes no representations or warranties regarding the merchandise, manufacturers or compatibility of the merchandise depicted or described. Check system requirements before you purchase any merchandise or download any software described on this site. Use of all software is governed by the end user license agreement, if any, which accompanies or is included with the software.

Handwritten 'AA' in the bottom left margin.

Handwritten scribbles in the bottom left margin.

Handwritten 'PENDING' stamp.

Handwritten scribbles in the bottom right margin.

Handwritten '169' in the bottom right margin.



u

~~u~~

1970-1971

1970-1971

Windows Server Catalog



Search Go

[Home](#) [Software](#) [Hardware](#) [SVP](#)

[Home](#)
[Server](#)

Software

- [Business Management](#)
- [Business Solutions](#)
- [Communications, Internet & Collaboration](#)
- [Engineering](#)
- [Enterprise Solutions](#)
- [Financial Applications](#)
- [Infrastructure Solutions](#)
- [Security](#)
- [Vertical Applications](#)
- [Other](#)

Hardware

- [Audio](#)
- [Bus Controllers and Ports](#)
- [Cameras, Video Capture and Streaming](#)
- [Graphics](#)
- [Input Devices](#)
- [Modems](#)
- [Monitors](#)
- [Networking](#)
- [Printers](#)
- [Scanners](#)
- [Security and File System Software](#)
- [Servers](#)
- [Storage](#)
- [Windows Server Compatible Hardware](#)



ProLiant DL160 Gen9
by Hewlett Packard Enterprise Company

Compatible with the following versions of Microsoft Windows

	Windows Server 2016 x64	Certified for Windows • Hardware Assurance
	Windows Server 2012 R2 x64	Certified for Windows
	Windows Server 2012 x64	Certified for Windows
	Windows Server 2008 R2 x64	Certified for Windows

Submission Details

Baseboard manufacturer	HP
Baseboard product name	ProLiant DL180 Gen9
Firmware manufacturer	HP
Firmware release date	05/05/2016
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	2048 GB (2147483648 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	896 GB (961936478208 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2623 v4 @ 2.60GHz
Tested processor speed	2597 MHz
Submission	1152921504626696617 (Sep 9 2016 10:27AM)
Baseboard manufacturer	HP
Baseboard product name	ProLiant DL160 Gen9
Firmware manufacturer	HP
Firmware release date	12/27/2015
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	1024 GB (1073741824 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	1024 GB (1099241213952 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2623 v4@ 2.60GHz
Tested processor speed	2597 MHz
Submission	1152921504626695770 (Feb 21 2016 9:58PM)
Baseboard manufacturer	HP
Baseboard product name	ProLiant DL160 Gen9
Firmware manufacturer	HP
Firmware release date	12/27/2015
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	1024 GB (1073741824 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	1024 GB (1099233361920 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2623 v4 @ 2.60GHz
Tested processor speed	2600 MHz
Submission	1152921504626695752 (Feb 21 2016 9:56PM)
Baseboard manufacturer	HP
Baseboard product name	ProLiant DL180 Gen9
Firmware manufacturer	HP

Feedback

Handwritten mark resembling a large 'S' or '5'.

Handwritten number '11'.

Large handwritten signature or scribble.

Handwritten text 'EAT/WHATA'.

Handwritten text 'EAT/WHATA'.

Handwritten number '170'.

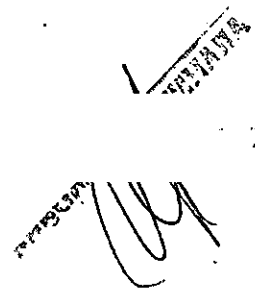
Firmware release date 05/05/2016
 Firmware type UEFI
 Firmware version HP - 1
 Maximum memory supported 2048 GB (2147483648 KB)
 Processor socket count 2
 System sleep states S5
 Tested memory size during certification 896 GB (961936478208 bytes)
 Tested memory speed during certification 2400 MHz
 Tested processor name during certification Intel(R) Xeon(R) CPU E5-2623 v4 @ 2.60GHz
 Tested processor speed 2597 MHz
 Product and support URL <http://www.hpe.com>
 Submission [1892683\(Sep 9 2016 10:27AM\)](#)
 Submission [1814122\(Feb 21 2016 9:58PM\)](#)
 Product and support URL <http://www.hpe.com>
 Submission [1814120\(Feb 21 2016 9:56PM\)](#)

Baseboard manufacturer
 Baseboard product name ProLiant DL180 Gen9
 Firmware manufacturer HP
 Firmware release date 08/26/2014
 Firmware type UEFI
 Firmware version HP - 1
 Maximum memory supported 1024 GB (1073741824 KB)
 Processor socket count 2
 System sleep states S5
 Tested memory size during certification 512 GB (549488972928 bytes)
 Tested memory speed during certification 2133 MHz
 Tested processor name during certification Intel(R) Xeon(R) CPU E5-2623 v3 @ 3.00GHz
 Tested processor speed 1198 MHz
 Product and support URL <http://www.hp.com>
 Submission [1686159\(Nov 3 2015 1:46PM\)](#)

Baseboard manufacturer
 Baseboard product name ProLiant DL160 Gen9
 Firmware manufacturer HP
 Firmware release date 08/26/2014
 Firmware type UEFI
 Firmware version HP - 1
 Maximum memory supported 1024 GB (1073741824 KB)
 Processor socket count 2
 System sleep states S5
 Tested memory size during certification 512 GB (549479120896 bytes)
 Tested memory speed during certification 2133 MHz
 Tested processor name during certification Intel(R) Xeon(R) CPU E5-2623 v3 @ 3.00GHz
 Tested processor speed 3000 MHz
 Product and support URL <http://www.hp.com>
 Submission [1688143\(Nov 3 2015 1:40PM\)](#)

Feedback

Merchandise pictures and descriptions are provided by the manufacturers of the merchandise. Microsoft makes no representations or warranties regarding the merchandise, manufacturers or compatibility of the merchandise depicted or described. Check system requirements before you purchase any merchandise or download any software described on this site. Use of all software is governed by the end user license agreement, if any, which accompanies or is included with the software.



This site uses cookies for analytics, personalized content and ads. By continuing to browse this site, you agree to this use.

Learn more

Windows Server Catalog



Search Go

Home Software Hardware SVVP

Home
Server

Software

- [Business Management](#)
- [Business Solutions](#)
- [Communications Internet & Collaboration](#)
- [Engineering](#)
- [Enterprise Solutions](#)
- [Financial Applications](#)
- [Infrastructure Solutions](#)
- [Security](#)
- [Vertical Applications](#)
- [Other](#)

Hardware

- [Audio](#)
- [Bus Controllers and Ports](#)
- [Cameras Video Capture and Streaming](#)
- [Graphics](#)
- [Input Devices](#)
- [Modems](#)
- [Monitors](#)
- [Networking](#)
- [Printers](#)
- [Scanners](#)
- [Security and File System Software](#)
- [Servers](#)
- [Storage](#)
- [Windows Server Compatible Hardware](#)



ProLiant BL460c Gen9
by Hewlett Packard Enterprise Company

Compatible with the following versions of Microsoft Windows

	Windows Server 2016 x64	Certified for Windows • Hardware Assurance
	Windows Server 2012 R2 x64	Certified for Windows
	Windows Server 2012 x64	Certified for Windows
	Windows Server 2008 R2 x64	Certified for Windows

Submission Details

Baseboard manufacturer	
Baseboard product name	ProLiant BL460c Gen9
Firmware manufacturer	HP
Firmware release date	05/05/2016
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	2048 GB (2147483648 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	1536 GB (1649131245568 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2637 v4 @ 3.50GHz
Tested processor speed	3496 MHz
Submission	1152921504626694006 (Aug 27 2016 8:35PM)

Baseboard manufacturer	
Baseboard product name	ProLiant BL460c Gen9
Firmware manufacturer	HP
Firmware release date	05/05/2016
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	2048 GB (2147483648 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	1536 GB (1649123393536 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2637 v4@ 3.50GHz
Tested processor speed	3500 MHz
Submission	1152921504626691963 (Jun 1 2016 9:16AM)

Baseboard manufacturer	
Baseboard product name	ProLiant BL460c Gen9
Firmware manufacturer	HP
Firmware release date	05/05/2016
Firmware type	UEFI
Firmware version	HP - 1
Maximum memory supported	2048 GB (2147483648 KB)
Processor socket count	2
System sleep states	S5
Tested memory size during certification	1536 GB (1649131245568 bytes)
Tested memory speed during certification	2400 MHz
Tested processor name during certification	Intel(R) Xeon(R) CPU E5-2637 v4@ 3.50GHz
Tested processor speed	3496 MHz

Feedback

AA
[Handwritten signature]

[Handwritten signature]

11/01/17

Submission [1152921504626691418](#)(May 26 2016 2:43PM)

Baseboard manufacturer ProLiant BL460c Gen9

Baseboard product name ProLiant BL460c Gen9

Firmware manufacturer HP

Firmware release date 05/05/2016

Firmware type UEFI

Firmware version HP - 1

Maximum memory supported 2048 GB (2147483648 KB)

Processor socket count 2

System sleep states S5

Tested memory size during certification 1536 GB (1649131245568 bytes)

Tested memory speed during certification 2400 MHz

Tested processor name during certification Intel(R) Xeon(R) CPU E5-2637 v4 @ 3.50GHz

Tested processor speed 3496 MHz

Product and support URL <http://www.hpe.com>

Submission [1886368](#)(Aug 27 2016 8:35PM)

Baseboard manufacturer ProLiant BL460c Gen9

Baseboard product name ProLiant BL460c Gen9

Firmware manufacturer HP

Firmware release date 05/05/2016

Firmware type UEFI

Firmware version HP - 1

Maximum memory supported 2048 GB (2147483648 KB)

Processor socket count 2

System sleep states S5

Tested memory size during certification 1536 GB (1649123393536 bytes)

Tested memory speed during certification 2400 MHz

Tested processor name during certification Intel(R) Xeon(R) CPU E5-2637 v4@ 3.50GHz

Tested processor speed 3500 MHz

Product and support URL <http://hpe.com>

Submission [1846685](#)(Jun 1 2016 9:16AM)

Baseboard manufacturer ProLiant BL460c Gen9

Baseboard product name ProLiant BL460c Gen9

Firmware manufacturer HP

Firmware release date 05/05/2016

Firmware type UEFI

Firmware version HP - 1

Maximum memory supported 2048 GB (2147483648 KB)

Processor socket count 2

System sleep states S5

Tested memory size during certification 1536 GB (1649131245568 bytes)

Tested memory speed during certification 2400 MHz

Tested processor name during certification Intel(R) Xeon(R) CPU E5-2637 v4@ 3.50GHz

Tested processor speed 3496 MHz

Product and support URL <http://hpe.com>

Submission [1845294](#)(May 26 2016 2:43PM)

Baseboard manufacturer ProLiant BL460c Gen9

Baseboard product name ProLiant BL460c Gen9

Firmware manufacturer HP

Firmware release date 12/24/2014

Firmware type UEFI

Firmware version HP - 1

Maximum memory supported 1024 GB (1073741824 KB)

Processor socket count 2

System sleep states S5

Tested memory size during certification 768 GB (824499097600 bytes)

Tested memory speed during certification 2133 MHz

Tested processor name during certification Intel(R) Xeon(R) CPU E5-2637 v3 @ 3.50GHz

Tested processor speed 3496 MHz

Product and support URL <http://www.hp.com>

Merchandise pictures and descriptions are provided by the manufacturers of the merchandise. Microsoft makes no representations or warranties regarding the merchandise, manufacturers or compatibility of the merchandise depicted or described. Check system requirements before you purchase any merchandise or download any software described on this site. Use of all software is governed by the end user license agreement, if any, which accompanies or is included with the software.

Feedback



This site uses cookies for analytics, personalized content and ads. By continuing to browse this site, you agree to this use.

Learn more

Windows Server Catalog



Search

Go

Home Software Hardware SVVP

Home
Server



Software

- [Business Management](#)
- [Business Solutions](#)
- [Communications Internet & Collaboration](#)
- [Engineering](#)
- [Enterprise Solutions](#)
- [Financial Applications](#)
- [Infrastructure Solutions](#)
- [Security](#)
- [Vertical Applications](#)
- [Other](#)

Hardware

- [Audio](#)
- [Bus Controllers and Ports](#)
- [Cameras Video Capture and Streaming](#)
- [Graphics](#)
- [Input Devices](#)
- [Modems](#)
- [Monitors](#)
- [Networking](#)
- [Printers](#)
- [Scanners](#)
- [Security and File System Software](#)
- [Servers](#)
- [Storage](#)
- [Windows Server Compatible Hardware](#)



HP MSA 1040 SAN Storage
by Hewlett-Packard Company

Compatible with the following versions of Microsoft Windows

- Windows Server 2012 R2 x64
Certified for Windows
 - iSCSI Interface
 - Multi-Path I/O
 - RAID
- Windows Server 2012 x64
Certified for Windows
 - iSCSI Interface
 - Multi-Path I/O
 - RAID
- Windows Server 2008 R2 x64
Certified for Windows
 - FibreChannel Interface
 - iSCSI Interface
 - Multi-Path I/O
 - RAID
- Windows Server 2008 x64
Certified for Windows

Feedback

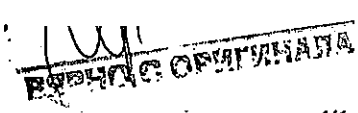
Submission Details

Firmware version	GL200
Filter driver version	N/A
Driver Version	N/A
Storage_bus_type	Fibre Channel
MPIO	1
VDS_Provider	0
Submission	1696448(Dec 5 2014 1:52PM)
Submission	1696447(Dec 5 2014 1:49PM)
Firmware version	GL200
Filter driver version	N/A
Driver Version	N/A
Storage_bus_type	iSCSI
MPIO	1
VDS_Provider	0
Submission	1696446(Dec 5 2014 1:44PM)
Firmware version	GL200
Filter driver version	N/A
Driver Version	N/A
Submission	1696445(Dec 5 2014 1:40PM)
Firmware version	GL200
Filter driver version	N/A
Driver Version	N/A
Submission	1696440(Dec 5 2014 12:28PM)
Firmware version	GL200
Filter driver version	N/A
Driver Version	N/A
Submission	1696439(Dec 5 2014 12:09PM)

Merchandise pictures and descriptions are provided by the manufacturers of the merchandise. Microsoft makes no representations or warranties regarding the merchandise, manufacturers or compatibility of the merchandise depicted or described. Check system requirements before you purchase any merchandise or download any software described on this site. Use of all software is governed by the end user license agreement, if any, which accompanies or is included with the software.



000172





Handwritten scribble or signature.

Handwritten text, possibly a date or reference number.

Handwritten text, possibly a signature or name.

This site uses cookies for analytics, personalized content and ads. By continuing to browse this site, you agree to this use.

Learn more

Windows Server Catalog



Search

N

Go

Home

Software

Hardware

SVVP

Home
Server

Software

Business Management

Business Solutions

Communications Internet & Collaboration

Engineering

Enterprise Solutions

Financial Applications

Infrastructure Solutions

Security

Vertical Applications

Other

Hardware

Audio

Bus Controllers and Ports

Cameras Video Capture and Streaming

Graphics

Input Devices

Modems

Monitors

Networking

Printers

Scanners

Security and File System Software

Servers

Storage

Windows Server Compatible Hardware



HP MSA 2040 SAN Storage
by Hewlett-Packard Company

Compatible with the following versions of Microsoft Windows



Windows Server 2012 R2 x64

Certified for Windows

- FibreChannel Interface
- iSCSI Interface
- Multi-Path I/O
- RAID



Windows Server 2012 x64

Certified for Windows

- FibreChannel Interface
- iSCSI Interface
- Multi-Path I/O
- RAID
- SAS Interface



Windows Server 2008 R2 x64

Certified for Windows

- FibreChannel Interface
- iSCSI Interface
- Multi-Path I/O
- RAID
- SAS Interface



Windows Server 2008 x64

Certified for Windows

Submission Details

Firmware version	GL200
Filter driver version	N/A
Driver Version	N/A
Submission	1696429 (Dec 5 2014 10:31AM)
Firmware version	GL200
Filter driver version	N/A
Driver Version	N/A
Storage_bus_type	iSCSI
MPIO	1
VDS_Provider	0
Submission	1696342 (Dec 4 2014 5:51PM)
Firmware version	GL200
Filter driver version	N/A
Driver Version	N/A
Storage_bus_type	Fibre Channel
MPIO	1
VDS_Provider	0
Submission	1696341 (Dec 4 2014 5:47PM)
Firmware version	GL200
Filter driver version	N/A
Driver Version	N/A
Submission	1698337 (Dec 4 2014 5:14PM)
Submission	1632096 (Jan 17 2014 9:13AM)
Submission	1627666 (Dec 12 2013 10:18AM)
Firmware version	GL101
Filter driver version	n/a
Driver Version	n/a
Submission	1627664 (Dec 12 2013 10:13AM)
Firmware version	GL101
Filter driver version	N/A
Driver Version	N/A
Storage_bus_type	SAS
MPIO	1
VDS_Provider	0

Feedback

AA

KV

173

Handwritten signature

Submission	1605809 (Sep 12 2013 9:59AM)
Firmware version	GL101
Filter driver version	N/A
Driver Version	N/a
Submission	1605806 (Sep 12 2013 9:54AM)
Submission	1605804 (Sep 12 2013 9:50AM)
Firmware version	GL101
Filter driver version	N/A
Driver Version	N/A
Storage_bus_type	Fibre Channel, iSCSI
MPIO	1
VDS_Provider	0
Submission	1605802 (Sep 12 2013 9:45AM)
Submission	1605800 (Sep 12 2013 9:41AM)
Submission	1605798 (Sep 12 2013 9:35AM)
Submission	1605797 (Sep 12 2013 9:31AM)
Firmware version	GL101
Filter driver version	N/A
Driver Version	N/A
Submission	1605796 (Sep 12 2013 9:24AM)

Merchandise pictures and descriptions are provided by the manufacturers of the merchandise. Microsoft makes no representations or warranties regarding the merchandise, manufacturers or compatibility of the merchandise depicted or described. Check system requirements before you purchase any merchandise or download any software described on this site. Use of all software is governed by the end user license agreement, if any, which accompanies or is included with the software.

Feedback


Handwritten mark resembling the letters 'NR'.

Handwritten mark resembling the letter 'Y'.

Handwritten mark resembling a checkmark or the letter 'C'.

Handwritten signature and a circular stamp containing the word 'DATA'.


**Hewlett Packard
Enterprise**

 Hewlett Packard Enterprise	Хюлет-Пакард България ЕООД Изх. No: <u>1323</u> Дата: <u>23.02.18г.</u>
--	--

23 февруари 2018 г.

До: Университет за национално и световно стопанство, 1700 София, Студентски град "Хр. Ботев"

Относно: АОП 00062-2018-0008

Уважаеми Господа,

Hewlett Packard Enterprise (тук „HPE“) е уважаван производител на сървъри, устройства за съхранение на данни, мрежово оборудване, софтуер и услуги (наричани „Продуктите“). Продуктите с марка Hewlett Packard Enterprise се произвеждат в над 15 страни, в това число, но не само в Китай, Франция, Германия, Великобритания, Ирландия, Япония, Малайзия, Мексико, Холандия, Сингапур, Тайван, САЩ.

Ираван Хира
Генерален директор
Хюлет-Пакард България
Т +359 2 9698940
iravan.hira@hpe.com

Хюлет-Пакард България ЕООД, София, ПК 1766, ул. Околовръстен път 258, Бизнес Център Камбаните, принадлежи към Групата компании Hewlett Packard Enterprise с единствена компания майка Hewlett Packard Enterprise Company, САЩ, която е формирана и управлявана според законите на Съединените Американски Щати.


Хюлет-Пакард България е наясно, че ПАРАФЛОУ КОМЮНИКЕЙШЪНСООД, 1700 София, бул. Никола Габровски 79, бл. (тук „SSP“) трябва да ви представи оферта за Продукти, произведени от HPE и след това да договори и да подпише с вас договор, по обществена поръчка с предмет:

„Доставка, инсталиране, въвеждане в експлоатация и гаранционен сервиз на информационно – компютърна техника“

Хюлет-Пакард България ЕООД удостоверява, че SSP понастоящем е упълномощен партньор на Hewlett Packard Enterprise за продажбата на Продуктите предмет на доставка по горната тръжна процедура както и за поддръжката на тези продукти по силата на подписано Споразумението за Партньорство в продажбите No YEAZAC и поддръжката им според условията и съответните бизнес линии (Приложение 1) на Споразумението за Партньорство в поддръжката No 28884.

В рамките на гореспоменатия търг и вероятен последващ договор SSP ще действа от собствено име. SSP не е нито агент, нито представител на HPE.

С уважение,
Ираван Хира
Генерален директор
Хюлет-Пакард България ЕООД


Хюлет-Пакард България ЕООД
Бул. „Околовръстен път“ 258
Бизнес център Камбаните
1766 София

hpe.com



Hewlett Packard Bulgaria EOOD
258 Okolovrasten Pat, Business Center "Kambanite", Mladost 4, 176
BG121909024

000174

Приложение 1

Оторизации и контакти на сервисни центрове на Hewlett Packard Enterprise в страната за сървъри, устройства за съхранение на данни и мрежови устройства

Град	Адрес	Телефон	E-май
Благоевград	бул. Св. Кирил и Методий 2	0 7001 7978	support@stemo.bg
Бургас	ул. Адам Мицкевич 5	0 7001 7978	support@stemo.bg
Бургас	ул. Александър Стамболийски 39, офис 2	0 7001 0887; 056/840 197	service@paraflow.bg
Бургас	ул. Транспортна, Бизнес център Кочдоско, офис 12	0 7001 6036; 056/811 896	support_burgas@cnsys.bg
Бургас	ул. Христо Фотев 94	0 8002 0199; 056/811 902	support@lirex.com
В.Търново	ул. Любен Каравелов 51	0 7001 6036; 062/602 404	support_velikutrnovo@cnsys.bg
Варна	ул. Любен Каравелов 26	0 8002 0199; 052/681 881	support@lirex.com
Варна	ул. Мир 3	0 7001 6036; 052/614 418	support_varna@cnsys.bg
Варна	бул. Отец Паисий 42	0 7001 7978	support@stemo.bg
Варна	ул. Тодор Бояджиев 7	0 7001 0887; 052/321 997	service@paraflow.bg
Видин	ул. Цар Александър II 87	0 7001 6036; 094/600 410	support_vidin@cnsys.bg
Габрово	ул. Емануил Манолов 13	0 8002 0199; 066/804 662	support@lirex.com
Габрово	ул. Николаевска 41	0 7001 7978	support@stemo.bg
Девня	Промислена зона	0 8002 0199; 0519/95 959	support@lirex.com
Козлодуй	АЕЦ Козлодуй	0 7001 7978	support@stemo.bg
Козлодуй	ул. Васил Воденичарски 1В, ет. 2	0 8002 0199; 0973/80 407	office@lirex.com
Плевен	бул. Русе 6	0 7001 7978	support@stemo.bg
Пловдив	бул. България 108А	0 7001 7978	support@stemo.bg
Пловдив	ул. Петко Каравелов 36, офис 17-18	0 8002 0199; 032/622 618	support@lirex.com
Пловдив	ул. Самара 7	0 7001 0887; 032/960 046	service@paraflow.bg
Пловдив	бул. Цар Борис III Обединител 67	0 7001 6036; 032/637 863	support_plovdiv@cnsys.bg
Русе	ул. Ангел Кычмев 38	0 7001 7978	support@stemo.bg
Русе	ул. Хан Крум 6, вх. В, ап. 2	0 8002 0199; 082/877 092	support@lirex.com
Русе	ул. Църковна независимост 27	0 7001 6036; 082/823 256	support_ruse@cnsys.bg
София	ул. Лерин 39	0 7001 6036	support@cnsys.bg
София	ж.к. Младост 3, бл. 302, вх. 4	0 8002 0199; 02/969 1660	support@lirex.com
София	ул. Никола Габровски 79, Бизнес център ТУИНС	0 7001 0887; 02/960 4200	service@paraflow.bg
София	бул. Цариградско шосе 135, Бизнес сграда Офис Експрес	0 7001 7978	support@stemo.bg
Стара Загора	ул. Генерал Гурко 61	0 7001 7978	support@stemo.bg
Стара Загора	ул. Кольо Ганчев 52	0 8002 0199; 042/612 114	support@lirex.com
Стара Загора	ул. Св. Отец Паисий 92	0 7001 6036; 042/623 216	support_starazagora@cnsys.bg
Стара Загора	бул. Христо Ботев 100, ет. 5, офис 116	0 7001 0887; 042/605 350	service@paraflow.bg

ОРИГИНАЛ



MANUFACTURER'S AUTHORIZATION FORM

Date:  9 March 2018

To:  University of National and World Economy

Subject: Delivery, installation, commissioning and warranty service of ICT

Cisco International Limited, registered in England and Wales (Company Number 06640658), having a principal place of business at 9-11 New Square Park, Bedford Lakes, Feltham, England TW14 8HA, United Kingdom ("Cisco"), who is a provider of networking products and services, hereby confirms that, as of the date of this letter, PARAFLOW COMMUNICATIONS LTD ("Reseller") wishes to participate in the Bid or Project stated above and has entered into an Indirect Channel Partner Agreement which entitles Reseller to do the following:

- (1) resell and/or distribute Cisco products and/or services in BULGARIA to end users within that territory;
- (2) bid, negotiate and conclude a contract with you for the above products/services manufactured or supplied by Cisco. The Reseller is an independent contractor and has no authority to commit and/or bind Cisco or its affiliates in any way.

Cisco will, within the scope of its agreement with its authorized channels, provide support and product warranty services for Cisco products obtained through its authorized channels.

This Authorization shall be accurate as of the date appearing at the top of this letter and for six (6) weeks from such date.

If you need any additional information, please do not hesitate to contact Plamen Zhechev at +359 899 908 715. For more information about Cisco's channel partner program, please visit the following URL: <http://www.cisco.com/web/partners/index.html>.

Duly authorized to sign this authorization for and on behalf of: **Cisco International Limited**


James Glenister
 DIRECTOR.MGMT-FINANCE


CISCO
 Cisco International Limited
 9-11 New Square Park
 Bedford Lakes, Feltham
 Middlesex, TW14 8HA
 United Kingdom

Handwritten marks:
 A A




Превод от английски език:

ОТОРИЗАЦИОННО ПИСМО ОТ ПРОИЗВОДИТЕЛ

Дата: 9 март 2018

До: Университет за национално и световно стопанство

Предмет: **„ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИКТ“**

Сиско Интернешънъл Лимитед регистрирана в Англия и Уелс (Номер на компанията 06640658) с адрес на бизнес офис Ню Скуеър Парк 9-11, Фелтъм TW14 8HA Англия (Сиско) като производител на мрежови продукти и услуги, с настоящото потвърждаваме, че с датата на това писмо, **Парафлоу Комуникейшънс ООД („Партньор“)** е заявила желание да участва в цитираната по-горе открита процедура, като носител на партньорски договор за продажба на продукти и/или услуги на Сиско и да извършва следното:

- 1) Да продава и /или дистрибутира продуктите и/или услугите на Сиско на крайни потребители на територията на България;
- 2) Да подава оферта, да преговаря и да сключва договор с Вас за цитираните продукти и услуги, произведени от Сиско. Партньорът е независимо лице и не обвързва Сиско със своите ангажименти към клиента.

Сиско, в обхвата на Договора си със оторизирания партньор осигурява поддръжка и продуктови гаранции и услуги, свързани с канала на доставките.
Тази Оторизация е валидна за срок от 6 седмици от датата на издаването ѝ.

В случай на необходимост от допълнителна информация, моля да се обръщате към Пламен Жечев на тел. +359 899908715. За повече информация относно партньорските канали на Сиско моля посетете сайта : <http://www.cisco.com/web/partners/index.html>.

Оторизиран подпис от името на (Cisco International Limited)

Джеймс Гленистър
Директор Мениджмънт Финанси

ВК 1

177

ДЕКЛАРАЦИЯ

Долуподписаната _____, ЕГН 7 _____, с л.к. № 040200001, изд. на 20.03.2018 г. от МВР – гр. София, в качеството си на Експерт обществени поръчки и редовно упълномощена от Управителя на “Парафлоу Комуникейшънс” ООД, със седалище и адрес на управление: София 1700, бул. Никола Габровски 79, ЕИК 820010775, участник в процедура от Закона за обществени поръчки (ЗОП) с предмет: “ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА” за обособена позиция № 1 – Сървъри, сториджи, мрежово и комуникационно оборудване

ДЕКЛАРИРАМ:

Задължаваме се да осигурим в рамките на предложението в техническото ни предложение гаранционен срок на техниката по обособена позиция 1, необходимите гаранционни ремонти при следните условия:

- Срокът за реакция (регистрация на повредата) след уведомяване от страна на Възложителя е до 2 часа в работно време и до 4 часа в извънработно време;
- Срокът за отстраняване на повредата е до един работен ден;
- При невъзможност в рамките на посочения срок за отстраняване на проблема в дефектирало оборудване, същото ще се заменя с работоспособно от същия или по-висок клас в срок до 5 работни дни.

Поемаме гаранция за качеството на стоката и за годността и за употреба за сроковете посочени в офертата ни и се задължаваме:

- да осигурим гаранционно обслужване и сервиз;
- да извършваме качествено сервизно техническо поддържане и ремонт на доставената компютърна техника в съответствие с действащите стандарти;
- да отстраняваме възникналите при нормалната експлоатация повреди;
- да отстраним безвъзмездно всички повреди и отклонения от изискванията за качество, които са възникнали в рамките на посочения гаранционен срок;

По време на гаранционния срок, се задължаваме при установяване на еднороден дефект на компоненти и това е установено на не по - малко от 20% от техниката от един вид, да подменяме дефектния компонент и на другата техника от същия вид, които не са проявили дефекта.

Гаранционното сервизно обслужване ще се извършва на мястото на използване на стоките, а ако това е невъзможно се извършва в наша сервизна база, оторизирана от производителите на предлаганата техника за осъществяване на сервизната услуга при условията посочени по-горе посочения в офертата ни.

Адресът на базата е следният:

Гр. София 1700, Район студентски, бул. Никола Габровски 79.

За заявяване на услуга за обслужването Оборудване/ Системи, клиентът ни уведомява по един от следните начини:

- чрез регистриране на заявка в Сервизна информационна система „Paraflow Service Desk”, достъпна на адрес: support.paraflow.bg;
- по електронна поща на адреси hotline@paraflow.bg и service@paraflow.bg чрез попълнен формуляр на Потребителска заявка;
- на факс 02 960 4218 с попълнена сервизна заявка чрез попълнен формуляр на Потребителска заявка;
- по телефона за контакт с ИЗПЪЛНИТЕЛЯ 0700 10 887, 02 960 4222

гр. София, 12.03.2018 г.

/дата на подписе

Декларатор:

Експерт обществени поръчки.

Парафлоу Комуникейшънс ООД

000178



**ДЕКЛАРАЦИЯ
ЗА СЪГЛАСИЕ С КЛАУЗИТЕ НА ПРИЛОЖЕНИЯ ПРОЕКТ НА ДОГОВОР**

Долуподписаният:

(собствено, бащино, фамилно име)

с ЕГН: 5412310211, притежаващ л.к. № 6, издадена на 2000 г.,
от МВР – гр. София, с постоянен адрес: гр София, ул. М
в качеството си на Управител,

(длъжност)

на участник Парафлоу Комуникейшънс ООД, ЕИК 831913775

(наименование на участника)

в процедура от Закона за обществени поръчки (ЗОП) с предмет: "ДОСТАВКА,
ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ
НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА" за обособена позиция № 1 –
Сървъри, сторижди, мрежово и комуникационно оборудване

ДЕКЛАРИРАМ, ЧЕ:

Запознат съм с проекта на договора за възлагане на обществената поръчка за обособена
позиция позиция № 1 – Сървъри, сторижди, мрежово и комуникационно оборудване, приемам
го без възражения и ако участникът, когото представлявам, бъде определен за изпълнител, ще
сключа договора изцяло в съответствие с проекта, приложен към документацията за участие,
в законоустановения срок.

Известна ми е отговорността по чл. 313 от Наказателния кодекс за посочване на
неверни данни.

Дата: 12.03.2018 г.

Декларатор:

[Подпис]
/подпис и печат/

л л

[Подпис]

000179

Д Е К Л А Р А Ц И Я
ЗА СЪГЛАСИЕ С КЛАУЗИТЕ НА ПРИЛОЖЕНИЯ ПРОЕКТ НА РАМКОВО
СПОРАЗУМЕНИЕ

Долуподписаният:

с ЕГН: 5, притежаващ л.к. № б, издадена на
 от МВР – гр. София, с постоянен адрес: гр С,
 в качеството си на Управител,
 (длъжност)

на участник Парафлоу Комуникейшънс ООД, ЕИК 831913775
 (наименование на участника)

в процедура от Закона за обществени поръчки (ЗОП) с предмет: “ДОСТАВКА,
 ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ
 НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА” за обособена позиция № 1 –
 Сървъри, сториджи, мрежово и комуникационно оборудване

Д Е К Л А Р И Р А М, Ч Е:

Запознат съм с проекта на рамково споразумение за възлагане на обществената поръчка, приемам го без възражения и ако участникът, когото представлявам, бъде определен за изпълнител, ще сключа рамковото споразумение изцяло в съответствие с проекта, приложен към документацията за участие, в законоустановения срок.

Известна ми е отговорността по чл. 313 от Наказателния кодекс за посочване на неверни данни.

Дата: 12.03.2018 г.

Декларатор: /11/4/.....

/подпис и печат/

1 1



Handwritten marks: a checkmark and the number '4V'.

**ДЕКЛАРАЦИЯ
ЗА СРОК НА ВАЛИДНОСТ НА ОФЕРТАТА**

Долуподписаният:

(собствено, бащино, фамилно име)

с ЕГН: _____, притежаващ л.к. № _____, издадена на _____ г.,
от МВР – гр. София, с постоянен адрес: гр. София, ул. Митрополит Иван Новаков № _____
в качеството си на Управител,
(длъжност)

на участник Парафлоу Комуникейшънс ООД, ЕИК 831913775
(наименование на участника)

в процедура от Закона за обществени поръчки (ЗОП) с предмет: "ДОСТАВКА,
ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ
НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА" за обособена позиция № 1 –
Сървъри, сториджи, мрежово и комуникационно оборудване

ДЕКЛАРИРАМ, ЧЕ:

С подаване на настоящата оферта декларираме, че сме съгласни валидността на нашата оферта да бъде 4 (четири) месеца от крайния срок за получаване на оферти, посочен в обявлението за процедурата

Известна ми е отговорността по чл. 313 от Наказателния кодекс за посочване на неверни данни.

Дата: 12.03.2018 г.

Декларатор:

/подпис и/печат/

Large handwritten signature or stamp on the left side of the page.

ДО
Университет за национално и световно стопанство
Студентски град, ул. "8ми Декември"
София 1700

ЦЕНОВО ПРЕДЛОЖЕНИЕ

за участие в открита процедура за сключване на
рамково споразумение с предмет:

“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО-КОМПЮТЪРНА ТЕХНИКА”

*За обособена позиция 1: Съреъри, сториджи, мрежово и комуникационно
оборудване*

От: ПАРАФЛОУ КОМУНИКЕЙШЪНС ООД

Адрес: София 1700, бул. "Никола Габровски" 79

Лице за контакт: Искра Берова

тел.: + 359 2 960 42 00, факс: + 359 2 960 42 18

e-mail: office@paraflow.bg

www.paraflow.bg



ЦЕНОВО ПРЕДЛОЖЕНИЕ

от Парафоу Комуникейшънс ООД
(наименование на участника)

и подписано от Ис _____
(трите имена и ЕГН)

в качеството ѝ на Експерт обществени поръчки и упълномощено лице от управителя
(на длъжност)

с ЕИК: _____

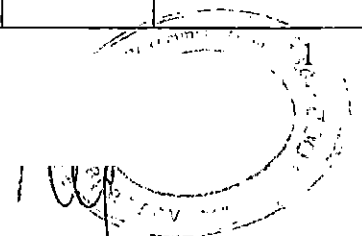
УВАЖАЕМИ ДАМИ И ГОСПОДА,

1. С настоящото, Ви представяме нашата ценова оферта за участие в обявената от Вас обществена поръчка с предмет: **“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА”** за обособена позиция № 1

Предлагаме да поемем, изпълним и завършим тази обществена поръчка, съобразно условията на документацията за участие, както следва:

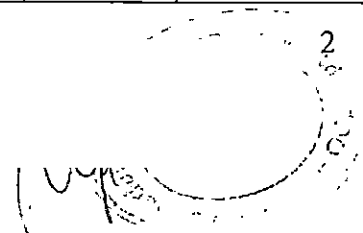
№	Вид оборудване, марка, модел, елементи	Технически характеристики	мярка	Ед.цена без ДДС
1	Tower сървър 1 HPE ProLiant ML110 Gen9 Server	HPE ML110 Gen9 Intel Xeon E5-2603v4 1.7Ghz, 15MB 6-core 85W Intel® C621 16GB DDR4 Registered HPE SmartMemory and Standard Memory 256GB 8DIMM slots HPE Smart Array P408i-p SR Gen10 (8 Internal Lanes/2GB Cache) 12G SAS PCIe Plug-in Controller, HPE 96W Smart Storage Battery (up to 20 Devices) with 260mm Cable Kit. Модъръжа RAID 0, 1, 10, 5, 50, 6, 60 3 x HPE 300GB SAS 12G Enterprise 15K LFF (3.5in) LPC 3yr Wty Digitally Signed Firmware HDD. Възможност за разширяване до 16 броя твърди дискове 2.5" или до 8 броя дсика 3,5". HPE 9.5mm SATA DVD-RW JackBlack G9 Optical Drive Embedded 2-Port 1GbE HPE Ethernet 1Gb 2-port 332i Adapter Поддържа TPM, UEFI, APCI 2.0 и пароли на 2 нива Вграден чип HPE iLO (Firmware HPE iLO4 2.0 or later) with NAND с отделен обособен RJ-45 порт за отдалечено управление и софтуер с графична конзола към него 5 PCIe 3.0 слота - 2-x4, 2-x8 и 1-x16 350W захранване. Платформата поддържа захранване с опция резервиранст и HotPlug в зависимост от комплектацията на системата Кутия тип Tower (4,5U) с възможност за монтаж в rack чрез допълнителни релси. 3 години на място, с реакция на следващия работен ден Сертифициран за работа и със следните ОС: Microsoft Windows Server Red Hat Enterprise Linux (RHEL)	Бр.	6247.00

000001



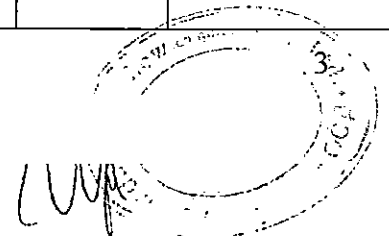
		SUSE Linux Enterprise Server (SLES) VMware ClearOS		
2	Tower сървър 2 HPE ProLiant ML150 Generation9	HPE ML150 Gen9 Intel Xeon E5-2603v4 (1.7GHz/6-core/15MB/85W) Processor Възможност за добавяне на втори процесор." Intel® C610 Series Chipset 16GB DDR4 Registered HPE SmartMemory 512GB (min 16 DIMM slots) HP Smart Array P440/4GB FBWC 12Gb 1-port Int SAS Controller с поддръжка на RAID 0,1,10, 5, 50, 6 с4GB енерго-независима памет (тип Flash) 3 x HPE 300GB SAS 12G Enterprise 15K LFF (3.5in) LPC 3yr Wty Digitally Signed Firmware HDD. Възможност за разширяване до 16 броя твърди дискове 2.5" или до 8 броя диска 3,5". SATA 9.5mm DVD RW Optical Drive Broadcom 5717 Dual-port 1Gb Поддръжка TPM, UEFI, APCI 2.0 и пароли на 2 нива Вграден чип HPE iLO (Firmware HPE iLO4 2.0 or later) with NAND с отделен обособен RJ-45 порт за отдалечено управление и софтуер с графична конзола към него 6 x PCIe 3.0 - 4 - x8; 2 - x16 550W захранване с опция за резервираност Кутия тип Tower с възможност за конвертиране за монтаж в рак 5U чрез допълнителни релси. 3 години на място, с реакция на следващия работен ден Сертифициран за работа и със следните ОС Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) VMware ClearOS	Бр.	7616.00
3	Rack-mount сървър 1 HPE ProLiant DL20 Generation9	1U rackmount HPE DL20 Gen9 Intel Xeon E3-1220v6 (3.0GHz/4-core/8MB/72W) Processor Intel C232 Series Chipset 16GB DDR4 ECC. Поддръжка надграждане минимум 64GB (4 DIMM Slots) HPE Dynamic Smart Array B140i Controller с поддръжка на RAID (0/1) 4 x HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC Hot Plug HDD Поддръжка 2 диска 3.5 инча или 4 диска 2.5 инча." HPE 9.5mm SATA DVD-RW JackBlack G9 Optical Drive HPE Ethernet 1Gb 2-port 332i network Adapter 2 вградени PCI-E 3.0 слота за разширение x8 Поддръжка TPM, UEFI, APCI 2.0 и пароли на 2 нива Един microSD слот Вграден чип HPE iLO (Firmware HPE iLO4 2.3) 4GB NAND за отдалечено управление и софтуер с графична конзола към него От производителя, с включени телескопични релси Резервирани вентилатори 3 броя Резервирани захранвания 900W 6 години на място, с реакция на следващия работен ден Сертифициран за работа и със следните ОС Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) VMware ClearOS	Бр.	7945.00
4.	Rack-mount сървър 2 HPE ProLiant DL180 Generation9	2U rackmount 1 x E5-2620v3 2.4GHz 6 core 15MB 85W Възможност за добавяне на втори процесор." Intel C610 Series Chipset 8GB DDR4 Registered, поддръжка надграждане до 512GB (16 DIMM Slots) HPE Smart Array P440/2GB FBWC 12Gb 1-port Int SAS Controller с поддръжка на RAID (0/1/1+0/5/5+0/6) 2 x HPE 450GB SAS 12G Enterprise 15K SFF (2.5in) SC HDD с възможност за подмяна без спиране на сървъра	Бр.	16327.00

000002

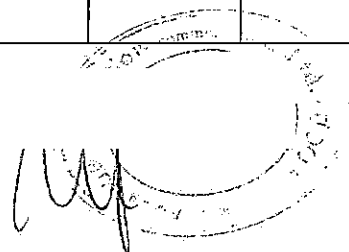


		<p>(hot-plug) Моддържа 8 диска 2,5" с възможност за разширение до 16 диска Поддържа SSD дискове" HPE 9.5mm SATA DVD-RW JackBlack G9 Optical Drive HPE Ethernet 1Gb 2-Port 361i Adapter 3 вградени PCI-E 3.0 слота за разширение x8. Възможност за добавяне на разширител за допълнителни слотове - x8, x16, FlexLOM Поддържа TPM, UEFI, APCI 2.0 и пароли на 2 нива Един microSD слот Вграден чип HPE iLO (Firmware HPE iLO4 2.0 or later) 2GB NAND с отделен обособен RJ-45 порт за отдалечено управление и софтуер с графична конзола към него От производителя, с включени телескопични релси Резервирани 4 или 5 с възможност за подмяна без спиране на сървъра (hot-plug) HPE 900W Redundant Power Supply Gold-certified 80 Plus power efficiency 3 години на място, с реакция на следващия работен ден Сертифициран за работа и със следните ОС Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) VMware ClearOS</p>		
5.	Rack-mount сървър 3 HPE ProLiant DL180 Generation9	<p>2U rackmount 1 x E5-2620v3 2.4GHz 6 core 15MB 85W Възможност за добавяне на втори процесор." Intel C610 Series Chipset 8GB DDR4 Registered, поддържа надграждане до 512GB (16 DIMM Slots) HPE Smart Array P440/2GB FBWC 12Gb 1-port Int SAS Controller с поддръжка на RAID (0/1/1+0/5/5+0/6) 2 x HPE 450GB SAS 12G Enterprise 15K SFF (2.5in) SC HDD с възможност за подмяна без спиране на сървъра (hot-plug) Моддържа 8 диска 2,5" с възможност за разширение до 16 диска Поддържа SSD дискове" HPE 9.5mm SATA DVD-RW JackBlack G9 Optical Drive HPE Ethernet 1Gb 2-Port 361i Adapter HPE Ethernet 1Gb 2-port 332T Adapter HPE Ethernet 10Gb 2-port 530T Adapter" 2 x HPE 81E 8Gb 1-port PCIe Fibre Channel Host Bus Adapter Поддържа TPM, UEFI, APCI 2.0 и пароли на 2 нива 3 вградени PCI-E 3.0 слота за разширение x8. Възможност за добавяне на разширител за допълнителни слотове - x8, x16, FlexLOM Един microSD слот Вграден чип HPE iLO (Firmware HPE iLO4 2.0 or later) 2GB NAND с отделен обособен RJ-45 порт за отдалечено управление и софтуер с графична конзола към него От производителя, с включени телескопични релси Резервирани 4 или 5 с възможност за подмяна без спиране на сървъра (hot-plug) HPE 900W Redundant Power Supply Gold-certified 80 Plus power efficiency 6 години на място, 24 x 7, с реакция до 4 часа и ремонт до 48 часа Сертифициран за работа и със следните ОС Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) VMware ClearOS</p>	Бр.	14024.00
6.	Rack-mount сървър 4 HPE ProLiant DL160 Generation9	<p>1U rackmount 1 x Intel four core 2.4 GHz, 10 MB cache или повече. Възможност за добавяне на втори процесор Intel C610 Series Chipset или по-нов Минимум 64GB, DDR4 Registered , да поддържа</p>	Бр.	14336.00

000003



		<p>надграждане до минимум 512GB (min 16 DIMM Slots) Вграден SAS/SATA RAID контролер, с поддръжка на минимум RAID (0/1/1+0/5/5+0) с минимум 1GB енерго-независима памет (тип Flash). Да поддържа надграждане до RAID 6 2 x 450GB SAS 10k HDD с възможност за подмяна без спиране на сървъра (hot-plug) Да поддържа минимум 8 диска 2,5" DVD-RW устройство Да поддържа TPM, UEFI, APCI 2.0 и пароли на поне 2 нива Четири порта със скорост 1GbE на всеки порт и 2 порта със скорост 10Gbps Base-T Минимум 2 вградени PCI-E 3.0 слота за разширение - 1-x8 и 1-x16 Вграден чип с отделен обособен RJ-45 порт за отдалечено управление и софтуер с графична конзола към него От производителя, с включени телескопични релси Минимум 3 години на място, 24 x 7, с реакция до 4 часа и ремонт до 48 часа Моделът е сертифициран за Microsoft Windows Server</p>		
7.	Шаси за блейд сървъри HPE BladeSystem c7000 Enclosure	<p>Побира до 16 сървъра, с възможност за поставяне на до 8 модули за комуникация 10U N+1 (при пълно със сървъри шаси) резервирани заменяеми по време на работа захранващи модули, където N е 6 N+1 (при пълно със сървъри шаси) резервирани, заменяеми по време на работа вентилатори, способни да поемат охлаждането на шасито при пълно натоварване, където N е 10 Поддържа повече от два различни вида архитектура на блейд сървърите, които могат да се поставят в него BL460, BL660, Blade Workstations и други Инсталирани 2 модула за мрежова свързаност от тип Ethernet HPE 6125G Ethernet Blade Switch работещи на 1Gbps на всички портове. Възможност за поставяне на до 8 модула за мрежова свързаност от тип Ethernet, работещи на 1Gbps, и/или 10Gbps" Има възможност за поставяне на модули за SAN свързаност от тип Fiber Channel, работещи на 8Gbps на всички портове. Модулите имат вътрешни портове за свързаност със всеки един блейд сървър в шасито. Инсталирани 2 модула HPE Virtual Connect FlexFabric-20/40 F8 Module for c-Class BladeSystem за свързаност, поддържащи Fiber Channel, Fiber Channel over Ethernet и iSCSI протоколи за връзка на сървърите с външен SAN или дисков масив/и. Модулите имат вътрешни портове за свързаност със всеки един блейд сървър в шасито Шасито разполага с резервирани модули за отдалечено управление и наблюдение на всички компоненти на шасито, сървърите и модулите за свързаност - BladeSystem Onboard Administrator Има възможност за записване на генерирани грешки. Всички компоненти в шасито са сменяеми по време на работа и максимално резервирани, за да се избегне съществуването на единична точка на отказ 3 години на място, 24 x 7, с реакция до 4 часа и ремонт до 48 часа</p>	Бр.	111636.00
8.	Блейд сървър HPE ProLiant BL460c Gen9 Server Blade	<p>Напълно съвместими с предлаганото блейд шаси HPE BL460c Gen9 Intel® Xeon® E5-2620v3 (2.4GHz/6-core/15MB/85W) 32GB Registered DDR4, поддържа надграждане минимум 2TB (min 16 DIMM Slots) Вграден SAS/SATA RAID контролер, с поддръжка на RAID 0,1,10 2 x HPE 450GB SAS 12G Enterprise 15K SFF (2.5in) SC HDD с възможност за подмяна без спиране на сървъра (hot-plug) 2 x 10Gb 2-port HPE FlexFabric FLB Има възможност за инсталиране на двупортов Fiber Channel адаптер 8Gbps Поддържа TPM Има възможност за отдалечено</p>	Бр.	11236.00



		управление/наблюдение Светлинна диагностика при възникване на проблем, софтуер за наблюдение, вградена диагностика, софтуер за събиране на сервизна информация 3 години на място, 24 x 7, с реакция до 4 часа и ремонт до 48 часа		
9.	Дисков масив тип DAS - тип1-разширение DAS P/N: AJ940A	Сторидж, тип DAS P/N: AJ940A SAS Interface Two (2) integrated 12Gb SAS IO Modules Твърд диск, брой Supports up to 12x 3.5 inch SAS or SATA drives Maximum Disk Drives Up to eight (8) enclosures from a single controller port Контролер Supported: Smart Array P421, Smart Array P431, Smart Array P822, Smart Array P721m, Smart Array P731m, Smart Array P441, H221 Host Bus Adapter, H222 Host Bus Adapter, H241 Host Bus Adapter Захранване 460W Common Slot Power supply Maximum Raw Capacity Supports up to 12 (twelve) 6G LFF SAS drives for a maximum capacity of 7.2 TB with 6G 600GB SAS drives or 72 TB with 6/12G 6 TB SAS MDL or 6/12G 6TB SATA MDL drives Форм-фактор 2U Гаранция 36 месеца	Бр.	4733.00
10.	Дисков масив тип DAS - тип2 – разширение DAS P/N: AJ941A	Сторидж, тип DAS P/N: AJ941A SAS Interface Two (2) integrated 12Gb SAS IO Modules Твърд диск, брой Supports up to 25x 2.5 inch SAS or SATA drives Maximum Disk Drives Up to eight (8) enclosures from a single controller port Контролер Supported: Smart Array P421, Smart Array P431, Smart Array P822, Smart Array P721m, Smart Array P731m, Smart Array P441, H221 Host Bus Adapter, H222 Host Bus Adapter, H241 Host Bus Adapter Захранване 460W Common Slot Power supply Maximum Raw Capacity Supports up to 25 (twenty five) 6/12G SFF SAS drives for a maximum capacity of 30 TB with 6/12G 1.2 TB SAS drives or 50 TB with 2 TB 12G SAS MDL or 1 TB 6G SATA MDL drives. D3700 also supports 6/12G SAS and 6G SATA SSD. Форм-фактор 2U Гаранция 36 месеца	Бр.	4741.00
11.	Дисков масив тип DAS - тип3 – разширение DAS P/N: QQ696A	Сторидж, тип DAS P/N: QQ696A SAS Interface Two (2) integrated 6Gb SAS IO Modules Твърд диск, брой Supports up to 70x 3.5 inch SAS or SATA drives Да поддържа следните: Smart Array P421, Smart Array P431, Smart Array P822, Smart Array P721m, Smart Array P731m, Smart Array P441, H221 Host Bus Adapter, H222 Host Bus Adapter, H241 Host Bus Adapter Захранване 1200W Platinum Certified 80 Plus Power supply - ,epe,lr,dkf Maximum Raw Capacity Supports up to 70 6/12G SFF SAS drives for a maximum capacity of 560TB. Съдържа 8 диска 8TB. Форм-фактор 5U rackmount form factor Гаранция 36 месеца	Бр.	39110.00
12.	Дисков масив тип 1 HPE MSA 1040 Storage	HPE MSA 1040 Storage Предоставя възможност за стъпково разширяване на дисковото пространство без спиране на работа Системата разполага с 4 бр. 1GB Ethernet порта за връзка към мрежата (SAN) 6 GB инсталирана кеш памет на всеки от контролерите, предназначена за операциите по четене и запис на дисковете Кеш паметта е с независимо енергийно обезпечаване с цел съхранение на данните в нея при прекъсване на захранването Поддръжка на RAID 0, 1, 3, 5, 10, 50 и 6 Поддържа едновременна работа на SFF и LFF SAS дискове в една система. Дисковете са с възможност за подмяна по време на работа (hot swap). Системата има възможност за разширяване до 99 диска SFF. Инсталирани са 4 диска 2TB 7,2K rpm SAS	Бр.	15876.00

		<p>5500GB използваемо дисково пространство след RAID-5 Предлаганият обем след RAID-6 е от порядъка на 4 TB"</p> <p>Дисковият масив е комплектуван с:</p> <ul style="list-style-type: none"> - всички необходими кабели за резервирано свързване на всеки от контролерите на система в SAN средата; - всички необходими кабели за свързване към електрическо захранване" <p>Microsoft Windows Server 2016 Microsoft Windows Server 2012 Microsoft Windows Server 2012R2 Microsoft Windows Server 2008 SP2 Microsoft Windows Server Hyper-V VMware Red Hat Linux SuSE SLES"</p> <p>Дисковата система е пригодена за вграждане в 19" шкаф, окомплектована с всички аксесоари за монтаж от производителя 2U</p> <p>Изпълнителят се задължава да инсталира оборудването, предмет на настоящата доставка, както и да извърши първоначална конфигурация на системата съгласно указанията и нуждите на Възложителя</p> <p>Ще бъде осигурена поддръжка 24 часа 7 дни в седмицата с време за реакция 4 часа от производителя. Изпълнителят разполага със собствен сервизен център обслужващ предложеното устройство</p> <p>Три години с възможност за разширение</p>		
13.	Дисков масив тип 2 HPE MSA 2040 Storage	<p>HPE MSA 2040 Storage</p> <p>Архитектура с дублиране на всички компоненти, без единична точка на отказ. Позволява подмяна/надграждане на всеки един компонент без спиране на работата</p> <p>Предоставя възможност за стъпково разширяване на дисковото пространство без спиране на работа</p> <p>Напълно дублирана архитектура с автоматично балансиране на натоварването и динамично разпределение на входно-изходните заявки между компонентите на системата. Контролерите са hot-plug. Системата разполага с 8 бр. 1GB Ethernet порта за връзка към мрежата (SAN)</p> <p>6 GB инсталирана кеш памет на всеки от контролерите, предназначена за операциите по четене и запис на дисковете</p> <p>Кеш паметта е с независимо енергийно обезпечаване с цел съхранение на данните в нея при прекъсване на захранването</p> <p>Поддръжка на RAID 0, 1, 3, 5, 10, 50 и 6</p> <p>Поддържа едновременна работа на SFF и LFF SAS и Solid State дискове в една система. Дисковете са с възможност за подмяна по време на работа (hot swap). Системата да има възможност за разширяване до 199 диска SFF</p> <p>Инсталирани 6 диска 4TB 7,2K rpm SAS</p> <p>Конфигурацията предоставя 18 500GB използваемо дисково пространство след RAID-5</p> <p>Предлаганият обем след RAID-6 е от порядъка на 16TB"</p> <p>128TB</p> <p>512 логически устройства (LUNs)</p> <p>Дисковият масив е комплектуван с:</p> <ul style="list-style-type: none"> - всички необходими кабели за резервирано свързване на всеки от контролерите на система в SAN средата; - всички необходими кабели за свързване към електрическо захранване" <p>"Минимум: Microsoft Windows Server 2016 Microsoft Windows Server 2012 Microsoft Windows Server 2012R2 Microsoft Windows Server 2008 SP2 Microsoft Windows Server Hyper-V VMware Red Hat Linux SuSE SLES"</p>	Бр.	33445.00

		<p>Дисковата система е пригодна за вграждане в 19" шкаф, окомплектована с всички аксесоари за монтаж от производителя 2U</p> <p>Изпълнителят се задължава да инсталира оборудването, предмет на настоящата доставка, както и да извърши първоначална конфигурация на системата съгласно указанията и нуждите на Възложителя</p> <p>Ще бъде осигурена поддръжка 24 часа 7 дни в седмицата с време за реакция 4 часа от производителя. Изпълнителят разполага със собствен сервизен център обслужващ предложеното устройство</p> <p>Три години с възможност за разширение</p>		
14.	Дисков масив тип 3 HPE MSA 2040 Storage	<p>HPE MSA 2040 Storage</p> <p>Архитектура с дублиране на всички компоненти, без единична точка на отказ. Позволява подмяна/надграждане на всеки един компонент без спиране на работата</p> <p>Предоставя възможност за стъпково разширяване на дисковото пространство без спиране на работа</p> <p>Напълно дублирана архитектура с автоматично балансиране на натоварването и динамично разпределение на входно-изходните заявки между компонентите на системата. Контролерите са hot-plug. Системата разполага с 8 бр. 1GB Ethernet порта за връзка към мрежата (SAN) с нужният брой прилежащи трансивери</p> <p>6 GB инсталирана кеш памет на всеки от контролерите, предназначена за операциите по четене и запис на дисковете. Поддържа Automated Sub-Lun Tiering, SSD virtual disk group за запис и четене и SSD Read Cache функционалности.</p> <p>Кеш паметта е с независимо енергийно обезпечаване с цел съхранение на данните в нея при прекъсване на захранването</p> <p>Поддръжка на RAID 0, 1, 3, 5, 10, 50 и 6</p> <p>Поддържа едновременна работа на SFF и LFF SAS и Solid State дискове в една система. Дисковете са с възможност за подмяна по време на работа (hot swap). Системата да има възможност за разширяване до 199 диска SFF</p> <p>Инсталирани 15 диска 10TB 12Gbps 7,2K rpm SAS 512e 140TB</p> <p>512 логически устройства (LUNs)</p> <p>Дисковият масив е комплектуван с:</p> <ul style="list-style-type: none"> - всички необходими кабели за резервирано свързване на всеки от контролерите на система в SAN средата; - всички необходими кабели за свързване към електрическо захранване" <p>"Минимум: Microsoft Windows Server 2016 Microsoft Windows Server 2012 Microsoft Windows Server 2012R2 Microsoft Windows Server 2008 SP2 Microsoft Windows Server Hyper-V VMware Red Hat Linux SuSE SLES"</p> <p>Дисковата система е пригодна за вграждане в 19" шкаф, окомплектована с всички аксесоари за монтаж от производителя 2U</p> <p>Изпълнителят се задължава да инсталира оборудването, предмет на настоящата доставка, както и да извърши първоначална конфигурация на системата съгласно указанията и нуждите на Възложителя</p> <p>Ще бъде осигурена поддръжка 24 часа 7 дни в седмицата с време за реакция 4 часа от производителя. Изпълнителят разполага със собствен сервизен център обслужващ предложеното устройство</p> <p>Шест години с възможност за разширение</p>	Бр.	63420.00
15.	Сървърен шкаф 1 HPE G2 Advanced Series Rack	<p>42U</p> <p>Достатъчна за монтиране на предложените rackmount сървери с дълбочина 1075 мм</p> <p>Осигурява оптимално охлаждане при максимално запълване на шкафа с устройства, включително и</p>	Бр.	11192.00

		<p>многопроцесорни сървъри, отделящи повече топлина Два захранващи модули (PDU). Всеки един от тях с 28 броя ел. гнезда за захранване на оборудване 3 години на място, с реакция на следващия работен ден Конзолен комутатор 16 порта с клавиатура и дисплей, оборудван с необходимите интерфейсни кабел - HPE LCD8500 1U Rackmount Console Kit и HPE 0x2x16 G3 KVM Analog Console Switch</p>		
16.	Сървърен шкаф 2 16U	<p>16U 600x600 свободно стоящ</p>	Бр.	515.00
17.	Сървърен шкаф 3 HPE G2 Advanced Series Rack	<p>22U с дълбочина 1075 мм Достатъчна за монтиране на предложените rackmount сървъри с дълбочина 1075 мм Осигурява оптимално охлаждане при максимално запълване на шкафа с устройства, включително и многопроцесорни сървъри, отделящи повече топлина Два захранващи модули (PDU). Всеки един от тях с 28 броя ел. гнезда за захранване на оборудване Конзолен комутатор 16 порта с клавиатура и дисплей, оборудван с необходимите интерфейсни кабел - HPE LCD8500 1U Rackmount Console Kit и HPE 0x2x16 G3 KVM Analog Console Switch 3 години на място, с реакция на следващия работен ден</p>	Бр.	10378.00
18.	Защитна стена Cisco ASA5516-FPWR-K9 + L-ASA5516-TAMC	<p>Защитната стена притежава следните модули и интерфейси: 8 Gigabit Ethernet интерфейси; Софтуерен лиценз, позволяващ IPS Софтуерен лиценз, позволяващ филтриране на URL Софтуерен лиценз, позволяващ проверка за наличие на Malware в изтегляните файлове, с възможност за ретроспективен анализ Включени лицензи за система за управление на IPS функционалността, с възможност за инсталация на самото устройство или на отделна система Пропускателна способност в режим защитна стена от ново поколение: 850 Mbps Мултипроколна пропускателна способност в режим IPS: 450 Mbps VPN пропускателна способност: 250 Mbps Брой IPSec VPN тунелни сесии: 300 Поддръжка на потребители: с лиценз за неограничен брой потребители Скорост за отваряне на нови сесии за секунда: 20,000 нови сесии за секунда Брой едновременни сесии: 250,000 Брой физически интерфейси: 8 броя 10/100/1000 Mbit Ethernet Отделен Ethernet-базиран 10/100/1000 интерфейс за управление Брой виртуални интерфейси: 100 Разделяне на устройството на виртуални подустройства (VRF, Context или подобни): 2 Допълнителни интерфейси: USB 2.0 порт, сериен порт, слот за SSD памет. SSD памет: 100 GB Защитната стена разполага със следните ресурси: 8GB оперативна памет и 8GB флаш Управление: Поддръжка на Telnet, SNMP, CLI за отделен достъп Устройството поддържа графичен интерфейс за управление Анализ и динамична реконфигурация на политиката за достъп Автоматично прехвърляне на трафика към резервна защитна стена Размер: Може да се монтира в 19" комуникационен шкаф, размер 1U, с включени елементи за монтиране в шкаф Гаранция: 3 години със срок за отстраняване на проблем до следващ работен ден Офертата включва абонамент за 3 години за автоматично обновяване на IPS дефинициите</p>	Бр.	20586.00
19.	Комутатор тип 1 Cisco WS-C3850-48T-S	<p>Комутаторът притежава следните интерфейси: 48 Етернет порта 10/100/1000Mbps с автоматично разпознаване на скоростта и дуплекса; Слот за допълнителен разширителен модул; Модул с 4 x Small Form-Factor Pluggable (SFP) базирани порта; Възможност за включване на второ токозахранване за резервиране – вградено в комутатора, с възможност за подмяна без спиране на комутатора; Възможност за подмяна на вентилаторен блок без спиране на комутатора; Възможност за включването на комутатора в стек; Възможност за споделяне на захранванията между членовете на стека. Комутаторът притежава следната производителност и функционалност: Производителност (64 byte frames) – 130.95 Mpps Скорост на комутиращата матрица – 176 Gbps неблокируема, за да осигури едновременна максимална двупосочна скорост на всички портове Поддръжка на Jumbo Frames (9216 Bytes) за всички портове Поддръжка MAC таблица 32,000 MAC адреса; Поддръжани протоколи и услуги: 802.3ad Link Aggregation Control Protocol (LACP) IEEE 802.1w Rapid Spanning Tree Protocol IEEE 802.1d Spanning Tree Protocol – Практически без ограничение IEEE 802.1s Multiple Spanning Tree Protocol (MSTP) Откриване на еднопосочни връзки Internet Group Management Protocol V3 (IGMP) Snooping Hardware-based storm control Поддръжка на 4096 едновременно активни 802.1Q VLAN-а с възможност за задаване на идентификатори от 1 до 4096</p>	Бр.	17780.00

000008

		<p>802.1p CoS и DSCP класификация на трафика с възможност за маркиране и прекласифициране на база source/destination IP адреси, source/destination MAC адреси и Layer 4 TCP/UDP номера на портове.</p> <p>IEEE 802.1x автентикация и оторизация с прилагането на динамични VLAN и ACL в зависимост от профила на потребителя</p> <p>IEEE 802.1x автентикация и оторизация на устройства по MAC адреси</p> <p>Възможност за асоциирането на потребители без 802.1x възможности в предварително определен VLAN</p> <p>Листи за филтриране на трафика на база порт и на база VLAN.</p> <p>Поддръжка на SSHv2 и SNMPv3</p> <p>TACACS+ и RADIUS автентикация</p> <p>IEEE 802.1X MAC-Auth-Bypass</p> <p>Trusted Boundary</p> <p>Spanning-Tree Root Guard</p> <p>IGMP filtering</p> <p>Управление: Поддръжка на SSHv2 и SNMPv3</p> <p>Монтаж в 19" шкаф</p> <p>Гаранция: 3 години със срок за отстраняване на проблем до следващ работен ден</p>		
20.	Маршрутизатор Тип 1 Cisco ISR4431-VSEC/K9	<p>Маршрутизаторът да притежава следните модули и интерфейси:</p> <p>Притежава 4 броя 10/100/1000Base-T интерфейса с възможност за ползване на меден или оптичен кабел (чрез SFP модул)</p> <p>1 порт E1 с поддръжка на 30 гласови канала</p> <p>Специализиран хардуерен модул за IPsec VPN криптиране</p> <p>Специализиран хардуерен модул за гласова обработка за едновременна обработка на 64 гласови канала</p> <p>Поддържа разширяване на производителността чрез софтуерен лиценз без необходимост от добавяне на хардуерни модули</p> <p>Притежава резервирано променливотоково захранване</p> <p>Разполага с многоядрен процесор</p> <p>Маршрутизаторът може да балансира трафика през паралелни пътища с различна скорост и дължина, използвайки максимално капацитета на линиите</p> <p>Маршрутизаторът е модулен и има 3 слота, поддържащи различни мрежови интерфейси, с възможност за добавяне/изваждане без рестартиране на маршрутизатора</p> <p>Има 8 GB флеш памет</p> <p>Има 4096 MB DRAM</p> <p>Поддържа функционалност на резервна учреденска телефонна централа, управляваща до 1200 IP телефона по протокол SIP или аналогичен</p> <p>Маршрутизаторът може да поддържа захранване по стандарт на IEEE 802.3af</p> <p>Поддържа NAT</p> <p>Има 2 USB слота за запазване на конфигурацията и криптиращи ключове</p> <p>Поддържа методи за автентикация TACACS+ и RADIUS</p> <p>Има поддръжка на MLPPP</p> <p>Поддържа BGP v4 съгласно следните IETF стандарти RFC 1771, 1966, 1997, 2439, 2547, 2796</p> <p>Към маршрутизатора може да се добавят следните модули: VoIP, ISDN BRI/PRI, Fast Ethernet, Gigabit Ethernet</p> <p>Поддържа протокол за отказоустойчивост съгласно IETF RFC 2281</p> <p>Поддържа Dial-backup, с автоматично преминаване от основната към резервната линия и обратно. Същата резервна линия да може да бъде използвана и като спомогателна, когато натоварването на основната надхвърли определен процент.</p> <p>Поддържа MPLS-VPN и следните стандарти и препоръки - RFC 2547, RFC 2283</p> <p>Поддържа MPLS-VPN в P и PE режим.</p> <p>Поддържа IPsec в транспортен и тунелен режим;</p> <p>Поддържа различни алгоритми за криптиране и автентификация, в т.ч. DES, 3DES, AES, MD5, SHA и др.</p> <p>Поддържа динамични схеми за обмен на ключове (IKE)</p> <p>Поддържа следните стандарти и препоръки - IPsec - RFC 2401-2411, 2451</p> <p>Има вградени в операционната си система възможности за защитна стена и филтриране на трафика</p> <p>Поддържа следните технологии за гарантиране на качеството (QoS):</p> <ul style="list-style-type: none"> • IP Precedence • IP RTP, cRTP • Generic Traffic Shaping (GTS) • Weighted Random Early Detection (WRED) • Class Based Queueing (CBQ) <p>Гаранция: 3 години със срок за отстраняване на проблем до следващ работен ден</p>	Бр.	37097.00
21.	Маршрутизатор Тип 2 Cisco RV320-K9-G5	<p>6</p> <p>802.1Q VLAN, 7 VLAN supported</p> <p>Static, Routing Information Protocol (RIP) v1, v2, and RIP for IPv6 (RIPv6)</p> <p>Port Address Translation (PAT), One-to-one NAT, NAT traversal</p> <p>SPI firewall, Denial of service (DoS), ping of death, SYN flood, land attack, IP spoofing, email alert for hacker attack</p> <p>100 Mbps</p> <p>20 Mbps</p> <p>3 години</p>	Бр.	458.00
22.	Комутатор Тип 2 Cisco SF110D-08-EU	<p>Fixed Port</p> <p>8</p> <p>8x10/100Base-TX</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>1.6 Gbps</p> <p>1.4 Mpps</p> <p>3 години</p>	Бр.	70.00
23.	Комутатор Тип 3 Cisco SG550XG-8F8T-K9-EU	<p>Fixed Port</p> <p>8x10/100/1000Base-T/10GBase-T and 8xSFP+</p> <p>8x10/100/1000Base-T/10GBase-T and 8xSFP+</p> <p>No</p> <p>8xSFP+</p> <p>Web user interface</p> <p>No</p> <p>320 Gbps</p>	Бр.	6847.00

		<p>238 Mpps 64000 MAC address table size Support for 4096 VLANs simultaneously; Port-based and 802.1Q tag-based VLANs; MAC-based VLAN; Management VLAN; Private VLAN Priority levels: 8 hardware queues; Scheduling: Strict priority and weighted round-robin (WRR). Queue assignment based on DSCP and class of service (802.1p/CoS); Class of service: Port based; 802.1p VLAN priority based IEEE 802.3, IEEE 802.3u, IEEE 802.3z, IEEE 802.1D, IEEE 802.1Q, IEEE 802.3ab, IEEE 802.1p, IEEE 802.3x, IEEE 802.3ad (LACP), IEEE 802.1w, IEEE 802.1x, IEEE 802.1s Secure Shell (SSH) Protocol; Secure Sockets Layer (SSL); IEEE 802.1X (Authenticator role); STP Bridge Protocol Data Unit (BPDU) Guard; Secure Core Technology (SCT); RADIUS/TACACS+; Storm control; ACLs 3 години</p>		
24.	Комутатор Тип 4 Cisco SRW224G4-K9-EU	<p>Fixed Port 24 24x10/100Base-TX No 2x10/100/1000Base and 2xCombo Ports (2x10/100/1000Base or 2xSFP) Web user interface Layer 3 Lite 12.8 Gbps 9.52 Mpps 16000 MAC address table size Support for 4096 VLANs simultaneously; Port-based and 802.1Q tag-based VLANs; MAC-based VLAN; Management VLAN; Private VLAN Edge (PVE), also known as protected ports, with multiple uplinks Priority levels: 4 hardware queues; Scheduling: Strict priority and weighted round-robin (WRR). Queue assignment based on DSCP and class of service (802.1p/CoS); Class of service: Port based; 802.1p VLAN priority based IEEE 802.3, IEEE 802.3u, IEEE 802.3z, IEEE 802.1D, IEEE 802.1Q, IEEE 802.3ab, IEEE 802.1p, IEEE 802.3x, IEEE 802.3ad (LACP), IEEE 802.1w, IEEE 802.1x, IEEE 802.1s Wirespeed routing of IPv4 packets; Up to 32 static routes and up to 32 IP interfaces; Classless Inter-Domain Routing (CIDR); DHCP relay at Layer 3; Relay of DHCP traffic across IP domains; User Datagram Protocol (UDP) relay IPv6 host mode; IPv6 over Ethernet; IPv6 neighbor and router discovery (ND); IPv6 stateless address auto-configuration; IPv6 over IPv4 network with Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) support Secure Shell (SSH) Protocol; Secure Sockets Layer (SSL); IEEE 802.1X (Authenticator role); STP Bridge Protocol Data Unit (BPDU) Guard; Secure Core Technology (SCT); RADIUS/TACACS+; Storm control; ACLs 3 години</p>	Бр.	501.00
25.	Комутатор Тип 5 Cisco SG350X-24-K9-EU	<p>Fixed Port 24 24x10/100/1000Base-TX No 4 x 10Gbps Web user interface 95.23 Gbps 128Mpps 64000 MAC address table size Support for 4096 VLANs simultaneously; Port-based and 802.1Q tag-based VLANs; MAC-based VLAN; Management VLAN; Private VLAN Edge (PVE), also known as protected ports, with multiple uplinks Priority levels: 4 hardware queues; Scheduling: Strict priority and weighted round-robin (WRR). Queue assignment based on DSCP and class of service (802.1p/CoS); Class of service: Port based; 802.1p VLAN priority based IEEE 802.3, IEEE 802.3u, IEEE 802.3z, IEEE 802.1D, IEEE 802.1Q, IEEE 802.3ab, IEEE 802.1p, IEEE 802.3x, IEEE 802.3ad (LACP), IEEE 802.1w, IEEE 802.1x, IEEE 802.1s Wirespeed routing of IPv4 packets; Up to 8000 static routes and up to 256 IP interfaces; Classless Inter-Domain Routing (CIDR); DHCP relay at Layer 3; Relay of DHCP traffic across IP domains; User Datagram Protocol (UDP) relay IPv6 host mode; IPv6 over Ethernet; IPv6 neighbor and router discovery (ND); IPv6 stateless address auto-configuration; IPv6 over IPv4 network with Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) support Secure Shell (SSH) Protocol; Secure Sockets Layer (SSL); IEEE 802.1X (Authenticator role); STP Bridge Protocol Data Unit (BPDU) Guard; Secure Core Technology (SCT); RADIUS/TACACS+; Storm control; ACLs 3 години</p>	Бр.	1677.00
26.	Комутатор Тип 6 Cisco SRW248G4-K9-EU	<p>Fixed Port 48 48x10/100Base-TX No 2x10/100/1000Base and 2xCombo Ports (2x10/100/1000Base or 2xSFP) Web user interface Layer 3 Lite 17.6 Gbps 13.1 Mpps 16000 MAC address table size Support for up to 4096 VLANs simultaneously; Port-based and 802.1Q tag-based VLANs; MAC-based VLAN; Management VLAN; Private VLAN Edge (PVE), also known as protected ports, with multiple uplinks Priority levels: 4 hardware queues; Scheduling: Strict priority and weighted round-robin (WRR). Queue assignment based on DSCP and class of service (802.1p/CoS); Class of service: Port based; 802.1p VLAN priority based IEEE 802.3, IEEE 802.3u, IEEE 802.3z, IEEE 802.1D, IEEE 802.1Q, IEEE 802.3ab, IEEE 802.1p, IEEE 802.3x, IEEE 802.3ad (LACP), IEEE 802.1w, IEEE 802.1x, IEEE 802.1s Wirespeed routing of IPv4 packets; Up to 32 static routes and up to 32 IP interfaces; Classless Inter-Domain Routing (CIDR); DHCP relay at Layer 3; Relay of DHCP traffic across IP domains; User Datagram Protocol (UDP) relay IPv6 host mode; IPv6 over Ethernet; IPv6 neighbor and router discovery (ND); IPv6 stateless address auto-configuration; IPv6 over IPv4 network with Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) support Secure Shell (SSH) Protocol; Secure Sockets Layer (SSL); IEEE 802.1X (Authenticator role); STP Bridge Protocol Data Unit (BPDU) Guard; Secure Core Technology (SCT); RADIUS/TACACS+; Storm control; ACLs 3 години</p>	Бр.	1096.00

27.	Комутатор Тип 7 Cisco SG550XG-24F	<p>24 порта 10 Gigabit Ethernet SFP+ 2 combo порта 10 Gigabit Ethernet 10GBase-T/SFP+ Специализиран Ethernet порт за управление Възможност за включването на комутатора в стек, като се използват вградените Ethernet портове. Възможност на стекиране на 8 комутатора. Производителност (64 byte frames) - 357.12 Mpps Скорост на комутиращата матрица - 480 Gbps неблокируема Поддръжка на Jumbo Frames (9000 Bytes) Да поддържа MAC таблица с 64,000 MAC адреса; 802.3ad Link Aggregation Control Protocol (LACP) IEEE 802.1w Rapid Spanning Tree Protocol IEEE 802.1s Multiple Spanning Tree Protocol (MSTP), поне 15 инстанции Откриване на еднопосочни връзки Internet Group Management Protocol V1,2,3 (IGMP) Snooping Storm control - Broadcast, multicast, and unknown unicast. Поддръжка на минимум 7000 статични маршрута Поддръжка на IPv2 динамичен маршрутизиращ протокол Поддръжка на маршрутизиране базирано на политики Поддръжка на Virtual Router Redundancy Protocol (VRRP) Поддръжка на минимум 4094 едновременно активни VLAN-a Поддръжка на частни VLAN-и Възможност за конфигурация на 256 SVI интерфейса Поддръжка на 7000 маршрута Поддръжка на QoS, минимум 8 хардуерни опашки IEEE 802.1x автентикация и оторизация с прилагането на динамични VLAN и ACL в зависимост от профила на потребителя IEEE 802.1x автентикация и оторизация на устройства по MAC адреси Възможност за асоциирането на потребители без 802.1x възможности в предварително определен VLAN Листи за филтриране на трафика на база порт и на база VLAN. TACACS+ и RADIUS автентикация Spanning-Tree Root Guard Spanning-Tree BPDU Guard IP Source Guard Управление: Поддръжка на SSHv2 и SNMPv4 256MB флаш памет. Монтаж в 19" шкаф, 1 RU. Консумация на енергия 77.5W 3 години хардуерна и софтуерна техническа поддръжка</p>	Бр.	7304.00
28.	Комутатор Тип 8 Cisco SG550X-48-K9-EU	<p>48 порта 10/100/1000 Gigabit Ethernet 4 порта 10 Gigabit Ethernet (2 комбо порта 10GBase-T/SFP+ и 2 порта SFP+) Възможност за включването на комутатора в стек, като се използват вградените Ethernet портове. Възможност на стекиране на 8 комутатора. Производителност (64 byte frames) - 130.94 Mpps Скоростна комутиращата матрица - 176 Gbps неблокируема Поддръжка на Jumbo Frames (9000 Bytes) Да поддържа MAC таблица с 16,000 MAC адреса; 802.3ad Link Aggregation Control Protocol (LACP) IEEE 802.1w Rapid Spanning Tree Protocol IEEE 802.1s Multiple Spanning Tree Protocol (MSTP), 16 инстанции Откриване на еднопосочни връзки Internet Group Management Protocol V1,2,3 (IGMP) Snooping Storm control - Broadcast, multicast, and unknown unicast. Поддръжка на минимум 7000 статични маршрута Поддръжка на IPv2 динамичен маршрутизиращ протокол Поддръжка на маршрутизиране базирано на политики Поддръжка на Virtual Router Redundancy Protocol (VRRP) Поддръжка на минимум 4094 едновременно активни VLAN-a Поддръжка на частни VLAN-и. Възможност за конфигурация на 256 SVI интерфейса. Поддръжка на 7000 маршрута Поддръжка на QoS, минимум 8 хардуерни опашки IEEE 802.1x автентикация и оторизация с прилагането на динамични VLAN и ACL в зависимост от профила на потребителя IEEE 802.1x автентикация и оторизация на устройства по MAC адреси Възможност за асоциирането на потребители без 802.1x възможности в предварително определен VLAN Листи за филтриране на трафика на база порт и на база VLAN. TACACS+ и RADIUS автентикация Spanning-Tree Root Guard Spanning-Tree BPDU Guard IP Source Guard Управление: Поддръжка на SSHv2 и SNMPv3 Минимум 256MB флаш памет. Монтаж в 19" шкаф, 1 RU. Консумация на енергия 51.8W 3 години хардуерна и софтуерна техническа поддръжка</p>	Бр.	4790.00
29.	Комутатор Тип 9 Cisco SG550X-24-K9-EU	<p>24 порта 10/100/1000 Gigabit Ethernet 4 порта 10 Gigabit Ethernet (2 комбо порта 10GBase-T/SFP+ и 2 порта SFP+) Възможност за включването на комутатора в стек, като се използват вградените Ethernet портове. Възможност на стекиране на 8 комутатора. Производителност (64 byte frames) — 95.23 Mpps Скорост на комутиращата матрица — 128 Gbps неблокируема Поддръжка на Jumbo Frames (9000 Bytes) Да поддържа MAC таблица с минимум 16,000 MAC адреса; 802.3ad Link Aggregation Control Protocol (LACP) - или еквивалент IEEE 802.1w Rapid Spanning Tree Protocol — или еквивалент IEEE 802.1s Multiple Spanning Tree Protocol (MSTP), 16 инстанции Откриване на еднопосочни връзки Internet Group Management Protocol V1,2,3 (IGMP) Snooping — или еквивалент Storm control - Broadcast, multicast, and unknown unicast. Поддръжка на 7000 статични маршрута Поддръжка на IPv2 динамичен маршрутизиращ протокол Поддръжка на маршрутизиране базирано на политики Поддръжка на Virtual Router Redundancy Protocol (VRRP) Поддръжка на 4094 едновременно активни VLAN-a Поддръжка на частни VLAN-и.</p>	Бр.	2875.00

		<p>Възможност за конфигурация на 256 SVI интерфейса. Поддръжка на 7000 маршрута Поддръжка на QoS, 8 хардуерни нишки IEEE 802.1x автентикация и оторизация с прилагането на динамични VLAN и ACL в зависимост от профила на потребителя IEEE 802.1x автентикация и оторизация на устройствата по MAC адреси Възможност за асоциирането на потребители без 802.1x възможности в предварително определен VLAN Листи за филтриране на трафика на база порт и на база VLAN. TACACS+ и RADIUS автентикация Spanning-Tree Root Guard Spanning-Tree BPDU Guard IP Source Guard Управление: Поддръжка на SSHv2 и SNMPv3 256MB флаш памет. Монтаж в 19" шкаф, 1 RU. Консумация на енергия 33.5W 3 години хардуерна и софтуерна техническа поддръжка</p>		
30.	Комутор Тип 10 Cisco C9500-24Q	<p>24 QSFP+ базирани порта 40 Gigabit Ethernet Специализиран Ethernet порт за управление Възможност за включването на комутора в стек Производителност - 1440 Mpps Скорост на комутиращата матрица-1920 Gbps неблокируема Поддръжка на Jumbo Frames (9198 Bytes) Да поддържа MAC таблица с 64,000 MAC адреса; Поддръжка на 64000 статични маршрута 802.3ad Link Aggregation Control Protocol (LACP) IEEE 802.1w Rapid Spanning Tree Protocol IEEE 802.1s Multiple Spanning Tree Protocol (MSTP) Откриване на еднопосочни връзки Internet Group Management Snooping Функционалност за генериране и експортване на статистики за преминаващия през комутора IP трафик Поддръжка на RIP и OSPF динамични маршрута и рачни протоколи Поддръжка на маршрутизиране базирано на политики Поддръжка на Virtual Router Redundancy Protocol (VRRP) Поддръжка на минимум 4000 VLAN IDs Поддръжка на частни VLAN-и. Възможност за конфигурация на минимум 4000 SVI интерфейса. Поддръжка на 64000 IPv4 маршрута Поддръжка на 16000 IPv4 multicast маршрута Възможност за разпределяне на ресурсите според шаблони. Поддръжка на QoS с възможност на конфигуриране минимум на 18000 контролни листи IEEE 802.1x автентикация и оторизация с прилагането на динамични VLAN и ACL в зависимост от профила на потребителя IEEE 802.1x автентикация и оторизация на устройствата по MAC адреси Възможност за асоциирането на потребители без 802.1x възможност в предварително определен VLAN TACACS+ и RADIUS автентикация Управление: Поддръжка на SSHv2, SNMPv3, API Поддръжка на NETCONF, RESTCONF, YANG Минимум 16GB флаш памет. Минимум 16GB DRAM памет. Два резервирани захранващи блока Максимална консумация на всеки един от захранващите блокове до 850W Монтаж в 19" шкаф, 1 RU. 3 години хардуерна и софтуерна техническа поддръжка</p>	Бр.	39749.00
31.	Инсталация на Windows Server 2012 Standart Edition		Бр.	240.00
Сбор на единичните цени				513847.00

2. В предлаганата от нас цена също така сме включили и всички разходи, необходими за качествено и точно изпълнение на дейностите от обхвата на обществената поръчка.

3. Предложените цени са определени при пълно съответствие с условията от документацията и техническата спецификация по процедурата.

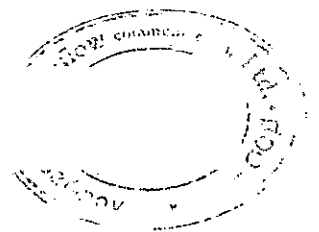
Дата: 12.03.2018 г.

ПОДПИС И ПЕЧАТ: ..

Искра Берова
[име и фамилия]

Упълномощено лице

[качество на представляващия участника]



ДО
Университет за национално и световно стопанство
Студентски град, ул. "8ми Декември"
София 1700

ТЕХНИЧЕСКО ПРЕДЛОЖЕНИЕ

за участие в открита процедура за сключване на
рамково споразумение с предмет:

“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО-КОМПЮТЪРНА ТЕХНИКА”

За Обособена позиция 2 – Настолни компютри

от: ПАРАФЛОУ КОМУНИКЕЙШЪНС ООД
Адрес: София 1700, бул. "Никола Габровски"
Лице за контакт: Искра Берова
тел.: + 359 2 960 42 00, факс: + 359 2 960 42 18
e-mail: office@paraflow.bg
www.paraflow.bg

За Гено
1
1. 000
1. 1111111111

ТЕХНИЧЕСКО ПРЕДЛОЖЕНИЕ ЗА ИЗПЪЛНЕНИЕ НА ПОРЪЧКАТА

от Парафлоу Комуникейшънс ООД
(наименование на участника)

и подписано от

г, ЕГН
(трите имена и ЕГН)

в качеството ѝ на Експерт обществени поръчк и упълномощено лице
(на длъжност)

с **ЕИК:**

УВАЖАЕМИ ДАМИ И ГОСПОДА,

1. След запознаване с всички документи и образци от документацията за участие в процедурата, получаването, на които потвърждаваме с настоящото, ние удостоверяваме и потвърждаваме, че представляваният от нас участник отговаря на изискванията и условията посочени в документацията за участие в процедура с предмет: **“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА”** за обособена позиция № 2

2. Декларираме, че сме получили посредством „Профила на купувача” документация за участие и сме запознати с указанията и условията за участие в обявената от Вас процедура. Съгласни сме с поставените от Вас условия и ги приемаме без възражения.

3. Декларираме, че сме запознати със всички условия за изпълнение на поръчката за обособената позиция

4. Декларираме, че ще изпълним дейностите по обществената поръчка в сроковете регламентирани от Възложителя в документацията за участие и Техническата спецификация, а именно:

Срок за изпълнение 12месеца.

5. Декларираме, че предлаганата предлаганата техника е сертифицирана от Microsoft. За доказателство за сертифициране от Microsoft на техниката прилагам разпечатка на Windows Logo Verification Report. Линк, чрез който може да се провери истинността на горепосоченото:

ProDesk 600 G3
<https://sysdev.microsoft.com/en-US/Hardware/LPL/ProductDetails.aspx?ProductID=50821&OrganizationID=47888>

000001

EliteDesk 800 G3

[https://sysdev.microsoft.com/en-](https://sysdev.microsoft.com/en-US/Hardware/LPL/ProductDetails.aspx?ProductID=48322&OrganizationID=47888)

[US/Hardware/LPL/ProductDetails.aspx?ProductID=48322&OrganizationID=47888](https://sysdev.microsoft.com/en-US/Hardware/LPL/ProductDetails.aspx?ProductID=48322&OrganizationID=47888)

Това изискване се прилага само за техниката, за която се изисква това в техническото задание (Образец № 11).

6. Декларираме, че предлаганата техника е нова, неупотребявана, нерициклирана и в производствената листа на производителя към момента на подаване на офертата, Линк, чрез който може да се провери истинността на горепосоченото

<http://www8.hp.com/bg/bg/home.html>

7. Декларираме, че имаме оторизация от производителя и/или от официалния представител на производителя с права да извършваме продажба и сервиз на предлаганото оборудване.

8. За изпълнение предмета на поръчката прилагаме:

8.1. документ за упълномощаване, когато лицето, което подава офертата, не е законният представител на участника – **оригинал или нотариално заверено копие;**

8.2. предложение за изпълнение на поръчката в съответствие с техническите спецификации и изискванията на възложителя за обособената позиция и да е съобразено с критериите за възлагане – свободна редакция;

8.3. разпечатка на Windows Logo Verification Report;

8.4. оторизация от производителя с права за извършване продажба и сервиз на предлаганото оборудване;

8.5. декларация за сервизно обслужване и наличие на сервизна база, оторизирана от производителите и на предлаганата техника за осъществяване на сервизните услуги при условията на възложителя;

8.6. декларация за съгласие с клаузите на приложения проект на договор - попълва се

Образец № 4.2.;

8.7. декларация за съгласие с клаузите на приложения проект на споразумение - попълва се **Образец № 4.1.;**

8.8. декларация за срока на валидност на офертата - попълва се **Образец № 5**

Дата: 12.03.2018 г.

ПОДПИС И ПЕЧАТ:

[име и фамилия]

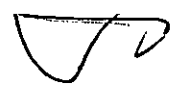
Упълномощено лице

[качество на представляващия участника]

000002



ПЪЛНОМОЩНО



Долуподписаният

притежаващ лична карта No. _____, издадена на _____ г. от МВР-1, ЕГН _____, с адрес в гр. София, ул. Митрополит Кирил Бидински 5, ст. 5, представляващ, и в качеството си на Управител на "Парафлоу Комуникейшънс" ООД, регистрирано по ф.д. 9779/1995 г. по описа на СГС, ЕМПОСТАТ/ЕИК: _____ 5, с адрес по регистрация гр. София 1700, бул. "Никола Габровски" 79

У П Ъ Л Н О М О Щ А В А М

Госка Николаева Борова, притежаваща лична карта номер _____ издадена на _____ г. от МВР - гр. София, ЕГН: _____, да представлява **Парафлоу Комуникейшънс ООД** пред всички възложители на обществени поръчки по смисъла на чл. 5, чл. 6, чл. 7, чл. 8 и чл. 9 от Закона за Обществени Поръчки (ЗОП) във връзка с провеждането на процедури за възлагане на обекти на обществените поръчки по смисъла на чл. 3, ч. 8 и чл. 9 от ЗОП, както и във всички тържни процедури, финансирани от фондовете на Европейския Съюз, международни тържни процедури, финансирани от Световната Банка, USAID, UNDP и други източници на финансиране, както и във фирмени конкурси и процедури, със следните права:

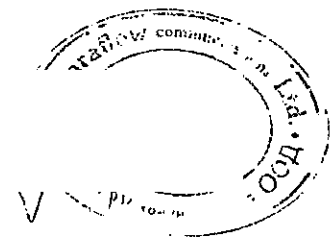
- Да води преговори от името на Парафлоу Комуникейшънс ООД с представители на Възложителите;
- Да получава, подава и подписва от името на Парафлоу Комуникейшънс ООД предложения, оферти, писма, молби, декларации, заявления, искания, копия на документи, и др. подобни документи от/към възложителите;
- Да представлява Парафлоу Комуникейшънс ООД пред Възложителите при предаване или получаване на предложения, оферти и допълнителни документи - писма, банкови гаранции, договори и т.н. в случай на поискването им от Възложителите;
- Да парафира и подписва от името на Парафлоу Комуникейшънс ООД, текстовете на договори и споразумения с Възложителите;
- Да представлява Парафлоу Комуникейшънс ООД пред Комисиите, като присъства при отваряне, разглеждане и оценяване на предложенията на Парафлоу Комуникейшънс ООД, да чете и взема становище по протоколите на Комисиите, както и да представя и подписва допълнителни документи или писма в случай на поискването им от Възложителите.

Настоящото Пълномощно е в сила до 30.8.2018 г.

гр. София, 03.01.2018 г.

УПЪЛНОМОЩИТЕЛ

Николай Аврамов



000003

[Handwritten mark]

11-01-2018

11-01-2018

На г. ТАТЯНА МАЛЕЕВА, иждив. в район Р.С.СОФИЯ, рег.№189
на Нотариалната камара, удостоверявам подписите върху този документ, положени от:

[Handwritten signatures and text]
.....
.....
с местож
Рег.№ Събрана такса лв.
Нотариус:

Владимир Петров
помощник-нотариус



[Handwritten mark]

ТЕХНИЧЕСКО ПРЕДЛОЖЕНИЕ

Минимални технически параметри		Предложение на Парафлоу Комуникайънс ООД
Обособена позиция №2: НАСТОЛНИ КОМПЮТРИ		
НАСТОЛНИ КОМПЮТРИ Тип 1		HP ProDesk 600 G3 Microtower PC
Кутия, form factor	Microtower	Microtower
Процесор	Intel Pentium G4560 Processor (3.5 GHz, 3 MB L3 cache, 2 cores) или еквивалентен	Intel® Pentium® Processor G4560 3.5 GHz, 3 MB L3 cache, 2 cores
Чипсет	Min. Intel® Q270 или еквивалентен	Intel® Q270
Оперативна памет	4GB DDR4 -2133 MHz, да поддържа разширение минимум до 32 GB	HP 4GB (1x4GB) DDR4 2400, поддържа разширение до 64 GB
Твърд диск	min. 500GB SATA 6Gbit/s, 7200rpm	500GB SATA 6Gbit/s, 7200rpm
Разширителни слотове	Min. 2x PCI Express x1 and 2x PCI Express x16	2 xPCIe x1 (v3.0) and 2 xPCIe x16 (v3.0)
Оптично устройство	Мин. DVD±RW DL	DVD±RW DL
Графика	Интегриран min. Intel HD Graphics 530 или еквивалентен	Integrated: Intel® HD Graphics 530
Мрежов адаптер	Integrated RJ-45, 10/100/1000	Integrated RJ-45, 10/100/1000
Интерфейси	min 6 USB 3.0 и 4 USB 2.0 (поне 4 от тях да са изведени на предния панел), 1 USB Type-C™, Audio-In и Audio-Out, RJ-45, 1 VGA, 1 DisplayPort/DVI	6 xUSB 3.0 и 6 xUSB 2.0 общо Front: Universal audio jack with CTIA headset support; 1 xUSB 2.0 (fast charging); 1 xUSB 2.0; 2 xUSB 3.1 Gen 1; 1 xUSB Type-C™ (charging); 4 xUSB са изведени на предния панел Back: Back: 1 x audio in; 1 xRJ-45; 1 xaudio out; 1 xDisplayPort™; 2 x USB 2.0; 2 xUSB 3.1 Gen 1; 1 xpower connector; 2x USB 2.0 (non-vPro™); 2 xUSB 3.1 Gen1 (vPro™); 1 xVGA
Клавиатура	La/сyr USB, от производителя на компютърната конфигурация	La/сyr USB, от производителя на компютърната конфигурация HP
Оптична мишка	Wheel Optical, USB, от производителя на компютърната конфигурация	Wheel Optical, USB, от производителя на компютърната конфигурация HP
Захранване	Захранващ блок с мощност минимум 250W, с минимум 85% ефективност	250 W, up to 85% efficient, active PFC
Сертификат за съвместимост	CE Mark, Energy Star 5.0, RoHS директива - 2011/65/EC, WEEE директива – 2002/96/EC, Microsoft Windows 7/8/10 Compatible. Моделът да бъде сертифициран от Microsoft.	CE Mark, Energy Star 5.0, RoHS директива - 2011/65/EC, WEEE директива – 2002/96/EC, Microsoft Windows 10 Compatible. Моделът сертифициран от Microsoft. <i>(съгласно разясненията от 1.03.2018 г.)</i>
Сигурност	Вграден TPM 1.2 модул	Вграден TPM 1.2 модул
Операционна система	Без операционна система, Драйвери за Windows 7/8/10.	Без операционна система, Драйвери за Windows 10. <i>(съгласно разясненията от 1.03.2018 г.)</i>
Гаранция	3 години	3 години
НАСТОЛНИ КОМПЮТРИ Тип 2		HP ProDesk 600 G3 Microtower PC
Кутия, form factor	Microtower	Microtower
Процесор	Min. Intel Core i3-7100 Processor (3.90 GHz, 3M cache, 2 cores/4 threads) или еквивалентен	Intel® Core™ i3-7100 Processor 7th Generation 3.90 GHz, 3M cache, 2 cores/4 threads
Чипсет	Min. Intel® Q270 или еквивалентен	Intel® Q270
Оперативна памет	Min. 4GB DDR4 -2133 MHz, да поддържа разширение минимум до 32 GB	HP 4GB (1x4GB) DDR4 2400, поддържа разширение до 64 GB
Твърд диск	Min. 1 TB SATA 7.2 krpm	1 TB SATA 7.2 krpm
Разширителни слотове	Min. 2x PCI Express x1 and 2x PCI Express x16	2 xPCIe x1 (v3.0) and 2 xPCIe x16 (v3.0)
Оптично устройство	Мин. DVD±RW DL	DVD±RW DL
Графика	Интегриран min. Intel HD Graphics 530 или еквивалентен	Integrated: Intel® HD Graphics 530
Аудио	Integrated	Integrated Conexant CX20632 codec
Мрежов адаптер	Integrated RJ-45, 1GB	Integrated RJ-45, 1GB

000004

T

W

Интерфейси	min 6 USB 3.0 и 4 USB 2.0 (поне 4 от тях да са изведени на предния панел), 1 USB Type-C™, Audio-In и Audio-Out, RJ-45, 1 VGA, 1 DisplayPort/DVI	6 xUSB 3.0 и 6 xUSB 2.0 общо Front: Universal audio jack with CTIA headset support; 1 xUSB 2.0 (fast charging); 1 xUSB 2.0; 2 xUSB 3.1 Gen 1; 1 xUSB Type-C™ (charging); 4 xUSB са изведени на предния панел Back: Back: 1 x audio in; 1 xRJ-45; 1 xaudio out; 1 xDisplayPort™; 2 x USB 2.0; 2 xUSB 3.1 Gen 1; 1 xpower connector; 2x USB 2.0 (non-vPro™); 2 xUSB 3.1 Gen1 (vPro™); 1 xVGA
Клавиатура	Lat/cyr USB, от производителя на компютърната конфигурация	Lat/cyr USB, от производителя на компютърната конфигурация HP
Мишка	Wheel Optical, USB, от производителя на компютърната конфигурация	Wheel Optical, USB, от производителя на компютърната конфигурация HP
Захранване	Захранващ блок с мощност минимум 250W, с минимум 85% ефективност	250 W, up to 85% efficient, active PFC
Сертификат за съвместимост	CE Mark, Energy Star 5.0, RoHS директива - 2011/65/EC, WEEE директива – 2002/96/EC, Microsoft Windows 7/8/10 Compatible. Моделът да бъде сертифициран от Microsoft..	CE Mark, Energy Star 5.0, RoHS директива - 2011/65/EC, WEEE директива – 2002/96/EC, Microsoft Windows 10 Compatible. Моделът е сертифициран от Microsoft. (съгласно разясненията от 1.03.2018 г.).
Сигурност	Вграден TPM 1.2 модул	Вграден TPM 1.2 модул
Операционна система	Без операционна система, Драйвери за Windows 7/8/10.	Без операционна система, Драйвери за Windows 10. (съгласно разясненията от 1.03.2018 г.)
Гаранция	3 години	3 години
НАСТОЛНИ КОМПЮТРИ Тип 3		HP ProDesk 600 G3 Microtower PC
Кутия, form factor	Microtower	Microtower
Процесор	Min. Intel Core i5-7500 Processor (3.40 GHz, 6M cache, 4 cores) или еквивалентен	Intel® Core™ i5-7500 Processor 7th Generation 3.40 GHz, 6M cache, 4 cores
Чипсет	Min. Intel® Q270 или еквивалентен	Intel® Q270
Оперативна памет	Min. 4GB DDR4 -2133 MHz, да поддържа разширение минимум до 32 GB	HP 4GB (1x4GB) DDR4 2400, поддържа разширение до 64 GB
Твърд диск	Min. 1 TB SATA 7.2 krpm	1TB 7200RPM SATA-6G
Разширителни слотове	Min. 2x PCI Express x1 and 2x PCI Express x16	2 xPCIe x1 (v3.0) and 2 xPCIe x16 (v3.0)
Оптично устройство	DVD±RW DL	DVD±RW DL
Графика	Интегриран min. Intel HD Graphics 530 или еквивалентен	Integrated: Intel® HD Graphics 530
Аудио	Integrated	Integrated Conexant CX20632 codec
Мрежов адаптер	Integrated RJ-45,1GB	Integrated RJ-45,1GB
Интерфейси	min 6 USB 3.0 и 4 USB 2.0 (поне 4 от тях да са изведени на предния панел), 1 USB Type-C™, Audio-In и Audio-Out, RJ-45, 1 VGA, 1 DisplayPort/DVI	6 xUSB 3.0 и 6 xUSB 2.0 общо Front: Universal audio jack with CTIA headset support; 1 xUSB 2.0 (fast charging); 1 xUSB 2.0; 2 xUSB 3.1 Gen 1; 1 xUSB Type-C™ (charging); 4 xUSB са изведени на предния панел Back: Back: 1 x audio in; 1 xRJ-45; 1 xaudio out; 1 xDisplayPort™; 2 x USB 2.0; 2 xUSB 3.1 Gen 1; 1 xpower connector; 2x USB 2.0 (non-vPro™); 2 xUSB 3.1 Gen1 (vPro™); 1 xVGA
Клавиатура	Lat/cyr USB, от производителя на компютърната конфигурация	Lat/cyr USB, от производителя на компютърната конфигурация HP
Мишка	Wheel Optical, USB, от производителя на компютърната конфигурация	Wheel Optical, USB, от производителя на компютърната конфигурация HP
Захранване	Захранващ блок с мощност минимум 250W, с минимум 85% ефективност	250 W, up to 85% efficient, active PFC
Сертификат за съвместимост	CE Mark, Energy Star 5.0, RoHS директива - 2011/65/EC, WEEE директива – 2002/96/EC, Microsoft Windows 7/8/10 Compatible. Моделът да бъде сертифициран от Microsoft..	CE Mark, Energy Star 5.0, RoHS директива - 2011/65/EC, WEEE директива – 2002/96/EC, Microsoft Windows 10 Compatible. Моделът е сертифициран от Microsoft. (съгласно разясненията от 1.03.2018 г.)
Сигурност	Вграден TPM 1.2 модул	Вграден TPM 1.2 модул
Операционна система	Без операционна система, Драйвери за Windows 7/8/10.	Без операционна система, Драйвери за Windows 10. (съгласно разясненията от 1.03.2018 г.)
Гаранция	3 години	3 години

000005

02

Handwritten signatures and initials at the bottom right of the page.

НАСТОЛНИ КОМПЮТРИ Тип 4		HP EliteDesk 800 G3 Tower PC
Кутия, form factor	Tower	Tower
Процесор	Min. Intel Core i7-7700 Processor (3.60 GHz, 8M cache, 4 cores/8 threads) или еквивалентен	Intel® Core™ i7-7700 Processor 7th Generation 3.60 GHz, 8M cache, 4 cores/8 threads
Чипсет	Min. Intel® Q270 или еквивалентен	Intel® Q270
Оперативна памет	Min. 8GB DDR4 -2133 MHz, да поддържа разширение минимум до 32 GB	8GB (1x8GB) DDR4 2400 UDIMM NECC Unbuffered Memory, поддържа разширение до 64 GB
Твърд диск	min. 1000GB SATA 6Gbit/s, 7200rpm, възможност за инсталиране на втори диск, RAID поддръжка	1000GB SATA 6Gbit/s, 7200rpm, с възможност за инсталиране на втори диск, RAID поддръжка
Разширителни слотове	Min. 2x PCI Express x1 and 2x PCI Express x16	2x PCI Express x1 and 2x PCI Express x16
Оптично устройство	DVD±RW DL	DVD±RW DL
Графика	Интегриран min. Intel HD Graphics 630 или еквивалентен	Интегриран Intel® HD Graphics 630
Аудио	Integrated	Integrated Realtek ALC221
Мрежов адаптер	Integrated RJ-45, 1GB	Integrated RJ-45, 1GB
Интерфейси	min 6 USB 3.0 и 4 USB 2.0 (поне 4 от тях да са изведени на предния панел), 1 USB Type-C, Audio-In и Audio-Out, RJ-45, 1 VGA, 1 DisplayPort/DVI	6 xUSB 3.0 и 4 xUSB 2.0 общо Front: 1 xHeadphone connector; 1 xUSB 2.0 (fast charging); 1 xUSB 2.0; 2 xUSB 3.1 Gen 1; 1 USB Type-C™ (charging); Universal audio jack with CTIA headset support, 4 xUSB са изведени на предния панел Back: 1 x audio out; 2 x DisplayPort™; 2x USB 2.0; 4 xUSB 3.1 Gen 1; 1 й audio in; 1 x RJ-45; 1 x power connector; 1 xVGA
Клавиатура	Lat/cyr USB, от производителя на компютърната конфигурация	Lat/cyr USB, от производителя на компютърната конфигурация HP
Мишка	Wheel Optical, USB, от производителя на компютърната конфигурация	Wheel Optical, USB, от производителя на компютърната конфигурация HP
Захранване	Захранващ блок с мощност минимум 250W, с минимум 85% ефективност	Захранващ блок с мощност 250W, 85% ефективност
Сертификат за съвместимост	CE Mark, Energy Star 5.0, RoHS директива - 2011/65/EC, WEEE директива – 2002/96/EC, Microsoft Windows 7/8/10 Compatible. Моделът да бъде сертифициран от Microsoft..	CE Mark, Energy Star 5.0, RoHS директива - 2011/65/EC, WEEE директива – 2002/96/EC, Microsoft Windows10 Compatible. Моделът е сертифициран от Microsoft. (съгласно разясненията от 1.03.2018 г.)
Сигурност	Вграден TPM 1.2 модул	Вграден TPM 1.2 модул
Операционна система	Без операционна система, Драйвери за Windows 7/8/10.	Без операционна система, Драйвери за Windows 10. (съгласно разясненията от 1.03.2018 г.)
Гаранция	3 години	3 години

Дата: 12.03.2018 г

ПОДПИС И ПЕЧАТ:

Мариана Георгиева

[име и фамилия]

Упълномощено лице

[качество на представляващия участника]

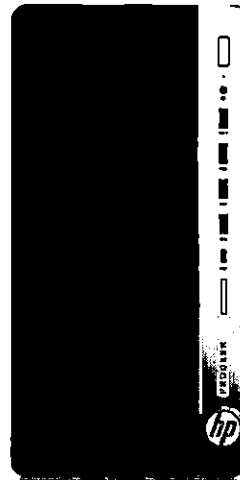
Datasheet

HP ProDesk 600 G3 Microtower PC



Business-ready expansion in a fresh new design

Powered for business, the HP ProDesk 600 MT is a highly expandable PC featuring flexible connectivity options, strong security, and comprehensive manageability features in a stylishly redesigned chassis for the modern workplace.



Handwritten scribbles

HP recommends Windows 10 Pro.

Expansion that extends your investment

- The full value of your investment comes with expansion that extends the life of your PC. The HP ProDesk 600 MT has four bays and four full-height slots, and configurable video and legacy ports.

Powerful options

- HP combined high-performance and massive expansion with 7th Gen Intel® Core™ i3/i5/i7 processors², unleashed by optional Intel® Optane™ technology. Amplify performance with up to 64 GB of DDR4 memory³ and optional dual graphics cards⁴.

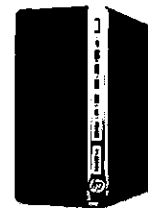
HP exclusive security and manageability

- Help prevent data breaches and downtime with HP BIOSphere Gen3⁵ and simplify management with HP WorkWise⁶, HP's most advanced smartphone app for PC management.
- Power through your day with Windows 10 Pro¹ and the powerful HP ProDesk 600 MT with built-in security, collaboration, and connectivity.
- Keep productivity high and downtime low with HP BIOSphere Gen3⁵ firmware-level automation. Your PCs have extra protection thanks to automatic updates and security checks.
- HP WorkWise⁶ is office intelligence rolled into one smartphone app to provide PC security, real-time PC performance information, and simplified printer driver installation for HP PC users.
- The HP Manageability Integration Kit⁴ helps speed up image creation and management of hardware, BIOS, and security through Microsoft SCCM.
- HP Client Security Suite Gen3⁹ features HP Multi-Factor Authenticate, HP Device Access Manager¹⁰, HP SpareKey, and HP Password Manager. These tools work to keep data out of reach and defend against theft, attacks, and unauthorized users.
- Improve the quality and security of custom Windows images with HP Image Assistant which assists ITDMs with image creation, identifies problems, and provides recommendations and remediation.
- Greatly improve the transfer rates of user's data, voice, and video communication when connecting over challenged LAN or Wi-Fi networks with HP Velocity.
- Rest easy with a PC that goes the distance and is designed to pass HP Total Test Process.
- Audio connections are easy with the Universal Audio Jacki that supports mic in, headphones, and CTIA headsets with the same connector.
- Simplify technical support with Helpdesk by HP Care. Rely on cost-effective expertise that's available 24x7, covering multiple brands, devices and operating systems¹¹.
- Help maximize your cash flow with the use of best-in-class hardware and services for a monthly subscription that allow you to replace your PC with a brand new one every three years¹².
- HP helps you preserve your time and optimize your resources with expert configuration and deployment services that bring you fast, accurate, and globally standardized IT solutions.

Handwritten marks and stamps at the bottom of the page, including a 'HATA' stamp and the number '000007'.

HP ProDesk 600 G3 Microtower PC Specifications Table

HP recommends Windows 10 Pro.



Handwritten signature

Form Factor	Microtower
Available Operating System	Windows 10 Pro 64 – HP recommends Windows 10 Pro. ¹ Windows 10 Home 64 ¹ Windows 10 Home Single Language 64 ¹ Windows 7 Professional 64 (available through downgrade rights from Windows 10 Pro) ² FreeDOS 2.0
Available Processors^{4,5,20}	Intel® Core™ i7-7700 with Intel HD Graphics 630 (3.6 GHz, up to 4.2 GHz with Intel Turbo Boost, 8 MB cache, 4 cores); Intel® Core™ i5-7500 with Intel HD Graphics 630 (3.4 GHz, up to 3.8 GHz with Intel Turbo Boost, 6 MB cache, 4 cores); Intel® Core™ i5-7600 with Intel HD Graphics 630 (3.5 GHz, up to 4.1 GHz with Intel Turbo Boost, 6 MB cache, 4 cores); Intel® Core™ i3-7100 with Intel HD Graphics 630 (3.9 GHz, 3 MB cache, 2 cores); Intel® Core™ i3-7300 with Intel HD Graphics 630 (4 GHz, 4 MB cache, 2 cores); Intel® Core™ i7-6700 with Intel HD Graphics 530 (3.4 GHz, up to 4.0 GHz with Intel Turbo Boost, 8 MB cache, 4 cores); Intel® Core™ i5-6600 with Intel HD Graphics 530 (3.3 GHz, up to 3.9 GHz with Intel Turbo Boost, 6 MB cache, 4 cores); Intel® Core™ i5-6500 with Intel HD Graphics 530 (3.2 GHz, up to 3.6 GHz with Intel Turbo Boost, 6 MB cache, 4 cores); Intel® Core™ i3-6100 with Intel HD Graphics 530 (3.7 GHz, 3 MB cache, 2 cores); Intel® Celeron™ G4400 with Intel HD Graphics 510 (3.3 GHz, 3 MB cache, 2 cores); Intel® Pentium® G4560 with Intel HD Graphics 610 (3.5 GHz, 3 MB cache, 2 cores); Intel® Pentium® G4600 with Intel HD Graphics 630 (3.6 GHz, 3 MB cache, 2 cores); Intel® Pentium® G4620 with Intel HD Graphics 630 (3.7 GHz, 3 MB cache, 2 cores); Intel® Celeron™ G3950 with Intel HD Graphics 610 (3 GHz, 2 MB cache, 2 cores); Intel® Celeron™ G3930 with Intel HD Graphics 610 (2.9 GHz, 2 MB cache, 2 cores)
Chipset	Intel® Q270
Maximum Memory	Up to 64 GB DDR4-2400 SDRAM ⁶ Standard memory note: Transfer rates up to 2400 MT/s
Memory slots	4 DIMM
Internal Storage	500 GB up to 1 TB 2.5" SATA SSHD (5400 rpm) ⁷ 128 GB up to 256 GB 2.5" SATA SSD ¹ 500 GB up to 2 TB 3.5" SATA HDD (7200 rpm) ⁷ 256 GB up to 512 GB 2.5" SATA SED SSD ^{8,9} 256 GB up to 1 TB HP Turbo Drive G2 TLC SSD (PCIe) ¹⁰ up to 1 TB 3.5" SATA SSHD (7200 rpm) ⁷ 500 GB up to 1 TB 2.5" SATA HDD (7200 rpm) ⁷ up to 500 GB 2.5" SATA SED HDD ⁷
Optical Storage	Slim DVD-ROM; Slim DVD-Writer ¹⁵
Available Graphics	Integrated: Intel® HD Graphics 530; Intel® HD Graphics 630; Intel® HD Graphics 610 ^{10,11,12} Discrete: AMD Radeon™ R7 450 FH (4 GB); AMD Radeon™ RX 460 FH (2 GB); NVIDIA® GeForce® GT730 HDMI (1 GB); NVIDIA® GeForce® GT 730 (2 GB, with DisplayPort™ display support)
Audio	Conexant CX20632 codec with universal audio jack and 2W Internal speaker; headset and headphone front ports (3.5 mm), multi-streaming capable
Communications	LAN: Intel® I219LM Gigabit Network Connection LOM; Intel Ethernet I210-T1 PCIe x1 gigabit network interface card (optional) WLAN: Intel® 8265 802.11ac (2x2) wireless with Bluetooth® M.2 combo card vPro™; Intel® 8265 802.11ac (2x2) wireless with Bluetooth® M.2 combo card non-vPro™; Intel® 7265 802.11ac (2x2) wireless with Bluetooth® M.2 combo card non-vPro™ ¹³
Expansion Slots	1 M.2 2230 for optional wireless NIC; 1 M.2 2280 for storage drives; 2 PCIe x1 (v3.0) 10.66 cm (4.2") full height, 16.76 cm (6.6") length, 10 W max power; 1 PCIe x16 (v3.0) (wired as a x4) 10.66 cm (4.2"), full height 16.76 cm (6.6") length, 35 W max power; 1 PCIe x16 (v3.0) 10.66 cm (4.2") full height, 16.76 cm (6.6") length, 75 W max power
Ports and Connectors	Front: Universal audio jack with CTA headset support; 1 USB 2.0 (fast charging); 1 USB 2.0; 2 USB 3.1 Gen 1; 1 USB Type-C™ (charging); 1 SD 4 card reader (optional) Back: 1 audio in; 1 RJ-45; 1 audio out; 1 DisplayPort™; 2 USB 2.0; 2 USB 3.1 Gen 1; 1 power connector; 2 USB 2.0 (non-vPro™); 2 USB 3.1 Gen 1 (vPro™); 3 optional ports Back (optional): 1 choice of 1 HDMI; 1 VGA; 1 USB 3.1 Type-C™; 1 DisplayPort; 1 choice of serial and PS/2; 1 choice of serial port
Internal Drive Bays	One 8.9 cm (3.5"); Two 6.35 cm (2.5") (adapter needed)
External Drive Bays	One 13.34 cm (5.25"); One 9.5 mm slim
Input Device	HP Conferencing Keyboard; HP USB Smart Card (CCID) Keyboard; HP USB Business Slim Keyboard; HP PS/2 Business Slim Keyboard; HP USB Grey Business Slim Keyboard ¹⁴ HP PS/2 Mouse; HP USB 1000 dpi Laser Mouse; HP Grey V2 Mouse; HP USB Mouse; HP USB Hardened Mouse ¹³
Available Software	HP business PCs are shipped with a variety of software titles including: HP BIOSphere Gen3, CyberLink Power Media Player, Native Miracast Support, HP ePrint Driver, HP Support Assistant. Please refer to this product's quick spec document for a full list of preinstalled software. ^{14,15,16}
Security Management	Trusted Platform Module TPM 2.0 Embedded Security Chip (SLB9670 - Common Criteria EAL4+ Certified); SATA 0,1 port disablement (via BIOS); Drive lock; Serial, USB enable/disable (via BIOS); Power-on password (via BIOS); Setup password (via BIOS); Solenoid hood lock/intrusion sensor; Support for chassis padlocks and cable lock devices
Management Features	Intel® vPro™ optional (Core i5 and Core i7)
Power	250 W, up to 85% efficient, active PFC
Dimensions	17 x 27.4 x 33.8 cm
Weight	7.14 kg
Environmental	Low halogen
Energy Efficiency Compliance	ENERGY STAR® certified and EPEAT® registered configurations available ¹⁷
Warranty	3-year limited warranty including 3 years of parts, labour, and next-business-day onsite service. Terms and conditions vary by country. Certain restrictions and exclusions apply.

Handwritten mark

Handwritten mark

Handwritten marks and numbers
000008

WARRANTY

Handwritten initials

Handwritten mark

HP ProDesk 600 G3 Microtower PC

HP recommends Windows

Accessories and services (not included)

Handwritten mark resembling a stylized 'V' or '2'.

HP Turbo Drive Gen2 256GB M.2 Solid State Drive



Super charge your productivity that optimizes your HP Desktops with the HP Turbo Drive Gen2 PCIe SSD drive, which delivers four times the read performance of a traditional SATA SSD drive.

Product number: 1CA51AA

HP 9.5mm G3 800/600 Tower DVD Writer



Affordably add an optical storage writer to your HP Desktop PC with the HP 9.5mm Desktop G3 ODD, which connects through SATA and supports writing—up to 8.5 GB of data or four hours of DVD-quality video—to all DVD formats.

Product number: 1CA52AA

HP Wireless Slim Business Keyboard



Enjoy easy data entry and wireless connectivity with the HP Wireless Business Slim Keyboard, designed to complement the 2015 class of HP Business PCs.

Product number: N3R88AA

AMD Radeon R7 450 4GB Card



Drive your everyday PC, Web conferencing, and video or photo content to up to four displays from one card with the AMD Radeon™ R7 450 4GB Card.

Product number: Z9H52AA

HP 16GB DDR4-2400 DIMM



Boost the capabilities of your HP Business Desktop PC and improve system performance and application responsiveness with low-power, high-speed DDR4 memory from HP.

Product number: Z9H57AA

HP 5 year Next business day Onsite Desktop Only Hardware Support

Receive 5 years of next business day onsite HW Support from an HP-qualified technician for your computing device, if the issue cannot be solved remotely.

Product number: U7899E



Learn more at www.hp.eu/hpoptions

Handwritten scribbles and marks.

Handwritten scribbles and a stamp that reads 'HP PARTS'.

000009

Handwritten scribble.

HP ProDesk 600 G3 Microtower PC

HP recommends Windows 10 Pro.

Messaging Footnotes

- ¹ Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com/>.
- ² Multi-Core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
- ³ Some functionality of this technology such as Intel® Active management technology and Intel Virtualization technology requires additional 3rd party software in order to run. Availability of future "virtual appliances" applications for Intel vPro technology is dependent on 3rd party software providers.
- ⁴ Sold separately or as an optional feature.
- ⁵ HP BIOSphere Gen3 features may vary depending on the PC platform and configurations.
- ⁶ HP WorkWise smartphone app will soon be available as a free download on the App Store and Google Play.
- ⁷ Based on major competitors as of November 1, 2016 with smartphone managed PC security, performance and print features.
- ⁸ HP Manageability Integration Kit is planned to be available first quarter 2017 and can be downloaded from <http://www.hp.com/us/en/ads/desktopmanagement/overview.html>.
- ⁹ HP Client Security Suite Gen3 requires Windows and Intel® 7th Gen processors.
- ¹⁰ HP Multi Factor Authenticate requires 7th Generation Intel® Core™ processor, Intel® integrated graphics and Intel® WLAN.
- ¹¹ HP Care Services are optional. Service levels and response times for HP Care Pack Services may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. For details, visit www.hp.com/go/pcp. HP services are governed by the applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional statutory rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service or the HP Limited Warranty provided with your HP Product.
- ¹² Financing and service offerings available through Hewlett-Packard Financial Services Company and its subsidiaries and affiliates (collectively HPFSC) in certain countries and is subject to credit approval and execution of standard HPFSC documentation. Subscriptions to use are available for 24 or 36 month terms. Rates and terms are based on customer's credit rating, offering types, services and/or equipment type and options. Not all customers may qualify. Not all services or offers are available in all countries. Other restrictions may apply. HPFSC reserves the right to change or cancel this program at any time without notice.

Technical specifications disclaimers

- ¹ Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com/>.
- ² Some devices for academic use will automatically be updated to Windows 10 Pro Education with the Windows 10 Anniversary update. Features vary; see <https://aka.ms/ProEducation> for Windows 10 Pro Education feature information.
- ³ This system is preinstalled with Windows 7 Pro software and also comes with a license and media for Windows 10 Pro software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.
- ⁴ Multicore is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
- ⁵ Your product does not support Windows 8 or Windows 7. In accordance with Microsoft's support policy, HP does not support the Windows 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows 8 or Windows 7 drivers on <http://www.support.hp.com>.
- ⁶ Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed.
- ⁷ For storage drives, GB = 1 billion bytes, TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10) is reserved for system recovery software.
- ⁸ TLC SSD in Federal Information Processing Standard
- ⁹ Wireless cards are optional or add-on features and requires separately purchased wireless access point and internet service. Availability of public wireless access points limited. The specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ac WLAN devices.
- ¹⁰ Intel® HD Graphics 530: integrated on 6th gen Core™ i7/i5/i3 processors
- ¹¹ Intel® HD Graphics 630: integrated on 7th gen Core™ i7/i5/i3 processors and Pentium® G4620, 4600, 4600T
- ¹² Intel® HD Graphics 610: integrated on Pentium® G4560, G4560T, Celeron™ G3950, G3930, G3930T
- ¹³ Sold separately or as an optional feature.
- ¹⁴ HP BIOSphere Gen 3 requires Intel® 7th generation processors.
- ¹⁵ Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming media players that also support Miracast. You can use Miracast to share what you're doing on your PC and present a slide show. For more information: <http://windows.microsoft.com/en-us/windows-8/project-wireless-screen-miracast>.
- ¹⁶ HP ePrint Driver requires an Internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see www.hp.com/go/eprintcenter). Requires optional broadband module. Broadband use requires separately purchased service contract. Check with service provider for coverage and availability in your area. Separately purchased data plans or usage fees may apply. Print times and connection speeds may vary.
- ¹⁷ EPEAT® registered where applicable. EPEAT registration varies by country. See www.epeat.net for registration status by country.
- ¹⁸ External power supplies, power cords, cables and peripherals are not low halogen. Service parts obtained after purchase may not be low halogen.
- ¹⁹ HD-DVD discs cannot be played on this drive. No support for DVD-RAM. Actual speeds may vary. Don't copy copyright-protected materials. Double Layer discs can store more data than single layer discs. Discs burned with this drive may not be compatible with many existing single-layer DVD drives and players.
- ²⁰ NOTE: Your product does not support Windows 8 or Windows 7. In accordance with Microsoft's support policy, HP does not support the Windows 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows 8 or Windows 7 drivers on <http://www.support.hp.com>.

Learn more at www.hp.eu/desktops

Sign up for updates www.hp.com/go/getupdated

Copyright © 2017 HP Development Company, L.P. The only warranties for HP products are set forth in the express limited warranty statements accompanying such products. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Intel, Core, Pentium, Celeron and vPro are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries. Bluetooth is a trademark of its proprietor and used by HP Inc. under license. USB Type-C™ and USB-C™ are trademarks of USB Implementers Forum. ENERGY STAR is a registered trademark of the U.S. Environmental Protection Agency. DisplayPort™ and the DisplayPort™ logo are trademarks owned by the Video Electronics Standards Association (VESA®) in the United States and other countries. All Rights Reserved. All other trademarks are the property of their respective owners..

4AA6-9333EEE, March 2017



BRP

000010



ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ
в съответствие с ISO / IEC 17050-1 и EN 17050-1

Doc #: TPC-M019-MT-R5Превод/bg

Наименование на производителя: **HP Inc.**
Производителя Адрес: **1501 Page Mill Road, Palo Alto, CA 94303-1112 USA**

заявява, че продуктът

Име на продукта и модел:²⁾ **HP ProDesk 400 G3 MT Business PC**
Нормативен номер на модела:¹⁾ **TPC-M019-MT**
Опции на продукта: **Виж приложение I**

съответства на следните спецификации на продукта и регламенти:

Безопасност:

IEC 60950-1:2005 +A1:2009 +A2:2013
EN 60950-1:2006 +A11:2009 +A1:2010
+A12:2011 +A2:2013
EN 62311:2008

EMC

EN 301 489-1 V2.1.1
EN 301 489-17 V3.1.1
CISPR 32:2012 Class B
FCC CFR 47 Part 15
ICES-003, Issue 6

Радиочестотният спектър

EN 300 328 V2.1.1
EN 301 893 V2.1.1

екодизайна

Регламент (EO) No 617/2013
EN 62623:2013

RoHS

EN 50581:2012

Този апарат в съответствие с изискванията на Директивата RED 2014/53/EC, Директивата за екодизайна 2009/125/OT, Директивата RoHS 2011/65/EC и носи маркировката съответно **CE**.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Допълнителна информация:

- 1) Този продукт има нормативен номер на модела, който остава с регулаторните аспекти на дизайн. Номер на Нормативен модел е идентификатора основен продукт в нормативната документация и протоколи от изпитвания, този брой не трябва да се бърка с пазарното име или номера на продукта.
- 2) Този продукт е изпробван в типична HP среда във връзка с хост система HP.

Palo Alto, CA
10-06-2017

проверка на подписа върху оригинала на декларацията,

приложена
Gilles Soulard, Manager
Product Compliance Center

Local контакт за регулаторни теми само:

EU: **HP Deutschland GmbH, HP HQ-TRE, 71025 Boeblingen, Germany**
U.S.: **HP Inc., 1501 Page Mill Road, Palo Alto 94304, U.S.A. 650-857-1501**

www.hp.eu/certificates

000011

ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ
в съответствие с ISO / IEC 17050-1 и EN 17050-1

Handwritten marks at the top right of the page.

ПРИЛОЖЕНИЕ I

Нормативен номер на модела (RMN): TPC-M019-MT

OPTIONS

ОПИСАНИЕ	RMN ОПЦИЯ
Intel 7265.NGWNG.W ac 2x2 + BT 4 LE PCIe + USB NGFF 2230 W	7265NGW

* Когато X представлява всяка алфа цифров знак.

Handwritten marks in the lower middle section of the page.

РИТЕНАТА

000012

Handwritten mark


Handwritten mark

THE ECO DECLARATION

Handwritten mark

Product environmental attributes – THE ECO DECLARATION

The declaration may be published only when all rows and/or fields marked with an * are filled-in (n.a. for not applicable).
Additional information regarding each item may be found under P14.

Brand *	HP	
Company name *	HP	
Contact information *	HP Environmental Contact Centre (ECC) environment@hp.com	
Internet site *	http://www.hp.com/hpinfo/globalcitizenship/environment/	
Additional Information		

The company declares (based on product specification or test results based obtained from sample testing), that the product conforms to the statements given in this declaration.	
Type of product *	Desktop PC
Commercial name *	HP ProDesk 600 G3 Microtower Business PC
Model number *	600 G3
Issue date *	1/18/2017
Intended market *	<input checked="" type="checkbox"/> Global <input type="checkbox"/> Europe <input type="checkbox"/> Asia, Pacific & Japan <input type="checkbox"/> Americas <input type="checkbox"/> Other
Additional information	

This is an uncontrolled copy when in printed form. Please refer to the contact information for the latest version.


Quality Control	Item	Requirement met	
		Yes	No
QC1 *	The company enforces an internal quality control scheme to ensure the correctness of this eco declaration	<input checked="" type="checkbox"/>	<input type="checkbox"/>
QC2 *	The company is a member of an eco declaration system that enforces regular independent quality control such as organized by IT-Företagen (see www.itecodeclaration.org).	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Handwritten signatures and marks

OPWEHPAIA


Handwritten mark

Handwritten mark

Model number *	600 G3	
Issue date *	1/18/2017	Logo 

Product environmental attributes - Legal requirements		Requirement met		
Item		Yes	No	n.a.
P1	Hazardous substances and preparations			
P1.1*	Products do not contain more than; 0.1% lead, 0.01% cadmium, 0.1% mercury, 0.1% hexavalent chromium, 0.1% polybrominated biphenyls (PBB) or 0.1% polybrominated diphenyl ethers (PBDE). (See legal reference and Note B1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.2*	Products do not contain Asbestos (see legal reference). Comment: Legal reference has no maximum concentration value.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.3*	Products do not contain Ozone Depleting Substances: Chlorofluorocarbons (CFC), hydrobromofluorocarbons (HBFC), hydrochlorofluorocarbons (HCFC), Halons, carbontetrachloride, 1,1,1-trichloroethane, methyl bromide (see legal reference). Comment: Legal reference has no maximum concentration values.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.4*	Products do not contain more than; 0.005% polychlorinated biphenyl (PCB), 0.005% polychlorinated terphenyl (PCT) in preparations (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.5*	Products do not contain more than 0.1% short chain chloroparaffins (SCCP) with 10-13 carbon atoms in the chain containing at least 48% per mass of chlorine in the SCCP (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.6*	Textile and leather parts with direct skin contact do not contain Tri-(2,3-dibromopropyl)-phosphate (TRIS), Tris-(aziridinyl)-phosphineoxide (TEPA), polybrominated biphenyl (PBB) (see legal reference). Comment: Legal reference has no maximum concentration values.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P1.7*	Textile and leather parts with direct skin contact do not contain more than 0.003% Azo colorants that split aromatic amines. (See legal reference and Note B1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P1.8*	Wooden parts do not contain arsenic and chromium as a wood preservation treatment as well as pentachlorophenol and derivatives (see legal reference). Comment: Legal reference has no maximum concentration values.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P1.9*	Parts with direct and prolonged skin contact do not release nickel in concentrations above 0.5 microgram/cm ² /week (see legal reference). Comment: Max limit in legal reference when tested according to EN1811:1998.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P1.10*	REACH Article 33 information about substances in articles is available at (add URL or mail contact): http://www.hp.com/hpinfo/globalcitizenship/environment/productdata/reachdesktop-pcs.html	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2	Batteries			
P2.1*	If the product contains a battery or an accumulator, it is labeled with the disposal symbol and if it contains more than 0.0005% of mercury (for button cells only) by weight, or more than 0.004% of lead, it shall be marked with the chemical symbol for the metal concerned, Hg or Pb. Information on proper disposal is provided in user manual. (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2.2*	Button cells used in the product do not contain more than 2% by weight of mercury. Other batteries or accumulators do not contain more than 0.0005% of mercury or 0.002% of cadmium. (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2.3*	Batteries and accumulators are easily removable by either users or service providers (as dependent on the design of the product). Exception: Batteries that are permanently installed for safety, performance, medical or data integrity reasons do not have to be "easily removable". (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3	Safety, EMC connection to the telephone network and labeling			
P3.1*	The product complies with legally required safety standards as specified (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.2*	The product complies with legally required standards for electromagnetic compatibility (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.3*	If product is intended for connection to a public telecom network or contains a radio transmitter, it complies with legally required standards for radio and telecommunication devices (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.4*	The product is labeled to show conformance with applicable legal requirements (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P4	Consumable materials			
P4.1*	If a photo conductor (drum, belt etc.) is used in the product, it does not contain cadmium max 0.01% (see legal reference and Note B1).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P4.2*	If ink/toner is used in the product, it does not contain cadmium max 0.1% by weight (see legal reference).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P4.3*	If the ink/toner formulation/preparation is classified as hazardous according to applicable regulations, the product/packaging is adequately labeled and a Safety Data Sheet (SDS) in accordance with these requirements is available (see legal reference).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P5	Product packaging			
P5.1*	Packaging and packaging components do not contain more than 0.01% lead, mercury, cadmium and hexavalent chromium by weight of these together.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P5.2*	Plastic packaging material is marked according to ISO 11469 referring ISO 1043 (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P5.3*	The product packaging material is free from ozone depleting substances as specified in the Montreal Protocol (see legal reference). Comment: Legal reference has no maximum concentration values.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>


Note B1: Restriction applies to the homogeneous material, unless other specified and expressed in weight %.

Model number *	600 G3	
Issue date *	1/18/2017	Logo 

Product environmental attributes - Market requirements - Environmental conscious design		Requirement met		
Item	*=mandatory to fill in. Additional information regarding each item may be found under P14.	Yes	No	n.a.
P6	Treatment Information			
P6.1*	Information for recyclers/treatment facilities is available (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7	Design			
	Disassembly, recycling			
P7.1*	Parts that have to be treated separately are easily separable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.2*	Plastic materials in covers/housing have no surface coating.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.3*	Plastic parts >100g consist of one material or of easily separable materials.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.4*	Plastic parts >25g have material codes according to ISO 11469 referring ISO 1043.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.5	Plastic parts are free from metal inlays or have inlays that can be removed with commonly available tools.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.6*	Labels are easily separable. (This requirement does not apply to safety/regulatory labels).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Product lifetime			
P7.7*	Upgrading can be done e.g. with processor, memory, cards or drives	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.8*	Upgrading can be done using commonly available tools	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.9.	Spare parts are available after end of production for: 5 years			<input type="checkbox"/>
P7.10	Service is available after end of production for: years			<input checked="" type="checkbox"/>
	Material and substance requirements			
P7.11*	Product cover/housing material type: Material type: >ABS< Material type: >PBT-GF30 FR(40)< Material type:			
P7.12	Electrical cable insulation materials of power cables are PVC free.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.13	Electrical cable insulation materials of signal cables are PVC free	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.14	All cover/housing plastic parts >25g are free from chlorine and bromine.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.15	All printed circuit boards (without components) >25g are halogen free. as defined in IEC61249-2-21. (See Note B2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.16	Flame retarded plastic parts >25g in covers / housings are marked according ISO 1043-4: Marking: >PBT-GF30 FR(40)<	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.17	Alt. 1 Chemical specifications of flame retardants in printed circuit boards >25g (without components): TBBPA (additive) <input type="checkbox"/> , TBBPA (reactive) <input type="checkbox"/> , Other; chemical name: , CAS #: Alt. 2 Chemical specifications of flame retardants in printed circuit boards (without components) >25g according ISO 1043-4: FR(40)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.18	Alt. 1 Flame retarded plastic parts >25g contain the following flame retardant substances/preparations in concentrations above 0.1%: Comment: No legal limits exist, this is a market requirement. 1. Chemical name: , CAS #: 2. Chemical name: , CAS #: 3. Chemical name: , CAS #: Alt. 2 Chemical specifications of flame retardants in plastic parts >25g according ISO 1043-4: >PBT-GF30 FR(40)<	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.19	Plastic parts >25g are free from flame retardant substances/ preparations above 0.1% classified as R45, R40, R46, R48, R50, R51, R53, R60, R61 and any combination of these (See Note B3)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.20	Of total plastic parts' weight >25g, recycled material content is 19.8 %.			
P7.21	Of total plastic parts' weight >25g, biobased material content is 0%.			
P7.22	Light sources are free from mercury If mercury is used specify: Number of lamps: and max. mercury content per lamp: mg	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P8	Batteries			
P8.1*	Battery chemical composition: lithium/manganese dioxide			<input type="checkbox"/>
P8.2	Batteries meet the requirements of the following voluntary program/s:			<input checked="" type="checkbox"/>


Note B2: IEC61249-2-21 has maximum limits for chlorine and bromine but does not address fluorine, iodine and astatine which are included in the group of halogens.

Note B3: 'Starting from January 2009. Risk phrases can be replaced by Hazard phrases according to the Globally Harmonized System (GHS), mandatory by December 2010.

Model number *	600 G3	
Issue date *	1/18/2017	Logo 

Product environmental attributes - Market requirements (continued)				Requirement met			
Item				Yes	No	n.a.	
P9 Energy consumption							
9.1 For the product the following power levels or energy consumptions are reported:							
Energy mode *	Power level at 100 V AC	Power level at 115 V AC	Power level at 230 V AC	Reference / Standard for energy modes and test method *			
ENERGY STAR® On Mode * (System Short Idle)	12.29 W	12.45 W	12.11 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>		
ENERGY STAR® On Mode * (System Long Idle)	11.42 W	11.35 W	11.25 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>		
ENERGY STAR® Low Power Sleep Mode* (S3 - Windows "Standby") With Wake On LAN (WOL) Enabled	1.20 W	1.20 W	1.17 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>		
System Off/Apparent Off Mode (ACPI S5) With Wake On LAN(WOL) Enabled* (Test Unit connected to AC Mains, AC adapter connected to All-In-One PC, if applicable)	0.79 W	0.79 W	0.78 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>		
Etec * Annual Energy Consumption (calculated value) for each input voltage	56.36 kWh/year	56.75 kWh/year	55.53 kWh/year	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>		
Display resolution*:	Megapixels (Applies only to Integrated PCs (All-In-One PC))			ENERGY STAR® Program Requirements for Displays (Ver. 6.1)	<input type="checkbox"/>		
Print Speed *	: Images per minute				<input checked="" type="checkbox"/>		
Default time to enter energy save mode:	minutes			ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>		
P9.2*	Information about the energy save function is provided with the product.				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P9.3*	The product meets the energy requirements of the following voluntary program/s: ENERGY STAR® version: 6.1 Tier: Product category: Desktop PC Others specify:				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P10 Emissions							
Noise emission – Declared according to ISO 9296							
P10.1	Mode	Mode description	Declared A-weighted sound power level L_{WAd} (B)	Declared A-weighted sound pressure level L_{pAm} (dB)		<input type="checkbox"/>	
				Operator position <input checked="" type="checkbox"/> Desktop <input checked="" type="checkbox"/> or Desk side <input type="checkbox"/>	Bystander positions <input type="checkbox"/>		(only if product is not operator attended)
	Idle	* Fans on, HDD spinning (if applicable)	* 3.3	24		<input type="checkbox"/>	
	Operation	* Fans on, HDD spinning	* 3.3	25		<input type="checkbox"/>	
	Other mode					<input type="checkbox"/>	
Measured according to: <input checked="" type="checkbox"/> ISO7779 <input checked="" type="checkbox"/> ECMA-74 <input type="checkbox"/> Other (only if not covered by ECMA-74 with L_{pAm} measurement distance m)							
P10.2	The product meets the acoustic noise requirements of the following voluntary program/s:				<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SPRINTWALIA

Model number *	600 G3	
Issue date *	1/18/2017	Logo 

Product environmental attributes - Market requirements (continued)		Requirement met		
Item		Yes	No	n.a.
Chemical emissions from printing products				
P10.3*	Test performed according to ECMA-328 (ISO/IEC 28360) standard <input type="checkbox"/> , other specify:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P10.4	Typical emission rate (print phase) is (mg/h): Dust <input type="checkbox"/> Ozone <input type="checkbox"/> Styrene <input type="checkbox"/> Benzene <input type="checkbox"/> TVOC <input type="checkbox"/>			<input checked="" type="checkbox"/>
P10.5	Chemical emission requirements of the following voluntary program/s are met for : Dust <input type="checkbox"/> Ozone <input type="checkbox"/> Styrene <input type="checkbox"/> Benzene <input type="checkbox"/> TVOC <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Electromagnetic emissions				
P10.6	Computer display meets the requirement for low frequency electromagnetic fields of the following voluntary program/s:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P11 Consumable materials for printing products				
P11.1*	A Safety Data Sheet (SDS) is available for the ink/toner preparation, even if not legally required (see P4.3).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P11.2*	Paper containing post-consumer recycled fibers can be used, provided that it meets the requirements of EN12281.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P11.3*	2-sided (duplex) printing/copying is an integrated product function.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P12 Ergonomics for computing products				
P12.1*	The display meets the ergonomic requirements of ISO 9241-307 for visual display technologies.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P12.2*	The physical input device meets the requirements of ISO 9995 and ISO 9241-410.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P13 Packaging and documentation				
P13.1*	Product packaging material type(s): PAPER/Corrugated weight (kg): 1.272 Product packaging material type(s): PLASTIC/Polyethylene Expanded - EPE weight (kg): 0.28 Product packaging material type(s): PLASTIC/Polyethylene low density - LDPE weight (kg): 0.028			
P13.2*	Product plastic packaging is free from PVC.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P13.3*	Specify media for user and product documentation (tick box): Electronic <input checked="" type="checkbox"/> , Paper <input type="checkbox"/> , Other <input type="checkbox"/>			<input type="checkbox"/>
P13.4*	For paper user and product documentation, please specify contained percentage of post-consumer recycled fiber: 0 %			<input type="checkbox"/>
Rev. P13.5	User and product documentation do not contain chlorine bleached paper	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P14 Additional information (See Note B4)				
All sections	1. Product environmental information contained in this declaration is valid as of the date the declaration is published. Changes to external standards referenced in the IT Eco-Declaration may invalidate some information contained in this declaration over time.			
P9	1. Many PCs are offered in multiple configurations within the model family. Energy efficiency data listed in this declaration is for an ENERGY STAR® compliant configuration if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. For more information about HP's ENERGY STAR® qualified products, go to hp.com: http://www.hp.com/ and select the applicable market segments and product categories to find PC configurations that meet the ENERGY STAR® specifications. 2. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured model. 3. Energy Efficiency information published on the ECMA 370 The Eco Declaration represents a typically configured product base model meeting ENERGY STAR® specifications if offered within the model family. If optional components or modules are added, like extra hard disks or graphic cards etc, these can change the energy efficiency data listed above. 4. Power consumption in the Off / Apparent Off mode is measured and reported with the network interface controller (NIC) WOL disabled.			
	5. European Union Commission Regulation 1275/2008- Energy Efficiency Information:			

Note B4: Additional lines may be inserted to declare further items. by positioning the cursor at the far right of the line and pressing the <Enter> key.

ATA



Mode / Condition	Power Consumption in Watts at 230 VAC Input Voltage	Default Time to Mode / Condition (if applicable)
Off Mode (if applicable)		Not Applicable
Standby Mode (if applicable)	Not Applicable	Not Applicable
Network Standby / Sleep / Long Idle Mode if all wired network ports are connected and all wireless network ports are activated (if applicable)		
Network Standby / Sleep / Long Idle Mode (if applicable)		

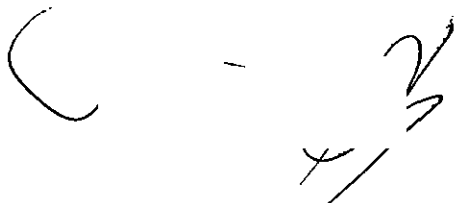
6. European Union Commission Regulation 1275/2008- Wireless Network Instructions:

Where applicable, activate and deactivate a wireless network using the instructions provided in the product user guide or the operating system. Information is also available at www.hp.com/support.

P10 1. Acoustic noise information published on the ECMA 370 The Eco Declaration represents a typically configured product base model only. If optional items with moving parts are added, like extra hard disks or graphic cards with fans etc, these can change acoustic noise values for which HP can take no responsibility.

Legal references Europe Annex B

Reference	Declaration item
2002/95/EC (ROHS Directive)	P1.1, P4.1
REACH, Annex XVII	P1.6, P1.8, P4.2
REACH, Annex XVII	P1.4
REACH, Annex XVII	P1.2
REACH, Annex XVII	P1.7
REACH, Annex XVII	P1.9
Regulation (EC) No. 2037/2000, 2038/2000, 2039/2000	P1.3
Norwegian regulation relating to restrictions on the use of certain dangerous chemicals 20.12.2002	P1.5
2006/66/EC (Battery and accumulators Directive)	P2.1, P2.2, P2.3, P3.4, P8.1
2006/95/EC (Low Voltage Directive)	P3.1, 3.4
2004/108/EEC (New EMC Directive)	P3.2, 3.4
1999/5/EC (R&TTE Directive)	P3.3, 3.4
"REACH" Regulation (1907/2006), annex VII	P1.10
(EC) No.1272/2008 regulation on classification, labeling and packaging (CLP)	P4.3
REACH article 31, annex II	P4.3
2004/12/EC (Directive on packaging and packaging waste)	P5.1
(97/129/EC) (Commission Decision on Identification System for Packaging Materials	P5.2
2037/2000/EC Regulation on Substances that Deplete the Ozone Layer	P5.3
2002/96/EC (WEEE directive)	P3.4, P6.1
(EC) No.1272/2008 regulation on classification, labeling and packaging (CLP)	P7.19



THE ECO DECLARATION



IT-Företagen

Company environmental profile - THE ECO DECLARATION

Brand	HP	Logo
Company name *	HP	
Contact information *	HP Environmental Contact Centre (ECC) environment@hp.com	
Internet site *	www.hp.com/hpinfo/globalcitizenship/environment/index.html	
Issue date *	2014-06	
Intended market *	<input checked="" type="checkbox"/> Global <input type="checkbox"/> Europe <input type="checkbox"/> Asia, Pacific & Japan <input type="checkbox"/> Americas <input type="checkbox"/> Other	
Additional information		

This is an uncontrolled copy when in printed form. Please refer to the contact information for the latest version.

The declaration may be published only when all rows and/or fields marked with an * are filled-in (n.a. for not applicable). Additional information regarding each item may be found under C6.

Quality control		Requirement met	
Item		Yes	No
QC1 *	The company enforces an internal quality control system to ensure the correctness of this eco declaration	<input checked="" type="checkbox"/>	<input type="checkbox"/>
QC2 *	The company is a member of an eco declaration system that enforces regular independent quality control.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Company environmental profile - Legal requirements		Requirement met		
Item		Yes	No	n.a.
C1	Product recycling			
C1.1*	The company participates in a system or has its own system for collection and recycling of end of life products in countries where the company puts them on the market and where required (see legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C2	Battery recycling			
C2.1*	The company participates in a system or has its own system for collection and recycling of batteries in countries where the company puts products on the market (see legal reference) or pays eco tax / fee where required.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C3	Packaging recycling			
C3.1*	The company participates in a system or has its own system for collection and recycling of packaging material in countries where the company puts products on the market and where required (see legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Company environmental profile - Market requirements		Requirement met		
Item		Yes	No	n.a.
C4	Environmental policy and environmental management			
C4.1*	The company has a documented environmental policy approved by the management.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C4.2*	The company has an environmental management system covering: Product development Manufacturing If so certified according to: <input checked="" type="checkbox"/> ISO 14001 <input type="checkbox"/> Other as specified in C6	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	
C4.3	The company regularly publishes an environmental report. If so, it meets the recommendations of <input checked="" type="checkbox"/> The Global Reporting Initiative <input type="checkbox"/> Other as specified in C6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C5	Recycling			
C5.1*	Information about the product, battery & packaging take back system (C1, C2, C3) is available in printed or electronic format.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C6	Additional Information			
<p><i>HP is committed to responsible business practices and transparency in its global citizenship policies and performance. We have a long history of working with suppliers to improve their social and environmental (SER) performance, as well as improving industry standards. HP endorses the EICC Code of Conduct in its entirety, and we supplement it with additional requirements specific to freedom of association and HP's Student and Dispatch Worker Guidance Standard for Supplier Facilities in the People's Republic of China (PRC). HP also has a strong Global Human Rights Policy in place. HP sets expectations for its suppliers to establish policies and processes regarding conflict minerals. HP conducts due diligence on its supply chain annually including requesting information about our suppliers' own due diligence and the smelters and refiners used. HP became the first IT company to publish its supply chain smelter list. HP follows the Global Reporting Initiative (GRI) guidelines as a basis for reporting. The GRI index provides easy reference to HP's Living Progress Report (LPR) content. HP offers take back services of products and printing suppliers in some 70 countries. Please refer to HP's Living Progress Report for more details on our global efforts.</i></p>				

РОПІТАНА

Legal references Europe Annex A

12

Reference	Declaration item
2002/96/EC (WEEE directive)	C1.1
2006/66/EC (Battery and accumulators Directive)	C1.2
2004/12/EC (Directive on packaging and packaging waste)	C1.3

Handwritten scribbles and marks in the lower middle section of the page.

Handwritten signature or initials at the bottom right corner.

Datasheet

HP EliteDesk 800 G3 Tower PC



Security, manageability, and performance in a modern design

Powered for the enterprise, the HP EliteDesk 800 TWR is one of HP's most secure and manageable PCs featuring high performance, and expandability in a stylishly redesigned, 26% smaller chassis for the modern workplace.



HP recommends Windows 10 Pro.

Ready for virtual reality

- HP has combined high-performance and massive expansion with 7th Gen Intel® Core™ processors¹ and PCIe Gen3 solid state drives². Amplify performance with optional 91W processors³, up to 64 GB of DDR4 memory⁴ and optional high-end discrete graphics for VR content⁵.

Expansion that extends your investment

- The full value of your investment comes with expansion that extends the life of your PC. The HP EliteDesk 800 TWR has five bays and four full-height slots, plus two additional M.2 connectors, and plenty of configurable ports.

Strong security, powerful manageability

- Get powerful protection and simplified management from HP's most secure and manageable PCs. HP Sure Start Gen3⁶ protects against BIOS attacks while the HP Manageability Integration Kit⁷ allows you to easily manage devices through Microsoft System Center Configuration Manager.

Configurable I/O Port for displays

- Configure a third configurable rear I/O port for customizable display connections with your choice of VGA, DisplayPort™, HDMI or USB-Type C™ with DisplayPort™.

- Power through your day with Windows 10 Pro¹ and the powerful HP EliteDesk 800 TWR with built-in security, collaboration, and connectivity.
- Start with a genuine HP BIOS every time. HP Sure Start Gen3⁶ monitors in-memory BIOS, recovers the platform without user or admin intervention, restores the BIOS to a custom state, and is enterprise ready for centralized management.
- Keep data out of reach and defend against theft, attacks, and unauthorized users with HP Client Security Suite Gen3⁸.
- ITDMs can quickly help create, improve, and secure custom Windows images with HP Image Assistant.
- The HP Manageability Integration Kit⁷ helps speed up image creation and management of hardware, BIOS, and security through Microsoft System Center Configuration Manager.
- HP WorkWise⁹ is office intelligence rolled into one smartphone app to provide PC security, real-time PC performance information, and simplified printer driver installation for HP PC users.
- Greatly improve data, voice, and video communication transfer rates over challenged LAN and Wi-Fi networks.
- Rest easy with a PC that goes the distance and is designed to pass HP Total Test Process and MIL-STD 810G testing¹⁰.
- Take advantage of HP's Elite Support¹¹, limited warranty, and Global Series support that enables stable, consistent images with managed lifecycle transitions for corporate and enterprise customers.
- Simplify technical support with Helpdesk by HP Care. Rely on cost-effective expertise that's available 24x7, covering multiple brands, devices and operating systems¹².
- Help maximize your cash flow with the use of best-in-class hardware and services for a monthly subscription that allow you to replace your PC with a brand new one every two or three years¹³.
- HP helps you preserve your time and optimize your resources with expert configuration and deployment services that bring you fast, accurate, and globally standardized IT solutions.

000021

ВЕРНО С ОРИГИНАЛА

HP EliteDesk 800 G3 Tower PC Specifications Table

HP recommends Windows 10 Pro.



Form Factor	Tower
Available Operating System	Windows 10 Pro 64 – HP recommends Windows 10 Pro. ¹ Windows 10 Home 64 ¹ Windows 10 Home Single Language 64 ¹ Windows 7 Professional 64 (available through downgrade rights from Windows 10 Pro) ² FreeDOS 2.0
Available Processors^{4,5}	Intel® Core™ i7-7700K with Intel HD Graphics 630 (4.2 GHz, up to 4.5 GHz with Intel Turbo Boost, 8 MB cache, 4 cores); Intel® Core™ i7-7700 with Intel HD Graphics 630 (3.6 GHz, up to 4.2 GHz with Intel Turbo Boost, 8 MB cache, 4 cores); Intel® Core™ i5-7500 with Intel HD Graphics 630 (3.4 GHz, up to 3.8 GHz with Intel Turbo Boost, 6 MB cache, 4 cores); Intel® Core™ i5-7600 with Intel HD Graphics 630 (3.5 GHz, up to 4.1 GHz with Intel Turbo Boost, 6 MB cache, 4 cores); Intel® Core™ i3-7100 with Intel HD Graphics 630 (3.9 GHz, 3 MB cache, 2 cores); Intel® Core™ i3-7300 with Intel HD Graphics 630 (4 GHz, 4 MB cache, 2 cores); Intel® Pentium® G4560 with Intel HD Graphics 610 (3.5 GHz, 3 MB cache, 2 cores); Intel® Pentium® G4600 with Intel HD Graphics 630 (3.6 GHz, 3 MB cache, 2 cores); Intel® Pentium® G4620 with Intel HD Graphics 630 (3.7 GHz, 3 MB cache, 2 cores); Intel® Celeron™ G3950 with Intel HD Graphics 610 (3 GHz, 2 MB cache, 2 cores); Intel® Core™ i7-6700 with Intel HD Graphics 530 (3.4 GHz, up to 4.0 GHz with Intel Turbo Boost, 8 MB cache, 4 cores); Intel® Core™ i5-6500 with Intel HD Graphics 530 (3.2 GHz, up to 3.6 GHz with Intel Turbo Boost, 6 MB cache, 4 cores); Intel® Core™ i3-6100 with Intel HD Graphics 530 (3.7 GHz, 3 MB cache, 2 cores)
Chipset	Intel® Q270
Maximum Memory	Up to 64 GB DDR4-2400 SDRAM ⁶ Standard memory note: Transfer rates up to 2400 MT/s
Memory slots	4 DIMM
Internal Storage	500 GB up to 2 TB 3.5" SATA HDD (7200 rpm) ⁷ 500 GB up to 1 TB 2.5" SATA SSHD (5400 rpm) ⁷ 256 GB up to 512 GB 2.5" SATA SED ^{7,8} 256 GB up to 1 TB HP Turbo Drive G2 TLC SSD (PCIe) ⁷ 128 GB up to 512 GB 2.5" SATA SSD ⁷ 500 GB up to 1 TB 2.5" SATA HDD (7200 rpm) ⁷ up to 1 TB 3.5" SATA SSHD (7200 rpm)
Optical Storage	Slim DVD-ROM; Slim DVD-Writer
Available Graphics	Integrated: Intel® HD Graphics 530; Intel® HD Graphics 630; Intel® HD Graphics 610 ^{10,11,12} Discrete: AMD Radeon™ R7 450 FH (4 GB); AMD Radeon™ RX 460 FH (2 GB); AMD Radeon™ RX 480 FH (4 GB); NVIDIA® GeForce® GT730 HDMI (1 GB); NVIDIA® GeForce® GT 730 (2 GB, with DisplayPort™ display support); NVIDIA® GeForce® GTX 1080 FH (8 GB)
Audio	Integrated Realtek ALC221 with combo microphone/headphone jack, line-in and line-out rear ports (3.5 mm), internal speaker.
Communications	LAN: Intel® I219LM Gigabit Network Connection LOM; Intel Ethernet I210-T1 PCIe x1 gigabit network interface card (optional) WiLAN: Intel® 8265 802.11ac (2x2) wireless with Bluetooth® M.2 combo card vPro™; Intel® 8265 802.11ac (2x2) wireless with Bluetooth® M.2 combo card non-vPro™; Intel® 7265 802.11ac (2x2) wireless with Bluetooth® M.2 combo card non-vPro™ ⁹
Expansion Slots	1 M.2 2230 for optional wireless NIC; 1 M.2 internal connector for optional SSD drive; 1 PCIe x1; 1 PCIe 3.0 x16; PCI Express x16 (v3.0) (wired as a x4) 6.35 cm (2.5") low profile, 16.76 cm (6.6") length, 35 W max power
Ports and Connectors	Front: 1 SD 4 card reader (optional); 1 Headphone connector; 1 USB 2.0 (fast charging); 1 USB 2.0; 2 USB 3.1 Gen 1; 1 USB Type-C™ (charging); Universal audio jack with CTIA headset support Back: 1 audio out; 2 DisplayPort™; 2 USB 2.0; 4 USB 3.1 Gen 1; 1 audio in; 1 RJ-45; 1 power connector; 3 optional ports Back (optional): 1 choice of 1 HDMI; 1 DisplayPort™; 1 VGA; 1 USB 3.1 Type-C™ (DisplayPort™ alternate mode or 15 W output); 1 choice of serial and PS/2; 1 choice of serial port
Internal Drive Bays	One 6.35 cm (2.5"); One 8.9 cm (3.5"); One 13.34 cm (5.25")
External Drive Bays	One 9.5 mm slim
Input Device	HP Conferencing Keyboard; HP USB Smart Card (CCID) Keyboard; HP USB Business Slim Keyboard; HP PS/2 Business Slim Keyboard; HP USB Grey Business Slim Keyboard ¹³ HP PS/2 Mouse; HP USB 1000 dpi Laser Mouse; HP Grey V2 Mouse; HP USB Optical Mouse; HP USB Hardened Mouse ¹³
Available Software	HP business PCs are shipped with a variety of software titles including: HP BIOSphere Gen3 with SureStart G3, CyberLink Power Media Player, Native Miracast Support, HP ePrint Driver, HP Support Assistant. Please refer to this product's quick spec document for a full list of preinstalled software. ^{14,15,16}
Security Management	Trusted Platform Module TPM 2.0 Embedded Security Chip (SLB9670 – Common Criteria EAL4+ Certified); SATA 0,1 port disablement (via BIOS); Drive lock; RAID configurations; Serial, USB enable/disable (via BIOS); Power-on password (via BIOS); Setup password (via BIOS); Solenoid hood lock/intrusion sensor; Support for chassis padlocks and cable lock devices
Management Features	Intel® vPro™ standard (Core i5 and Core i7)
Power	250 W standard efficiency
Dimensions	15.4 x 36.5 x 37 cm
Weight	9.86 kg
Environmental	Low halogen
Energy Efficiency Compliance	ENERGY STAR® certified and EPEAT® registered configurations available ¹⁷
Warranty	3-year limited warranty including 3 years of parts, labour, and next-business-day onsite service. Terms and conditions vary by country. Certain restrictions and exclusions apply.



ОБЩЕСТВО С ОГРАНИЧЕНА ОТГОВОРНОСТ

000022

HP EliteDesk 800 G3 Tower PC

HP recommends Windows 10 Pro.

Accessories and services (not included)

HP 16GB DDR4-2400 DIMM

Boost the capabilities of your HP Business Desktop PC and improve system performance and application responsiveness with low-power, high-speed DDR4 memory from HP.
Product number: Z9H57AA



HP 5 year Next Business Day Onsite Hardware Support for Desktops

Receive 5 years of next business day onsite HW Support from an HP-qualified technician for your computing device, if the issue cannot be solved remotely.
Product number: U7899E



Learn more at www.hp.eu/hpoptions



ВЯРНО С ОРИГИНАЛА

HP EliteDesk 800 G3 Tower PC

HP recommends Windows 10 Pro.

Messaging Footnotes

- ¹ Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com/>.
- ² Available on HP EliteBook products equipped with Intel® 7th generation processors.
- ³ Based on HP's unique and comprehensive security capabilities at no additional cost and HP Manageability Integration Kit's management of every aspect of a PC including hardware, BIOS and software management using Microsoft System Center Configuration Manager among vendors with >1M unit annual sales as of November 2016 on HP Elite PCs with 7th Gen Intel® Core® Processors, Intel® integrated graphics, and Intel® WLAN.
- ⁴ Multi-Core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
- ⁵ Sold separately or as an optional feature.
- ⁶ HP Manageability Integration Kit is planned to be available first quarter 2017 and can be downloaded from <http://www8.hp.com/us/en/ads/identitymanagement/overview.html>.
- ⁷ HP Client Security Suite Gen3 requires Windows and Intel® 7th Gen processors.
- ⁸ HP Multi Factor Authenticate requires 7th Generation Intel® Core™ processor, Intel® integrated graphics, and Intel® WLAN.
- ⁹ HP WorkWise smartphone app will soon be available as a free download on the App Store and Google Play.
- ¹⁰ MIL-STD testing is pending and is not intended to demonstrate fitness for U.S. Department of Defense contract requirements or for military use. Test results are not a guarantee of future performance under these test conditions. Damage under the MIL STD test conditions or any accidental damage requires an optional HP Accidental Damage Protection Care Pack.

Technical specifications disclaimers

- ¹ Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com/>.
- ² Some devices for academic use will automatically be updated to Windows 10 Pro Education with the Windows 10 Anniversary update. Features vary, see <https://aka.ms/ProEducationforWindows10> Pro Education feature information.
- ³ This system is preinstalled with Windows 7 Pro software and also comes with a license and media for Windows 10 Pro software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.
- ⁴ Multi-core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
- ⁵ Your product does not support Windows 8 or Windows 7. In accordance with Microsoft's support policy, HP does not support the Windows 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows 8 or Windows 7 drivers on <http://www.support.hp.com>.
- ⁶ Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed.
- ⁷ For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10) is reserved for system recovery software.
- ⁸ TLC SSD in Federal Information Processing Standard
- ⁹ Wireless cards are optional or add-on features and requires separately purchased wireless access point and internet service. Availability of public wireless access points limited. The specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ac WLAN devices.
- ¹⁰ Intel® HD Graphics 530: integrated on 6th gen Core™ i7/S/i3 processors
- ¹¹ Intel® HD Graphics 630: integrated on 7th gen Core™ i7/S/i3 processors and Pentium® G4620, 4600, 4600T
- ¹² Intel® HD Graphics 610: integrated on Pentium® G4560, G4560T, Celeron™ G3950, G3930, G3930T
- ¹³ Sold separately or as an optional feature.
- ¹⁴ HP BIOSphere with Sure Start available only on business PCs with HP BIOS. HP BIOSphere Gen 3 requires Intel® 7th generation processors
- ¹⁵ Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming media players that also support Miracast. You can use Miracast to share what you're doing on your PC and present a slide show. For more information: <http://windows.microsoft.com/en-us/windows-8/project-wireless-screen-miracast>.
- ¹⁶ HP ePrint Driver requires an Internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see www.hp.com/go/eprintcenter). Requires optional broadband module. Broadband use requires separately purchased service contract. Check with service provider for coverage and availability in your area. Separately purchased data plans or usage fees may apply. Print times and connection speeds may vary.
- ¹⁷ EPEAT® registered where applicable. EPEAT registration varies by country. See www.epeat.net for registration status by country
- ¹⁸ External power supplies, power cords, cables and peripherals are not low halogen. Service parts obtained after purchase may not be low halogen.

Learn more at www.hp.eu/desktops

Sign up for updates www.hp.com/go/getupdated

Copyright © 2017 HP Development Company, L.P. The only warranties for HP products are set forth in the express limited warranty statements accompanying such products. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Intel, Core, Pentium, Celeron and vPro are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries. Bluetooth is a trademark of its proprietor and used by HP Inc. under license. USB Type-C™ and USB-C™ are trademarks of USB Implementers Forum. ENERGY STAR is a registered trademark of the U.S. Environmental Protection Agency. DisplayPort™ and the DisplayPort™ logo are trademarks owned by the Video Electronics Standards Association (VESA®) in the United States and other countries. All Rights Reserved. All other trademarks are the property of their respective owners.

4AA6-9332EEE, February 2017



ВРНО С ОПРИЗНАНА

000024



ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ
в съответствие с ISO / IEC 17050-1 и EN 17050-1

ДоС #: TPC-F101-MT-R3Превод/bg

Наименование на производителя: **HP Inc.**
Производителя Адрес: 1501 Page Mill Road, Palo Alto, CA 94303-1112 USA

заявява, че продуктът

Име на продукта и модел:²⁾ HP EliteDesk 800 G3 TWR Business PC
Нормативен номер на модела:¹⁾ TPC-F101-MT
Опции на продукта: Виж приложение I

съответства на следните спецификации на продукта и регламенти:

Безопасност:

IEC 60950-1:2005 +A1:2009 +A2:2013
EN 60950-1:2006 +A11:2009 +A1:2010
+A12:2011 +A2:2013
EN 62311:2008

EMC

EN 301 489-1 V2.1.1
EN 301 489-17 V3.1.1
CISPR 32:2012 Class B
FCC CFR 47 Part 15
ICES-003, Issue 6

Радиочестотният спектър

EN 300 328 V2.1.1
EN 301 893 V2.1.1

екодизайна

Регламент (EO) No 617/2013
EN 62623:2013

RoHS

EN 50581:2012

Този апарат в съответствие с изискванията на Директивата RED 2014/53/EC, Директивата за екодизайна 2009/125/OT, Директивата RoHS 2011/65/EC и носи маркировката съответно **CE**.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Допълнителна информация:

- 1) Този продукт има нормативен номер на модела, който остава с регулаторните аспекти на дизайн. Номер на Нормативен модел е идентификатора основен продукт в нормативната документация и протоколи от изпитвания, този брой не трябва да се бърка с пазарното име или номера на продукта.
- 2) Този продукт е изпробван в типична HP среда във връзка с хост система HP.

Palo Alto, CA
10-06-2017

проверка на подписа върху оригинала на декларацията,

приложена
Gilles Soulard, Manager
Product Compliance Center

Local контакт за регулаторни теми само:

EU: HP Deutschland GmbH, HP HQ-TRE, 71025 Boeblingen, Germany
U.S.: HP Inc., 1501 Page Mill Road, Palo Alto 94304, U.S.A. 650-857-1501

www.hp.eu/certificates

000025

111
LVCP
ВАРНО С ОРИГИНАЛА

1

ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ
в съответствие с ISO / IEC 17050-1 и EN 17050-1

ПРИЛОЖЕНИЕ I

Нормативен номер на модела (RMN): TPC-F101-MT

OPTIONS

ОПИСАНИЕ	RMN ОПЦИЯ
Intel 8265NG ac 2x2 non-vPro + BT 4.2 M.2 PCIe+USB MOW 2Ant	8265NGW
Intel Dual Band Wireless-AC 3168 802.11AC 1x1 WiFi + BT 4.2 LE Combo Adaptor	3168NGW
Intel 7265.NGWNG.W ac 2x2 + BT 4 LE PCIe + USB NGFF 2230 W	7265NGW
Realtek RTL8723BE 802.11 b/g/n x1 + BT 4 LE PCIe + USB M.2	RTL8723BE

* Когато X представлява всяка алфа цифров знак.

N.

4 /

111
ВЯНО С ОРИГИНАЛА


000026

THE ECO DECLARATION

1
2

Product environmental attributes – THE ECO DECLARATION

The declaration may be published only when all rows and/or fields marked with an * are filled-in (n.a. for not applicable).
Additional information regarding each item may be found under P14.


Brand *	HP	
Company name *	HP	
Contact information *	HP Environmental Contact Centre (ECC) environment@hp.com	
Internet site *	http://www.hp.com/hpinfo/globalcitizenship/environment/	
Additional Information		

The company declares (based on product specification or test results based obtained from sample testing), that the product conforms to the statements given in this declaration.	
Type of product *	Desktop PC
Commercial name *	HP EliteDesk 800 G3 Tower Business PC
Model number *	800 G3
Issue date *	1/18/2017
Intended market *	<input checked="" type="checkbox"/> Global <input type="checkbox"/> Europe <input type="checkbox"/> Asia, Pacific & Japan <input type="checkbox"/> Americas <input type="checkbox"/> Other
Additional Information	

This is an uncontrolled copy when in printed form. Please refer to the contact information for the latest version.

Quality Control	Item	Requirement met	
		Yes	No
QC1 *	The company enforces an internal quality control scheme to ensure the correctness of this eco declaration	<input checked="" type="checkbox"/>	<input type="checkbox"/>
QC2 *	The company is a member of an eco declaration system that enforces regular independent quality control such as organized by IT-Företagen (see www.itecodeclaration.org).	<input checked="" type="checkbox"/>	<input type="checkbox"/>

01
41


Model number *	800 G3	
Issue date *	1/18/2017	Logo 

Product environmental attributes - Legal requirements		Requirement met		
Item		Yes	No	n.a.
P1	Hazardous substances and preparations			
P1.1*	Products do not contain more than; 0.1% lead, 0.01% cadmium, 0.1% mercury, 0.1% hexavalent chromium, 0.1% polybrominated biphenyls (PBB) or 0.1% polybrominated diphenyl ethers (PBDE). (See legal reference and Note B1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.2*	Products do not contain Asbestos (see legal reference). Comment: Legal reference has no maximum concentration value.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.3*	Products do not contain Ozone Depleting Substances: Chlorofluorocarbons (CFC), hydrobromofluorocarbons (HBFC), hydrochlorofluorocarbons (HCFC), Halons, carbontetrachloride, 1,1,1-trichloroethane, methyl bromide (see legal reference). Comment: Legal reference has no maximum concentration values.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.4*	Products do not contain more than; 0.005% polychlorinated biphenyl (PCB), 0.005% polychlorinated terphenyl (PCT) in preparations (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.5*	Products do not contain more than 0.1% short chain chloroparaffins (SCCP) with 10-13 carbon atoms in the chain containing at least 48% per mass of chlorine in the SCCP (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.6*	Textile and leather parts with direct skin contact do not contain Tri-(2,3-dibromopropyl)-phosphate (TRIS), Tris-(aziridiny)-phosphineoxide (TEPA), polybrominated biphenyl (PBB) (see legal reference). Comment: Legal reference has no maximum concentration values.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P1.7*	Textile and leather parts with direct skin contact do not contain more than 0.003% Azo colorants that split aromatic amines. (See legal reference and Note B1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P1.8*	Wooden parts do not contain arsenic and chromium as a wood preservation treatment as well as pentachlorophenol and derivatives (see legal reference). Comment: Legal reference has no maximum concentration values.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P1.9*	Parts with direct and prolonged skin contact do not release nickel in concentrations above 0.5 microgram/cm ² /week (see legal reference). Comment: Max limit in legal reference when tested according to EN1811:1998.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P1.10*	REACH Article 33 information about substances in articles is available at (add URL or mail contact): http://www.hp.com/hpinfo/globalcitizenship/environment/productdata/reachdesktop-pcs.html	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2	Batteries			
P2.1*	If the product contains a battery or an accumulator, it is labeled with the disposal symbol and if it contains more than 0.0005% of mercury (for button cells only) by weight, or more than 0.004% of lead, it shall be marked with the chemical symbol for the metal concerned, Hg or Pb. Information on proper disposal is provided in user manual. (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2.2*	Button cells used in the product do not contain more than 2% by weight of mercury. Other batteries or accumulators do not contain more than 0.0005% of mercury or 0.002% of cadmium. (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2.3*	Batteries and accumulators are easily removable by either users or service providers (as dependent on the design of the product). Exception: Batteries that are permanently installed for safety, performance, medical or data integrity reasons do not have to be "easily removable". (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3	Safety, EMC connection to the telephone network and labeling			
P3.1*	The product complies with legally required safety standards as specified (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.2*	The product complies with legally required standards for electromagnetic compatibility (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.3*	If product is intended for connection to a public telecom network or contains a radio transmitter, it complies with legally required standards for radio and telecommunication devices (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.4*	The product is labeled to show conformance with applicable legal requirements (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P4	Consumable materials			
P4.1*	If a photo conductor (drum, belt etc.) is used in the product, it does not contain cadmium max 0.01% (see legal reference and Note B1).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P4.2*	If Ink/toner is used in the product, it does not contain cadmium max 0.1% by weight (see legal reference).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P4.3*	If the ink/toner formulation/preparation is classified as hazardous according to applicable regulations, the product/packaging is adequately labeled and a Safety Data Sheet (SDS) in accordance with these requirements is available (see legal reference).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P5	Product packaging			
P5.1*	Packaging and packaging components do not contain more than 0.01% lead, mercury, cadmium and hexavalent chromium by weight of these together.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P5.2*	Plastic packaging material is marked according to ISO 11469 referring ISO 1043 (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P5.3*	The product packaging material is free from ozone depleting substances as specified in the Montreal Protocol (see legal reference). Comment: Legal reference has no maximum concentration values.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note B1: Restriction applies to the homogeneous material, unless other specified and expressed in weight

ИЗДАНО С ОРЪЖИНАТА


(УФ)

Model number *	800 G3	
Issue date *	1/18/2017	Logo 

Product environmental attributes - Market requirements - Environmental conscious design		Requirement met		
Item	*=mandatory to fill in. Additional information regarding each item may be found under P14.	Yes	No	n.a.
P6	Treatment Information			
P6.1*	Information for recyclers/treatment facilities is available (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7	Design			
	Disassembly, recycling			
P7.1*	Parts that have to be treated separately are easily separable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.2*	Plastic materials in covers/housing have no surface coating.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.3*	Plastic parts >100g consist of one material or of easily separable materials.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.4*	Plastic parts >25g have material codes according to ISO 11469 referring ISO 1043.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.5	Plastic parts are free from metal inlays or have inlays that can be removed with commonly available tools.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.6*	Labels are easily separable. (This requirement does not apply to safety/regulatory labels).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Product lifetime			
P7.7*	Upgrading can be done e.g. with processor, memory, cards or drives	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.8*	Upgrading can be done using commonly available tools	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.9.	Spare parts are available after end of production for: 5 years			<input type="checkbox"/>
P7.10	Service is available after end of production for: years			<input checked="" type="checkbox"/>
	Material and substance requirements			
P7.11*	Product cover/housing material type: Material type: >PBT-GF30 FR(40)< Material type: >ABS< Material type: >PBT-GF30 FR(10+30)<			
P7.12	Electrical cable insulation materials of power cables are PVC free.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.13	Electrical cable insulation materials of signal cables are PVC free	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.14	All cover/housing plastic parts >25g are free from chlorine and bromine.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.15	All printed circuit boards (without components) >25g are halogen free. as defined in IEC61249-2-21. (See Note B2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.16	Flame retarded plastic parts >25g in covers / housings are marked according ISO 1043-4: Marking: >PBT-GF30 FR(40)<, >PBT-GF30 FR(10+30)<	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.17	Alt. 1 Chemical specifications of flame retardants in printed circuit boards >25g (without components): TBBPA (additive) <input type="checkbox"/> , TBBPA (reactive) <input type="checkbox"/> , Other; chemical name: , CAS #: Alt. 2 Chemical specifications of flame retardants in printed circuit boards (without components) >25g according ISO 1043-4: FR(40)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.18	Alt. 1 Flame retarded plastic parts >25g contain the following flame retardant substances/preparations in concentrations above 0.1%: Comment: No legal limits exist, this is a market requirement. 1. Chemical name: , CAS #: 2. Chemical name: , CAS #: 3. Chemical name: , CAS #: Alt. 2 Chemical specifications of flame retardants in plastic parts >25g according ISO 1043-4: >PBT-GF30 FR(40)<, >PBT-GF30 FR(10+30)<	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.19	Plastic parts >25g are free from flame retardant substances/ preparations above 0.1% classified as R45, R40, R46, R48, R50, R51, R53, R60, R61 and any combination of these (See Note B3)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.20	Of total plastic parts' weight >25g, recycled material content is 17.8 %.			
P7.21	Of total plastic parts' weight >25g, biobased material content is 0 %.			
P7.22	Light sources are free from mercury If mercury is used specify: Number of lamps: and max. mercury content per lamp: mg	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P8	Batteries			
P8.1*	Battery chemical composition: <i>lithium/manganese dioxide</i>			<input type="checkbox"/>
P8.2	Batteries meet the requirements of the following voluntary program/s:			<input checked="" type="checkbox"/>

Note B2: IEC61249-2-21 has maximum limits for chlorine and bromine but does not address fluorine, iodine and astatine which are included in the group of halogens.

Note B3: 'Starting from January 2009. Risk phrases can be replaced by Hazard phrases according to / Harmonized System (GHS), mandatory by December 2010.

Model number *	800 G3	
Issue date *	1/18/2017	Logo 

Product environmental attributes - Market requirements (continued) **Requirement met**

Item Yes No n.a.

P9 Energy consumption

9.1 For the product the following power levels or energy consumptions are reported:

Energy mode *	Power level at 100 V AC	Power level at 115 V AC	Power level at 230 V AC	Reference / Standard for energy modes and test method *	<input type="checkbox"/>
ENERGY STAR® On Mode * (System Short Idle)	15.88 W	15.60 W	14.19 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
ENERGY STAR® On Mode * (System Long Idle)	14.91 W	14.62 W	13.08 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
ENERGY STAR® Low Power Sleep Mode* (S3 - Windows "Standby") With Wake On LAN (WOL) Enabled	1.22 W	1.21 W	1.17 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
System Off/Apparent Off Mode (ACPI S5) With Wake On LAN(WOL) Enabled* (Test Unit connected to AC Mains, AC adapter connected to All-In-One PC, if applicable)	0.81 W	0.81 W	0.79 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
ETEC * Annual Energy Consumption (calculated value) for each input voltage	72.07 kWh/year	70.81 kWh/year	64.36 kWh/year	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
Display resolution*: Megapixels (Applies only to Integrated PCs (All-In-One PC))				ENERGY STAR® Program Requirements for Displays (Ver. 6.1)	<input type="checkbox"/>
Print Speed * : Images per minute					<input checked="" type="checkbox"/>
Default time to enter energy save mode: minutes				ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>

P9.2* Information about the energy save function is provided with the product.

P9.3* The product meets the energy requirements of the following voluntary program/s:
 ENERGY STAR® version: 6.1 Tier: Product category: Desktop PC
 Others specify:

P10 Emissions


Noise emission - Declared according to ISO 9296

P10.1 Mode	Mode description	Declared A-weighted sound power level L_{WAd} (B)	Declared A-weighted sound pressure level L_{pAm} (dB)		<input type="checkbox"/>
			Operator position <input checked="" type="checkbox"/> Desktop <input checked="" type="checkbox"/> or Desk side <input type="checkbox"/>	Bystander positions <input type="checkbox"/> (only if product is not operator attended)	
Idle	* Fans on, HDD spinning (if applicable)	* 3.3	22		<input type="checkbox"/>
Operation	* Fans on, HDD spinning	* 3.5	23		<input type="checkbox"/>
Other mode					<input type="checkbox"/>
Measured according to: <input checked="" type="checkbox"/> ISO7779 <input checked="" type="checkbox"/> ECMA-74 <input type="checkbox"/> Other (only if not covered by ECMA-74 with L_{pAm} measurement distance m)					

P10.2 The product meets the acoustic noise requirements of the following voluntary program/s:

ВЕРНО С ОПРИГНАЛАТА

[Handwritten signature]

Model number *	800 G3	
Issue date *	1/18/2017	Logo 

Product environmental attributes - Market requirements (continued)		Requirement met		
Item		Yes	No	n.a.
Chemical emissions from printing products				
P10.3*	Test performed according to ECMA-328 (ISO/IEC 28360) standard <input type="checkbox"/> , other specify:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P10.4	Typical emission rate (print phase) is (mg/h):			<input checked="" type="checkbox"/>
	Dust Ozone Styrene Benzene TVOC			
P10.5	Chemical emission requirements of the following voluntary program/s are met for :	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Dust <input type="checkbox"/> Ozone <input type="checkbox"/> Styrene <input type="checkbox"/> Benzene <input type="checkbox"/> TVOC <input type="checkbox"/>			
Electromagnetic emissions				
P10.6	Computer display meets the requirement for low frequency electromagnetic fields of the following voluntary program/s:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P11 Consumable materials for printing products				
P11.1*	A Safety Data Sheet (SDS) is available for the ink/toner preparation, even if not legally required (see P4.3).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P11.2*	Paper containing post-consumer recycled fibers can be used, provided that it meets the requirements of EN12281.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P11.3*	2-sided (duplex) printing/copying is an integrated product function.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P12 Ergonomics for computing products				
P12.1*	The display meets the ergonomic requirements of ISO 9241-307 for visual display technologies.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P12.2*	The physical input device meets the requirements of ISO 9995 and ISO 9241-410.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P13 Packaging and documentation				
P13.1*	Product packaging material type(s): <i>PAPER/Corrugated</i> weight (kg): 1.144 Product packaging material type(s): <i>PLASTIC/Polyethylene Expanded - EPE</i> weight (kg): 0.288 Product packaging material type(s): <i>PLASTIC/Polyethylene low density - LDPE</i> weight (kg): 0.03			
P13.2*	Product plastic packaging is free from PVC.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P13.3*	Specify media for user and product documentation (tick box): Electronic <input checked="" type="checkbox"/> , Paper <input type="checkbox"/> , Other <input type="checkbox"/>			<input type="checkbox"/>
P13.4*	For paper user and product documentation, please specify contained percentage of post-consumer recycled fiber: 0 %			<input type="checkbox"/>
Rev. P13.5	User and product documentation do not contain chlorine bleached paper	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P14 Additional information (See Note B4)				
All sections	1. Product environmental information contained in this declaration is valid as of the date the declaration is published. Changes to external standards referenced in the IT Eco-Declaration may invalidate some information contained in this declaration over time.			
P9	<p>1. Many PCs are offered in multiple configurations within the model family. Energy efficiency data listed in this declaration is for an ENERGY STAR® compliant configuration if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. For more information about HP's ENERGY STAR® qualified products, go to hp.com: http://www.hp.com/ and select the applicable market segments and product categories to find PC configurations that meet the ENERGY STAR® specifications.</p> <p>2. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured model.</p> <p>3. Energy Efficiency information published on the ECMA 370 The Eco Declaration represents a typically configured product base model meeting ENERGY STAR® specifications if offered within the model family. If optional components or modules are added, like extra hard disks or graphic cards etc, these can change the energy efficiency data listed above.</p> <p>4. Power consumption in the Off / Apparent Off mode is measured and reported with the network interface controller (NIC) WOL disabled.</p>			
	5. European Union Commission Regulation 1275/2008- Energy Efficiency Information:			

[Handwritten signature]

Note B4: Additional lines may be inserted to declare further items. by positioning the cursor at the far right of the row and hitting the <Enter> key.

000031

Mode / Condition	Power Consumption in Watts at 230 VAC Input Voltage	Default Time to Mode / Condition (if applicable)
Off Mode (if applicable)		Not Applicable
Standby Mode (if applicable)	Not Applicable	Not Applicable
Network Standby / Sleep / Long Idle Mode if all wired network ports are connected and all wireless network ports are activated (if applicable)		
Network Standby / Sleep / Long Idle Mode (if applicable)		

6. European Union Commission Regulation 1275/2008- Wireless Network Instructions:

Where applicable, activate and deactivate a wireless network using the instructions provided in the product user guide or the operating system. Information is also available at www.hp.com/support.

P10 1. Acoustic noise information published on the ECMA 370 The Eco Declaration represents a typically configured product base model only. If optional items with moving parts are added, like extra hard disks or graphic cards with fans etc, these can change acoustic noise values for which HP can take no responsibility.

Legal references Europe Annex B

Reference	Declaration item
2002/95/EC (ROHS Directive)	P1.1, P4.1
REACH, Annex XVII	P1.6, P1.8, P4.2
REACH, Annex XVII	P1.4
REACH, Annex XVII	P1.2
REACH, Annex XVII	P1.7
REACH, Annex XVII	P1.9
Regulation (EC) No. 2037/2000, 2038/2000, 2039/2000	P1.3
Norwegian regulation relating to restrictions on the use of certain dangerous chemicals 20.12.2002	P1.5
2006/66/EC (Battery and accumulators Directive)	P2.1, P2.2, P2.3, P3.4, P8.1
2006/95/EC (Low Voltage Directive)	P3.1, 3.4
2004/108/EEC (New EMC Directive)	P3.2, 3.4
1999/5/EC (R&TTE Directive)	P3.3, 3.4
"REACH" Regulation (1907/2006), annex VII	P1.10
(EC) No.1272/2008 regulation on classification, labeling and packaging (CLP)	P4.3
REACH article 31, annex II	P4.3
2004/12/EC (Directive on packaging and packaging waste)	P5.1
(97/129/EC) (Commission Decision on Identification System for Packaging Materials)	P5.2
2037/2000/EC Regulation on Substances that Deplete the Ozone Layer	P5.3
2002/96/EC (WEEE directive)	P3.4, P6.1
(EC) No.1272/2008 regulation on classification, labeling and packaging (CLP)	P7.19

HP

000032

LUY

THE ECO DECLARATION



IT-Företagen

Company environmental profile - THE ECO DECLARATION

Brand	HP	Logo
Company name *	HP	
Contact information *	HP Environmental Contact Centre (ECC) environment@hp.com	
Internet site *	www.hp.com/hpinfo/globalcitizenship/environment/index.html	
Issue date *	2014-06	
Intended market *	<input checked="" type="checkbox"/> Global <input type="checkbox"/> Europe <input type="checkbox"/> Asia, Pacific & Japan <input type="checkbox"/> Americas <input type="checkbox"/> Other	
Additional information		

This is an uncontrolled copy when in printed form. Please refer to the contact information for the latest version.

The declaration may be published only when all rows and/or fields marked with an * are filled-in (n.a. for not applicable). Additional information regarding each item may be found under C6.

Quality control		Requirement met	
Item		Yes	No
QC1 *	The company enforces an internal quality control system to ensure the correctness of this eco declaration	<input checked="" type="checkbox"/>	<input type="checkbox"/>
QC2 *	The company is a member of an eco declaration system that enforces regular independent quality control.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Company environmental profile - Legal requirements		Requirement met		
Item		Yes	No	n.a.
C1	Product recycling			
C1.1*	The company participates in a system or has its own system for collection and recycling of end of life products in countries where the company puts them on the market and where required (see legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C2	Battery recycling			
C2.1*	The company participates in a system or has its own system for collection and recycling of batteries in countries where the company puts products on the market (see legal reference) or pays eco tax / fee where required.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C3	Packaging recycling			
C3.1*	The company participates in a system or has its own system for collection and recycling of packaging material in countries where the company puts products on the market and where required (see legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Company environmental profile - Market requirements		Requirement met		
Item		Yes	No	n.a.
C4	Environmental policy and environmental management			
C4.1*	The company has a documented environmental policy approved by the management.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C4.2*	The company has an environmental management system covering: Product development Manufacturing If so certified according to: <input checked="" type="checkbox"/> ISO 14001 <input type="checkbox"/> Other as specified in C6	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	
C4.3	The company regularly publishes an environmental report. If so, it meets the recommendations of <input checked="" type="checkbox"/> The Global Reporting Initiative <input type="checkbox"/> Other as specified in C6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C5	Recycling			
C5.1*	Information about the product, battery & packaging take back system (C1, C2, C3) is available in printed or electronic format.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C6	Additional information			
	<i>HP is committed to responsible business practices and transparency in its global citizenship policies and performance. We have a long history of working with suppliers to improve their social and environmental (SER) performance, as well as improving industry standards. HP endorses the EICC Code of Conduct in its entirety, and we supplement it with additional requirements specific to freedom of association and HP's Student and Dispatch Worker Guidance Standard for Supplier Facilities in the People's Republic of China (PRC). HP also has a strong Global Human Rights Policy in place. HP sets expectations for its suppliers to establish policies and processes regarding conflict minerals. HP conducts due diligence on its supply chain annually including requesting information about our suppliers' own due diligence and the smelters and refiners used. HP became the first IT company to publish its supply chain smelter list. HP follows the Global Reporting Initiative (GRI) guidelines as a basis for reporting. The GRI index provides easy reference to HP's Living Progress Report (LPR) content. HP offers take back services of products and printing suppliers in some 70 countries. Please refer to HP's Living Progress Report for more details on our global efforts.</i>			

Handwritten marks at the top right of the page.

Legal references Europe Annex A

Reference	Declaration item
2002/96/EC (WEEE directive)	C1.1
2006/66/EC (Battery and accumulators Directive)	C1.2
2004/12/EC (Directive on packaging and packaging waste)	C1.3



Handwritten marks and symbols in the bottom right area, including a checkmark and a question mark.

000034

HP ProDesk 600 G3 Microtower Business PC

By HP Inc.



Compatibility details

Verification report: 1933523 - Certification Report - 12/27/2016 (/en-US/Hardware/LogoVerificationReport.aspx?sid=1933523)
 1933524 - Certification Report - 12/27/2016 (/en-US/Hardware/LogoVerificationReport.aspx?sid=1933524)
 1933527 - Certification Report - 12/27/2016 (/en-US/Hardware/LogoVerificationReport.aspx?sid=1933527)
 1933528 - Certification Report - 12/27/2016 (/en-US/Hardware/LogoVerificationReport.aspx?sid=1933528)

Compatibility status: Windows 7
 Windows 7 x64
 Certified for Microsoft Windows 10 Client family version 1607, x64

Product types: Desktop

Feature and AQ's: Windows 10 Anniversary Update Client x64

- System.Client.Aero
- System.Client.BluetoothController.Base
- System.Client.BluetoothController.USB
- System.Client.BrightnessControls
- System.Client.CPU
- System.Client.Firewall
- System.Client.Firmware.UEFI.GOP
- System.Client.Graphics
- System.Client.MediaTranscode
- System.Client.PCContainer
- System.Client.SystemConfiguration
- System.Client.SystemImage
- System.Client.SystemPartition
- System.Client.VideoEncode
- System.Client.VideoPlayback
- System.Client.WLAN.BasicConnectivity
- System.Client.WLAN.HangDetectionAndRecovery
- System.Client.WLAN.SupportMACAddressRandomization
- System.Client.WLAN.WiFiDirect
- System.Fundamentals.DebugPort
- System.Fundamentals.DebugPort.USB
- System.Fundamentals.Firmware
- System.Fundamentals.Firmware.Boot
- System.Fundamentals.Graphics
- System.Fundamentals.Graphics.Display
- System.Fundamentals.Graphics.Display.Firmware.VBE
- System.Fundamentals.Graphics.Display.Render
- System.Fundamentals.HAL
- System.Fundamentals.Input
- System.Fundamentals.MarkerFile
- System.Fundamentals.Network
- System.Fundamentals.NX
- System.Fundamentals.PowerManagement
- System.Fundamentals.PXE
- System.Fundamentals.Reliability
- System.Fundamentals.Security
- System.Fundamentals.SignedDrivers
- System.Fundamentals.SMBIOS
- System.Fundamentals.SystemAudio
- System.Fundamentals.SystemAudio.3rdPartyDriver
- System.Fundamentals.SystemPCIController
- System.Fundamentals.SystemUSB
- System.Fundamentals.TPM20
- System.Fundamentals.TrustedPlatformModule
- System.Fundamentals.USBBoot
- System.Fundamentals.USBDevice
- System.Fundamentals.WatchDogTimer
- System.Server.Base
- System.Server.Graphics
- System.Server.SMBIOS
- System.Server.SVVP
- System.Server.SystemStress
- System.Server.Virtualization
- System.Server.WHEA

(http://msdn.microsoft.com/en-

000035

RRR

144

Network sites

Windows Dev Center

Windows Dev Center home
(<https://dev.windows.com/en-US>)

Windows Store apps
(<http://msdn.microsoft.com/en-US/windows/apps/>)

Microsoft Edge (<https://dev.windows.com/en-US/microsoft-edge-for-devs>)

Hardware Dev Center
(<http://msdn.microsoft.com/en-US/windows/hardware/>)

Other links

SUPPORT (<http://msdn.microsoft.com/en-US/windows/hardware/gg454528>)

Microsoft Connect
(<http://connect.microsoft.com/>)

OEM (</en-US/Hardware/oem>)

© 2015 Microsoft. All rights reserved.

Terms of use (<http://msdn.microsoft.com/en-US/windows/hardware/cc300389/>) | Trademarks (<http://www.microsoft.com/library/toolbar/3.0/trademarks/en-us.mspx>) | Privacy & Cookies (<http://www.microsoft.com/info/privacy.mspx>) | United States (English)

Handwritten marks: a squiggle, a dash, and the number 41.

Stamp: 000036

000036

Stamp: BRT

Handwritten initials: UY

HP EliteDesk 800 G3 Tower Business PC

By HP Inc.

Compatibility details

Verification report: 1933517 - Certification Report - 12/27/2016 (/en-US/Hardware/LogoVerificationReport.aspx?sid=1933517)
 1933525 - Certification Report - 12/27/2016 (/en-US/Hardware/LogoVerificationReport.aspx?sid=1933525)

Compatibility status: Windows 7
 Windows 7 x64
 Certified for Microsoft Windows 10 Client family version 1607, x64

Product types: Desktop

Feature and AQ's: Windows 10 Anniversary Update Client x64

- System.Client.Aero
- System.Client.BluetoothController.Base
- System.Client.BluetoothController.USB
- System.Client.BrightnessControls
- System.Client.CPU
- System.Client.Firewall
- System.Client.Firmware.UEFI.GOP
- System.Client.Graphics
- System.Client.MediaTranscode
- System.Client.PCContainer
- System.Client.SystemConfiguration
- System.Client.SystemImage
- System.Client.SystemPartition
- System.Client.VideoEncode
- System.Client.VideoPlayback
- System.Client.WLAN.BasicConnectivity
- System.Client.WLAN.HangDetectionAndRecovery
- System.Client.WLAN.SupportMACAddressRandomization
- System.Client.WLAN.WiFiDirect
- System.Fundamentals.DebugPort
- System.Fundamentals.DebugPort.USB
- System.Fundamentals.Firmware
- System.Fundamentals.Firmware.Boot
- System.Fundamentals.Graphics
- System.Fundamentals.Graphics.Display
- System.Fundamentals.Graphics.Display.Firmware.VBE
- System.Fundamentals.Graphics.Display.Render
- System.Fundamentals.HAL
- System.Fundamentals.Input
- System.Fundamentals.MarkerFile
- System.Fundamentals.Network
- System.Fundamentals.NX
- System.Fundamentals.PowerManagement
- System.Fundamentals.PXE
- System.Fundamentals.Reliability
- System.Fundamentals.Security
- System.Fundamentals.SignedDrivers
- System.Fundamentals.SMBIOS
- System.Fundamentals.SystemAudio
- System.Fundamentals.SystemAudio.3rdPartyDriver
- System.Fundamentals.SystemPCIController
- System.Fundamentals.SystemUSB
- System.Fundamentals.TPM20
- System.Fundamentals.TrustedPlatformModule
- System.Fundamentals.USBBoot
- System.Fundamentals.USBDevice
- System.Fundamentals.WatchDogTimer
- System.Server.Base
- System.Server.Graphics
- System.Server.SMBIOS
- System.Server.SVVP
- System.Server.SystemStress
- System.Server.Virtualization
- System.Server.WHEA

(http://msdn.microsoft.com/en-

000037

ВЕРНО О ПРОВЕРКАТА

Windows Compatible Products List

Network sites

Windows Dev Center

Windows Dev Center home
(<https://dev.windows.com/en-US>)

Windows Store apps
(<http://msdn.microsoft.com/en-US/windows/apps/>)

Microsoft Edge (<https://dev.windows.com/en-US/microsoft-edge-for-devs>)

Hardware Dev Center
(<http://msdn.microsoft.com/en-US/windows/hardware/>)

Other links

SUPPORT (<http://msdn.microsoft.com/en-US/windows/hardware/gg454528>)

Microsoft Connect
(<http://connect.microsoft.com/>)

OEM ([/en-US/Hardware/oem](http://en-US/Hardware/oem))

© 2015 Microsoft. All rights reserved.

Terms of use (<http://msdn.microsoft.com/en-US/windows/hardware/cc300389/>) | Trademarks (<http://www.microsoft.com/library/toolbar/3.0/trademarks/en-us.mspx>) | Privacy & Cookies (<http://www.microsoft.com/info/privacy.mspx>) | United States (English)

000038

~~ВЕРНО С ОРИГИНАЛА~~



HP Europe B.V.
Amsterdam, Meyrin Branch
Route du Nant d'Avril 150
CH-1217 Meyrin/ Genève
Switzerland

Дата: 21.02.2018
Изходящ. №340

Оторизационна форма на производител

до:
Парафлоу Комуникейшънс ООД
България, София, п.к.1700, ул. Никола Габровски 79
+359 (2) 960 42 00

Уважаеми господа,

Ейч Пи Юръп Б.В., клон Мейрин, с адрес Route du Nant d'Avril 150, CH-1217 Meyrin/ Genève, Швейцария ("HPEBV") представлява производителя на HP продукти на територията на Европейския съюз, в т. ч. Р. България.

С настоящето потвърждавам от името на "HPEBV", че е наясно със следното:

- Парафлоу Комуникейшънс ООД, България, София, п.к.1700, ул. Никола Габровски 79 ("HP Оторизиран Партньор") възнамерява да подаде оферта за участие в търг Обществената поръчка с предмет: "ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА", 00062-2018-0008 за Университет за национално и световно стопанство, 1700 София, Студентски град "Хр. Ботев" ("Клиент") включващ следните HP Personal Computers, Notebooks, Printers продукти и свързаните с тях услуги на HP за пакетна поддръжка ("HP Продукти"), и
- в случай, че поръчката бъде възложена на HP Оторизирания Партньор, той в следствие ще преговаря и ще подпише договор, подчинен изключително на правилата и условията между Клиента и HP Оторизирания Партньор за доставка на продукти и услуги на Клиента, включително посочените по-горе продукти на HP.

Само HP има право да упълномощава трети лица ("HP Оторизиран Партньор"), за да продава продукти на HP в определени територии, основани на селективни критерии за дистрибуция (специфични технически и професионални стандарти, които са определени от HP).

HPEBV потвърждава, че към датата на това писмо HP Оторизирания Партньор не е изключително оторизиран от HP препродавач, за продажба на по-горе споменатите HP Продукти за територията на България.

Продуктите на HP са обхванати от стандартна гаранция, съгласно правилата и условията приложими България. Услугите на HP за пакетна поддръжка представляват стандартни предплатени и пакетни и брандирани услуги. HP Оторизирания Партньор има разрешение да предава тази стандартна гаранция на клиенти-крайни потребители които закупуват и използват такива HP Продукти в България и HP ще спазва тези стандартни гаранции.

ВЯРНО СО

000039

В рамките на горепосочената оферта за участие в търг и последващият потенциален договор, HP Оторизирания Партньор действа от свое име и за своя сметка и няма право, власт и не е опълномощен да създаде задължение или дълг, изричен или подразбиращ се от името на HPEBV.

HPEBV е единствено отговорен и задължен към Клиента съгласно стандартната HP продуктова гаранция и/или съгласно правилата и условията на HP за пакетна поддръжка. HP Оторизирания Партньор единствено се задължава относно удължаването и разширяването на тази гаранция и/или правила и условия.

Доставката на стандартната HP продуктова гаранция и на услугата на HP за пакетна поддръжка се предоставят или от местният офис на HP в България, или от оторизиран от HP доставчик по поддръжка.

С уважение,



Erik Chang
Manager Channel Sales Operations
EMEA – Europe, Middle-East & Africa

HP Europe B.V.
Amsterdam, Meyrin Branch
Route du Nant-d'Avril 150
1217 Meyrin, Switzerland

ВЕРНО С ОРИГИНАЛА

000040

Приложение 1


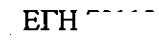
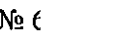
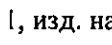

HP Сервизни центрове за поддръжка на HP Consumer & Commercial продукти

Оторизирани сервизи на HP в България				Контакти: HP в България, HP Бгг. ДЗ Слънце, HP Слънце, HP Слънце Телефон: HP Слънце, HP Слънце	Имени на служители в сервизни центрове: HP Слънце, HP Слънце, HP Слънце	Центрове и телефони/имени на служители
Град	Адрес	Телефон	E-mail			
Благоевград	бул. Св. Кирил и Методий 2	07001 7978	support@stemo.bg	•	•	•
Бургас	ул. Адам Мещанин 5	07001 7978	support@stemo.bg	•	•	•
Бургас	ул. Александър Стамболийски 39, офис 2	07001 0807; 056/040 187	service@paraflow.bg	•	•	•
Бургас	ул. Транспортна, Бизнес център Кандоско, офис 12	07001 6036; 056/011 896	support_burgas@cnsys.bg	•	•	•
Бургас	ул. Христо Фотев 94	08002 0199; 056/011 902	support@torex.com	•	•	•
П.Търново	ул. Любен Карамелов 51	07001 6036; 062/602 404	support_velikotyrnovo@cnsys.bg	•	•	•
Варна	ул. Любен Карамелов 26	08002 0199; 052/581 881	support@torex.com	•	•	•
Варна	ул. Мюч 3	07001 6036; 052/614 418	support_varna@cnsys.bg	•	•	•
Варна	бул. Отец Панкря 42	07001 7978	support@stemo.bg	•	•	•
Варна	ул. Тодор Бодрачев 7	07001 0887; 052/321 997	service@paraflow.bg	•	•	•
Видри	ул. Цар Александър II 87	07001 6036; 094/600 410	support_vidin@cnsys.bg	•	•	•
Габрово	ул. Емилумп Манолов 13	08002 0199; 066/804 662	support@torex.com	•	•	•
Габрово	ул. Николаевска 41	07001 7978	support@stemo.bg	•	•	•
Девня	Промислена зона	08002 0199; 0519/95 959	support@torex.com	•	•	•
Козлодуй	АЕЦ Козлодуй	07001 7978	support@stemo.bg	•	•	•
Козлодуй	ул. Васил Водичарски 18, ет. 2	08002 0199; 0973/80 407	support@torex.com	•	•	•
Плевен	ул. Беласица 28	08002 0199; 02/969 1691	support@torex.com	•	•	•
Плевен	бул. Русе 6	07001 7978	support@stemo.bg	•	•	•
Пловдив	бул. България 108А	07001 7978	support@stemo.bg	•	•	•
Пловдив	ул. Тодор Бурнов 4	08002 0199; 032/622 618	support@torex.com	•	•	•
Пловдив	ул. Самара 7	07001 0887; 032/960 046	service@paraflow.bg	•	•	•
Пловдив	бул. България 105	032/637 663	support_plovdiv@cnsys.bg	•	•	•
Русе	бул. Цар Освободител 42А, блок Проектант	07001 7978	support@stemo.bg	•	•	•
Русе	ул. Мил Круш 6, вк. В, ет. 2	08002 0199; 082/077 092	support@torex.com	•	•	•
Русе	ул. Църковна независимост 27	07001 6036; 082/023 256	support_ruse@cnsys.bg	•	•	•
София	ул. Лерик 39	07001 6036	support@cnsys.bg	•	•	•
София	ж.к. Младост 3, бл. 302, вк. 4	08002 0199; 02/969 1660	support@torex.com	•	•	•
София	ул. Никола Габровски 79, Бизнес център ТУИНС	07001 0887; 02/960 4200	service@paraflow.bg	•	•	•
София	бул. Цариградско шосе 335, Бизнес сграда Офис Експрес	07001 7978	support@stemo.bg	•	•	•
Стара Загора	ул. Генерал Гурко 61	07001 7978	support@stemo.bg	•	•	•
Стара Загора	ул. Кольо Ганчев 52	08002 0199; 042/621 114	support@torex.com	•	•	•
Стара Загора	ул. Св. Отец Панкря 92	07001 6036; 042/623 216	support_starazagora@cnsys.bg	•	•	•
Стара Загора	бул. Христо Ботев 100, ет. 5, офис 116	07001 0887; 042/605 350	service@paraflow.bg	•	•	•

КОПИО С ОПРИГНАТА

000041

ДЕКЛАРАЦИЯ

Долуподписаната Г-жа  ЕГН , с л.к. № , изд. на  г. от МВР – гр. София, в качеството си на Експерт обществени поръчки и редовно упълномощена от Управителя на “Парафлуо Комуникейшънс” ООД, със седалище и адрес на управление: София 1700, бул. “Пиротска” 79, ЕИК  5, участник в процедура от Закона за обществени поръчки (ЗОП) с предмет: “ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА” за Обособена позиция 2 – Настолни компютри

ДЕКЛАРИРАМ:

Задължаваме се да осигурим в рамките на предложението в техническото ни предложение гаранционен срок на техниката по обособена позиция 2, необходимите гаранционни ремонти при следните условия:

- Срокът за реакция (регистрация на повредата) след уведомяване от страна на Възложителя е до 2 часа в работно време;
- Срокът за отстраняване на повредата е до 14 работни дни;
- При невъзможност в рамките на посочения срок за отстраняване на проблема в дефектирало оборудване, същото ще се заменя с работоспособно от същия или по-висок клас в срок до 5 работни дни.

Поемаме гаранция за качеството на стоката и за годността и за употреба за сроковете посочени в офертата ни и се задължаваме:

- да осигурим гаранционно обслужване и сервиз;
- да извършваме качествено сервизно техническо поддържане и ремонт на доставената компютърна техника в съответствие с действащите стандарти;
- да отстраняваме възникналите при нормалната експлоатация повреди;
- да отстраним безвъзмездно всички повреди и отклонения от изискванията за качество, които са възникнали в рамките на посочения гаранционен срок;

По време на гаранционния срок, се задължаваме при установяване на еднороден дефект на компоненти и това е установено на не по-малко от 20% от техниката от един вид, да подменяме дефектния компонент и на другата техника от същия вид, които не са проявили дефекта.

Гаранционното сервизно обслужване ще се извършва на мястото на използване на стоките, а ако това е невъзможно се извършва в наша сервизна база, оторизирана от производителите на предлаганата техника за осъществяване на сервизната услуга при условията посочени по-горе посочения в офертата ни.

Адресът на базата е следният:

Гр. София 1700, Район студентски, бул. Никола Габровски 79.

За заявяване на услуга за обслужването Оборудване/ Системи, клиентът ни уведомява по един от следните начини:

- чрез регистриране на заявка в Сервизна информационна система „Paraflow Service Desk”, достъпна на адрес: support.paraflow.bg;
- по електронна поща на адреси hotline@paraflow.bg и service@paraflow.bg чрез попълнен формуляр на Потребителска заявка;
- на факс 02 960 4218 с попълнена сервизна заявка чрез попълнен формуляр на Потребителска заявка;
- по телефона за контакт с ИЗПЪЛНИТЕЛЯ 0700 10 887, 02 960 4222

гр. София, 12.03.2018 г.

/дата на подписване/

Декларатор:


Експерт обществени поръчки

Парафлуо Комуникейшънс ООД

000042

**ДЕКЛАРАЦИЯ
ЗА СЪГЛАСИЕ С КЛАУЗИТЕ НА ПРИЛОЖЕНИЯ ПРОЕКТ НА ДОГОВОР**

Долуподписаният: **Николай Аврамов**

(*собствено, бащино, фамилно име*)

с ЕГН: _____ 1, притежаващ л.к. № _____, издадена на _____ г.,
от МВР – гр. София, с постоянен адрес: гр София, ул. Митрополит Видински 8, ет. 8,
в качеството си на Управител,
(*длъжност*)

на участник Парафлоу Комуникейшънс ООД, ЕИК: _____

(*наименование на участника*)

в процедура от Закона за обществени поръчки (ЗОП) с предмет: **“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА”** за Обособена позиция 2 – **Настолни компютри**

ДЕКЛАРИРАМ, ЧЕ:

Запознат съм с проекта на договора за възлагане на обществената поръчка за Обособена позиция 2 – Настолни компютри, приемам го без възражения и ако участникът, когото представлявам, бъде определен за изпълнител, ще сключа договора изцяло в съответствие с проекта, приложен към документацията за участие, в законоустановения срок.

Известна ми е отговорността по чл. 313 от Наказателния кодекс за посочване на неверни данни.

Дата: 12.03.2018 г.

Декларатор: _____

Николай Аврамов
(*подпис и печат*)

000043

Д Е К Л А Р А Ц И Я
ЗА СЪГЛАСИЕ С КЛАУЗИТЕ НА ПРИЛОЖЕНИЯ ПРОЕКТ НА РАМКОВО
СПОРАЗУМЕНИЕ

Долуподписаният: I

(собствено, бащино, фамилно име)

с ЕГН: _____, притежаващ л.к. № _____, издадена на _____ Г.,
от МВР – гр. София, с постоянен адрес: гр _____
в качеството си на Управител,
(длъжност)

на участник Парафлоу Комуникейшънс ООД, ЕИК I
(наименование на участника)

в процедура от Закона за обществени поръчки (ЗОП) с предмет: "ДОСТАВКА,
ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ
НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА" за Обособена позиция 2 –
Настолни компютри

Д Е К Л А Р И Р А М, ЧЕ:

Запознат съм с проекта на рамково споразумение за възлагане на обществената поръчка, приемам го без възражения и ако участникът, когото представлявам, бъде определен за изпълнител, ще сключа рамковото споразумение изцяло в съответствие с проекта, приложен към документацията за участие, в законоустановения срок.

Известна ми е отговорността по чл. 313 от Наказателния кодекс за посочване на неверни данни.

Дата: 12.03.2018 г.

Декларатор: 

Николай Аврамов
/подпис и печат/

Д Е К Л А Р А Ц И Я ЗА СРОК НА ВАЛИДНОСТ НА ОФЕРТАТА

Долуподписаният: *Г. Иванов*

(собствено, бащино, фамилно име)

с ЕГН: *1234567890*, притежаващ л.к. № *1234567890*, издадена на *12.03.2018* г.,
от МВР – гр. София, с постоянен адрес: гр София, у
в качеството си на Управител,
(длъжност)

на участник *Парафлоу Комуникейшънс ООД, ЕИК*
(наименование на участника)

в процедура от Закона за обществени поръчки (ЗОП) с предмет: “ДОСТАВКА,
ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ
НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА” за Обособена позиция 2 –
Настолни компютри

Д Е К Л А Р И Р А М, Ч Е:

С подаване на настоящата оферта декларираме, че сме съгласни валидността на нашата оферта да бъде 4 (четири) месеца от крайния срок за получаване на оферти, посочен в обявлението за процедурата

Известна ми е отговорността по чл. 313 от Наказателния кодекс за посочване на неверни данни.

Дата: 12.03.2018 г.

Декларатор: *Г. Иванов*

Г. Иванов
/подпис и печат/

ДО
Университет за национално и световно стопанство
Студентски град, ул. "8ми Декември"
София 1700

ЦЕНОВО ПРЕДЛОЖЕНИЕ

за участие в открита процедура за сключване на
рамково споразумение с предмет:

“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО-КОМПЮТЪРНА ТЕХНИКА”

За Обособена позиция 2 – Настолни компютри

от: ПАРАФЛОУ КОМУНИКЕЙШЪНС ООД
Адрес: София 1700, бул. "Никола Габровски" 79
Лице за контакт: Искра Берова
тел.: + 359 2 960 42 00, факс: + 359 2 960 42 18
e-mail: office@paraflow.bg
www.paraflow.bg



ЦЕНОВО ПРЕДЛОЖЕНИЕ

от Парафюу Комуникейшънс ООД

(наименование на участника)

и подписано от

(трите имена и ЕГН)

в качеството ѝ на Експерт обществени поръчки и упълномощено лице от управителя

(на длъжност)

с ЕИК: 00113775;

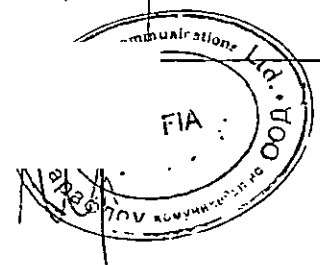
УВАЖАЕМИ ДАМИ И ГОСПОДА,

1. С настоящото, Ви представяме нашата ценова оферта за участие в обявената от Вас обществена поръчка с предмет: **“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА”** за обособена позиция № 2

Предлагаме да поемем, изпълним и завършим тази обществена поръчка, съобразно условията на документацията за участие, както следва:

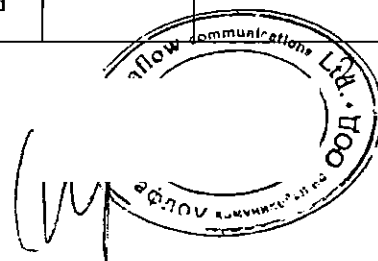
№	Вид оборудване, марка, модел, елементи	Технически характеристики	мярка	Ед.цена без ДДС
1	НАСТОЛНИ КОМПЮТРИ Тип 1 HP ProDesk 600 G3 Microtower PC	Microtower Intel® Pentium® Processor G4560 3.5 GHz, 3 MB L3 cache, 2 cores Intel® Q270 HP 4GB (1x4GB) DDR4 2400, поддържа разширение до 64 GB 500GB SATA 6Gbit/s, 7200rpm 2 xPCIe x1 (v3.0) and 2 xPCIe x16 (v3.0) DVD±RW DL Integrated: Intel® HD Graphics 530 Integrated RJ-45,10/100/1000 " 6 xUSB 3.0 и 6 xUSB 2.0 общо Front: Universal audio jack with CTIA headset support; 1 xUSB 2.0 (fast charging); 1 xUSB 2.0; 2 xUSB 3.1 Gen 1; 1 xUSB Type-C™ (charging); 4 xUSB са изведени на предния панел Back: Back: 1 x audio in; 1 xRJ-45; 1 xaudio out; 1 xDisplayPort™; 2 x USB 2.0; 2 xUSB 3.1 Gen 1; 1 xpower connector; 2x USB 2.0 (non-vPro™); 2 xUSB 3.1 Gen1 (vPro™); 1 xVGA" Lat/cyr USB, от производителя на компютърната конфигурация HP Wheel Optical, USB, от производителя на компютърната конфигурация HP 250 W, up to 85% efficient, active PFC CE Mark, Energy Star 5.0, RoHS директива - 2011/65/EC, WEEE директива – 2002/96/EC, Microsoft Windows 10 Compatible. Моделът е сертифициран от Microsoft. (съгласно разясненията от 1.03.2018 г.) Вграден TPM 1.2 модул Без операционна система, Драйвери за Windows 10. (съгласно разясненията от 1.03.2018 г.)	Бр.	742.00

0000001



		3 години		
2	НАСТОЛНИ КОМПЮТРИ Тип 2 HP ProDesk 600 G3 Microtower PC	<p>Microtower Intel® Core™ i3-7100 Processor 7th Generation 3.90 GHz, 3M cache, 2 cores/4 threads Intel® Q270 HP 4GB (1x4GB) DDR4 2400, поддържа разширение до 64 GB 1 TB SATA 7.2 krpm 2 xPCIe x1 (v3.0) and 2 xPCIe x16 (v3.0) DVD±RW DL Integrated: Intel® HD Graphics 530 Integrated Conexant CX20632 codec Integrated RJ-45, 1GB "6 xUSB 3.0 и 6 xUSB 2.0 общо Front: Universal audio jack with CTIA headset support; 1 xUSB 2.0 (fast charging); 1 xUSB 2.0; 2 xUSB 3.1 Gen 1; 1 xUSB Type-C™ (charging); 4 xUSB са изведени на предния панел Back: Back: 1 x audio in; 1 xRJ-45; 1 xaudio out; 1 xDisplayPort™; 2 x USB 2.0; 2 xUSB 3.1 Gen 1; 1 xpower connector; 2x USB 2.0 (non-vPro™); 2 xUSB 3.1 Gen1 (vPro™); 1 xVGA" Lat/cyр USB, от производителя на компютърната конфигурация HP Wheel Optical, USB, от производителя на компютърната конфигурация HP 250 W, up to 85% efficient, active PFC CE Mark, Energy Star 5.0, RoHS директива - 2011/65/EC, WEEE директива – 2002/96/EC, Microsoft Windows 10 Compatible. Моделът е сертифициран от Microsoft. (съгласно разясненията от 1.03.2018 г.). Вграден TPM 1.2 модул Без операционна система, Драйвери за Windows 10. (съгласно разясненията от 1.03.2018 г.) 3 години</p>	Бр.	861.00
3	НАСТОЛНИ КОМПЮТРИ Тип 3 HP ProDesk 600 G3 Microtower PC	<p>Microtower Intel® Core™ i5-7500 Processor 7th Generation 3.40 GHz, 6M cache, 4 cores Intel® Q270 HP 4GB (1x4GB) DDR4 2400, поддържа разширение до 64 GB 1TB 7200RPM SATA-6G 2 xPCIe x1 (v3.0) and 2 xPCIe x16 (v3.0) DVD±RW DL Integrated: Intel® HD Graphics 530 Integrated Conexant CX20632 codec Integrated RJ-45, 1GB " 6 xUSB 3.0 и 6 xUSB 2.0 общо Front: Universal audio jack with CTIA headset support; 1 xUSB 2.0 (fast charging); 1 xUSB 2.0; 2 xUSB 3.1 Gen 1; 1 xUSB Type-C™ (charging); 4 xUSB са изведени на предния панел Back: Back: 1 x audio in; 1 xRJ-45; 1 xaudio out; 1 xDisplayPort™; 2 x USB 2.0; 2 xUSB 3.1 Gen 1; 1 xpower connector; 2x USB 2.0 (non-vPro™); 2 xUSB 3.1 Gen1 (vPro™); 1 xVGA" Lat/cyр USB, от производителя на компютърната конфигурация HP Wheel Optical, USB, от производителя на компютърната конфигурация HP 250 W, up to 85% efficient, active PFC CE Mark, Energy Star 5.0, RoHS директива - 2011/65/EC, WEEE директива – 2002/96/EC, Microsoft Windows 10 Compatible. Моделът е сертифициран от Microsoft. (съгласно разясненията от 1.03.2018 г.). Вграден TPM 1.2 модул Без операционна система, Драйвери за Windows 10. (съгласно разясненията от 1.03.2018 г.) 3 години</p>	Бр.	993.00
4.	НАСТОЛНИ КОМПЮТРИ Тип 4 HP EliteDesk 800 G3 Tower PC	<p>Tower Intel® Core™ i7-7700 Processor 7th Generation 3.60 GHz, 8M cache, 4 cores/8 threads Intel® Q270 8GB (1x8GB) DDR4 2400 UDIMM NECC Unbuffered Memory, поддържа разширение до 64 GB</p>	Бр.	1324.00

000002



		<p>1000GB SATA 6Gbit/s, 7200rpm, с възможност за инсталиране на втори диск, RAID поддръжка 2x PCI Express x1 and 2x PCI Express x16 DVD±RW DL Интегриран Intel® HD Graphics 630 Integrated Realtek ALC221 Integrated RJ-45,1GB " 6 xUSB 3.0 и 4 xUSB 2.0 общо Front: 1 xHeadphone connector; 1 xUSB 2.0 (fast charging); 1 xUSB 2.0; 2 xUSB 3.1 Gen 1; 1 USB Type-C™ (charging); Universal audio jack with CTIA headset support, 4 xUSB са изведени на предния панел Back: 1 x audio out; 2 x DisplayPort™; 2x USB 2.0; 4 xUSB 3.1 Gen 1; 1 й audio in; 1 x RJ-45; 1 x power connector; 1 xVGA" Lat/cyr USB, от производителя на компютърната конфигурация HP Wheel Optical, USB, от производителя на компютърната конфигурация HP Захранващ блок с мощност 250W, 85% ефективност CE Mark, Energy Star 5.0, RoHS директива - 2011/65/EC, WEEE директива – 2002/96/EC, Microsoft Windows10 Compatible. Моделът е сертифициран от Microsoft. (съгласно разясненията от 1.03.2018 г.) Вграден TPM 1.2 модул Без операционна система, Драйвери за Windows 10. (съгласно разясненията от 1.03.2018 г.) 3 години</p>		
Сбор на единичните цени				3 920.00

2. В предлаганата от нас цена също така сме включили и всички разходи, необходими за качествено и точно изпълнение на дейностите от обхвата на обществената поръчка.

3. Предложените цени са определени при пълно съответствие с условията от документацията и техническата спецификация по процедурата.

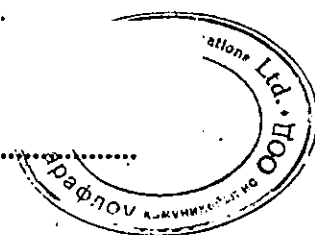
Дата: 12.03.2018 г.

ПОДПИС И ПЕЧАТ:

[име и фамилия]

Упълномощено лице

[качество на представляващия участника]



ПРЕДЛОЖЕНИЕ ЗА ИЗПЪЛНЕНИЕ НА ПОРЪЧКАТА

Обособена позиция 2 – Настолни компютри

УЧАСТНИК СТЕМО ООД

авова

ма,

у

мер,

000000

А: ТЕХНИЧЕСКО ПРЕДЛОЖЕНИЕ ЗА СЪБОСОБЕНА ПОЗИЦИЯ № 2 (ОБРАЗЕЦ № 3.2), ПРЕДАВАНО ВЕДНО С ПРИЛОЖЕНИЯТА КЪМ НЕГО

(а) НОТАРИАЛНО ЗАВЕРЕНО ПЪЛНОМОЩНО НА ЛИЦЕТО ВАНЯ ЦЕНКОВА-МИТЕВА ДА ПОДПИШЕ СЪРТАТА И/ДА ПРЕДАВА ЛУВА ФИРМА СТЕМО ООД В НАСТОЯЩА ПРОЦЕДУРА

[Handwritten signature]

[Handwritten signature]

[Handwritten signature]

[Handwritten signature]

(6) ПРЕДЛОЖЕНИЕ ЗА ИЗПЪЛНЕНИЕ НА ПОРЪЧКАТА В СЪОТВЕТСТВИЕ С ТЕХНИЧЕСКИТЕ СПЕЦИФИКАЦИИ И ИЗИСКВАНИЯТА НА ВЪЗЛОЖИТЕЛЯ И СЪОБРАЗЕНО С КРИТЕРИИТЕ ЗА ВЪЗЛАГАНЕ



ОБРАЗЕЦ № 3.2

ТЕХНИЧЕСКО ПРЕДЛОЖЕНИЕ ЗА ИЗПЪЛНЕНИЕ НА ПОРЪЧКАТА

от СТЕМО ООД и подписано от _____, ЕГН _____, в качеството ѝ на търговски асистент търгове и пълномощник на управителя на СТЕМО ООД, с ЕИК/БУЛСТАТ/ЕГН/друга индивидуализация на участника или подизпълнителя (когато е приложимо): 817080126

УВАЖАЕМИ ДАМИ И ГОСПОДА,

1. След запознаване с всички документи и образци от документацията за участие в процедурата, получаването, на които потвърждаваме с настоящото, ние удостоверяваме и потвърждаваме, че представяваният от нас участник отговаря на изискванията и условията посочени в документацията за участие в процедура с предмет: **“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА” за обособена позиция № 2**

2. Декларираме, че сме получили посредством „Профила на купувача“ документация за участие и сме запознати с указанията и условията за участие в обявената от Вас процедура. Съгласни сме с поставените от Вас условия и ги приемаме без възражения.

3. Декларираме, че сме запознати със всички условия за изпълнение на поръчката за обособената позиция.

4. Декларираме, че ще изпълним дейностите по обществената поръчка в сроковете регламентирани от Възложителя в документацията за участие и Техническата спецификация, а именно:

Срок за изпълнение 12 (дванадесет) месеца.

5. Декларираме, че предлаганата техника е сертифицирана от Microsoft. За доказателство за сертифициране от Microsoft на техниката прилагам разпечатка на Windows Logo Verification Report. Линк, чрез който може да се провери истинността на горепосоченото:

- за ProDesk 600 G3 Microtower (Business) PC

<https://sysdev.microsoft.com/en-US/Hardware/LogoVerificationReport.aspx?sid=1933524>

- за EliteDesk 800 G3 Tower Business PC

<https://sysdev.microsoft.com/en-US/Hardware/LogoVerificationReport.aspx?sid=1933517>

6. Декларираме, че предлаганата техника е нова, неупотребявана, нерициклирана и в производствената листа на производителя към момента на подаване на офертата, Линк, чрез който може да се провери истинността на горепосоченото:

<https://support.hp.com/us-en/product/hp-prodesk-600-g3-microtower-pc/15257651/document/c05369348>

<https://support.hp.com/us-en/product/hp-elite-desk-800-g3-tower-pc/15257631/document/c05367765>

7. Декларираме, че имаме оторизация/договор от производителя и/или от официалния представител на производителя с права да извършва _____ сервиз на предлаганото оборудване.

000004

8. За изпълнение предмета на поръчката прилагаме:

8.1. документ за упълномощаване, когато лицето, което подава офертата, не е законният представител на участника – нотариално заверено копие;

8.2. предложение за изпълнение на поръчката в съответствие с техническите спецификации и изискванията на възложителя за обособената позиция съобразено с критериите за възлагане – свободна редакция;

8.3. разпечатка на Windows Logo Verifivation Report;

8.4. декларация за съгласие с клаузите на приложения проект на договор - попълнен Образец № 4.2.;

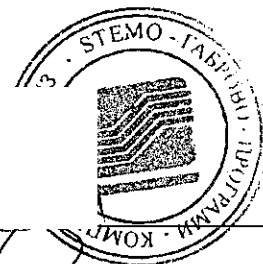
8.5. декларация за съгласие с клаузите на приложения проект на рамково споразумение - попълнен Образец № 4.1.;

8.6. декларация за срока на валидност на офертата - попълнен Образец № 5.

Дата: 12.03.2018 г.

ПОДПИС И ПЕЧАТ: _____

Ваня Ценкова-Митева –
търговски асистент търговец и
пълномощник на управителя на СТЕМО ООД



Л



000005

Приложение
КЪМ
ОБРАЗЕЦ № 3.2

ПРЕДЛОЖЕНИЕ ЗА ИЗПЪЛНЕНИЕ НА ПОРЪЧКАТА В СЪОТВЕТСТВИЕ С ТЕХНИЧЕСКИТЕ СПЕЦИФИКАЦИИ И ИЗИСКВАНИЯТА НА ВЪЗЛОЖИТЕЛЯ

УВАЖАЕМИ ДАМИ И ГОСПОДА,

Ако бъдем избрани за изпълнител:

1. В рамките на предложението в настоящето предложение гаранционен срок, ще осигурим необходимите гаранционни ремонти при следните условия:

1.1. Срокът за реакция (регистрация на повредата) след уведомяване от страна на Възложителя е до 2 часа в работното време на Възложителя.

1.2. Срокът за отстраняване на повредата е до 14 работни дни от датата на получаване на уведомлението от Възложителя.

1.3. При невъзможност в рамките на срока по т. 1.2., за отстраняване на проблема в дефектирало оборудване, същото ще заменим с работоспособно от същия или по-висок клас в срок до 5 работни дни.

2. Ще поемем гаранция за качеството на стоката и за годността и за употреба за сроковете посочени в предложението ни и се задължаваме:

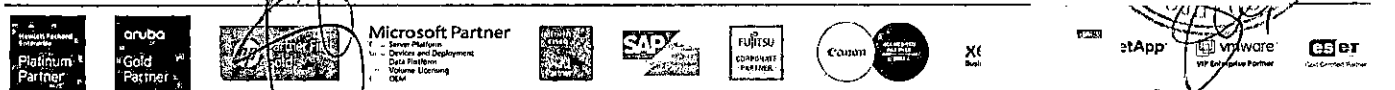
- да осигурим гаранционно обслужване и сервиз;
- да извършваме качествено сервизно техническо поддържане и ремонт на доставената компютърна техника в съответствие с действащите стандарти;
- да отстраняваме възникналите при нормалната експлоатация повреди;
- да отстраним безвъзмездно всички повреди и отклонения от изискванията за качество, които са възникнали в рамките на посочения гаранционен срок;

2.1. По време на гаранционния срок при установяване на еднороден дефект на компоненти, и това е установено на не по - малко от 20% от техниката от един вид, ще подменим дефектния компонент и на другата техника от същия вид, които не са проявили дефекта.

2.2. Не носим отговорност в следните случаи:

- за повреди и отклонения от качеството на стоката, възникнали вследствие на нейната неправилна употреба, експлоатация, неспазване на указанията в съпровождащата документация или неправилно съхранение от страна на Възложителя;
- поражения при стихийни бедствия: пожар, земетресение, наводнение, големи колебания в електрическата мрежа, посегателства и др.

Отстраняването на повреди, предизвикани от някои от изброените обстоятелства ще се извършват на техническа възможност и срещу допълнително заплащане от страна на Възложителя.



Handwritten signature and number 7000336

2.3. В случай, че не предприемем действия по отстраняване на повредите или замяна на дефектиралата техника в срок, Възложителят може да отстрани повредата за сметка на Изпълнителя. Всички разходи по поправката или замяната са за сметка на Изпълнителя и се удържат от гаранцията за добро изпълнение.

2.4. Гаранционното сервизно обслужване се извършва на мястото на използване на техниката, а ако това е невъзможно се извършва в посочения в офертата ни сервиз.

2.5. Ще доставим техниката до адреса на УНСС за наша сметка и ще осигурим гаранционно обслужване на техниката, при условията посочени по-горе.

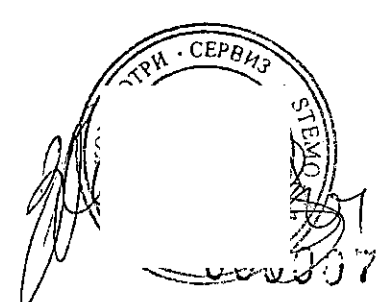
3. За доказване на обстоятелството, че предлаганата техника е сертифицирана от Microsoft към настоящето предложение е приложена разпечатка на Windows Logo Verifivation Report, а в техническото предложение по Образец 3.2 е посочен линк за всеки предложен продукт, чрез който може да се провери истинността на горепосоченото.

4. Предлаганата техника е нова, неупотребявана, нерициклирана и в производствената листа на производителя към момента на подаване на офертата, за което в т. 6 на Образец 3.2 е посочен линк, чрез който да може да се провери истинността на горепосоченото.

5. За осъществяване на сервизната услуга при условията посочени по-горе имаме на разположение сервизна база, оторизирана от производителя на предлаганата техника.

6. Подробно описание на техническите характеристики на предложената техника е направено в следващата сравнителна таблица, в която е видно съответствието на предлаганата техника с техническите спецификации и изискванията на възложителя.

✓


СЕРВИЗ
STEMO

Срав

Таблица за Обособена позиция №2 НАСТОЛНИ КОМПЮТРИ
Минимални технически параметри
**Технически параметри,
предложени от Стемо ООД**
**Степ
съответствие**
НАСТОЛНИ КОМПЮТРИ Тип 1
**НАСТОЛНИ КОМПЮТРИ Тип 1, марка HP, модел
ProDesk 600 G3 Microtower.PC**

Минимални технически параметри		Технически параметри, предложени от Стемо ООД	Степ съответствие
НАСТОЛНИ КОМПЮТРИ Тип 1		НАСТОЛНИ КОМПЮТРИ Тип 1, марка HP, модел ProDesk 600 G3 Microtower.PC	
Кутия, form factor	Microtower	Microtower	Съответства
Процесор	Intel Pentium G4560Processor (3.5 GHz, 3 MB L3 cache, 2 cores) или еквивалентен	Intel Pentium G4560Processor (3.5 GHz, 3 MB L3 cache, 2 cores)	Съответства
Чипсет	Min. Intel® Q270 или еквивалентен	Intel® Q270	Съответства
Оперативна памет	Min. 4GB DDR4 -2133 MHz, да поддържа разширение минимум до 32 GB	4GB DDR4 -2400 MHz, поддържа разширение до 64 GB	Надвишава
Твърд диск	min. 500GB SATA 6Gbit/s, 7200rpm	500GB SATA 6Gbit/s, 7200rpm	Съответства
Разширителни слотове	Min. 2x PCI Express x1 and 2x PCI Express x16	2x PCI Express x1 and 2x PCI Express x16	Съответства
Оптично устройство	Мин. DVD±RW DL	DVD±RW DL	Съответства
Графика	Интегриран min. Intel HD Graphics 530 или еквивалентен	Интегриран Intel® HD Graphics 610	Надвишава
Мрежов адаптер	Integrated RJ-45,10/100/1000	Integrated RJ-45,10/100/1000	Съответства
Интерфейси	min 6 USB 3.0 и 4 USB 2.0 (поне 4 от тях да са изведени на предния панел), 1 USB Type-c, Audio-In и Audio-Out, RJ-45, 1 VGA, 1 DisplayPort/DVI	6 USB 3.1 и 4 USB 2.0 (4 от тях са изведени на предния панел), 1 USB Type-c, Audio-In и Audio-Out, 1 Headset, RJ-45, 1 VGA, 2 DisplayPort	Надвишава
Клавиатура	Lat/cyr USB, от производителя на компютърната конфигурация	Lat/cyr USB, от производителя на компютърната конфигурация	Съответства
Оптична мишка	Wheel Optical, USB, от производителя на компютърната конфигурация	Wheel Optical, USB, от производителя на компютърната конфигурация	Съответства
Захранване	Захранващ блок с мощност минимум 250W, с минимум 85% ефективност	Захранващ блок с мощност 250W, с 90% ефективност	Надвишава

Минимални технически параметри		Технически параметри, предложени от Стемо ООД	Степен на съответствие
Сертификат за съвместимост	CE Mark, Energy Star 5.0, RoHS директива - 2011/65/EC, WEEE директива - 2002/96/EC, Microsoft Windows 7/8/10 Compatible. Моделът да бъде сертифициран от Microsoft.	CE Mark, Energy Star 6.1, RoHS директива - 2011/65/EC, WEEE директива - 2002/96/EC, Microsoft Windows 10 Compatible . Моделът да бъде сертифициран от Microsoft.	Съответства
Сигурност	Вграден TPM 1.2 модул	Вграден TPM 2.0 модул	Надвишава
Операционна система	Без операционна система, Драйвери за Windows 7/8/10.	Без операционна система, Драйвери за Windows 10.	Съответства
Гаранция	3 години	3 години	Съответства
НАСТОЛНИ КОМПЮТРИ Тип 2		НАСТОЛНИ КОМПЮТРИ Тип 2, марка HP, модел ProDesk.600.G3 Microtower PC	
Кутия, form factor	Microtower	Microtower	Съответства
Процесор	Min. Intel Core i3-7100 Processor (3.90 GHz, 3M cache, 2 cores/4 threads) или еквивалентен	Intel Core i3-7100 Processor (3.90 GHz, 3M cache, 2 cores/4 threads)	Съответства
Чипсет	Min. Intel® Q270 или еквивалентен	Intel® Q270	Съответства
Оперативна памет	Min. 4GB DDR4 -2133 MHz, да поддържа разширение минимум до 32 GB	4GB DDR4 -2400 MHz, поддържа разширение до 64 GB	Надвишава
Твърд диск	Min. 1 TB SATA 7.2 krpm	1 TB SATA 7.2 krpm	Съответства
Разширителни слотове	Min. 2x PCI Express x1 and 2x PCI Express x16	2x PCI Express x1 and 2x PCI Express x16	Съответства
Оптично устройство	Мин. DVD±RW DL	DVD±RW DL	Съответства
Графика	Интегриран min. Intel HD Graphics 530 или еквивалентен	Интегриран Intel® HD Graphics 630	Надвишава
Звук	Integrated	Integrated	Съответства
Сетов адаптер	Integrated RJ-45, 1GB	Integrated RJ-45, 1GB	Съответства
Периферия	min 6 USB 3.0 и 4 USB 2.0 (поне 4 от тях да са изведени на предния панел), 1 USB Type-c, Audio-In и Audio-Out, RJ-45, 1 VGA, 1 DisplayPort/DVI	6 USB 3.1 и 4 USB 2.0 (4 от тях са изведени на предния панел), 1 USB Type-c, Audio-In и Audio-Out, 1 Headset, RJ-45, 1 VGA, 2 DisplayPort	Надвишава
Клавиатура	Lat/cyr USB, от производителя на компютърната конфигурация	Lat/cyr USB, от производителя на компютърната конфигурация	Съответства
Мишка	Wheel Optical, USB, от производителя на компютърната конфигурация	Wheel Optical, USB, от производителя на компютърната конфигурация	Съответства



Минимални технически параметри		Технически параметри, предложени от Стемо ООД	Степен на съответствие
Захранване	Захранващ блок с мощност минимум 250W, с минимум 85% ефективност	Захранващ блок с мощност 250W, с 90% ефективност	Надвишава
Сертификат за съвместимост	CE Mark, Energy Star 5.0, RoHS директива - 2011/65/EC, WEEE директива - 2002/96/EC, Microsoft Windows 7/8/10 Compatible. Моделът да бъде сертифициран от Microsoft..	CE Mark, Energy Star 6.1, RoHS директива - 2011/65/EC, WEEE директива - 2002/96/EC, Microsoft Windows 10 Compatible. Моделът да бъде сертифициран от Microsoft.	Съответства
Сигурност	Вграден TPM 1.2 модул	Вграден TPM 2.0 модул	Надвишава
Операционна система	Без операционна система, Драйвери за Windows 7/8/10.	Без операционна система, Драйвери за Windows 10.	Съответства
Гаранция	3 години	3 години	Съответства
НАСТОЛНИ КОМПЮТРИ Тип 3		НАСТОЛНИ КОМПЮТРИ Тип 3, марка HP, модел ProDesk 600 G3 Microtower.PC	
Кутия, form factor	Microtower	Microtower	Съответства
Процесор	Min. Intel Core i5-7500 Processor (3.40 GHz, 6M cache, 4 cores) или еквивалентен	Intel Core i5-7500 Processor (3.40 GHz, 6M cache, 4 cores)	Съответства
Чипсет	Min. Intel® Q270 или еквивалентен	Intel® Q270	Съответства
Оперативна памет	Min. 4GB DDR4 -2133 MHz, да поддържа разширение минимум до 32 GB	4GB DDR4 -2400 MHz, поддържа разширение до 64 GB	Надвишава
Твърд диск	Min. 1 TB SATA 7.2 krpm	1 TB SATA 7.2 krpm	Съответства
Разширителни слотове	Min. 2x PCI Express x1 and 2x PCI Express x16	2x PCI Express x1 and 2x PCI Express x16	Съответства
	DVD±RW DL	DVD±RW DL	Съответства
	Интегриран min. Intel HD Graphics 530 или еквивалентен	Интегриран Intel® HD Graphics 630	Надвишава
Аудио	Integrated	Integrated	Съответства
Мрежов адаптер	Integrated RJ-45,1GB	Integrated RJ-45,1GB	Съответства
Интерфейси	min 6 USB 3.0 и 4 USB 2.0 (поне 4 от тях да са изведени на предния панел), 1 USB Type-c, Audio-In и Audio-Out, RJ-45, 1 VGA, 1 DisplayPort/DVI	6 USB 3.1 и 4 USB 2.0 (4 от тях са изведени на предния панел), 1 USB Type-c, Audio-In и Audio-Out, 1 Headset, RJ-45, 1 VGA, 2 DisplayPort	Надвишава
Клавиатура	Lat/cyr USB, от производителя на компютърната конфигурация	Lat/cyr USB, от производителя на компютърната конфигурация	Съответства



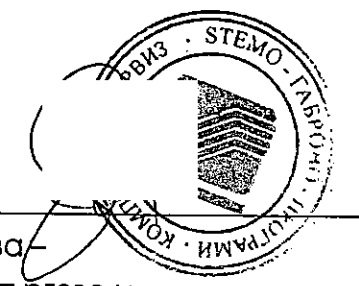
Минимални технически параметри		Технически параметри, предложени от Стемо ООД	Степен на съответствие
MI	Wheel Optical, USB, от производителя на компютърната конфигурация	Wheel Optical, USB, от производителя на компютърната конфигурация	Съответства
Захранване	Захранващ блок с мощност минимум 250W, с минимум 85% ефективност	Захранващ блок с мощност 250W, с 90% ефективност	Надвишава
Сертификат за съвместимост	CE Mark, Energy Star 5.0, RoHS директива - 2011/65/EC, WEEE директива - 2002/96/EC, Microsoft Windows 7/8 Compatible. Моделът да бъде сертифициран от Microsoft..	CE Mark, Energy Star 6.1, RoHS директива - 2011/65/EC, WEEE директива - 2002/96/EC, Microsoft Windows 10 Compatible. Моделът да бъде сертифициран от Microsoft.	Съответст
Сигурност	Вграден TPM 1.2 модул	Вграден TPM 2.0 модул	Надвишава
Операционна система	Без операционна система, Драйвери за Windows 7/8/10.	Без операционна система, Драйвери за Windows 10.	Съответства
Гаранция	3 години	3 години	Съответства
НАСТОЛНИ КОМПЮТРИ Тип 4		НАСТОЛНИ КОМПЮТРИ Тип 4, марка HP, модел EliteDesk 800 G3 Tower Business PC	
Кутия, form factor	Tower	Tower	Съответства
Процесор	Min. Intel Core i7-7700 Processor (3.60 GHz, 8M cache, 4 cores/8 threads) или еквивалентен	Intel Core i7-7700 Processor (3.60 GHz, 8M cache, 4 cores/8 threads)	Съответства
Чипсет	Min. Intel® Q270 или еквивалентен	Intel® Q270	Съответства
Оперативна памет	Min. 8GB DDR4 -2133 MHz, да поддържа разширение минимум до 32 GB	8GB DDR4 -2133 MHz, поддържа разширение до 64GB	Надвишава
Твърд диск	min. 1000GB SATA 6Gbit/s, 7200rpm, възможност за инсталиране на втори диск, RAID поддръжка	1000GB SATA 6Gbit/s, 7200rpm, възможност за инсталиране на втори диск, RAID поддръжка	Съответства
Слотове	Min. 2x PCI Express x1 and 2x PCI Express x16	2x PCI Express x1 and 2x PCI Express x16	Съответства
	DVD±RW DL	DVD±RW DL	Съответства
Графика	Интегриран min. Intel HD Graphics 630 или еквивалентен	Интегриран Intel HD Graphics 630	Съответства
Аудио	Integrated	Integrated	Съответства
Мрежов адаптер	Integrated RJ-45,1GB	Integrated RJ-45,1GB	Съответства

302
 ГРАФИКА
 АУДИО
 МРЕЖОВ АДАПТЕР
 СЛОТОВЕ

Минимални технически параметри		Технически параметри, предложени от Стемо ООД	Степен на съответствие
Интерфейси	min 6 USB 3.0 и 4 USB 2.0 (поне 4 от тях да са изведени на предния панел), 1 USB Type-c, Audio-In и Audio-Out, RJ-45, 1 VGA, 1 DisplayPort/DVI	6 USB 3.1 и 4 USB 2.0 (4 от тях да са изведени на предния панел), 1 USB Type-c, Audio-In и Audio-Out, RJ-45, 1 VGA, 2 DisplayPort	Надвишава
Клавиатура	Lat/cyr USB, от производителя на компютърната конфигурация	Lat/cyr USB, от производителя на компютърната конфигурация	Съответства
Мишка	Wheel Optical, USB, от производителя на компютърната конфигурация	Wheel Optical, USB, от производителя на компютърната конфигурация	Съответства
Захранване	Захранващ блок с мощност минимум 250W, с минимум 85% ефективност	Захранващ блок с мощност 250W, с 90% ефективност	Надвишава
Сертификат за съвместимост	CE Mark, Energy Star 5.0, RoHS директива - 2011/65/EC, WEEE директива - 2002/96/EC, Microsoft Windows 7/8/10 Compatible. Моделът да бъде сертифициран от Microsoft..	CE Mark, Energy Star 6.1, RoHS директива - 2011/65/EC, WEEE директива - 2002/96/EC, Microsoft Windows 10 Compatible. Моделът да бъде сертифициран от Microsoft..	Съответства
Сигурност	Вграден TPM 1.2 модул	Вграден TPM 2.0 модул	Надвишава
Операционна система	Без операционна система, Драйвери за Windows 7/8/10.	Без операционна система, Драйвери за Windows 10.	Съответства
Гаранция	3 години	3 години	Съответства

- ProDesk 600 G3 Microtower (Business) PC
<https://support.hp.com/us-en/product/hp-prodesk-600-g3-microtower-pc/15257651/document/c05369348>
- EliteDesk 800 G3 Tower Business PC
<https://support.hp.com/us-en/product/hp-elitedesk-800-g3-tower-pc/15257631/document/c05367765>

Дата: 12.03.2018 г.

ПОДПИС И ПЕЧАТ: 
Ваня Ценкова-Митева
търговски асистент търгове и
пълномощник на управителя на STEMO ООД

1000012

(B) РАЗПЕЧАТКА НА WINDOWS LOGO VERIFICATION REPORT

Превод от английски език



Доклад за извършена проверка на съвместимостта с Windows: Приет

Идентификационен номер на подаване: 1933523

Дата на подаване: 27 декември 2016

Срок за изпълнение на логото: 27 декември 2016

Фирма: Хюлет-Пакард Инк.

Име на продукта: HP ProDesk 600 G3 Microtower Business PC

Категория: Системи

Вид на продукта: Десктоп

Ниво на квалификация: Сертифициран за Microsoft Windows 10 клиентско семейство 1607, x64

Търговски наименования: HP ProDesk 600 G3 Microtower Business PC

Допълнителна информация:

BIOS URL: <http://www8.hp.com/us/en/drivers.html>

Производител на дънната платка: Хюлет-Пакард

Модел на дънната платка: 829D

Производител на BIOS: Хюлет-Пакард

Дата на BIOS: 12/06/2016

Версия на BIOS: HPQOEM - 0

Firmware интерфейс: UEFI

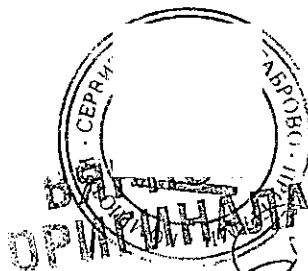
Максимална RAM памет, която може да бъде инсталирана (в MB): 67108864

Скорост на CPU: 3600

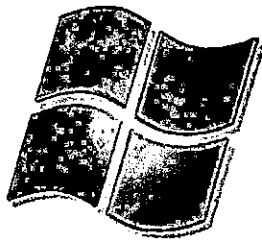
Брой физическите процесори (CPU сокети): 1

Модел на CPU: Intel(R) Core(TM) i7-7700 CPU @ 3.60GHz

ACPI sleep states: S3,S4,S5



000014



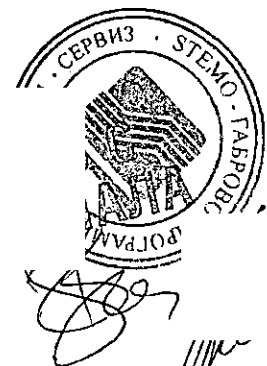
Windows hardware certification report: Approved

Submission ID: 1933523
 Submission date: 12/27/2016
 Hardware certification completion date: 12/27/2016
 Company: HP Inc.
 Product name: HP ProDesk 600 G3 Microtower Business PC
 Category: Systems
 Product type: Desktop
 Qualification level: Certified for Microsoft Windows 10 Client family version 1607, x64
 Marketing names: HP ProDesk 600 G3 Microtower Business PC

Additional information:

BIOS URL: <http://www8.hp.com/us/en/drivers.html>
 Motherboard manufacturer: HP
 Motherboard model: 829D
 BIOS manufacturer: HP
 BIOS date: 12/06/2016
 BIOS version: HPQOEM - 0
 Firmware interface: UEFI
 Maximum RAM that can be installed (in MB): 67108864
 CPU speed: 3600
 Number of physical CPUs (CPU sockets): 1
 CPU model: Intel(R) Core(TM) i7-7700 CPU @ 3.60GHz
 ACPI sleep states: S3,S4,S5

В
ОП



000015

Превод от английски език

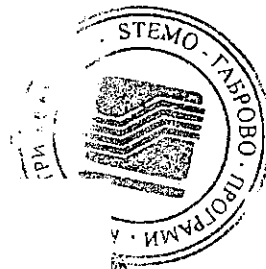


Доклад за извършена проверка на съвместимостта с Windows: Приет

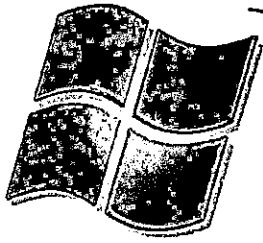
Идентификационен номер на подаване:	1933524
Дата на подаване:	27 декември 2016
Срок за изпълнение на логото:	27 декември 2016
Фирма:	Хюлет-Пакард Инк.
Име на продукта:	HP ProDesk 600 G3 Microtower Business PC
Категория:	Системи
Вид на продукта:	Десктоп
Ниво на квалификация:	Сертифициран за Microsoft Windows 10 клиентско семейство 1607, x64
Търговски наименования:	HP ProDesk 600 G3 Microtower Business PC

Допълнителна информация:

BIOS URL:	http://www8.hp.com/us/en/drivers.html
Производител на дънната платка:	Хюлет-Пакард
Модел на дънната платка:	82B3
Производител на BIOS:	Хюлет-Пакард
Дата на BIOS:	12/06/2016
Версия на BIOS:	HPQOEM - 0
Firmware интерфейс:	UEFI
Максимална RAM памет, която може да бъде инсталирана (в MB):	67108864
Скорост на CPU:	3600
Брой физическите процесори (CPU сокети):	1
Модел на CPU:	Intel(R) Core(TM) i7-7700 CPU @ 3.60GHz
ACPI sleep states:	S3,S4,S5



000016



Windows hardware certification report: Approved

Submission ID: 1933524
 Submission date: 12/27/2016
 Hardware certification completion date: 12/27/2016
 Company: HP Inc.
 Product name: HP ProDesk 600 G3 Microtower Business PC
 Category: Systems
 Product type: Desktop
 Qualification level: Certified for Microsoft Windows 10 Client family version 1607, x64
 Marketing names: HP ProDesk 600 G3 Microtower Business PC

Additional information:

BIOS URL: <http://www8.hp.com/us/en/drivers.html>
 Motherboard manufacturer: HP
 Motherboard model: 82B3
 BIOS manufacturer: HP
 BIOS date: 12/06/2016
 BIOS version: HPQOEM - 0
 Firmware interface: UEFI
 Maximum RAM that can be installed (in MB): 67108864
 CPU speed: 3600
 Number of physical CPUs (CPU sockets): 1
 CPU model: Intel(R) Core(TM) i7-7700 CPU @ 3.60GHz
 ACPI sleep states: S3,S4,S5

Handwritten signature

Handwritten 'B' and 'OP' stamp



Handwritten number '000017' with a checkmark

Превод от английски език



Доклад за извършена проверка на съвместимостта с Windows: Приет

Идентификационен номер на подаване: 1933517

Дата на подаване: 27 декември 2016

Срок за изпълнение на логото: 27 декември 2016

Фирма: Хюлет-Пакард Инк.

Име на продукта: HP EliteDesk 800 G3 Tower Business PC

Категория: Системи

Вид на продукта: Десктоп

Ниво на квалификация: Сертифициран за Microsoft Windows 10 клиентско семейство 1607, x64

Търговски наименования: HP EliteDesk 880 G3 Tower Business PC

Допълнителна информация:

BIOS URL: <http://www8.hp.com/us/en/drivers.html>

Производител на дънната платка: Хюлет-Пакард

Модел на дънната платка: 8298

Производител на BIOS: Хюлет-Пакард

Дата на BIOS: 12/06/2016

Версия на BIOS: HPQOEM - 0

Firmware интерфейс: UEFI

Максимална RAM памет, която може да бъде инсталирана (в MB): 67108864

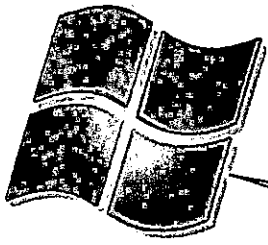
Скорост на CPU: 4200

Брой физическите процесори (CPU сокети): 1

Модел на CPU: Intel(R) Core(TM) i7-7700 CPU @ 4.20GHz

ACPI sleep states: S3,S4,S5

800018



Windows hardware certification report: Approved

Submission ID: 1933517
 Submission date: 12/27/2016
 Hardware certification completion date: 12/27/2016
 Company: HP Inc.
 Product name: HP EliteDesk 800 G3 Tower Business PC
 Category: Systems
 Product type: Desktop
 Qualification level: Certified for Microsoft Windows 10 Client family version 1607, x64
 Marketing names: HP EliteDesk 880 G3 Tower Business PC

Additional information:

BIOS URL: <http://www8.hp.com/us/en/drivers.html>
 Motherboard manufacturer: HP
 Motherboard model: 8298
 BIOS manufacturer: HP
 BIOS date: 12/06/2016
 BIOS version: HPQOEM - 0
 Firmware interface: UEFI
 Maximum RAM that can be installed (in MB): 67108864
 CPU speed: 4200
 Number of physical CPUs (CPU sockets): 1
 CPU model: Intel(R) Core(TM) i7-7700K CPU @ 4.20GHz
 ACPI sleep states: S3,S4,S5



ВЯР
ОРИТ

000019

(Г) ДЕКЛАРАЦИЯ ЗА СЪГЛАСИЕ С КЛАУЗИТЕ НА ПРИЛОЖЕНИЯ ПРОЕКТНА ДОГОВОР (ОБРАЗЕЦ № 4.2)





ОБРАЗЕЦ № 4.2

Д Е К Л А Р А Ц И Я ЗА СЪГЛАСИЕ С КЛАУЗИТЕ НА ПРИЛОЖЕНИЯ ПРОЕКТ НА ДОГОВОР



Долуподписаната Ваня Стефанова Ценкова-Митева, с ЕГН: 8004197037, притежаваща л. к. № 646997381, издадена на 21.04.2017 г. от МВР – гр. София, с постоянен адрес: София, ж.к. Лев Толстой, бл. 55, вх. В, ет. 4, ап. 58, в качеството си на търговски асистент търгове и пълномощник на управителя на СТЕМО ООД, ЕИК 817080126, участник в процедура от Закона за обществени поръчки (ЗОП) с предмет: **"ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА"** за обособена позиция № 2: Настолни компютри

ДЕКЛАРИРАМ, ЧЕ:

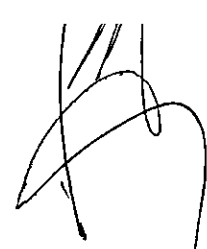
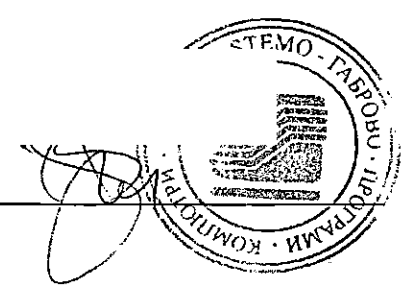
Запозната съм с проекта на договора за възлагане на обществената поръчка за обособена позиция 2, приемам го без възражения и ако участникът, когото представлявам, бъде определен за изпълнител, ще сключа договора изцяло в съответствие с проекта, приложен към документацията за участие, в законоустановения срок.

Известна ми е отговорността по чл. 313 от Наказателния кодекс за посочване на неверни данни.

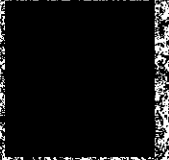
Дата: 12.03.2018 г.



Декларатор:

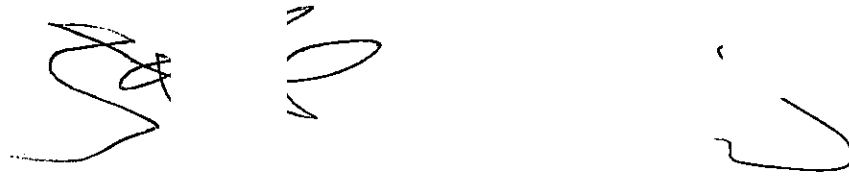


(А) ДЕКЛАРАЦИЯ ЗА СЪГЛАСИЕ С КЛАУЗИТЕ НА ПРИЛОЖЕНОТО РАМКОВО СПОРАЗУМЕНИЕ
(ОБРАЗЕЦ № 4.1)



[Handwritten signature]

[Handwritten signature]



ОБРАЗЕЦ № 4.1

Д Е К Л А Р А Ц И Я

ЗА СЪГЛАСИЕ С КЛАУЗИТЕ НА ПРИЛОЖЕНИЯ ПРОЕКТ НА РАМКОВО СПОРАЗУМЕНИЕ

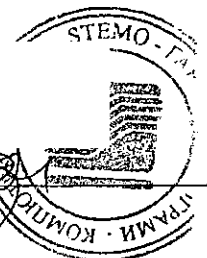
Долуподписаната Ваня Стефанова Ценкова-Митева, с ЕГН: 8004197037, притежаваща л. к. № 646997381, издадена на 21.04.2017 г. от МВР – гр. София, с постоянен адрес: София, ж.к. Лев Толстой, бл. 55, вх. В, ет. 4, ап. 58, в качеството си на търговски асистент търгове и пълномощник на управителя на СТЕМО ООД, ЕИК 817080126, участник в процедура от Закона за обществени поръчки (ЗОП) с предмет: **“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА”** за обособена позиция № 2: Настолни компютри

Д Е К Л А Р И Р А М, Ч Е:

Запозната съм с проекта на рамково споразумение за възлагане на обществената поръчка, приемам го без възражения и ако участникът, когото представлявам, бъде определен за изпълнител, ще сключа рамковото споразумение изцяло в съответствие с проекта, приложен към документацията за участие, в законоустановения срок.

Известна ми е отговорността по чл. 313 от Наказателния кодекс за посочване на неверни данни.

Дата: 12.03.2018 г.

Декларатор: 

(e) ДЕКЛАРАЦИЯ ЗА СРОКА НА ВАЛИДНОСТ НА ОФЕРТАТА (ОБРАЗЕЦ № 5)

[Handwritten signature]



[Handwritten signature]

[Handwritten signature]

ОБРАЗЕЦ № 5

ДЕКЛАРАЦИЯ ЗА СРОК НА ВАЛИДНОСТ НА ОФЕРТАТА

Долуподписаната **Ваня Стефанова Цонкова Митрова**, с ЕГН: 0004111007, притежаваща л. к. № 111000001, издадена на 21.03.2017 г. от МВР – гр. София, с постоянен адрес: София, жк. Лев Толстой, бл. 55, кв. Витомир 1, в качеството си на търговски асистент търгове и пълномощник на управителя на **STEMO ООД**, ЕИК 140100003, участник в процедура от Закона за обществени поръчки (ЗОП) с предмет: **"ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА"** за обособена позиция № 2: **Настолни компютри**

ДЕКЛАРИРАМ, ЧЕ:


С подаване на настоящата оферта декларираме, че сме съгласни валидността на нашата оферта да бъде 4 (четири) месеца от крайния срок за получаване на оферти, посочен в обявлението за процедурата.

Известна ми е отговорността по чл. 313 от Наказателния кодекс за посочване на неверни данни.

Дата: 12.03.2018 г.

Декларатор: _____





Предлагани ценови параметри

Обособена позиция 2 – Настолни компютри

УЧАСТНИК СТЕМО ООД

ЦЕНОВО ПРЕДЛОЖЕНИЕ

от СТЕМО ООД и подписано от в.д. Стефанова, Пенкова-Митева, ЕГН: _____, в качеството ѝ на търговски асистент търгове и пълномощник на управителя на СТЕМО ООД, с ЕИК/БУЛСТАТ/ЕГН/друга индивидуализация на участника или под изпълнителя (когато е приложимо):

УВАЖАЕМИ ДАМИ И ГОСПОДА,

1. С настоящото, Ви представяме нашата ценова оферта за участие в обявената от Вас обществена поръчка с предмет: **“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА”** за обособена позиция № 2.

Предлагаме да поемем, изпълним и завършим тази обществена поръчка, съобразно условията на документацията за участие, както следва:

№	Вид оборудване, марка, модел, елементи	Технически характеристики	Мярка	Ед. цена без ДДС
1	Настолен компютър Тип 1, марка HP, модел ProDesk 600 G3 Microtower PC	Microtower Intel Pentium G4560Processor (3.5 GHz, 3 MB L3 cache, 2 cores) Intel® Q270 4GB DDR4 -2400 MHz, поддържа разширение до 64 GB 500GB SATA 6Gbit/s, 7200rpm 2x PCI Express x1 and 2x PCI Express x16 DVD±RW DL Интегриран Intel® HD Graphics 610 Integrated RJ-45,10/100/1000 6 USB 3.1 и 4 USB 2.0 (4 от тях са изведени на предния панел), 1 USB Type-c, Audio-In и Audio-Out, 1 Headset, RJ-45, 1 VGA, 2 DisplayPort	Бр.	1,227.00

000001



№	Вид оборудване, марка, модел, елементи	Технически характеристики	Мярка	Ед. цена без ДДС
		Lat/cyr USB, от производителя на компютърната конфигурация Wheel Optical, USB, от производителя на компютърната конфигурация Захранващ блок с мощност 250W, с 90% ефективност CE Mark, Energy Star 6.1, RoHS директива - 2011/65/EC, WEEE директива - 2002/96/EC, Microsoft Windows 10 Compatible. Моделът да бъде сертифициран от Microsoft. Вграден TPM 2.0 модул Без операционна система, Драйвери за Windows 10. 3 години		
2	Настолен компютър Тип 1, марка HP, модел ProDesk 600 G3 Microtower PC	Microtower Intel Core i3-7100 Processor (3.90 GHz, 3M cache, 2 cores/4 threads) Intel® Q270 4GB DDR4 -2400 MHz, поддържа разширение до 64 GB 1 TB SATA 7.2 krpm 2x PCI Express x1 and 2x PCI Express x16 DVD±RW DL Интегриран Intel® HD Graphics 630 Integrated audio Integrated RJ-45, 1GB 6 USB 3.1 и 4 USB 2.0 (4 от тях са изведени на предния панел), 1 USB Type-c, Audio-In и Audio-Out, 1 Headset, RJ-45, 1 VGA, 2 DisplayPort Lat/cyr USB, от производителя на компютърната конфигурация Wheel Optical, USB, от производителя на компютърната конфигурация Захранващ блок с мощност 250W, с 90% ефективност CE Mark, Energy Star 6.1, RoHS директива - 2011/65/EC, WEEE директива - 2002/96/EC, Microsoft Windows 10 Compatible. Моделът да бъде сертифициран от Microsoft. Вграден TPM 2.0 модул Без операционна система, Драйвери за Windows 10. 3 години	Бр.	1,415.00
3	Настолен компютър Тип 1, марка HP, модел ProDesk 600 G3 Microtower PC	Microtower Intel Core i5-7500 Processor (3.40 GHz, 6M cache, 4 cores) Intel® Q270 4GB DDR4 -2400 MHz, поддържа разширение до 64 GB 1 TB SATA 7.2 krpm	Бр.	1,622.00

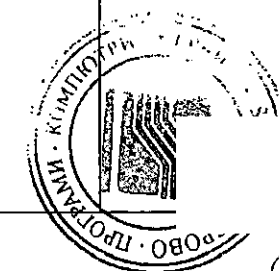


000092



№	Вид оборудване, марка, модел, елементи	Технически характеристики	Мярка	Ед. цена без ДДС
		2x PCI Express x1 and 2x PCI Express x16 DVD±RW DL Интегриран Intel® HD Graphics 630 Integrated audio Integrated RJ-45,1GB 6 USB 3.1 и 4 USB 2.0 (4 от тях са изведени на предния панел), 1 USB Type-c, Audio-In и Audio-Out, 1 Headset, RJ-45, 1 VGA, 2 DisplayPort Lat/cyr USB, от производителя на компютърната конфигурация Wheel Optical, USB, от производителя на компютърната конфигурация Захранващ блок с мощност 250W, с 90% ефективност CE Mark, Energy Star 6.1, RoHS директива - 2011/65/EC, WEEE директива - 2002/96/EC, Microsoft Windows 10 Compatible. Моделът да бъде сертифициран от Microsoft. Вграден TPM 2.0 модул Без операционна система, Драйвери за Windows 10. 3 години		
4.	Настолен компютър Тип 4, марка HP, модел EliteDesk 800 G3 Tower Business PC	Tower Intel Core i7-7700 Processor (3.60 GHz, 8M cache, 4 cores/8 threads) Intel® Q270 8GB DDR4 -2133 MHz, поддържа разширение до 64GB 1000GB SATA 6Gbit/s, 7200rpm, възможност за инсталиране на втори диск, RAID поддръжка 2x PCI Express x1 and 2x PCI Express x16 DVD±RW DL Интегриран Intel HD Graphics 630 Integrated audio Integrated RJ-45,1GB 6 USB 3.1 и 4 USB 2.0 (4 от тях да са изведени на предния панел), 1 USB Type-c, Audio-In и Audio-Out, RJ-45, 1 VGA, 2 DisplayPort Lat/cyr USB, от производителя на компютърната конфигурация Wheel Optical, USB, от производителя на компютърната конфигурация Захранващ блок с мощност 250W, с 90% ефективност CE Mark, Energy Star 6.1, RoHS директива - 2011/65/EC, WEEE директива - 2002/96/EC, Microsoft Windows 10 Compatible. Моделът да бъде сертифициран от Microsoft.	Бр.	2,125.00

000000





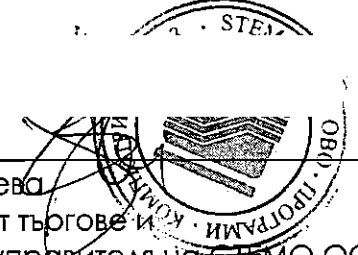
№	Вид оборудване, марка, модел, елементи	Технически характеристики	Марка	Ед. цена без ДДС
		Вграден TPM 2.0 модул Без операционна система, Драйвери за Windows 10. 3 години		
Сбор на единичните цени, лева				6,389.00

2. В предлаганата от нас цена също така сме включили и всички разходи, необходими за качествено и точно изпълнение на дейностите от обхвата на обществената поръчка.

3. Предложените цени са определени при пълно съответствие с условията от документацията и техническата спецификация по процедурата.

Дата: 12.03.2018 г.

ПОДПИС И ПЕЧАТ: _____
 Ваня Ценкова-Митева
 търговски асистент търгове и
 пълномощник на управителя на СТЕМО ООД



Приложение 5

ДО
Университет за национално и световно стопанство
Студентски град, ул. "8ми Декември"
София 1700

ТЕХНИЧЕСКО ПРЕДЛОЖЕНИЕ

за участие в открита процедура за сключване на
рамково споразумение с предмет:

**“ДОСТАВКА, ИНСТАЛИРАНЕ,
ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И
ГАРАНЦИОНЕН СЕРВИЗ НА
ИНФОРМАЦИОННО-КОМПЮТЪРНА
ТЕХНИКА”**

За Обособена позиция 3 – Преносими компютри и таблети

от: ПАРАФЛОУ КОМУНИКЕЙШЪНС ООД
Адрес: София 1700, бул. "Никола Габровски" 79
Лице за контакт: Искра Берова
тел.: + 359 2 960 42 00, факс: + 359 2 960 42 18
e-mail: office@paraflow.bg
www.paraflow.bg

ТЕХНИЧЕСКО ПРЕДЛОЖЕНИЕ ЗА ИЗПЪЛНЕНИЕ НА ПОРЪЧКАТА

от Парафлоу Комуникейшънс ООД
(наименование на участника)

и подписано от _____, ЕГГ,
(трите имена и ЕГН)

в качеството ѝ на Експерт обществени поръчк и упълномощено лице
(на длъжност)

с ЕИК: _____ ;

УВАЖАЕМИ ДАМИ И ГОСПОДА,

1. След запознаване с всички документи и образци от документацията за участие в процедурата, получаването, на които потвърждаваме с настоящото, ние удостоверяваме и потвърждаваме, че представяваният от нас участник отговаря на изискванията и условията посочени в документацията за участие в процедура с предмет: **“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА”** за обособена позиция № 3

2. Декларираме, че сме получили посредством „Профила на купувача” документация за участие и сме запознати с указанията и условията за участие в обявената от Вас процедура. Съгласни сме с поставените от Вас условия и ги приемаме без възражения.

3. Декларираме, че сме запознати със всички условия за изпълнение на поръчката за обособената позиция

4. Декларираме, че ще изпълним дейностите по обществената поръчка в сроковете регламентирани от Възложителя в документацията за участие и Техническата спецификация, а именно:

Срок за изпълнение 12месеца.

5. Декларираме, че предлаганата предлаганата техника е сертифицирана от Microsoft. За доказателство за сертифициране от Microsoft на техниката прилагам разпечатка на Windows Logo Verification Report. Линк, чрез който може да се провери истинността на горепосоченото

000001

ProBook 450 G5

<https://sysdev.microsoft.com/en-US/Hardware/LPL/ProductDetails.aspx?ProductID=50702&OrganizationID=47888>

ProBook 650 G3

<https://sysdev.microsoft.com/en-US/Hardware/LPL/ProductDetails.aspx?ProductID=50771&OrganizationID=47888>

ProBook 640 G3

<https://sysdev.microsoft.com/en-US/Hardware/LPL/ProductDetails.aspx?ProductID=461462&OrganizationID=47888>

EliteBook 820 G4

<https://sysdev.microsoft.com/en-US/Hardware/LPL/ProductDetails.aspx?ProductID=48220&OrganizationID=47888>

EliteBook 850 G4

<https://sysdev.microsoft.com/en-US/Hardware/LPL/ProductDetails.aspx?ProductID=48244&OrganizationID=47888>

ZBook 17 G4

<https://sysdev.microsoft.com/en-US/Hardware/LPL/ProductDetails.aspx?ProductID=51557&OrganizationID=47888>

Това изискване се прилага само за техниката, за която се изисква това в техническото задание (Образец № 11).

6. Декларираме, че предлаганата техника е нова, неупотребявана, нерициклирана и в производствената листа на производителя към момента на подаване на офертата, Линк, чрез който може да се провери истинността на горепосоченото

<http://www8.hp.com/bg/bg/home.html>

<https://www.acer.com/ac/bg/BG/content/home>

<https://www.apple.com/bg/>

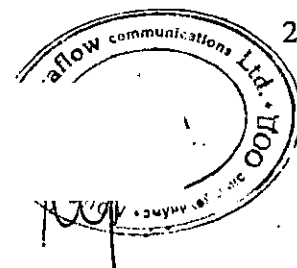
7. Декларираме, че имаме оторизация от производителя и/или от официалния представител на производителя с права да извършваме продажба и сервиз на предлаганото оборудване.

8. За изпълнение предмета на поръчката прилагаме:

8.1. документ за упълномощаване, когато лицето, което подава офертата, не е законният представител на участника – **оригинал или нотариално заверено копие;**

8.2. предложение за изпълнение на поръчката в съответствие с техническите спецификации и изискванията на възложителя за обособената позиция и да е съобразено с критериите за възлагане – свободна редакция;

000002



8.3. разпечатка на Windows Logo Verifivation Report;

8.4. оторизация от производителя с права за извършване продажба и сервиз на предлаганото оборудване;

8.5. декларация за сервизно обслужване и наличие на сервизна база, оторизирана от производителите и на предлаганата техника за осъществяване на сервизните услуги при условията на възложителя;

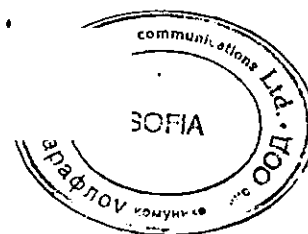
8.6. декларация за съгласие с клаузите на приложения проект на договор - попълва се Образец № 4.2.;

8.7. декларация за съгласие с клаузите на приложения проект на рамково споразумение - попълва се Образец № 4.1.;

8.7. декларация за срока на валидност на офертата - попълва се Образец № 5.

Дата: 12.03.2018 г.

ПОДПИС И ПЕЧАТ: ..



[име и фамилия]

Упълномощено лице

[качество на представляващия участника]



ПЪЛНОМОЩНО

Долуподписаният

притежаващ лична карта No. 445507542, издадена на 21.08.2018 г. от МВР- гр. София, ЕГН _____, с адрес в гр. София, ул. Мл. _____, представляващ, и в качеството си на Управител на "Парафлоу Комуникейшънс" ООД, регистрирано по ф.д. 9778/1995 г. по описа на СГС, БУЛСТАТ/ЕИК 201010775, с адрес по регистрация гр. София 1700, бул. "Никола Габровски" _____.

У П Ъ Л Н О М О Щ А В А М

_____ г. от МВР - гр. София, ЕГН: _____, притежаваща лична карта номер (_____), издадена на _____ г. от МВР - гр. София, ЕГН: _____ да представлява **Парафлоу**

Комуникейшънс ООД пред всички възложители на обществени поръчки по смисъла на чл. 5, чл. 6, чл. 7, чл. 8 и чл. 9 от Закона за Обществени Поръчки (ЗОП) във връзка с провеждането на процедури за възлагане на обекти на обществените поръчки по смисъла на чл. 3, ч. 8 и чл. 9 от ЗОП, както и във всички тържни процедури, финансирани от фондовете на Европейския Съюз, международни тържни процедури, финансирани от Световната Банка, USAID, UNDP и други източници на финансиране, както и във фирмени конкурси и процедури, със следните права:

- Да води преговори от името на Парафлоу Комуникейшънс ООД с представители на Възложителите;
- Да получава, подава и подписва от името на Парафлоу Комуникейшънс ООД предложения, оферти, писма, молби, декларации, заявления, искания, копия на документи, и др. подобни документи от/към възложителите;
- Да представлява Парафлоу Комуникейшънс ООД пред Възложителите при предаване или получаване на предложения, оферти и допълнителни документи - писма, банкови гаранции, договори и т.н. в случай на поискването им от Възложителите;
- Да парафира и подписва от името на Парафлоу Комуникейшънс ООД, текстовете на договори и споразумения с Възложителите;
- Да представлява Парафлоу Комуникейшънс ООД пред Комисиите, като присъства при отваряне, разглеждане и оценяване на предложенията на Парафлоу Комуникейшънс ООД, да чете и взема становище по протоколите на Комисиите, както и да представя и подписва допълнителни документи или писма в случай на поискването им от Възложителите.

Настоящото Пълномощно е в сила до 30.8.2018 г.

гр. София, 03.01.2018 г.

УПЪЛНОМОЩ

Е

000004



1.1 -01

11 -01- 2018

На
на Нотариалната
Никола
Де Мар

ус в район Р.С.СОФИЯ, рег.№199
върху този документ, положени от
Никола Н. Де Мар

с местожителство гр.(с)
Рег.№ .

Содня

лъбрана такса лв.
Нотариус:

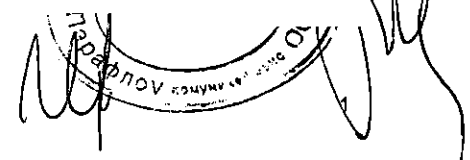
Боян Петров
помощник-нотариус



ТЕХНИЧЕСКО ПРЕДЛОЖЕНИЕ

Минимални технически параметри		Предложение на Парафлюо Комуникейшънс ООД
Обособена позиция №3: ПРЕНΟΣИМИ КОМПЮТРИ И ТАБЛЕТИ		
ПРЕНΟΣИМИ КОМПЮТРИ Тип 1		HP ProBook 450 G5 Notebook PC
Процесор	min. 2.4 GHz, 2 cores/4threads, 3MB cache, 14 nm lithography	Intel® Core™ i3-7100U Processor 7th Generation 2.4 GHz, 2 cores/4threads, 3MB cache, 14 nm lithography
RAM памет	min. 4GB DDR4-2133, up to 16	HP 4GB (1x4GB) DDR4 2400, up to 16
Хард диск	мин. 500 GB 7200 rpm SSD	512GB PCIe NVMe Solid State Drive (SSD) <i>(съгласно разясненията от 1.03.2018 г.)</i>
Дисплеи	15,6" HD 1366x768 anti-glare	15.6 inch HD (1366x768) Anti-Glare LED
Видео контролер	интегриран	интегриран
Камера и микрофон	вградени	вградени
Оптично устройство	допустимо е външно, на USB	външно, на USB
Мрежова свързаност	мин. Ethernet 10/100/1000 ; 802.11ac WiFi , Bluetooth 4.0	Ethernet 10/100/1000 ; 802.11ac WiFi , Bluetooth 4.0
Батерия	Минимум 3 клетъчна, осигуряваща мин. 10 часа работа	3 клетъчна, осигуряваща мин. 10 часа работа
Портове	мин. 2 USB 3.0, 1 USB 2.0, 1 USB Type-C, VGA, HDMI or Display port, Media Card Slot, RJ-45	2 xUSB 3.1, 1 x USB 2.0, 1x USB Type-C, 1x VGA, 1x HDMI, Media Card Slot, 1x RJ-45
Клавиатура	Гравирани с English (US) и кирилица по БДС, backlit	Гравирани с English (US) и кирилица по БДС, backlit
Сигурност	Fingerprint Reader, TPM модул	Fingerprint Reader, TPM модул
Други	Драйвери за Windows 7. Без операционна система. Моделът да бъде сертифициран от Microsoft..	Драйвери за Windows 10. Без операционна система. Моделът е сертифициран от Microsoft. <i>(съгласно разясненията от 1.03.2018 г.)</i>
Гаранция	3 години от производителя, включително на батерията	3 години от производителя, включително на батерията
Съответствие с изискванията за енергийна ефективност и безопасност	ENERGY STAR®, CE, RoHS директива 2011/65/EC, WEEE директива 2002/96/EC	ENERGY STAR®, CE, RoHS директива 2011/65/EC, WEEE директива 2002/96/EC
Тегло	до 2,1 кг	2,1 кг
Чанта	да	да
ПРЕНΟΣИМИ КОМПЮТРИ Тип 2		HP ProBook 650 G3 Notebook PC
Процесор	min. 2.4 GHz, 2 cores/4threads, 3MB cache, 14 nm lithography	Intel® Core™ i3-7100U Processor 7th Generation 2.4 GHz, 2 cores/4threads, 3MB cache, 14 nm lithography
Дисплей	15,6" HD 1366x768 anti-glare	15.6 inch HD (1366x768) Anti-Glare LED
Видеоконтролер	интегриран	интегриран
Оперативна памет	min. 4GB DDR4-2133, up to 16	HP 4GB (1x4GB) DDR4 2133, up to 16
Твърд диск	min. 500GB 7200rpm SSD	512GB PCIe NVMe Solid State Drive (SSD) <i>(съгласно разясненията от 1.03.2018 г.)</i>
Оптично устройство	мин. DVD±RW (допуска се и външно USB устройство)	DVD±RW
Мрежов интерфейс	мин. Ethernet 10/100/1000 ; 802.11ac Wi-Fi ; Bluetooth 4.0	Ethernet 10/100/1000 ; 802.11ac Wi-Fi ; Bluetooth 4.0
Клавиатура	Гравирани с English (US) и кирилица	Гравирани с English (US) и кирилица
Посочващо устройство (мишка)	Според фирмената технология	Според фирмената технология
Интерфейси	min. 2 USB 3.0, min. 1 USB Type-C, Media Card Slot, Docking connector, HDMI or Display port, Serial port, RJ-45	1 xUSB Type-C™; 2 x USB 3.0 (1 charging); 1 xRJ-45; 1 x docking connector; 1 x headphone/microphone combo; 1 x power connector; 1 xDisplayPort™; 1 x serial port, 1xMedia Card Slot
Възможност за включване към Docking station	да, специализиран порт за връзка с докинг станция	да, специализиран порт за връзка с докинг станция
Батерия	Минимум 3 клетъчна, осигуряваща мин. 10 часа работа	3 клетъчна, осигуряваща мин. 10 часа работа
Съответствие с изискванията за енергийна ефективност и безопасност	ENERGY STAR®, CE, RoHS директива 2011/65/EC, WEEE директива 2002/96/EC	ENERGY STAR®, CE, RoHS директива 2011/65/EC, WEEE директива 2002/96/EC
Гаранция	3 години от производителя, включително на батерията	3 години от производителя, включително на батерията

000005



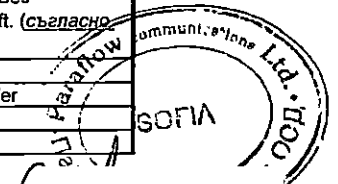
900006

Други	Драйвери за Windows 7/8/10. Без операционна система. Моделът да бъде сертифициран от Microsoft..	Драйвери за Windows 10. Без операционна система. Моделът е сертифициран от Microsoft. (съгласно разясненията от 1.03.2018 г.)
Сигурност	TPM модул, Fingerprint Reader, Smart Card Reader	TPM модул, Fingerprint Reader, Smart Card Reader
Тегло	до 2,4 кг	2,31 кг
Чанта	да	да
ПРЕНОСИМИ КОМПЮТРИ Тип 3		
Процесор	min. 2.4 GHz, 2 cores/4threads, 3MB cache, 14 nm lithography	HP ProBook 640 G3 Notebook PC Intel® Core™ i3-7100U Processor 7th Generation 2.4 GHz, 2 cores/4threads, 3MB cache, 14 nm lithography
Оперативна памет	min. 4GB DDR4-2133, up to 16	HP 4GB (1x4GB) DDR4 2133, up to 16
Дисплей	14,0" HD 1366x768 anti-glare	14 inch HD (1366x768) Anti-Glare
Видеоконтролер	интегриран	интегриран
Твърд диск	min. 500GB 7200rpm SSD	512GB PCIe NVMe Solid State Drive (SSD) (съгласно разясненията от 1.03.2018 г.)
Оптично устройство	мин. DVD±RW (допуска се и външно USB устройство)	DVD±RW
Мрежов интерфейс	мин. Ethernet 10/100/1000 ; 802.11ac WiFi , Bluetooth 4.0	Ethernet 10/100/1000 ; 802.11ac WiFi , Bluetooth 4.0
Клавиатура	English (US)/кирилица	English (US)/кирилица
Посочващо устройство (мишка)	Според фирмената технология	Според фирмената технология
Интерфейси	min. 2 USB 3.0, min. 1 USB Type-C, Media Card Slot, Docking connector, HDMI or Display port, RJ-45	1 xUSB Type-C™; 2 xUSB 3.0 (1 charging); 1 xRJ-45; 1 x docking connector; 1 x headphone/microphone combo; AC power connector; 1 xDisplayPort™; Media Card Slot, Docking connector
Възможност за включване към Docking station	да, специализиран порт за връзка с докинг станция	да, специализиран порт за връзка с докинг станция
Батерия	Минимум 3 клетъчна, осигуряваща мин. 10 часа работа	3 клетъчна, осигуряваща мин. 10 часа работа
Съответствие с изискванията за енергийна ефективност и безопасност	ENERGY STAR®, CE, RoHS директива 2011/65/EC, WEEE директива 2002/96/EC	ENERGY STAR®, CE, RoHS директива 2011/65/EC, WEEE директива 2002/96/EC
Гаранция	3 години от производителя, включително на батерията	3 години от производителя, включително на батерията
Други	Драйвери за Windows 7/8/10. Без операционна система. Моделът да бъде сертифициран от Microsoft..	Драйвери за Windows 10. Без операционна система. Моделът е сертифициран от Microsoft. (съгласно разясненията от 1.03.2018 г.)
Сигурност	TPM модул, Fingerprint Reader, Smart Card Reader	TPM модул, Fingerprint Reader, Smart Card Reader
Тегло	до 2,0 кг	до 2,0 кг
Чанта	да	да
ПРЕНОСИМИ КОМПЮТРИ Тип 4		
Процесор	min. up to 3.1GHz, 2 cores/4threads, 3MB cache, 14 nm lithography	HP EliteBook 820 G4 Notebook PC Intel® Core™ i5-7200U Processor 7th Generation up to 3.1GHz, 2 cores/4threads, 3MB cache, 14 nm lithography
RAM памет	min. 4GB DDR4-2133, up to 16	HP 4GB (1x4GB) DDR4 2133, up to 16
Хард диск	мин. 256GB SSD	256GB PCIe NVMe Solid State Drive
Дисплеи	от 12" до 13" HD 1366x768 anti-glare	12.5 inch HD (1366x768) Anti-Glare
Видео контролер	интегриран	интегриран
Камера и микрофон	вградени	вградени
Оптично устройство	допустимо е външно, на USB	външно, на USB
Мрежова свързаност	мин. Ethernet 10/100/1000 ; 802.11ac WiFi , Bluetooth 4.0	Ethernet 10/100/1000 ; 802.11ac WiFi , Bluetooth 4.0
Батерия	Минимум 3 клетъчна, осигуряваща мин. 10 часа работа	3 клетъчна, осигуряваща мин. 10 часа работа
Портове	мин. USB 3.0, USB Type-C, VGA, HDMI or Display port, Media Card Slot, RJ-45, Docking Connector	1 x USB 3.0, 1x USB Type-C, 1x VGA, 1x Display port, 1x Media Card Slot, 1x RJ-45, 1x Docking Connector
Клавиатура	Гравирана с English (US) и кирилица по БДС, backlit	Гравирана с English (US) и кирилица по БДС, backlit
Сигурност	Fingerprint Reader, TPM модул, интегриран Smart Card Reader	Fingerprint Reader, TPM модул, интегриран Smart Card Reader
Други	Драйвери за Windows 7/8/10. Без операционна система. Моделът да бъде сертифициран от Microsoft..	Драйвери за Windows 10. Без операционна система. Моделът е сертифициран от Microsoft. (съгласно разясненията от 1.03.2018 г.)
Възможност за включване към Docking station	да, специализиран порт за връзка с докинг станция	да, специализиран порт за връзка с докинг станция
Гаранция	3 години от производителя, включително на батерията	3 години от производителя, включително на батерията
Съответствие с изискванията за енергийна ефективност и безопасност	ENERGY STAR®, CE, RoHS директива 2011/65/EC, WEEE директива 2002/96/EC	ENERGY STAR®, CE, RoHS директива 2011/65/EC, WEEE директива 2002/96/EC



Тегло	до 1,3 кг	до 1,3 кг
Чанта	да	да
ПРЕНОСИМИ КОМПЮТРИ Тип 5		
Процесор	min. up to 3.1GHz, 2 cores/4threads, 3MB cache, 14 nm lithography	HP EliteBook 850 G4 Notebook PC Intel® Core™ i5-7200U Processor 7th Generation up to 3.1GHz, 2 cores/4threads, 3MB cache, 14 nm lithography
Дисплей	15,6" FHD 1920x1080 anti-glare	15.6 inch FHD (1920x1080) Anti-Glare
Оперативна памет	min. 4GB DDR4-2133, up to 16	HP 4GB (1x4GB) DDR4 2133
Твърд диск	min 500GB 7200 rpm, 128GB SSD	500GB 7200RPM SATA-3 и 128GB M2 SATA-3 Solid State Drive
Видео интерфейс	видео карта с мин. 1GB собствена памет	видео карта с 1GB собствена памет
Оптично устройство	допустимо е външно, на USB	външно, на USB
Мрежов интерфейс	мин. Ethernet 10/100/100 ; 802.11ac Wi-Fi ; Bluetooth 4.0	Ethernet 10/100/100 ; 802.11ac Wi-Fi ; Bluetooth 4.0
Web камера	уебкамера с вграден цифров микрофон	уебкамера с вграден цифров микрофон
Клавиатура	Гравирана с English (US) и кирилица по БДС, backlit	Гравирана с English (US) и кирилица по БДС, backlit
Посочващо устройство (мишка)	Според фирмената технология	Според фирмената технология
Интерфейси	мин. 2 USB 3.0, USB Type-C, VGA, HDMI or Display port, Media Card Slot, RJ-45, Docking Connector	2 x USB 3.0, 1x USB Type-C, 1xVGA, 1x Display port, 1x Media Card Slot, 1x RJ-45, 1x Docking Connector
Възможност за включване към Docking station	да, специализиран порт за връзка с докинг станция	да, специализиран порт за връзка с докинг станция
Батерия	Минимум 3 клетъчна, осигуряваща мин. 10 часа работа	3 клетъчна, осигуряваща мин. 10 часа работа
Съответствие с изискванията за енергийна ефективност и безопасност	ENERGY STAR®, CE, RoHS директива 2011/65/EC, WEEE директива 2002/96/EC	ENERGY STAR®, CE, RoHS директива 2011/65/EC, WEEE директива 2002/96/EC
Други	Microsoft Windows 7/8/10 Compatible. Драйвери за Windows 7/8. Без операционна система. Моделът да бъде сертифициран от Microsoft..	Microsoft Windows 10 Compatible. Драйвери за Windows 10. Без операционна система. Моделът е сертифициран от Microsoft. (съгласно разясненията от 1.03.2018 г.).
Гаранция	3 години от производителя, включително на батерията	3 години от производителя, включително на батерията
Сигурност	Fingerprint Reader, TPM модул, интегриран Smart Card Reader	Fingerprint Reader, TPM модул, интегриран Smart Card Reader
Тегло	до 2.1 кг	до 2.1 кг
Чанта	да	да
ПРЕНОСИМИ КОМПЮТРИ Тип 6		
Процесор	min. 2.8 GHz, up to 3.8 GHz, 4 cores/8threads, 6MB cache, 14 nm lithography	HP ZBook 17 G4 Mobile Workstation Intel® Core™ i7-7700HQ Processor 7th Generation 2.8 GHz, up to 3.8 GHz, 4 cores/8threads, 6MB cache, 14 nm lithography
Оперативна памет	min. 8GB DDR4-2133 MHz, up to 32	HP 8GB (1x8GB) DDR4 2400, up to 64
Дисплей	17" FHD 1920x1080 anti-glare	17.3 inch FHD (1920x1080) Anti-Glare
Твърд диск	min. 1TB 7200rpm, 256GB SSD	1TB 7200RPM SATA-3 и 256GB PCIe NVMe Solid State Drive
Видео интерфейс	видео карта с мин. 4GB собствена памет, GDDR5, 128-bit	NVIDIA Quadro M1200 4GB Graphics, собствена памет, GDDR5, 128-bit
Оптично устройство	допустимо е външно, на USB	външно, на USB
Мрежов интерфейс	мин. Ethernet 10/100/1000 ; 802.11ac WiFi Adapter, Bluetooth 4.0	Ethernet 10/100/1000 ; 802.11ac WiFi Adapter, Bluetooth 4.0
Клавиатура	Гравирана с English (US) и кирилица по БДС, backlit	Гравирана с English (US) и кирилица по БДС, backlit
Посочващо устройство (мишка)	Според фирмената технология	Според фирмената технология
Интерфейси	мин. 4x USB 3.0, Media Card slot, VGA, HDMI or Display port, RJ-45, Thunderbolt	4x USB 3.0, 1 x Media Card slot, 1 xVGA, 1 xHDMI, 1 xRJ-45, 2 xThunderbolt™ 3.1, 1 x power connector, 1 x headphone/microphone combo;
Батерия	Минимум 6 клетъчна, осигуряваща мин. 10 часа работа	6 Cell 96 WHr Long Life, осигуряваща мин. 10 часа работа
Съответствие с изискванията за енергийна ефективност и безопасност	ENERGY STAR®, CE, RoHS директива 2011/65/EC, WEEE директива 2002/96/EC	ENERGY STAR®, CE, RoHS директива 2011/65/EC, WEEE директива 2002/96/EC
Други	Microsoft Windows 10 Compatible. Драйвери за Windows 7/8/10. Без операционна система. Моделът да бъде сертифициран от Microsoft..	Microsoft Windows 10 Compatible. Драйвери за Windows 10. Без операционна система. Моделът е сертифициран от Microsoft. (съгласно разясненията от 1.03.2018 г.).
Гаранция	3 години от производителя	3 години от производителя
Сигурност	Fingerprint Reader, TPM модул, интегриран Smart Card Reader	Fingerprint Reader, TPM модул, интегриран Smart Card Reader
Тегло	до 3.2кг	до 3.2кг
Чанта	да	да

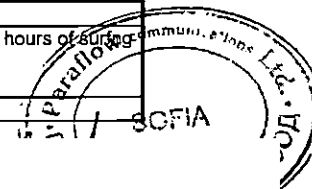
1000007



Handwritten signature

80000

ТАБЛЕТИ Тип 1		Acer Iconia A3-A40
Процесор	min. Quad Core 1.5GHz	MTK8163V/A Quad Core Cortex A53 1.5GHz
Памет	min. 2GB DDR3L	2GB DDR3L
Дисплей	min. 10.1" IPS, min. 1920x1200 FHD resolution	10.1" IPS, 1920x1200 FHD resolution
Дисково пространство	min. 32GB	32GB
Мрежов интерфейс	802.11 a/b/g/n	802.11 a/b/g/n
Интерфейси	min. Bluetooth, Micro HDMI, Micro USB 2.0, вградени високоговорители, вграден микрофон	Bluetooth, Micro HDMI, Micro USB 2.0, вградени високоговорители, вграден микрофон
Разширителни слотове	min. MicroSD memory card up to 128GB	MicroSD memory card up to 128GB
GPS	Да	Да
Батерия	Минимум Rechargeable Li-ion battery	Rechargeable Li-ion battery
Тегло	Максимум 0,550 кг	0,530 кг
Операционна систем	min. Android 6.0	Android 6.0
Гаранция	1 година	1 година
Калъф	да	да
ТАБЛЕТИ Тип 2		Acer One S1003
Процесор	min. Quad Core 1.44GHz, 2 MB L2 cache	Intel Atom® x5-Z8350 Processor Quad Core 1.44GHz, 2 MB L2 cache
Памет	min. 2GB DDR3L	2GB DDR3L
Дисплей	min. 10.1" IPS, min. 1280x800 HD resolution	10.1" IPS, 1280x800 HD resolution
Дисково пространство	min. 32GB	32GB
Мрежов интерфейс	802.11 b/g/n	802.11 b/g/n
Интерфейси	min. Bluetooth, Micro HDMI, Micro USB 2.0, вградени високоговорители, вграден микрофон	Bluetooth, Micro HDMI, Micro USB 2.0, вградени високоговорители, вграден микрофон
Разширителни слотове	min. MicroSD memory card up to 32GB	MicroSD memory card up to 32GB
Батерия	Минимум Rechargeable Li-ion battery	Минимум Rechargeable Li-ion battery
Клавиатура / Док	Да, мин. USB 2.0 порт (интегриран в клавиатурата)	Да, USB 2.0 порт (интегриран в клавиатурата)
Тегло	Максимум 0,680 кг (таблет), Максимум 1,300 кг (таблет + клавиатура)	Максимум 0,680 кг (таблет), Максимум 1,300 кг (таблет + клавиатура)
Операционна система	min. Microsoft Windows 10	Microsoft Windows 10 Home
Гаранция	1 година	1 година
Калъф	да	да
ТАБЛЕТИ Тип 3		Apple 9.7-inch iPad Wi-Fi 128GB
Размер на дисплея, инч	Min. 9.7" (24.64 cm)	9.7" (24.64 cm)
Резолюция	Min. 2048x1536	2048x1536
Тип матрица	LED-backlit Multi-Touch display with IPS technology, Fingerprint-resistant oleophobic coating, Fully laminated display, Antireflective coating	LED-backlit Multi-Touch display with IPS technology, Fingerprint-resistant oleophobic coating, Fully laminated display, Antireflective coating
Процесор	Min. Triple Core 1.50 GHz Typhoon, A8X chip with 64-bit architecture, M8 motion coprocessor	Triple Core 1.50 GHz Typhoon, A8X chip with 64-bit architecture, M8 motion coprocessor
Памет, MB	Min. 2048 MB RAM	2048 MB RAM
Дисково пространство, GB	Min. 128 GB	128 GB
Камера	Предна Min. 1.2MP, f/2.2 aperture, 720p HD video recording, Backside illumination, Задна мин. 8.0MP, f/2.4 aperture, Autofocus, Burst mode, Tap to focus, Timer mode, Five-element lens, Backside illumination, Auto image stabilization, Face detection	Предна 12MP, f/2.2 aperture, 720p HD video recording, Backside illumination, Задна мин. 8.0MP, f/2.4 aperture, Autofocus, Burst mode, Tap to focus, Timer mode, Five-element lens, Backside illumination, Auto image stabilization, Face detection
Безжична мрежа	Wi-Fi (802.11a/b/g/n/ac); dual band (2.4GHz and 5GHz); HT80 with MIMO, Bluetooth 4.0	Wi-Fi (802.11a/b/g/n/ac); dual band (2.4GHz and 5GHz); HT80 with MIMO, Bluetooth 4.0
Пренос на данни	no3G	no3G
Батерия	Min. 27.3-watt-hour rechargeable lithium-polymer battery, Up to 10 hours of surfing the web on Wi-Fi, watching video, or listening to music	27.3-watt-hour rechargeable lithium-polymer battery, Up to 10 hours of surfing the web on Wi-Fi, watching video, or listening to music
Софтуер	iOS 10.0	iOS 10.0



Тегло, kg	Максимум 0.5	0.450 кг.
Гаранция	12 месеца	12 месеца
Калъф	да	да
ТАБЛЕТИ Тип 4		Apple iPad mini 4 Wi-Fi 128GB
Размер на дисплея, инч	Max. 7.9" (20.07 cm)	7.9" (20.07 cm)
Резолюция	Min. 2048x1536	2048x1536
Тип матрица	Min. LED-backlit Multi-Touch display, Fingerprint-resistant oleophobic coating, Fully laminated display, Antireflective coating	LED-backlit Multi-Touch display, Fingerprint-resistant oleophobic coating, Fully laminated display, Antireflective coating
Процесор	Min. Dual-core 1.5 GHz Typhoon, A8 chip with 64-bit architecture, M8 motion coprocessor	Dual-core 1.5 GHz Typhoon, A8 chip with 64-bit architecture, M8 motion coprocessor
Памет, MB	Min. 2048 MB	2048 MB
Дисково пространство, GB	Min. 128 GB	128 GB
Камера	Min. 8 MP, f/2.4, 32mm, autofocus, face detection	8 MP, f/2.4, 32mm, autofocus, face detection
Безжична мрежа	Min. Wi-Fi (802.11a/b/g/n/ac), Bluetooth 4.2	Wi-Fi (802.11a/b/g/n/ac), Bluetooth 4.2
Пренос на данни	no3G	no3G
Батерия	Non-removable Li-Ion battery (19.1 Wh)	Non-removable Li-Ion battery (19.1 Wh)
Софтуер	iOS 9.0	iOS 9.0
Тегло, kg	Максимум 310 г	300 г
Гаранция	12 месеца	12 месеца
Калъф	да	да

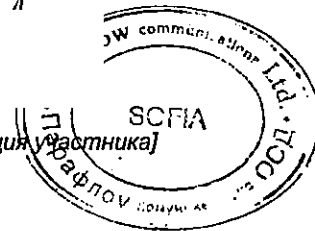
Дата: 12.03.2018 г

ПОДПИС И ПЕЧАТ:

[име и фамилия]

Упълномощено лице

[качество на представляващия участник]



600000

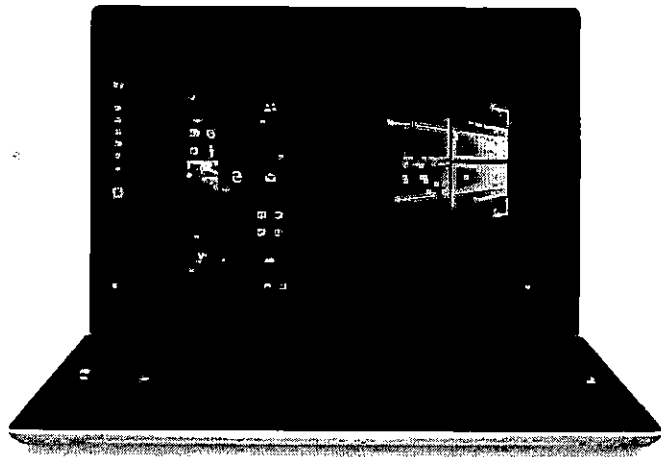
Datasheet

HP ProBook 450 G5 Notebook PC



Power, style and value, just what your growing business needs.

Full-featured, thin, and light, the HP ProBook 450 lets professionals stay productive in the office and on the go. Stylish design, linear precision, and subtle curvature plus optional Quad Core performance and long battery life make this ProBook essential for today's workforce.



HP recommends Windows 10 Pro.

Powerful processing

- Get through your deadline-driven, multitasking day with optional 7th Gen Intel® Core™ i3/i5 or 8th Gen Core™ i5/i7 Quad Core™ processors² and optional NVIDIA® GeForce® discrete graphics⁴.

Stylish and durable ultraslim design

- The HP ProBook 450 delivers stylish design to every business. An ultraslim chassis in a refined new natural silver finish includes a keyboard deck made of durable premium stamped aluminum.

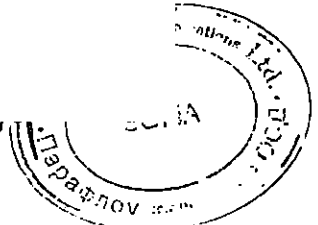
Designed for docking

- Quickly transition to desktop productivity with a single cable that supports docking via USB-C™ which allows you to connect multiple external displays⁴, a power source, and a gigabit network connection through optional docks⁴.

Immersive experience

- Experience vivid audio engagement and an easy conferencing experience with the Skype for Business™ Certified HP ProBook 450 with HP Audio Boost, HP Noise Cancellation.
- Experience the new features of Windows 10 Pro¹ on the thin, light, touch⁴ optional HP ProBook 450.
- Fortify your security by using multiple factors of authentication including fingerprints and facial recognition.
- Get the best of both worlds with dual solid-state and hard drive storage options from HP.
- Battery life that gets you through the workday and beyond. Fast charge 90% in 90 minutes⁵.
- Stay connected with self-healing wireless driver technology and support for the latest global 4G LTE wireless broadband technology⁶.
- Stand up to the workload with a ProBook that is designed to pass MIL-STD 810G testing⁷.
- Help suppress ambient noise including keyboard clicks with HP Noise Cancellation.
- Help make good speakers sound great with the HP Audio Boost.

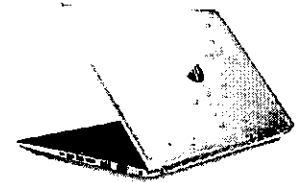
КОРПОРАТИВНА



000010

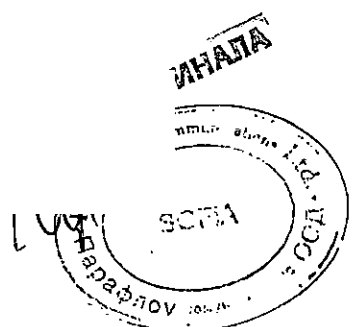
HP ProBook 450 G5 Notebook PC Specifications Table

HP recommends Windows 10 Pro.



Available Operating System	Windows 10 Pro 64 – HP recommends Windows 10 Pro. ¹ Windows 10 Home 64 ¹ FreeDOS 2.0
Processor Family²	8th Generation Intel® Core™ i7 processor (i7-8550U model); 8th Generation Intel® Core™ i5 processor (i5-8250U model); 7th Generation Intel® Core™ i5 processor (i5-7200U model); 7th Generation Intel® Core™ i3 processor (i3-7100U model); 6th Generation Intel® Core™ i3 processor
Available Processors^{3,4,5}	Intel® Core™ i7-8550U Intel® UHD graphics 620 (1.8 GHz, up to 3.7 GHz with Intel® Turbo Boost Technology 2.0, 8 MB cache, 4 cores); Intel® Core™ i5-8250U Intel® UHD Graphics 620 (1.6 GHz, up to 3.4 GHz with Intel® Turbo Boost Technology 2.0, 6 MB cache, 4 cores); Intel® Core™ i5-7200U with Intel HD Graphics 620 (2.5 GHz, up to 3.1 GHz with Intel Turbo Boost Technology, 3 MB cache, 2 cores); Intel® Core™ i3-7100U with Intel® HD Graphics 620 (2.4 GHz, 3 MB cache, 2 cores); Intel® Core™ i3-6006U with Intel® HD Graphics 520 (2 GHz, 3 MB cache, 2 cores)
Chipset	Chipset is integrated with processor
Maximum Memory	Up to 16 GB DDR4-2400 SDRAM ⁶ Standard memory note: SODIMM slots are customer accessible/upgradeable; Supports dual channel memory
Memory Slots	2 SODIMM
Internal Storage	up to 1 TB SATA (5400 rpm) ⁷ up to 500 GB SATA (7200 rpm) ⁷ up to 512 GB M.2 PCIe NVMe TLC SSD ^{7,8} up to 256 GB M.2 PCIe NVMe SSD ^{7,9} up to 128 GB M.2 SATA TLC SSD ⁷
Display	39.6 cm (15.6") diagonal HD touch screen, 220 cd/m ² , 45% sRGB (1366 x 768); 39.6 cm (15.6") diagonal FHD UWVA anti-glare flat LED backlight, 220 cd/m ² , 45% sRGB (1920 x 1080); 39.6 cm (15.6") diagonal HD SVA anti-glare LED-backlit, 220 cd/m ² , 45% sRGB (1366 x 768) ^{2, 14}
Available Graphics	Integrated: Intel® UHD Graphics 620; Intel® HD Graphics 620; Intel® HD Graphics 520; Intel® HD Graphics ¹² Discrete: NVIDIA® GeForce® 930MX (2 GB DDR3 dedicated, switchable) ¹³
Wireless Technologies	Realtek 802.11ac (2x2) Wi-Fi® and Bluetooth® 4.2 Combo; Intel® Dual Band Wireless-AC 8265 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo (non-vPro™); HP I4132 LTE/HSPA+ 4G Mobile Broadband; HP I4210 LTE/HSPA+ 4G Mobile Broadband ¹⁰
Communications	Realtek RTL8111HSH Gigabit Ethernet
Expansion Slots	1 multi-format digital media reader/Supports SD, SDHC, SDXC.
Ports and Connectors	1 USB 3.1 Type-C™ Gen 1 (Power Delivery, DisplayPort™); 2 USB 3.0; 1 USB 2.0 (power port); 1 HDMI 1.4b; 1 VGA; 1 RJ-45; 1 AC power; 1 headphone/microphone combo jack ¹¹
Input Device	HP Premium Keyboard, full-sized island-style, spill resistant and optional backlit Clickpad with image sensor, multi-touch gestures enabled, taps enabled as default
Webcam	HD camera; HD IR webcam ^{12, 13}
Available Software	Native Miracast Support; HP LAN Protection; HP Velocity; HP 3D DriveGuard 6 (Windows required); HP ePrint Driver + JetAdvantage; HP Hotkey Support; HP Recovery Manager; HP JumpStart; HP Support Assistant; HP Noise Cancellation Software; Buy Office; Bing search for IE11; HP Connection Optimizer ^{21, 22, 23}
Security Management	HP BIOSphere Gen4; HP DriveLock and Automatic DriveLock; HP Client Security Gen3, TPM 2.0 ^{27, 28, 29, 30, 31, 32}
Power	45 W HP Smart AC adapter ¹⁷ HP 3-cell, 48 Wh Long Life Li-ion ¹⁶
Dimensions	37.6 x 26.41 x 2.08 cm (non-touch); 37.6 x 26.41 x 2.28 cm (touch)
Weight	Starting at 2.1 kg (Weight varies by configuration and components)
Environmental	Low halogen ¹⁰
Energy Efficiency Compliance	ENERGY STAR® certified; EPEAT® Gold
Warranty	1-year limited warranty (upgrades available, sold separately), 1-year warranty on primary battery

000011



HP ProBook 450 G5 Notebook PC

HP recommends Windows 10 Pro.

Accessories and services (not included)

HP USB-C Mini Dock



Be productive on the go with streamlined, pocket-sized port expansion that's fashionable and functional. The HP USB-C™ Mini Dock has a modern, textured design and packs pass-through charging¹ and data, video, network, and device connectivity² into a compact, portable dock.

Product number: 1PM64AA

HP Slim Professional Top Load Case



The HP Slim Ultrabook Top Load—a stylish, durable, and compact carrying case built for your Ultrabook™. A black twill fabric accented with gray plaid combines form and function to help protect your hardware and give you a polished appearance.

Product number: F3W15AA

HP 65W Smart AC Adapter



Feed your notebook with controlled servings of electricity. HP's new 65W Smart AC Adapter regulates power and offsets electrical spikes, is designed to reduce cable stress, and includes a special dongle to support current and prior HP models — perfect for replacing your notebook's power adapter or as a needed back-up.

Product number: H6Y89AA

HP Notebook Power Bank



Boost your notebook's uptime and charge your everyday USB devices at the same time with the portable, chargeable HP Notebook Power Bank.

Product number: N9F71AA

HP Essential Combination Lock



Put your own spin on your notebook lock with the programmable HP Combination Lock, designed for any HP notebook with a standard lock slot.

Product number: T0Y16AA

HP 3 year Next Business Day Onsite Hardware Support for Notebooks



Receive 3 years of next business day onsite HW support from an HP-qualified technician for your computing device, if the issue cannot be solved remotely.

Product number: UK703E

Handwritten scribbles at the top of the page.

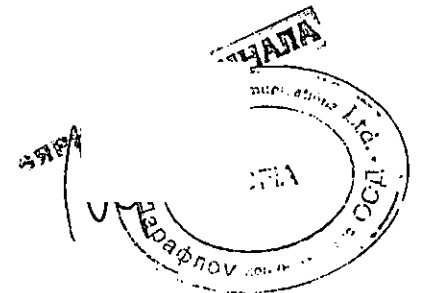
Small circular mark on the left margin.

Small circular mark on the left margin.

Handwritten scribble in the bottom right area.

Handwritten scribble in the bottom right area.

000012



HP ProBook 450 G5 Notebook PC

HP recommends Windows 10 Pro.

Messaging Footnotes

- ¹ Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com>.
- ² Quad Core processor sold separately or as an optional feature.
- ³ Multicore is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
- ⁴ Sold separately or as an optional feature.
- ⁵ Recharges the battery up to 90% within 90 minutes when the system is off or in standby mode when used with the power adapter provided with the notebook and no external devices are connected. After charging has reached 90% capacity charging speed will return to normal. Charging time may vary +/- 10% due to System tolerance.
- ⁶ Wireless and Bluetooth may be optional features. Wireless requires separately purchased access point and internet service. Availability of public wireless access points limited.
- ⁷ MIL STD 810G testing is pending and is not intended to demonstrate fitness for U.S. Department of Defense contract requirements or for military use. Test results are not a guarantee of future performance under these test conditions. Accidental damage requires an optional HP Accidental Damage Protection Care Pack.

Technical specifications disclaimers

- ¹ Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com/>.
- ² Multicore is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
- ³ Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.
- ⁴ NOTE: In accordance with Microsoft's support policy, HP does not support the Windows 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows 8 or Windows 7 drivers on <http://www.support.hp.com>.
- ⁵ Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed.
- ⁶ For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10) is reserved for system recovery software.
- ⁷ Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. The specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ac WLAN devices.
- ⁸ WWAN module requires separately purchased service contract. Check with service provider for coverage and availability in your area. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, in all regions.
- ⁹ HDMI cable sold separately.
- ¹⁰ HD content required to view HD images.
- ¹¹ Internet access required.
- ¹² Sold separately or as an optional feature.
- ¹³ Battery is internal and not replaceable by customer. Serviceable by warranty.
- ¹⁴ Availability may vary by country.
- ¹⁵ HP Care Packs are sold separately. Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. For details, visit www.hp.com/go/hpcc. HP services are governed by the applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional statutory rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service or the HP Limited Warranty provided with your HP Product.
- ¹⁶ EPEAT[®] registered where applicable. EPEAT registration varies by country. See <http://www.epeat.net> for registration status by country. Search keyword generator on HP's 3rd party option store for solar generator accessories at www.hp.com/go/options.
- ¹⁷ External power supplies, power cords, cables and peripherals are not Low Halogen. Service parts obtained after purchase may not be Low Halogen.
- ¹⁸ Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming media players that also support Miracast. You can use Miracast to share what you're doing on your PC and present a slide show. For more information, <http://windows.microsoft.com/en-us/windows-8/project-wireless-screen-miracast>
- ¹⁹ HP ePrint Drive requires an Internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see www.hp.com/go/eprintcenter). Print times and connection speeds may vary.
- ²⁰ HP Support Assistant requires Windows and Internet Access.
- ²¹ HP Driver Packs is not preinstalled, however available for download at <http://www.hp.com/go/drivermanagement>.
- ²² HP Management Integration Kit for Microsoft System Center Configuration Manager and HP Management Integration Kit can be downloaded from <http://www8.hp.com/us/en/ads/drivermanagement/overview.html>
- ²³ LANDESK Management subscription required.
- ²⁴ HP BIOSphere Gen4 requires Intel[®] 7th or 8th Generation processors.
- ²⁵ HP Client Security Suite Gen3 requires Windows and Intel[®] or AMD 7th or 8th Generation processors.
- ²⁶ Secure Erase for the methods outlined in the National Institute of Standards and Technology Special Publication 800-88. Supported on Elite platforms with BIOS version F.03 or higher.
- ²⁷ Absolute agent is shipped turned off, and will be activated when customers activate a purchased subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: <http://www.absolute.com/any/legal/agreements/computrace-agreement>. Data Delete is an optional service provided by Absolute Software. If utilized the Recovery Guarantee is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.
- ²⁸ HP Password Manager requires Internet Explorer or Chrome or Firefox. Some websites and applications may not be supported. User may need to enable or allow the add-on / extension in the internet browser.
- ²⁹ Microsoft Defender Opt In and Internet connection required for updates.
- ³⁰ NVIDIA[®] technology requires an Intel[®] processor, plus an NVIDIA[®] GeForce[®] discrete graphics configuration and is available on Windows 10 Professional OS. With NVIDIA[®] Optimus[™] technology full enablement of all discrete graphics video and display features may not be supported on all systems (e.g. OpenGL, applications will run on the integrated GPU or the APU as the case may be)

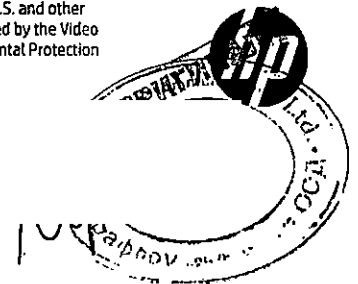
Sign up for updates
www.hp.com/go/getupdated

Copyright © 2017 HP Development Company, L.P. The only warranties for HP products are set forth in the express limited warranty statements accompanying such products. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Bluetooth is a trademark of its proprietor and used by HP Inc. under license. Intel, Core, Celeron and Intel vPro are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries. NVIDIA, the NVIDIA logo, and GeForce are trademarks and/or registered trademarks of NVIDIA Corporation in the U.S. and other countries. USB Type-C[™] and USB-C[™] are trademarks of USB Implementers Forum. DisplayPort[™] and the DisplayPort[™] logo are trademarks owned by the Video Electronics Standards Association (VESA[®]) in the United States and other countries. ENERGY STAR is a registered trademark of the U.S. Environmental Protection Agency. All other trademarks are the property of their respective owners.

4AA7-0846EEE, November 2017

000013





ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ
в съответствие с ISO / IEC 17050-1 и EN 17050-1

Doc #: HSN-Q07C-R4Превод/bg

Наименование на производителя: **HP Inc.**
Производителя Адрес: 1501 Page Mill Road, Palo Alto, CA 94303-1112 USA

заявява, че продуктът

Име на продукта и модел:²⁾ HP ProBook 450 G5 Notebook PC;

Нормативен номер на модела:¹⁾ HSN-Q07C

Опции на продукта: Виж приложение I

съответства на следните спецификации на продукта и регламенти:

Безопасност:

IEC 60950-1:2005 +A1:2009 +A2:2013
EN 60950-1:2006 +A11:2009 +A1:2010
+A12:2011 +A2:2013
EN 62311:2008
EN 62479:2010

EMC

EN 55032:2012 Class B
EN 55024:2010
EN 61000-3-2:2014
EN 61000-3-3:2013
EN 301 489-1 V2.1.1
EN 301 489-17 V3.1.1
EN 301 489-19 V2.1.0
EN 301 489-52 V1.1.0
FCC CFR 47 Part 15
ICES-003, Issue 6:2016

Радиочестотният спектър

EN 62209-2:2010
EN 300 328 V2.1.1
EN 301 511 V12.5.1
EN 301 893 V2.1.1
EN 301 908-1 V11.1.1
EN 301 908-2 V11.1.1
EN 301 908-13 V11.1.1
EN 303 413 V1.1.1

екодизайна

Регламент (EC) № 1275/2008
EN 50564:2011
IEC 62301:2011

RoHS

EN 50581:2012

Този апарат в съответствие с изискванията на Директивата RED 2014/53/EC, Директивата за екодизайна 2009/125/OT, Директивата RoHS 2011/65/EC и носи маркировката съответно **CE**.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Допълнителна информация:

- 1) Този продукт има нормативен номер на модела, който остава с регулаторните аспекти на дизайн. Номер на Нормативен модел е идентификатора основен продукт в нормативната документация и протоколи от изпитвания, този брой не трябва да се бърка с пазарното име или номера на продукта.
- 2) Нотифицираният орган **SIEMIC, Inc.** с номер **2200** е извършена оценка на съответствието (съгласно приложение III, поради липсващи хармонизирани стандарти) и издаде сертификата за ЕС изследване на типа: RE-17072609; RE-17082903
- 3) Този продукт е изпробван в типична HP среда във връзка с хост система HP.

Palo Alto, CA
01-11-2017

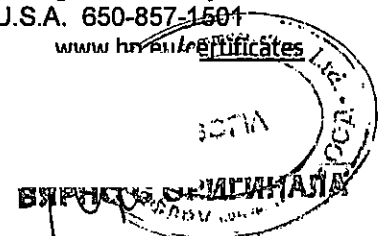
проверка на подписа върху оригинала на декларацията,

приложена
Gilles Soulard, Manager
Product Compliance Center

Local контакт за регулаторни теми само:

EU: HP Deutschland GmbH, HP HQ-TRE, 71025 Boeblingen, Germany
U.S.: HP Inc., 1501 Page Mill Road, Palo Alto 94304, U.S.A. 650-857-1501

www.hp.com/legislatives



000014


THE ECO DECLARATION



Ecma/TC38-TG3/2015/026
(Rev. 1 – 15 April 2015)

Annex B2 - Product environmental attributes Computers and computer monitors

The declaration may be published only when all rows and/or fields marked with * are filled-in (n.a. for not applicable).
Additional information regarding each item may be found under P15.

Brand *	HP	Logo 
Company name *	HP	
Contact Information * e-mail address	HP Sustainability and Compliance Center sustainability@hp.com	
Internet site *	http://www.hp.com/hpinfo/globalcitizenship/environment/	
Additional Information		


The company declares (based on product specification or test results based obtained from sample testing), that the product conforms to the statements given in this declaration.	
Type of product *	Notebook PC
Commercial name *	HP ProBook 450 G5 Notebook PC
Model number *	450 G5
Issue date *	9/1/2017
Intended market *	<input checked="" type="checkbox"/> Global <input type="checkbox"/> Europe <input type="checkbox"/> Asia, Pacific & Japan <input type="checkbox"/> Americas <input type="checkbox"/> Other
Additional Information	

This is an uncontrolled copy when in printed form. Please refer to the contact information for the latest version.

About Annex B2

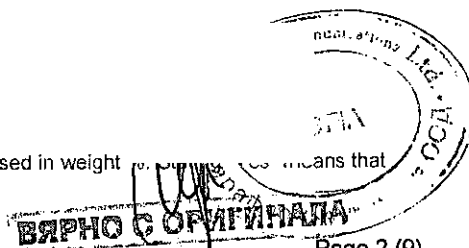
Annex B2 reflects Product environmental attributes relevant for Computers and Computer Monitors. The following items from the ECMA-370 Main body are not shown in the template:
P4.1 – P4.3 Consumable materials
P9.1 TEC and Print speed
P10.2 - P10.3 Chemical emissions from printing products
P11.1 - P11.3 Consumable materials for printing products.




Model number *	450 G5	Logo 
Issue date *	9/1/2017	

Product environmental attributes - Legal requirements		Requirement met		
Item		Yes	No	n.a.
P1 Hazardous substances and preparations				
P1.1*	Products do comply with current European RoHS Directive. (See legal reference and NOTE B1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.2*	Products do not contain Asbestos (see legal reference). Comment: Legal reference has no maximum concentration value.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.3*	Products do not contain Ozone Depleting Substances: Chlorofluorocarbons (CFC), hydrobromofluorocarbons (HBFC), hydrochlorofluorocarbons (HCFC), Halons, carbontetrachloride, 1,1,1-trichloroethane, methyl bromide (see legal reference). Comment: Legal reference has no maximum concentration values.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.4*	Products do not contain more than; 0,005% polychlorinated biphenyl (PCB), 0,005% polychlorinated terphenyl (PCT) in preparations (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.5*	Products do not contain more than 0,1% short chain chloroparaffins (SCCP) with 10-13 carbon atoms in the chain containing at least 48% per mass of chlorine in the SCCP (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.6*	Parts with direct and prolonged skin contact do not release nickel in concentrations above 0,5 µg/cm ² /week (see legal reference). Comment: Max limit in legal reference when tested according to EN1811:2011-5.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P1.7*	REACH Article 33 information about substances in articles is available at (add URL or mail contact): http://www.hp.com/hpinfo/globalcitizenship/environment/productdata/reachdesktop-pcs.html	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2 Batteries				
P2.1*	If the product contains a battery or an accumulator, the battery/accumulator is labeled with the disposal symbol. Information on proper disposal is provided in user manual. (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2.2*	Batteries or accumulators do not contain more than 0,0005% of mercury or 0,002% of cadmium. (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2.3*	Batteries and accumulators are readily removable. (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3 Conformity verification & Eco design (ErP)				
P3.1*	The product is CE-marked to show conformance with applicable legal requirements (see legal reference). The Declaration of Conformity can be requested at (add link or e-mail address): http://www8.hp.com/uk/en/certifications/technical/regulations-certificates.html sustainability@hp.com	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.2*	The product complies with the Eco design requirements for energy-related products, (see legal reference). Required information is; <input checked="" type="checkbox"/> given in item P15 or added to this document, <input type="checkbox"/> available at (add URL):	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P5 Product packaging				
P5.1*	Packaging and packaging components do not contain more than 0,01% lead, mercury, cadmium and hexavalent chromium by weight of these together.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P5.2*	The packaging materials are marked with abbreviations and numbers indicating the nature of the material(s) used (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P5.3*	The product packaging material is free from ozone depleting substances as specified in the Montreal Protocol (see legal reference). Comment: Legal reference has no maximum concentration values.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P6 Treatment information				
P6.1*	Information for recyclers/treatment facilities is available (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

NOTE B1 Restriction applies to the homogeneous material, unless otherwise specified and expressed in weight per unit of volume, which means that the product is compliant with the mandatory requirements.



Model number *	450 G5	Logo	
Issue date *	9/1/2017		

Product environmental attributes - Market requirements (See General NOTE GN below)			
- Environmental conscious design			Requirement met
Item	*=mandatory to fill in. Additional information regarding each item may be found under P14.	Yes	No n.a.
P7	Design		
	Disassembly, recycling		
P7.1*	Parts that have to be treated separately are easily separable	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.2*	Plastic materials in covers/housing have no surface coating.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P7.3*	Plastic parts > 100 g consist of one material or of easily separable materials.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.4*	Plastic parts > 25 g have material codes according to ISO 11469 referring ISO 1043-4.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.5	Plastic parts are free from metal inlays or have inlays that can be removed with commonly available tools.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.6*	Labels are easily separable. (This requirement does not apply to safety/regulatory labels).	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Product lifetime		
P7.7*	Upgrading can be done e.g. with processor, memory, cards or drives	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.8*	Upgrading can be done using commonly available tools	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.9	Spare parts are available after end of production for: 5 years		<input type="checkbox"/>
P7.10	Service is available after end of production for: 5 years		<input type="checkbox"/>
	Material and substance requirements		
P7.11*	Product cover/housing material type (e.g. plastics, metal, aluminum): Material type: <i>PC/ABS+Talc15% (FR 40)</i> Material type: <i>PC/ABS+Talc5% (FR 40)</i> Material type:		
P7.12	Insulation materials of external electrical cables are PVC free.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P7.13	Insulation materials of internal electrical cables are PVC free.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.14	External plastic casing/cover parts > 25 g contain no more than 0,1% weight (1000 ppm) bromine and 0,1% weight (1000 ppm) chlorine attributable to brominated flame retardants, chlorinated flame retardants, and polyvinyl chloride or 0,3% weight (3000 ppm) bromine and 0,3% weight (3000 ppm) chlorine in parts containing more than 25% post-consumer recycled content.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.15	Printed circuit boards, PCBs (without components) are low halogen: all <input type="checkbox"/> PCBs > 25 g <input checked="" type="checkbox"/> are low halogen as defined in IEC 61249-2-21. (See 5NOTE B2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.16	Flame retarded plastic parts > 25 g in covers / housings are marked according ISO 1043-4: Marking: <i>PC/ABS+Talc15%(FR 40), PC/ABS+Talc5%(FR 40)</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.17	Alt. 1: Chemical specifications of flame retardants in printed circuit boards > 25 g (without components): TBBPA (additive) <input type="checkbox"/> , TBBPA (reactive) <input type="checkbox"/> (See NOTE B3), Other; chemical name: _____, CAS #: _____ Alt. 2: Chemical specifications of flame retardants in printed circuit boards (without components) > 25 g according ISO 1043-4: <i>FR(40)</i>	<input type="checkbox"/>	<input type="checkbox"/>
P7.18	Alt. 1: Flame retarded plastic parts > 25 g contain the following flame retardant substances/preparations in concentrations above 0,1%: 1. Chemical name: _____, CAS #: _____ (See NOTE B4) 2. Chemical name: _____, CAS #: _____ 3. Chemical name: _____, CAS #: _____ Alt. 2: Chemical specifications of flame retardants in plastic parts > 25 g according ISO 1043-4: <i>PC/ABS+Talc15%, PC/ABS+Talc5%</i>	<input type="checkbox"/>	<input type="checkbox"/>
P7.19	In plastic parts > 25 g, flame retardant substances/preparations above 0,1% are used which have been assigned the following Risk phrases; <i>R53</i> and Hazard statements: <i>May cause long-lasting harmful effects to aquatic life</i> The source(s) for these classifications is/are found at (add URL(s)): http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database (See note B5)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.20*	Postconsumer recycled plastic material content is used in the product (See Note B6): If YES; at least one of the two alternatives below shall be answered; a) Of total plastic parts' weight > 25 g, the postconsumer recycled plastic material content (calculated as a percentage of total plastic by weight) is _____ %.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

GENERAL NOTE Standard references should direct to the latest version of a standard. If an older version of a standard is used, section P15 shall be used for explanation.


NOTE B2 IEC 61249-2-21 defines maximum limits of 900 ppm for each of the substances chlorine and bromine and a maximum limit of 1500ppm of these substances combined. The standard does not address fluorine, iodine and astatine which are included in the group of halogens.

NOTE B3 and B4 A Guidance document on Chemical substances is available: see <http://www.ecma-international.org/publications/standards/Ecma-370.htm>

NOTE B5 If a certain substance has been assigned a certain risk phrases / hazard statement in the referenced source, this does not necessarily mean the substance has been tested for all of the hazards referred to by a certain customer.

NOTE B6 Applies to a product containing plastic parts whose combined weight exceeds 10 printed circuit boards, cables, connectors and electronic components and bio-based plastic material.

or
b) The weight of recycled material is _____ g.

Model number *	450 G5	Logo 
Issue date *	9/1/2017	


Product environmental attributes - Market requirements (continued) **Requirement met**

Item	Yes	No	n.a.	
Material and substance requirements (continued)				
P7.21* Biobased plastic material content is used in the product (See NOTE B7): If YES; at least one of the two alternatives below shall be answered; a) Of total plastic parts' weight > 25 g, the biobased plastic material content (calculated as a percentage of total plastic by weight) is _____ %. or b) The weight of the biobased plastic material is _____ g.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P7.22* Light sources are free from mercury, i.e. less than 0,1 mg/lamp. If mercury is used specify: Number of lamps: _____ and maximum mercury content per lamp: _____ mg	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
P8 Batteries				
P8.1* Battery chemical composition: <i>lithium/manganese dioxide</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
P9 Energy consumption (See NOTE B8)				
P9.1 For the product the following power levels or energy consumptions are reported:				
Energy mode *	Power level at 100 V AC	Power level at 115 V AC	Power level at 230 V AC	Reference/Standard for energy modes and test method *
EPS No-load (External power supply / charger plugged in the wall outlet but disconnected from the product.)	W	W	W	EPS Energy Report Data <input checked="" type="checkbox"/>
PTEC * Typical Energy Consumption	W	W	W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1 <input checked="" type="checkbox"/>
ETEC * Annual Energy Consumption	26.23 kWh/year	26.32 kWh/year	26.70 kWh/year	ENERGY STAR® Program Requirements for Computers: Ver. 6.1 <input type="checkbox"/>
External Power Supply Efficiency Level (International Efficiency Marking Protocol) * : V				ENERGY STAR® Program Requirements for Computers: Ver. 6.1 <input type="checkbox"/>
Display resolution * : megapixels				ENERGY STAR® Program Requirements for Computers: Ver. 6.1 <input type="checkbox"/>
Default time to enter energy save mode: minutes				ENERGY STAR® Program Requirements for Computers: Ver. 6.1 <input checked="" type="checkbox"/>
P9.2*	Information about the energy save function is provided with the product.			<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
P9.3	Energy efficiency class (monitors only):			<input checked="" type="checkbox"/>
P10 Emissions				
Noise emission – Declared according to ISO 9296 (See NOTE B9)				
P10.1	Mode	Mode description	Statistical upper limit A-weighted sound power level, L _{WA,c} (B)	
	Idle	* Fans on, HDD spinning (if applicable)	* 2.9	<input type="checkbox"/>
	Operation	* Fans on, HDD spinning	* 2.9	<input type="checkbox"/>
	Other mode			
Measured according to: <input checked="" type="checkbox"/> ISO 7779 <input checked="" type="checkbox"/> ECMA-74 <input type="checkbox"/> Other (only if not covered by ECMA-74)				

NOTE B7 The following is to be excluded from the calculation of percentage: printed circuit boards, labels, cables, connectors and electronic components and postconsumer recycled plastic

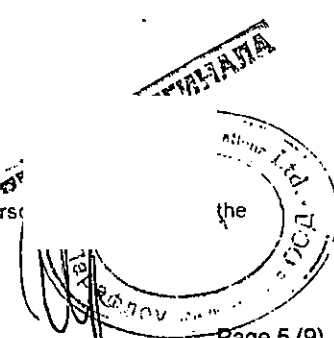
NOTE B8 A Guidance document on Energy Efficiency is available: see <http://www.ecma-international.org/publications/standards/Ecma-370.htm>

NOTE B9 A Guidance document on Acoustic Noise is available: see <http://www.ecma-international.org/publications/standards/Ecma-370.htm>

Model number *	450 G5	Logo	
Issue date *	9/1/2017		

Product environmental attributes - Market requirements (continued)		Requirement met		
Item		Yes	No	n.a.
Electromagnetic emissions				
P10.4	Computer display meets the requirement for low frequency electromagnetic fields of the following voluntary program(s):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P12 Ergonomics for computing products				
P12.1*	The display meets the ergonomic requirements of ISO 9241-307 for visual display technologies.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P12.2*	The physical input device meets the requirements of ISO 9995 and ISO 9241-410.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P13 Packaging and documentation				
P13.1*	Product packaging material type(s): <i>PAPER/Corrugated</i> weight (kg): <i>0.359</i> Product packaging material type(s): <i>PLASTIC/Polyethylene Expanded - EPE</i> weight (kg): <i>0.082</i> Product packaging material type(s): <i>PLASTIC/Polyethylene low density - LDPE</i> weight (kg): <i>0.01</i>			
P13.2*	Product plastic primary packaging is free from PVC.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P13.3*	For product primary corrugated fiberboard packaging, specify the contained percentage of minimum post-consumer recovered fiber content: <i>0 %</i>			<input type="checkbox"/>
P13.4*	Specify media for user and product documentation (tick box): Electronic <input checked="" type="checkbox"/> , Paper <input type="checkbox"/> , Other <input type="checkbox"/>			<input type="checkbox"/>
P13.5	(Please only complete this item if paper documentation used) User and product documentation on paper media is chlorine-free: If Yes, please specify: Totally chlorine-free Elemental chlorine-free Processed chlorine-free	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P14 Voluntary programs				
P14.1	The product meets the requirements of the following voluntary program(s): ENERGY STAR® Criteria version: <i>6.1</i> Date: <i>9/1/2017</i> Product category: <i>Notebook</i> Eco-label: <i>EPEAT</i> Criteria version: <i>IEEE 1680.1</i> Date: <i>9/1/2017</i> Product category: <i>Notebook</i> Eco-label: <i>TCO</i> Criteria version: <i>5.0</i> Date: <i>9/1/2017</i> Product category: <i>Notebook</i>			
P15 Additional information (See NOTE B10)				
P9	Energy consumption of computer products; description of the tested product configuration:			
All Sections	1. Product environmental information contained in this declaration is valid as of the date the declaration is published. Changes to external standards referenced in the IT Eco-Declaration may invalidate some information contained in this declaration over			
P9	1. European Union Commission Regulation 1275/2008- Energy Efficiency Information:			
	Mode / Condition	Power Consumption in Watts at 230 VAC Input Voltage	Default Time to Mode / Condition (if applicable)	
	Off Mode (if applicable)	<i>0.34 W</i>	Not Applicable	
	Standby Mode (if applicable)	Not Applicable	Not Applicable	
	Network Standby / Sleep / Long Idle Mode if all wired network ports are connected and all wireless network ports are activated (if applicable)	<i>0.96 W</i>	<i>20 mins</i>	
	Network Standby / Sleep / Long Idle Mode (if applicable)	<i>0.78 W</i>	<i>20 mins</i>	
	2. European Union Commission Regulation 1275/2008- Wireless Network Instructions:			
	Where applicable, activate and deactivate a wireless network using the instructions provided in the product user guide or the operating system. Information is also available at www.hp.com/support .			

NOTE B10 Additional lines may be inserted to declare further items, by positioning the cursor on the next row and hitting the <Enter> key.



Handwritten marks at the top of the page, including a horizontal line and a stylized signature or symbol.

Legal references Europe Annex B2

Reference	Declaration item
Directive 2011/65/EU (RoHS Directive) * * Specific exemptions apply for certain products and applications.	P1.1
Regulation (EC) 1907/2006 (REACH, Annex XVII)	P1.2, P1.4, P1.6, P1.7
Regulation (EC) 2037/2000, 2038/2000, 2039/2000 (Marketing and use of Ozone layer depleting substances)	P1.3, P5.3
Norwegian regulation relating to restrictions on the use of certain dangerous chemicals 20.12.2002	P1.5
Directive 2013/56/EC (Battery and accumulators Directive) * * These provisions shall not apply where, for safety, performance, medical or data integrity reasons, continuity of power supply is necessary and requires a permanent connection between the appliance and the battery or accumulator.	P2.1, P2.2, P2.3, P8.1
Directive 2006/95/EC (Low Voltage Directive)	P3.1
Directive 2004/108/EC (EMC Directive)	P3.1
Directive 1999/5/EC (R&TTE Directive)	P3.1
Regulation (EC) 801/2013 amending Regulation (EC) No 1275/2008 with regard to ecodesign requirements for standby, off mode electric power consumption of electrical and electronic household and office equipment, and amending Regulation (EC) No 642/2009 with regard to ecodesign requirements for televisions	P3.1, P3.2
Regulation (EC) No 1272/2008 (CLP Regulation)	P7.19
Directive 2004/12/EC (Packaging Directive)	P5.1
Decision 97/129/EC (Secondary packaging legislation)	P5.2
Directive 2012/19/EU (WEEE directive)	P6.1

Handwritten marks in the middle of the page, including a large 'A' and a checkmark-like symbol.


Handwritten marks at the bottom left, including a checkmark and a horizontal line.

Official circular stamp from the Ministry of Environmental Protection and Climate Change of the Republic of Bulgaria. The stamp contains the text: "РЕПУБЛИКА БЪЛГАРИЯ", "Министерство на околната среда и климата", "ИД. ДС", and "ДЦ". There is a handwritten signature over the stamp.



Ecma/TC38-TG3/2015/024

Company environmental profile - THE ECO DECLARATION

Brand	HP	Logo 
Company name *	HP	
Contact Information *	HP Sustainability and Compliance Center (SCC) sustainability@hp.com	
Internet site *	www.hp.com/hpinfo/globalcitizenship/environment/index.html	
Issue date *	2014-06-01	
Intended market *	<input checked="" type="checkbox"/> Global <input type="checkbox"/> Europe <input type="checkbox"/> Asia, Pacific & Japan <input type="checkbox"/> Americas <input type="checkbox"/> Other	
Additional Information		

This is an uncontrolled copy when in printed form. Please refer to the contact information for the latest version.

The declaration may be published only when all rows and/or fields marked with an * are filled-in (n.a. for not applicable). Additional information regarding each item may be found under C7.

Company environmental profile - Legal requirements		Requirement met		
Item		Yes	No	n.a.
C1	Product recycling			
C1.1*	The company participates in a system or has its own system for collection and recycling of end of life products in countries where the company puts them on the market and where required (see legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C2	Battery recycling			
C2.1*	The company participates in a system or has its own system for collection and recycling of batteries in countries where the company puts products on the market (see legal reference) or pays eco tax / fee where required.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C3	Packaging recycling			
C3.1*	The company participates in a system or has its own system for collection and recycling of packaging material in countries where the company puts products on the market and where required (see legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Company environmental profile - Market requirements		Requirement met		
Item		Yes	No	n.a.
C4	Environmental policy and environmental management			
C4.1*	The company has a documented environmental policy approved by the management.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C4.2*	The company has an environmental management system covering: Product development Manufacturing If so certified according to: <input checked="" type="checkbox"/> ISO 14001 <input checked="" type="checkbox"/> Other as specified in C7	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C4.3	The company regularly publishes an environmental report. If so, it meets the recommendations of <input checked="" type="checkbox"/> The Global Reporting Initiative <input type="checkbox"/> Other as specified in C7	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C5	Recycling			
C5.1*	Information about the product, battery & packaging take back system (C1, C2 and C3) is available in printed or electronic format.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C6	Voluntary programs			
C6.1	The company meets the requirements of the following voluntary program/s: Voluntary Agreement: Criteria version: Date: Product category: Voluntary Agreement: Criteria version: Date: Product category:			

C7 Additional Information

HP has received ISO 14001 certification for its manufacturing operations (Worldwide Manufacturing of Computing and Imaging Products and Related Operations) and for product design for its Personal Systems Products and LaserJet and Enterprise Printing Products. The product design certifications include HP-wide product environmental design processes (such as HP's General Specification for the Environment) that cover all HP products.

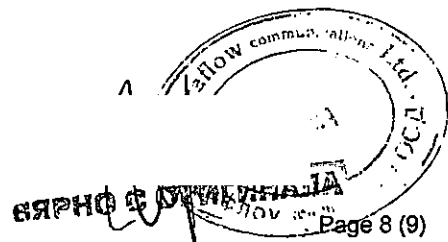
HP is committed to responsible business practices and transparency in its global citizenship policies and performance. We have a long history of working with suppliers to monitor and improve their social and environmental responsibility (SER) performance when required, as well as improving standards in the industry. HP endorses the EICC Code of Conduct in its entirety, and we have supplemented it with additional requirements specific to freedom of association as well as HP's Student and Dispatch Worker Guidance Standard for Supplier Facilities in the People's Republic of China (PRC). HP also has a strong Global Human Rights Policy in place. HP expects its suppliers to establish policies and processes regarding conflict minerals. HP conducts due diligence on its supply chain annually including requesting information about our suppliers' own due diligence and the smelters and refiners used. HP was the first IT company to publish its supply chain smelter list. HP follows the Global Reporting Initiative (GRI) guidelines as a basis for reporting. The GRI index provides easy reference to HP's Living Progress Report (LPR) content. HP offers take back services of products and printing suppliers in some 70 countries. Please refer to HP's Living Progress Report for more details on our global efforts.

[Handwritten mark]



[Handwritten mark]

[Handwritten mark]



Handwritten mark resembling a stylized 'S' or '9'.

Legal references Europe Annex A

Reference	Declaration item
Directive 2012/19/EU (WEEE directive)	C1.1
Directive 2006/66/EC (Battery and accumulators Directive) * * These provisions shall not apply where, for safety, performance, medical or data integrity reasons, continuity of power supply is necessary and requires a permanent connection between the appliance and the battery or accumulator.	C2.1
Directive 2004/12/EC (Packaging Directive)	C3.1
Decision 97/129/EC (Secondary packaging legislation)	C3.1

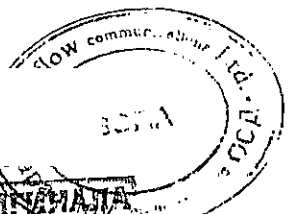
Handwritten mark resembling a circle with a dot inside.

Handwritten mark resembling a circle with a dot inside.

Handwritten mark resembling the letter 'A'.

Handwritten mark resembling a checkmark or the number '4'.

Handwritten mark resembling a bracket or a checkmark.



Handwritten text: ~~БЯРНО С ОРИГИНАЛА~~

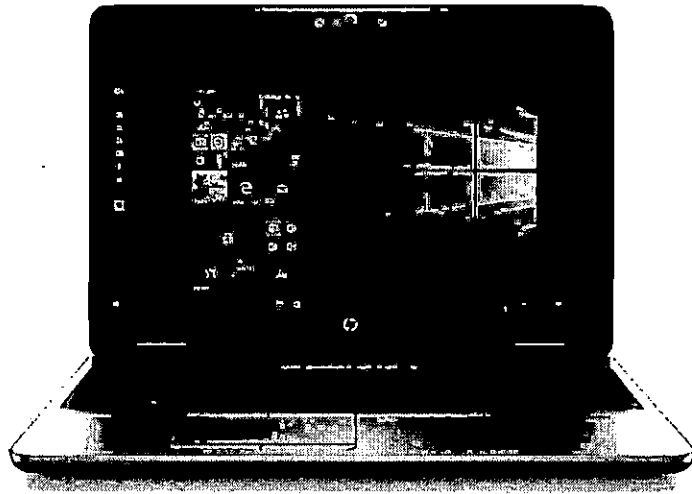
Datasheet

HP ProBook 650 G3 Notebook PC



The flexibility to meet business demands.

Get the most from your investment with configurations that support today's technology and legacy devices. The HP ProBook 650 is equipped with the newest security and productivity features and is compatible with your existing IT investments.



HP recommends Windows 10 Pro.

Blend new features with proven technology

- Simplify deployment of new PCs. The HP ProBook 650 easily integrates into your current IT structure. Optional optical drives² and legacy ports like a serial port, standard VGA port, and RJ-45 connection help reduce the costs of upgrading your PCs.

Mobilize your workforce

- Give your deskbound workforce the benefits of mobility without sacrificing performance or breaking the budget with 7th Gen Intel® Core™ i3/i5/i7 processors², expansive DDR4 memory, and peripherals like the HP UltraSlim dock³.

HP exclusive security and manageability

- Help prevent data breaches and downtime with HP BIOSphere Gen3⁴ and self-encrypting³. Simplify management with HP configuration across the globe, available in more than 180 countries where HP conducts business.

Collaborate on the go

- Business doesn't stop when you are away from the office. HP Noise Cancellation Software, HP Audio Boost, Skype for business⁵, and a 720p webcam are collaboration tools that help you communicate clearly with colleagues.
- Be productive in any situation. Experience the new features of Windows 10 Pro¹ on the powerful, touch³ optional HP ProBook 650.
- Powerful 7th Gen Intel® Core™ i3/i5/i7 processors² and configurable options let you deploy the right configuration based on user's needs.
- Replace batteries less often and quickly recharge your HP ProBook 650 with an HP fast charging battery. You'll get up to 90% battery life in just 90 minutes of charging⁶.
- Help suppress ambient noise including keyboard clicks with HP Noise Cancellation software.
- HP Audio Boost balances loudness and clarity, and enhances bass for improved speech quality.
- Keep productivity high and downtime low with the fully integrated and automated features of the HP BIOSphere Gen3⁴ firmware ecosystem. Your PCs have extra protection thanks to automatic updates and security checks.
- Stand up to the workload with a ProBook that is designed to pass MIL-STD 810G testing⁷.
- Help protect your ProBook with a spill-resistant HP Premium Keyboard with a full numeric keypad and backlit⁸ option.

Handwritten marks and stamps at the bottom of the page, including a circular stamp with text: "Paragon Computer, Inc. Ltd. 30711" and "PARAGON".

000024



HP ProBook 650 G3 Notebook PC Specifications Table

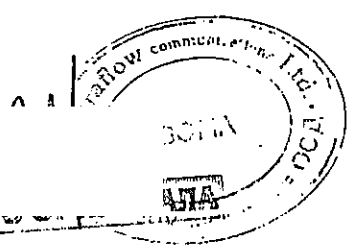
HP recommends Windows 10 Pro.



Available Operating System	Windows 10 Pro 64 – HP recommends Windows 10 Pro. ¹ Windows 10 Home 64 ¹ Windows 10 Home Single Language 64 – HP recommends Windows 10 Pro. ¹ FreeDOS 2.0
Processor Family	7th Generation Intel® Core™ i7 processor; 7th Generation Intel® Core™ i5 processor; 7th Generation Intel® Core™ i3 processor
Available Processors^{3,4,23}	Intel® Core™ i7-7600U with Intel HD Graphics 620 (2.8 GHz, up to 3.9 GHz with Intel Turbo Boost Technology, 4 MB cache, 2 cores); Intel® Core™ i5-7200U with Intel HD Graphics 620 (2.6 GHz, up to 3.5 GHz with Intel Turbo Boost Technology, 3 MB cache, 2 cores); Intel® Core™ i3-7100U with Intel HD Graphics 620 (2.5 GHz, up to 3.1 GHz with Intel Turbo Boost Technology, 3 MB cache, 2 cores); Intel® Core™ i3-7100U with Intel HD Graphics 620 (2.4 GHz, 3 MB cache, 2 cores) (In accordance with Microsoft's support policy, HP does not support the Windows 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows 8 or Windows 7 drivers on http://www.support.hp.com .)
Chipset	Chipset is integrated with processor
Maximum Memory	Up to 16 GB DDR4-2133 SDRAM; 32 GB DDR4-2133 SDRAM ^{2,4} Standard memory note: Dual channel support
Memory Slots	2 SODIMM
Internal Storage	up to 500 GB SATA (7200 rpm) ⁵ up to 500 GB SATA SED (7200 rpm) ⁵ up to 1 TB SATA (5400 rpm) ⁵ up to 128 GB M.2 SATA SSD ⁵ up to 256 GB M.2 SATA TLC SSD ⁵ 256 GB up to 512 GB M.2 PCIe NVMe TLC SSD ⁵
Optical Storage	DVD-ROM; DVD-Writer ⁶
Display	39.6 cm (15.6") diagonal HD SVA eDP anti-glare slim LED-backlit with WWAN (1366 x 768); 39.6 cm (15.6") diagonal HD SVA eDP anti-glare slim LED-backlit with camera and WWAN (1366 x 768); 39.6 cm (15.6") diagonal FHD SVA eDP anti-glare slim with WWAN (1920 x 1080); 39.6 cm (15.6") diagonal FHD SVA eDP anti-glare slim with camera and WWAN (1920 x 1080); 39.6 cm (15.6") diagonal FHD SVA eDP anti-glare slim LED-backlit touch screen with camera and WWAN (1920 x 1080) ⁷
Available Graphics	Integrated: Intel® HD Graphics 620; Intel® HD Graphics 630 ⁸ Discrete: AMD Radeon™ R7 M465 (2 GB GDDR5 dedicated) ⁹
Wireless Technologies	HP i4132 LTE/HSPA+ 4G Mobile Broadband; HP i4132 WW HSPA+ Mobile Broadband; Intel® Dual Band Wireless-AC 8265 802.11 a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 4.2 Combo (vPro™ and non-vPro™); Ralink 802.11b/g/n (1x1) and Bluetooth® 4.0 Combo (non-vPro™); Intel® Dual Band Wireless-AC 7265 802.11 a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo (non-vPro™) ^{11,12}
Communications	Intel® Ethernet Connection I219-LM 10/100/1000; Intel® Ethernet Connection I219-V 10/100/1000 ³
Expansion Slots	1 SDs Supports SD, SDHC, SDXC
Ports and Connectors	1 USB Type-C™; 2 USB 3.0 (1 charging); 1 RJ-45; 1 docking connector; 1 headphone/microphone combo; 1 4.5 mm AC power connector; 1 DisplayPort™; 1 VGA; 1 serial (optional) (Cables are not included.)
Input Device	HP Premium Spill-resistant Keyboard with Touchpad and drain; HP Premium Spill-resistant Backlit Keyboard with Touchpad and DuraKeys with drain; HP Premium Spill-resistant Backlit Keyboard with Dual Point and DuraKeys with drain Touchpad with on/off button, two-way scroll, taps and gestures enabled, two-finger scrolling, two finger zoom (pinch)
Webcam	720p HD webcam (optional) ⁵
Available Software	HP 3D DriveGuard (Windows required); HP ePrint Driver + JetAdvantage; HP Hotkey Support; HP Recovery Manager; HP Support Assistant; HP Noise Cancellation; HP Velocity; For a complete list of preinstalled software, please refer to the quick spec document for this product. ¹⁴
Security Management	HP Device Access Manager; HP BIOSphere; HP Secure Erase; Absolute persistence module; HP Client Security Gen3; Fingerprint reader; Security lock slot; TPM 2.0; Smart card reader. ^{15,19,20,25}
Power	45 W Smart AC adapter; 65 W HP Smart AC adapter; 90 W Smart adapter ¹² HP 3-cell, 48 Wh Long Life Li-Ion ¹¹
Dimensions	37.8 x 25.7 x 2.74 cm
Weight	Starting at 2.31 kg (Weight varies by configuration and components)
Energy Efficiency Compliance	ENERGY STAR® certified; EPEAT® Gold
Warranty	1 year standard parts and labour limited warranty, depending on country (upgrades available), 1 year limited warranty on primary battery

Handwritten mark resembling the number '11'.

Handwritten mark resembling the number '41'.



000025



HP ProBook 650 G3 Notebook PC

HP recommends Windows 10 Pro.

Accessories and services (not included)

HP 15.6 Executive Black Top Load



Protect your bag's contents while you're on the move with the black HP Executive Top Load, which has a lockable, double-teeth zippered notebook compartment, secure RFID pocket to safeguard your ID, and a discrete pocket for an optional tracking device.¹

Product number: P6N18AA

HP UC Wireless Duo Headset



Take a call up to 100 feet away from your desk or phone with the HP UC Wireless Duo Headset and get premium stereo sound and noise cancelling even in the busiest environments, in a design that's comfortable to wear throughout the work day.^{1,2}

Product number: W3K09AA

HP 65W Smart AC Adapter



Feed your notebook with controlled servings of electricity. HP's new 65W Smart AC Adapter regulates power and offsets electrical spikes, is designed to reduce cable stress, and includes a special dongle to support current and prior HP models — perfect for replacing your notebook's power adapter or as a needed back-up.

Product number: H5Y89AA

HP UltraSlim Docking Station



Designed exclusively for ultraslim HP EliteBook Notebook PCs, the HP UltraSlim Docking Station expands display, network, and device connectivity so you can be more productive throughout the day—all through a simple one-click slide-in side dock.

Product number: D9Y32AA

HP Comfort Grip Wireless Mouse



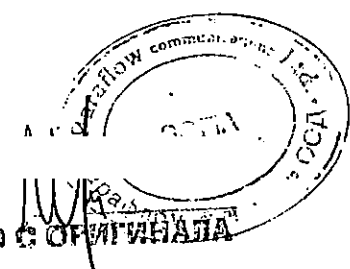
The HP Comfort Grip Wireless Mouse features a 30-month battery life and a bold, modern design that integrates seamlessly with HP Business Notebooks.

Product number: H2L63AA

HP 3 year Next Business Day Onsite Hardware Support for Notebooks

Receive 3 years of next business day onsite HW support from an HP-qualified technician for your computing device, if the issue cannot be solved remotely.

Product number: U4391E



000026

HP ProBook 650 G3 Notebook PC

HP recommends Windows 10 Pro.

Messaging Footnotes

- ¹ Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com>.
- ² Multicore is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
- ³ Sold separately or as an optional feature.
- ⁴ HP BIOSphere Gen3 features may vary depending on the PC platform and configurations.
- ⁵ Skype for business subscription required.
- ⁶ Recharges the battery up to 90% within 90 minutes when the system is off or in standby mode when used with the power adapter provided with the notebook. After charging has reached 90% capacity, charging speed will return to normal. Charging time may vary +/- 10% due to System tolerance.
- ⁷ MIL-STD testing is pending and is not intended to demonstrate fitness for U.S. Department of Defense contract requirements or for military use. Test results are not a guarantee of future performance under these test conditions. Damage under the MIL-STD test conditions or any accidental damage requires an optional HP Accidental Damage Protection Care Pack.

Technical specifications disclaimers

- ¹ Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com>.
- ² Multicore is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
- ³ Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.
- ⁴ HD content required to view HD images.
- ⁵ AMD Dynamic Switchable Graphics technology requires an Intel processor, plus an AMD Radeon™ discrete graphics configuration and is not available on FreeOS and Linux OS. With AMD Dynamic Switchable Graphics technology, full enablement of all discrete graphics video and display features may not be supported on all systems (e.g. OpenGL applications will run on the integrated GPU or the APU as the case may be).
- ⁶ Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed.
- ⁷ For hard drives and solid state drives, GB = 1 billion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10) of system disk is reserved for the system recovery software.
- ⁸ DVD-Writer does not support DVD-RAM. Don't copy copyright-protected materials.
- ⁹ Battery is internal and not replaceable by customer. Serviceable by warranty.
- ¹⁰ Availability may vary by country.
- ¹¹ HP ePrint Driver requires an Internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see www.hp.com/go/eprintcenter).
- ¹² HP Client Catalog not preinstalled, coming soon at <http://www.hp.com/go/clientmanagement>
- ¹³ LANDESK Management subscription required.
- ¹⁴ HP BIOSphere available only on business PCs with HP BIOS.
- ¹⁵ Secure Erase for the methods outlined in the National Institute of Standards and Technology Special Publication 800-88.
- ¹⁶ Absolute agent is shipped turned off and will be activated when customers activate a purchased subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: <http://www.absolute.com/company/legal/agreements/computer-use-agreement>. Data Delete is an optional service provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.
- ¹⁷ HP SoftPaq Download Manager (SDM); HP System Software Manager (SSM); HP Microsoft Integration Kit for Microsoft System Center Configuration Manager: Not preinstalled, however available for download at <http://www.hp.com/go/clientmanagement>.
- ¹⁸ NOTE: In accordance with Microsoft's support policy, HP does not support the Windows 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows 8 or Windows 7 drivers on <http://www.support.hp.com>.
- ¹⁹ 32 GB DDR4-2133 SDRAM is planned to be available in the second quarter of 2017.
- ²⁰ EPEAT® registered where applicable. EPEAT registration varies by country. See www.epeat.net for registration status by country. See HP's 3rd party option store for solar energy accessory www.hp.com/go/options.
- ²¹ Lock must be purchased separately.

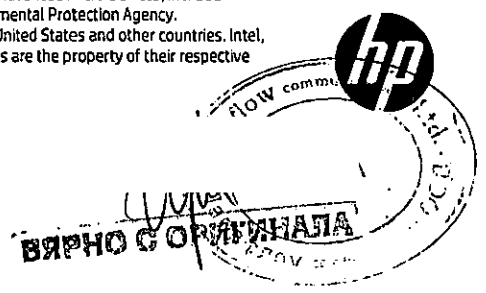
Sign up for updates
www.hp.com/go/getupdated

Copyright © 2018 HP Development Company, L.P. The only warranties for HP products are set forth in the express limited warranty statements accompanying such products. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Bluetooth is a trademark of its proprietor and used by HP Inc. under license. AMD, Radeon and the AMD logo are trademarks of Advanced Micro Devices, Inc. USB Type-C™ and USB-C™ are trademarks of USB Implementers Forum. ENERGY STAR is a registered trademark of the U.S. Environmental Protection Agency. DisplayPort™ and the DisplayPort™ logo are trademarks owned by the Video Electronics Standards Association (VESA®) in the United States and other countries. Intel, Core and Intel vPro are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries. All other trademarks are the property of their respective owners.

4AA6-8963EEE, January 2018

000027





ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ
в съответствие с ISO / IEC 17050-1 и EN 17050-1

Doc #: HSN-I05C-5H-R4Превод/bg

Наименование на производителя: **HP Inc.**
Производителя Адрес: 1501 Page Mill Road, Palo Alto, CA 94303-1112 USA

заявява, че продуктът

Име на продукта и модел:²⁾ HP ProBook 650 G3 Notebook PC
Нормативен номер на модела:¹⁾ HSN-I05C-5H
Опции на продукта: Виж приложение I

съответства на следните спецификации на продукта и регламенти:

Безопасност:

IEC 60950-1:2005 +A1:2009 +A2:2013
EN 60950-1:2006 +A11:2009 +A1:2010
+A12:2011 +A2:2013
EN 50364:2010
EN 50566:2013
EN 62311:2008
EN 62479:2010

EMC

EN 301 489-1 V2.1.1
EN 301 489-3 V2.1.1
EN 301 489-17 V3.1.1
EN 301 489-52 V1.1.0
FCC CFR 47 Part 15
ICES-003, Issue 6:2016

Радиочестотният спектър

EN 62209-2:2010
EN 300 328 V2.1.1
EN 300 330 V2.1.1
EN 301 511 V12.5.1
EN 301 893 V2.1.0
EN 301 908-1 V11.1.1
EN 301 908-2 V11.1.1
EN 301 908-13 V11.1.1
EN 303 413 V1.1.0

екодизайна

Регламент (EO) No 617/2013
EN 62623:2013
Регламент (EC) № 1275/2008
EN 50564:2011
IEC 62301:2011

RoHS

EN 50581:2012

Този апарат в съответствие с изискванията на Директивата RED 2014/53/EC, Директивата за екодизайна 2009/125/OT, Директивата RoHS 2011/65/EC и носи маркировката съответно **CE**.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Допълнителна информация:

- 1) Този продукт има нормативен номер на модела, който остава с регулаторните аспекти на дизайн. Номер на Нормативен модел е идентификатора основен продукт в нормативната документация и протоколи от изпитвания, този брой не трябва да се бърка с пазарното име или номера на продукта.
- 2) Нотифицираният орган **SGS Fimko Ltd.** с номер **0598** е извършена оценка на съответствието (съгласно приложение III, поради липсващи хармонизирани стандарти) и издаде сертификата за ЕС изследване на типа: RED-1036
- 3) Този продукт е изпробван в типична HP среда във връзка с хост система HP.

Palo Alto, CA
06-07-2017

проверка на подписа върху оригинала на декларацията,

приложена
Gilles Soulard, Manager
Product Compliance Center

Local контакт за регулаторни теми само:

EU: HP Deutschland GmbH, HP HQ-TRE, 71025 Boeblingen, Germany
U.S.: HP Inc., 1501 Page Mill Road, Palo Alto 94304, U.S.A. 650-857-1501

www.hp.eu/certificates


000028



THE ECO **DECLARATION**

Product environmental attributes – THE ECO DECLARATION

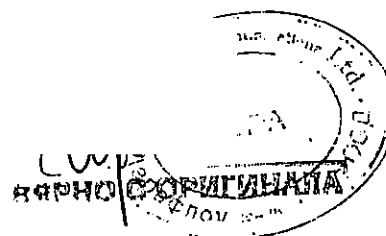
The declaration may be published only when all rows and/or fields marked with an * are filled-in (n.a. for not applicable).
 Additional information regarding each item may be found under P14.


Brand *	HP	Logo 
Company name *	HP	
Contact information *	HP Environmental Contact Center environment@hp.com	
Internet site *	http://www.hp.com/hpinfo/globalcitizenship/environment/	
Additional Information		

The company declares (based on product specification or test results based obtained from sample testing), that the product conforms to the statements given in this declaration.	
Type of product *	Notebook PC
Commercial name *	HP ProBook 650 G3 Notebook PC
Model number *	650 G3
Issue date *	12/23/2016
Intended market *	<input checked="" type="checkbox"/> Global <input type="checkbox"/> Europe <input type="checkbox"/> Asia, Pacific & Japan <input type="checkbox"/> Americas <input type="checkbox"/> Other
Additional Information	

This is an uncontrolled copy when in printed form. Please refer to the contact information for the latest version.


Quality Control		Requirement met	
Item	Description	Yes	No
QC1 *	The company enforces an internal quality control scheme to ensure the correctness of this eco declaration	<input checked="" type="checkbox"/>	<input type="checkbox"/>
QC2 *	The company is a member of an eco declaration system that enforces regular independent quality control such as organized by IT-Företagen (see www.itecodeclaration.org).	<input checked="" type="checkbox"/>	<input type="checkbox"/>



Model number *	650 G3	
Issue date *	12/23/2016	Logo 

Product environmental attributes - Legal requirements		Requirement met		
Item		Yes	No	n.a.
P1	Hazardous substances and preparations			
P1.1*	Products do not contain more than; 0.1% lead, 0.01% cadmium, 0.1% mercury, 0.1% hexavalent chromium, 0.1% polybrominated biphenyls (PBB) or 0.1% polybrominated diphenyl ethers (PBDE). (See legal reference and Note B1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.2*	Products do not contain Asbestos (see legal reference). Comment: Legal reference has no maximum concentration value.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.3*	Products do not contain Ozone Depleting Substances: Chlorofluorocarbons (CFC), hydrobromofluorocarbons (HBFC), hydrochlorofluorocarbons (HCFC), Halons, carbontetrachloride, 1,1,1-trichloroethane, methyl bromide (see legal reference). Comment: Legal reference has no maximum concentration values.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.4*	Products do not contain more than; 0.005% polychlorinated biphenyl (PCB), 0.005% polychlorinated terphenyl (PCT) in preparations (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.5*	Products do not contain more than 0.1% short chain chloroparaffins (SCCP) with 10-13 carbon atoms in the chain containing at least 48% per mass of chlorine in the SCCP (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.6*	Textile and leather parts with direct skin contact do not contain Tri-(2,3-dibromopropyl)-phosphate (TRIS), Tris-(aziridiny)-phosphineoxide (TEPA), polybrominated biphenyl (PBB) (see legal reference). Comment: Legal reference has no maximum concentration values.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P1.7*	Textile and leather parts with direct skin contact do not contain more than 0.003% Azo colorants that split aromatic amines. (See legal reference and Note B1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P1.8*	Wooden parts do not contain arsenic and chromium as a wood preservation treatment as well as pentachlorophenol and derivatives (see legal reference). Comment: Legal reference has no maximum concentration values.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P1.9*	Parts with direct and prolonged skin contact do not release nickel in concentrations above 0.5 microgram/cm ² /week (see legal reference). Comment: Max limit in legal reference when tested according to EN1811:1998.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P1.10*	REACH Article 33 information about substances in articles is available at (add URL or mail contact): http://www.hp.com/hpinfo/globalcitizenship/environment/productdata/reachdesktop-pcs.html	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2	Batteries			
P2.1*	If the product contains a battery or an accumulator, it is labeled with the disposal symbol and if it contains more than 0.0005% of mercury (for button cells only) by weight, or more than 0.004% of lead, it shall be marked with the chemical symbol for the metal concerned, Hg or Pb. Information on proper disposal is provided in user manual. (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2.2*	Button cells used in the product do not contain more than 2% by weight of mercury. Other batteries or accumulators do not contain more than 0.0005% of mercury or 0.002% of cadmium. (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2.3*	Batteries and accumulators are easily removable by either users or service providers (as dependent on the design of the product). Exception: Batteries that are permanently installed for safety, performance, medical or data integrity reasons do not have to be "easily removable". (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3	Safety, EMC connection to the telephone network and labeling			
P3.1*	The product complies with legally required safety standards as specified (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.2*	The product complies with legally required standards for electromagnetic compatibility (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.3*	If product is intended for connection to a public telecom network or contains a radio transmitter, it complies with legally required standards for radio and telecommunication devices (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.4*	The product is labeled to show conformance with applicable legal requirements (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P4	Consumable materials			
P4.1*	If a photo conductor (drum, belt etc.) is used in the product, it does not contain cadmium max 0.01% (see legal reference and Note B1).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P4.2*	If ink/toner is used in the product, it does not contain cadmium max 0.1% by weight (see legal reference).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P4.3*	If the ink/toner formulation/preparation is classified as hazardous according to applicable regulations, the product/packaging is adequately labeled and a Safety Data Sheet (SDS) in accordance with these requirements is available (see legal reference).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P5	Product packaging			
P5.1*	Packaging and packaging components do not contain more than 0.01% lead, mercury, cadmium and hexavalent chromium by weight of these together.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P5.2*	Plastic packaging material is marked according to ISO 11469 referring ISO 1043 (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P5.3*	The product packaging material is free from ozone depleting substances as specified in the Montreal Protocol (see legal reference). Comment: Legal reference has no maximum concentration values.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

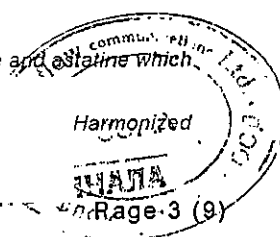
Note B1: Restriction applies to the homogeneous material, unless other specified and expressed in weight %.


Model number *	650 G3	Logo	
Issue date *	12/23/2016		

Product environmental attributes - Market requirements - Environmental conscious design		Requirement met		
Item	*=mandatory to fill in. Additional information regarding each item may be found under P14.	Yes	No	n.a.
P6	Treatment Information			
P6.1*	Information for recyclers/treatment facilities is available (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7	Design			
	Disassembly, recycling			
P7.1*	Parts that have to be treated separately are easily separable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.2*	Plastic materials in covers/housing have no surface coating.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.3*	Plastic parts >100g consist of one material or of easily separable materials.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.4*	Plastic parts >25g have material codes according to ISO 11469 referring ISO 1043.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.5	Plastic parts are free from metal inlays or have inlays that can be removed with commonly available tools.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.6*	Labels are easily separable. (This requirement does not apply to safety/regulatory labels).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Product lifetime			
P7.7*	Upgrading can be done e.g. with processor, memory, cards or drives	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.8*	Upgrading can be done using commonly available tools	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.9.	Spare parts are available after end of production for: 5 years			<input type="checkbox"/>
P7.10	Service is available after end of production for: years			<input checked="" type="checkbox"/>
	Material and substance requirements			
P7.11*	Product cover/housing material type: Material type: PC+ABS Material type: PC+ABS FR(30) Material type: FR(30)/PC+ABS C7230P			
P7.12	Electrical cable insulation materials of power cables are PVC free.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.13	Electrical cable insulation materials of signal cables are PVC free	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.14	All cover/housing plastic parts >25g are free from chlorine and bromine.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.15	All printed circuit boards (without components) >25g are halogen free. as defined in IEC61249-2-21. (See Note B2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.16	Flame retarded plastic parts >25g in covers / housings are marked according ISO 1043-4: Marking: C7230P PC+ABS FR(40)/FR3021 PC+ABS FR(40), FR3021 PC+ABS FR(40)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.17	Alt. 1 Chemical specifications of flame retardants in printed circuit boards >25g (without components): TBBPA (additive) <input type="checkbox"/> , TBBPA (reactive) <input type="checkbox"/> , Other; chemical name: , CAS #: Alt. 2 Chemical specifications of flame retardants in printed circuit boards (without components) >25g according ISO 1043-4: FR(40)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.18	Alt. 1 Flame retarded plastic parts >25g contain the following flame retardant substances/preparations in concentrations above 0.1%: Comment: No legal limits exist, this is a market requirement. 1. Chemical name: , CAS #: 2. Chemical name: , CAS #: 3. Chemical name: , CAS #: Alt. 2 Chemical specifications of flame retardants in plastic parts >25g according ISO 1043-4: C7230P PC+ABS FR(40)/FR3021 PC+ABS FR(40), FR3021 PC+ABS FR(40)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.19	Plastic parts >25g are free from flame retardant substances/ preparations above 0.1% classified as R45, R40, R46, R48, R50, R51, R53, R60, R61 and any combination of these (See Note B3)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.20	Of total plastic parts' weight >25g, recycled material content is 8.5 %.			
P7.21	Of total plastic parts' weight >25g, biobased material content is 0%.			
P7.22	Light sources are free from mercury If mercury is used specify: Number of lamps: and max. mercury content per lamp: mg	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P8	Batteries			
P8.1*	Battery chemical composition: lithium ion, lithium/manganese dioxide			<input type="checkbox"/>
P8.2	Batteries meet the requirements of the following voluntary program/s:			<input checked="" type="checkbox"/>

Note B2: IEC61249-2-21 has maximum limits for chlorine and bromine but does not address fluorine, iodine and astatine which are included in the group of halogens.

Note B3: 'Starting from January 2009. Risk phrases can be replaced by Hazard phrases according System (GHS), mandatory by December 2010.



Model number *	650 G3	
Issue date *	12/23/2016	Logo 

Product environmental attributes - Market requirements (continued) **Requirement met**

Item Yes No n.a.

P9 Energy consumption

9.1 For the product the following power levels or energy consumptions are reported:

Energy mode *	Power level at 100 V AC	Power level at 115 V AC	Power level at 230 V AC	Reference / Standard for energy modes and test method *	<input type="checkbox"/>
ENERGY STAR® On Mode * (System Short Idle)	6.42 W	6.29 W	6.66 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
ENERGY STAR® On Mode * (System Long Idle)	4.12 W	3.92 W	4.36 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
ENERGY STAR® Low Power Sleep Mode * (S3 - Windows "Standby") With Wake On LAN (WOL) Enabled	0.43 W	0.43 W	0.48 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
ENERGY STAR® System Off/Apparent Off Mode* (ACPI S5) With Wake On LAN(WOL) Enabled (Test Unit connected to AC Mains, AC adapter connected to notebook)	0.23 W	0.23 W	0.28 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
ETEC * Annual Energy Consumption (calculated value) for each input voltage	22.30 kWh/year	21.79 kWh/year	23.39 kWh/year	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
Display resolution* : Megapixels					<input checked="" type="checkbox"/>
Print Speed * : Images per minute					<input checked="" type="checkbox"/>
Default time to enter energy save mode: minutes				ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>

P9.2* Information about the energy save function is provided with the product.

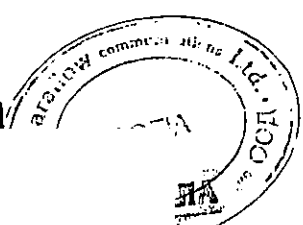
P9.3* The product meets the energy requirements of the following voluntary program/s:
 ENERGY STAR® version: 6.1 Tier: Product category: Notebook PC
 Others specify:

P10 Emissions

Noise emission – Declared according to ISO 9296


P10.1	Mode	Mode description	Declared A-weighted sound power level $L_{WA,d}$ (B)	Declared A-weighted sound pressure level L_{pAm} (dB)		<input type="checkbox"/>
				Operator position <input checked="" type="checkbox"/> Desktop <input type="checkbox"/> or Desk side <input type="checkbox"/>	Bystander positions <input type="checkbox"/> (only if product is not operator attended)	
	Idle	* Fans on, HDD spinning (if applicable)	* 3.1	24		<input type="checkbox"/>
	Operation	* Fans on, HDD spinning	* 3.3	26		<input type="checkbox"/>
	Other mode					<input type="checkbox"/>
Measured according to: <input checked="" type="checkbox"/> ISO7779 <input checked="" type="checkbox"/> ECMA-74 <input type="checkbox"/> Other (only if not covered by ECMA-74 with L_{pAm} measurement distance m)						

P10.2 The product meets the acoustic noise requirements of the following voluntary program/s:



000032

20

Model number *	650 G3	
Issue date *	12/23/2016	Logo 

Product environmental attributes - Market requirements (continued)		Requirement met		
Item		Yes	No	n.a.
Chemical emissions from printing products				
P10.3*	Test performed according to ECMA-328 (ISO/IEC 28360) standard <input type="checkbox"/> , other specify: <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P10.4	Typical emission rate (print phase) is (mg/h): Dust Ozone Styrene Benzene TVOC			<input checked="" type="checkbox"/>
P10.5	Chemical emission requirements of the following voluntary program/s are met for : Dust <input type="checkbox"/> Ozone <input type="checkbox"/> Styrene <input type="checkbox"/> Benzene <input type="checkbox"/> TVOC <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Electromagnetic emissions				
P10.6	Computer display meets the requirement for low frequency electromagnetic fields of the following voluntary program/s:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P11 Consumable materials for printing products				
P11.1*	A Safety Data Sheet (SDS) is available for the ink/toner preparation, even if not legally required (see P4.3).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P11.2*	Paper containing post-consumer recycled fibers can be used, provided that it meets the requirements of EN12281.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P11.3*	2-sided (duplex) printing/copying is an integrated product function.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P12 Ergonomics for computing products				
P12.1*	The display meets the ergonomic requirements of ISO 9241-307 for visual display technologies.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P12.2*	The physical input device meets the requirements of ISO 9995 and ISO 9241-410.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P13 Packaging and documentation				
P13.1*	Product packaging material type(s): <i>PAPER/Corrugated</i> weight (kg): 0.329 Product packaging material type(s): <i>PLASTIC/Polyethylene Expanded - EPE</i> weight (kg): 0.041 Product packaging material type(s): <i>PLASTIC/Polyethylene low density - LDPE</i> weight (kg): 0.013 Product packaging material type(s): <i>PLASTIC/Polypropylene - PP</i> weight (kg): 0.005			
P13.2*	Product plastic packaging is free from PVC.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P13.3*	Specify media for user and product documentation (tick box): Electronic <input checked="" type="checkbox"/> , Paper <input type="checkbox"/> , Other <input type="checkbox"/>			<input type="checkbox"/>
P13.4*	For paper user and product documentation, please specify contained percentage of post-consumer recycled fiber: 0%			<input type="checkbox"/>
Rev. P13.5	User and product documentation do not contain chlorine bleached paper	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

i

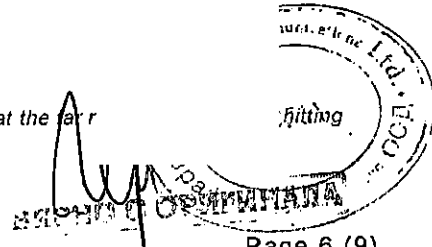
/

/



P14	Additional Information (See Note B4)															
All sections	1. Product environmental information contained in this declaration is valid as of the date the declaration is published. Changes to external standards referenced in the IT Eco-Declaration may invalidate some information contained in this declaration over time.															
P9	<p>1. Many PCs are offered in multiple configurations within the model family. Energy efficiency data listed in this declaration is for an ENERGY STAR® compliant configuration if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. For more information about HP's ENERGY STAR® qualified products, go to hp.com: http://www.hp.com/ and select the applicable market segments and product categories to find PC configurations that meet the ENERGY STAR® specifications.</p> <p>2. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured model.</p> <p>3. Energy Efficiency information published on the ECMA 370 The Eco Declaration represents a typically configured product base model meeting ENERGY STAR® specifications if offered within the model family. If optional components or modules are added, like extra hard disks or graphic cards etc, these can change the energy efficiency data listed above.</p> <p>4. Power consumption in the Off / Apparent Off mode is measured and reported with the network interface controller (NIC) WOL disabled.</p> <p>5. European Union Commission Regulation 1275/2008- Energy Efficiency Information:</p> <table border="1"> <thead> <tr> <th>Mode / Condition</th> <th>Power Consumption in Watts at 230 VAC Input Voltage</th> <th>Default Time to Mode / Condition (if applicable)</th> </tr> </thead> <tbody> <tr> <td>Off Mode (if applicable)</td> <td></td> <td>Not Applicable</td> </tr> <tr> <td>Standby Mode (if applicable)</td> <td>Not Applicable</td> <td>Not Applicable</td> </tr> <tr> <td>Network Standby / Sleep / Long Idle Mode if all wired network ports are connected and all wireless network ports are activated (if applicable)</td> <td></td> <td></td> </tr> <tr> <td>Network Standby / Sleep / Long Idle Mode (if applicable)</td> <td></td> <td></td> </tr> </tbody> </table> <p>6. European Union Commission Regulation 1275/2008- Wireless Network Instructions:</p> <p>Where applicable, activate and deactivate a wireless network using the instructions provided in the product user guide or the operating system. Information is also available at www.hp.com/support.</p>	Mode / Condition	Power Consumption in Watts at 230 VAC Input Voltage	Default Time to Mode / Condition (if applicable)	Off Mode (if applicable)		Not Applicable	Standby Mode (if applicable)	Not Applicable	Not Applicable	Network Standby / Sleep / Long Idle Mode if all wired network ports are connected and all wireless network ports are activated (if applicable)			Network Standby / Sleep / Long Idle Mode (if applicable)		
Mode / Condition	Power Consumption in Watts at 230 VAC Input Voltage	Default Time to Mode / Condition (if applicable)														
Off Mode (if applicable)		Not Applicable														
Standby Mode (if applicable)	Not Applicable	Not Applicable														
Network Standby / Sleep / Long Idle Mode if all wired network ports are connected and all wireless network ports are activated (if applicable)																
Network Standby / Sleep / Long Idle Mode (if applicable)																
P10	1. Acoustic noise information published on the ECMA 370 The Eco Declaration represents a typically configured product base model only. If optional items with moving parts are added, like extra hard disks or graphic cards with fans etc, these can change acoustic noise values for which HP can take no responsibility.															

Note B4: Additional lines may be inserted to declare further items, by positioning the cursor at the far right of the line and pressing the <Enter> key.



000034


Legal references Europe Annex B

Reference	Declaration item
2002/95/EC (ROHS Directive)	P1.1, P4.1
REACH, Annex XVII	P1.6, P1.8, P4.2
REACH, Annex XVII	P1.4
REACH, Annex XVII	P1.2
REACH, Annex XVII	P1.7
REACH, Annex XVII	P1.9
Regulation (EC) No. 2037/2000, 2038/2000, 2039/2000	P1.3
Norwegian regulation relating to restrictions on the use of certain dangerous chemicals 20.12.2002	P1.5
2006/66/EC (Battery and accumulators Directive)	P2.1, P2.2, P2.3, P3.4, P8.1
2006/95/EC (Low Voltage Directive)	P3.1, 3.4
2004/108/EEC (New EMC Directive)	P3.2, 3.4
1999/5/EC (R&TTE Directive)	P3.3, 3.4
"REACH" Regulation (1907/2006), annex VII	P1.10
(EC) No.1272/2008 regulation on classification, labeling and packaging (CLP)	P4.3
REACH article 31, annex II	P4.3
2004/12/EC (Directive on packaging and packaging waste)	P5.1
(97/129/EC) (Commission Decision on Identification System for Packaging Materials)	P5.2
2037/2000/EC Regulation on Substances that Deplete the Ozone Layer	P5.3
2002/96/EC (WEEE directive)	P3.4, P6.1
(EC) No.1272/2008 regulation on classification, labeling and packaging (CLP)	P7.19

THE ECO DECLARATION



Company environmental profile - THE ECO DECLARATION

Brand	HP	
Company name *	HP	
Contact information *	HP Environmental Contact Centre (ECC) environment@hp.com	
Internet site *	www.hp.com/hpinfo/globalcitizenship/environment/index.html	
Issue date *	2014-06	
Intended market *	<input checked="" type="checkbox"/> Global <input type="checkbox"/> Europe <input type="checkbox"/> Asia, Pacific & Japan <input type="checkbox"/> Americas <input type="checkbox"/> Other	
Additional information		

This is an uncontrolled copy when in printed form. Please refer to the contact information for the latest version.

The declaration may be published only when all rows and/or fields marked with an * are filled-in (n.a. for not applicable). Additional information regarding each item may be found under C6.

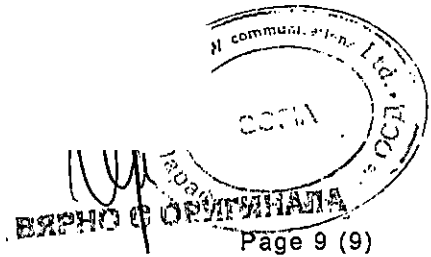
Quality control		Requirement met	
Item		Yes	No
QC1 *	The company enforces an internal quality control system to ensure the correctness of this eco declaration	<input checked="" type="checkbox"/>	<input type="checkbox"/>
QC2 *	The company is a member of an eco declaration system that enforces regular independent quality control.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Company environmental profile - Legal requirements		Requirement met		
Item		Yes	No	n.a.
C1	Product recycling			
C1.1*	The company participates in a system or has its own system for collection and recycling of end of life products in countries where the company puts them on the market and where required (see legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C2	Battery recycling			
C2.1*	The company participates in a system or has its own system for collection and recycling of batteries in countries where the company puts products on the market (see legal reference) or pays eco tax / fee where required.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C3	Packaging recycling			
C3.1*	The company participates in a system or has its own system for collection and recycling of packaging material in countries where the company puts products on the market and where required (see legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Company environmental profile - Market requirements		Requirement met		
Item		Yes	No	n.a.
C4	Environmental policy and environmental management			
C4.1*	The company has a documented environmental policy approved by the management.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C4.2*	The company has an environmental management system covering: Product development Manufacturing If so certified according to: <input checked="" type="checkbox"/> ISO 14001 <input type="checkbox"/> Other as specified in C6	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
C4.3	The company regularly publishes an environmental report. If so, it meets the recommendations of <input checked="" type="checkbox"/> The Global Reporting Initiative <input type="checkbox"/> Other as specified in C6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C5	Recycling			
C5.1*	Information about the product, battery & packaging take back system (C1, C2, C3) is available in printed or electronic format.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C6	Additional Information			
<p>HP is committed to responsible business practices and transparency in its global citizenship policies and performance. We have a long history of working with suppliers to improve their social and environmental (SER) performance, as well as improving industry standards. HP endorses the EICC Code of Conduct in its entirety, and we supplement it with additional requirements specific to freedom of association and HP's Student and Dispatch Worker Guidance Standard for Supplier Facilities in the People's Republic of China (PRC). HP also has a strong Global Human Rights Policy in place. HP sets expectations for its suppliers to establish policies and processes regarding conflict minerals. HP conducts due diligence on its supply chain annually including requesting information about our suppliers' own due diligence and the smelters and refiners used. HP became the first IT company to publish its supply chain smelter list. HP follows the Global Reporting Initiative (GRI) guidelines as a basis for reporting. The GRI index provides easy reference to HP's Living Progress Report (LPR) content. HP offers take back services of products and printing suppliers in some 70 countries. Please refer to HP's Living Progress Report for more details on our global efforts.</p>				

Legal references Europe Annex A

Reference	Declaration item
2002/96/EC (WEEE directive)	C1.1
2006/66/EC (Battery and accumulators Directive)	C1.2
2004/12/EC (Directive on packaging and packaging waste)	C1.3



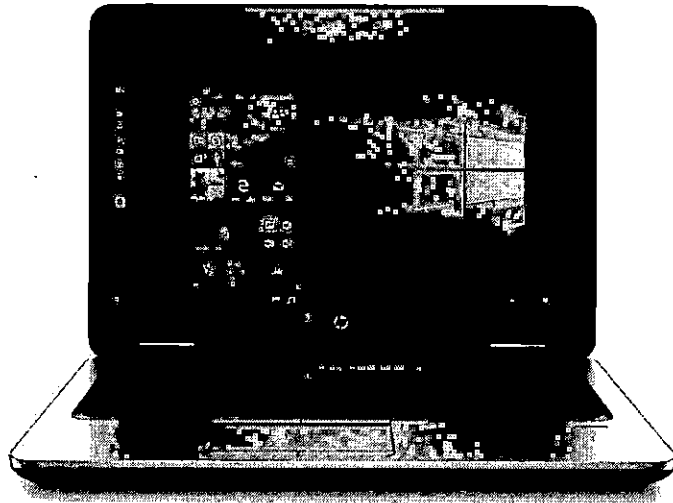
Datasheet

HP ProBook 640 G3 Notebook PC



The flexibility to meet business demands.

Get the most from your investment with configurations that support today's technology and legacy devices. The HP ProBook 640 is equipped with the newest security and productivity features and is compatible with your existing IT investments.



HP recommends Windows 10 Pro.

Blend new features with proven technology

- Simplify deployment of new PCs with the HP ProBook 640 that easily integrates into your current IT structure. Optional optical drives² and legacy ports like a standard VGA port and RJ-45 connection help reduce the costs of upgrading your PCs.

Mobilize your workforce

- Give your deskbound workforce the benefits of mobility without sacrificing performance or breaking the budget with 7th Gen Intel® Core™ i3/i5/i7 processors², expansive DDR4 memory, and peripherals like the HP UltraSlim dock³.

HP exclusive security and manageability

- Help prevent data breaches and downtime with HP BIOSphere Gen3⁴ and self-encrypting². Simplify management with HP configuration across the globe, available in more than 180 countries where HP conducts business.

Collaborate on the go

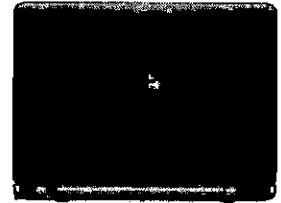
- Business doesn't stop when you are away from the office. HP Noise Cancellation Software, HP Audio Boost, Skype for business⁵, and a 720p webcam are collaboration tools that help you communicate clearly with colleagues.
- Be productive in any situation. Experience the new features of Windows 10 Pro¹ on the powerful, touch³ optional HP ProBook 640.
- Powerful 7th Gen Intel® Core™ i3/i5/i7 processors² and configurable options let you deploy the right configuration based on user's needs.
- Replace batteries less often and quickly recharge your HP ProBook 640 with an HP fast charging battery. You'll get up to 90% battery life in just 90 minutes of charging⁶.
- Help suppress ambient noise including keyboard clicks with HP Noise Cancellation software.
- HP Audio Boost balances loudness and clarity, and enhances bass for improved speech quality.
- Keep productivity high and downtime low with the fully integrated and automated features of the HP BIOSphere Gen3⁴ firmware ecosystem. Your PCs have extra protection thanks to automatic updates and security checks.
- Stand up to the workload with a ProBook that is designed to pass MIL-STD 810G testing⁷.



HP ProBook 640 G3 Notebook PC

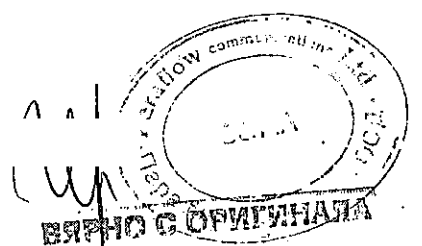
Specifications Table

HP recommends Windows 10 Pro.



Available Operating System	Windows 10 Pro 64 – HP recommends Windows 10 Pro. ¹ Windows 10 Home 64 ¹ Windows 10 Home Single Language 64 – HP recommends Windows 10 Pro. ¹ FreeDOS 2.0
Processor Family	7th Generation Intel® Core™ i7 processor; 7th Generation Intel® Core™ i5 processor; 7th Generation Intel® Core™ i3 processor
Available Processors^{3,4,23}	Intel® Core™ i7-7600U with Intel HD Graphics 620 (2.8 GHz, up to 3.9 GHz with Intel Turbo Boost Technology, 4 MB cache, 2 cores); Intel® Core™ i5-7300U with Intel HD Graphics 620 (2.6 GHz, up to 3.5 GHz with Intel Turbo Boost Technology, 3 MB cache, 2 cores); Intel® Core™ i5-7200U with Intel HD Graphics 620 (2.5 GHz, up to 3.1 GHz with Intel Turbo Boost Technology, 3 MB cache, 2 cores); Intel® Core™ i3-7100U with Intel HD Graphics 620 (2.4 GHz, 3 MB cache, 2 cores) (In accordance with Microsoft's support policy, HP does not support the Windows 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows 8 or Windows 7 drivers on http://www.support.hp.com .)
Chipset	Chipset is integrated with processor
Maximum Memory	Up to 16 GB DDR4-2133 SDRAM; 32 GB DDR4-2133 SDRAM. ^{2,24} Standard memory note: Dual channel support
Memory Slots	2 SODIMM
Internal Storage	up to 500 GB SATA (7200 rpm) ⁵ up to 500 GB SATA SED (7200 rpm) ⁵ up to 1 TB SATA (5400 rpm) ⁵ up to 128 GB M.2 SATA SSD ⁵ up to 256 GB M.2 SATA TLC SSD ⁵ 256 GB up to 512 GB M.2 PCIe NVMe TLC SSD ⁵
Optical Storage	DVD-ROM; DVD-Writer ⁹
Display	35.56 cm (14") diagonal HD SVA eDP anti-glare slim LED-backlit with WWAN (1366 x 768); 35.56 cm (14") diagonal HD SVA eDP anti-glare slim LED-backlit with camera and WWAN (1366 x 768); 35.56 cm (14") diagonal FHD SVA eDP anti-glare slim with WWAN (1920 x 1080); 35.56 cm (14") diagonal FHD SVA eDP anti-glare slim with camera and WWAN (1920 x 1080); 35.56 cm (14") diagonal FHD SVA eDP slim LED-backlit touch screen with camera and WWAN (1920 x 1080) ⁵
Available Graphics	Integrated: Intel® HD Graphics 620 ⁵ Discrete: AMD Radeon™ R7 M465 (2 GB GDDR5 dedicated) ⁵
Wireless Technologies	HP iL4132 LTE/HSPA+ 4G Mobile Broadband; HP hs3210 WW HSPA+ Mobile Broadband; Intel® Dual Band Wireless-AC 8265 802.11 a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 4.2 Combo (vPro™ and non-vPro™); Realtek 802.11b/g/n (1x1) and Bluetooth® 4.0 Combo (non-vPro™); Intel® Dual Band Wireless-AC 7265 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo (non-vPro™) ^{11,12}
Communications	Intel® Ethernet Connection i219-LM 10/100/1000; Intel® Ethernet Connection i219-V 10/100/1000 ¹³
Expansion Slots	1 SD Supports SD, SDHC, SDXC
Ports and Connectors	1 USB Type-C™; 2 USB 3.0 (1 charging); 1 RJ-45; 1 docking connector; 1 headphone/microphone combo; 1 4.5 mm AC power connector; 1 DisplayPort™; 1 VGA (Cables are not included.)
Input Device	HP Premium Spill-resistant Keyboard with Touchpad and drain; HP Premium Spill-resistant Backlit Keyboard with Touchpad and DuraKeys with drain; HP Premium Spill-resistant Backlit Keyboard with Dual Point and DuraKeys with drain Touchpad with on/off button, two-way scroll, taps and gestures enabled, two-finger scrolling, two finger zoom (pinch)
Webcam	720p HD webcam (optional) ⁵
Available Software	HP 3D DriveGuard (Windows required); HP ePrint Driver + JetAdvantage; HP Hotkey Support; HP Recovery Manager; HP Support Assistant; HP Noise Cancellation; HP Velocity; For a complete list of preinstalled software, please refer to the quick spec document for this product. ¹⁴
Security Management	HP Device Access Manager; HP BIOSphere; HP Secure Erase; Absolute persistence module; HP Client Security Gen3; Fingerprint reader; Security lock slot; TPM 2.0; Smart card reader ^{15,19,20,25}
Power	45 W Smart AC adapter; 65 W HP Smart AC adapter ¹² HP 3-cell, 48 Wh Long Life Li-ion ¹¹
Dimensions	34 x 23.7 x 2.7 cm
Weight	Starting at 1.95 kg (Weight varies by configuration and components)
Energy Efficiency Compliance	ENERGY STAR® certified; EPEAT® Gold
Warranty	1 year standard parts and labour limited warranty, depending on country (Upgrades available), 1 year limited warranty on primary battery

000039





HP ProBook 640 G3 Notebook PC

HP recommends Windows 10 Pro.

Accessories and services (not included)

HP UltraSlim Docking Station



Designed exclusively for ultraslim HP EliteBook Notebook PCs, the HP UltraSlim Docking Station expands display, network, and device connectivity so you can be more productive throughout the day—all through a simple one-click slide-in side dock.

Product number: D9V32AA

HP Comfort Grip Wireless Mouse



The HP Comfort Grip Wireless Mouse features a 30-month battery life and a bold, modern design that integrates seamlessly with HP Business Notebooks.

Product number: H2L63AA

HP 65W Smart AC Adapter



Feed your notebook with controlled servings of electricity. HP's new 65W Smart AC Adapter regulates power and offsets electrical spikes, is designed to reduce cable stress, and includes a special dongle to support current and prior HP models — perfect for replacing your notebook's power adapter or as a needed back-up.

Product number: H6V89AA

HP 15.6 Executive Black Top Load



Protect your bag's contents while you're on the move with the black HP Executive Top Load, which has a lockable, double-teeth zippered notebook compartment, secure RFID pocket to safeguard your ID, and a discrete pocket for an optional tracking device.¹

Product number: P6N18AA

HP UC Wireless Duo Headset



Take a call up to 100 feet away from your desk or phone with the HP UC Wireless Duo Headset and get premium stereo sound and noise cancelling even in the busiest environments, in a design that's comfortable to wear throughout the work day.²

Product number: W3K09AA

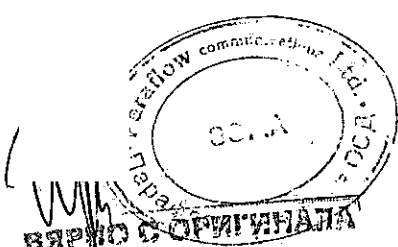
HP 3 year Next Business Day Onsite Hardware Support for Notebooks

Receive 3 years of next business day onsite HW support from an HP-qualified technician for your computing device, if the issue cannot be solved remotely.

Product number: U4391E



Handwritten scribbles and marks at the bottom of the page.



000040



HP ProBook 640 G3 Notebook PC

HP recommends Windows 10 Pro.

Messaging Footnotes

- ¹ Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com>.
- ² Multicore is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
- ³ Sold separately or as an optional feature.
- ⁴ HP BIOSphere Gen3 features may vary depending on the PC platform and configurations.
- ⁵ Usage for business subscription required.
- ⁶ Recharges the battery up to 90% within 90 minutes when the system is off or in standby mode when used with the power adapter provided with the notebook. After charging has reached 90% capacity, charging speed will return to normal. Charging time may vary +/-10% due to System tolerance.
- ⁷ MIL-STD testing is pending and is not intended to demonstrate fitness for U.S. Department of Defense contract requirements or for military use. Test results are not a guarantee of future performance under these test conditions. Damage under the MIL STD test conditions or any accidental damage requires an optional HP Accidental Damage Protection Care Pack.

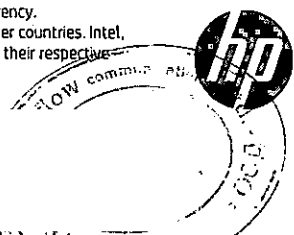
Technical specifications disclaimers

- ¹ Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com>.
- ² Multicore is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
- ³ Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.
- ⁴ HD content required to view HD images.
- ⁵ AMD Dynamic Switchable Graphics technology requires an Intel processor plus an AMD Radeon™ discrete graphics configuration and is not available on FreeDOS and Linux OS. With AMD Dynamic Switchable Graphics technology, full enablement of all discrete graphics video and display features may not be supported on all systems (e.g. OpenGL applications will run on the integrated GPU or the APU as the case may be).
- ⁶ Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed.
- ⁷ For hard drives and solid state drives, GB = 1 billion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10) of system disk is reserved for the system recovery software.
- ⁸ DVD-Writer does not support DVD-RAM. Don't copy copyright-protected materials.
- ⁹ Battery is internal and not replaceable by customer. Serviceable by warranty.
- ¹⁰ Availability may vary by country.
- ¹¹ HP ePrint Driver requires an Internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see www.hp.com/go/eprintcenter).
- ¹² HP Client Catalog not preinstalled, coming soon at <http://www.hp.com/go/clientmanagement>
- ¹³ LANDESK Management subscription required.
- ¹⁴ HP BIOSphere available only on business PCs with HP BIOS.
- ¹⁵ Secure Erase for the methods outlined in the National Institute of Standards and Technology Special Publication 800-88.
- ¹⁶ Absolute agent is shipped turned off, and will be activated when customers activate a purchased subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: <http://www.absolute.com/company/legal/agreements/computrace-agreement>. Data Delete is an optional service provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.
- ¹⁷ HP SoftPaq Download Manager (SDM); HP System Software Manager (SSM); HP Microsoft Integration Kit for Microsoft System Center Configuration Manager: Not preinstalled, however available for download at <http://www.hp.com/go/clientmanagement>.
- ¹⁸ NOTE: In accordance with Microsoft's support policy, HP does not support the Windows 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows 8 or Windows 7 drivers on <http://www.support.hp.com>.
- ¹⁹ 32 GB DDR4-2133 SDRAM is planned to be available in the second quarter of 2017.
- ²⁰ EPEAT® registered where applicable. EPEAT registration varies by country. See www.epeat.net for registration status by country. See HP's 3rd party option store for solar energy accessory www.hp.com/go/option.
- ²¹ Lock must be purchased separately.

Sign up for updates
www.hp.com/go/getupdated

Copyright © 2018 HP Development Company, L.P. The only warranties for HP products are set forth in the express limited warranty statements accompanying such products. Nothing herein should be construed as constituting an additional warranty.
 HP shall not be liable for technical or editorial errors or omissions contained herein.
 Bluetooth is a trademark of its proprietor and used by HP Inc. under license. AMD, Radeon and the AMD logo are trademarks of Advanced Micro Devices, Inc. USB Type-C™ and USB-C™ are trademarks of USB Implementers Forum. ENERGY STAR is a registered trademark of the U.S. Environmental Protection Agency.
 DisplayPort™ and the DisplayPort™ logo are trademarks owned by the Video Electronics Standards Association (VESA®) in the United States and other countries. Intel, Core and Intel vPro are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries. All other trademarks are the property of their respective owners.

4AA6-8961EEE, January 2018



Handwritten signature and the number 000041.

ВЕРНО С ОРНИТНАТА



ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ
в съответствие с ISO / IEC 17050-1 и EN 17050-1

Doc #: HSN-I05C-4-R3Превод/bg

Наименование на производителя: **HP Inc.**
Производителя Адрес: 1501 Page Mill Road, Palo Alto, CA 94303-1112 USA

заявява, че продуктът

Име на продукта и модел:²⁾ HP ProBook 640 G3 Notebook PC
Нормативен номер на модела:¹⁾ HSN-I05C-4
Опции на продукта: Виж приложение I

съответства на следните спецификации на продукта и регламенти:

Безопасност:

IEC 60950-1:2005 +A1:2009 +A2:2013
EN 60950-1:2006 +A11:2009 +A1:2010
+A12:2011 +A2:2013
EN 50364:2010
EN 50566:2013
EN 62311:2008
EN 62479:2010

EMC

EN 301 489-1 V2.1.1
EN 301 489-3 V2.1.1
EN 301 489-17 V3.1.1
EN 301 489-52 V1.1.0
FCC CFR 47 Part 15
ICES-003, Issue 6:2016

Радиочестотният спектър

EN 62209-2:2010
EN 300 328 V2.1.1
EN 300 330 V2.1.1
EN 301 511 V12.5.1
EN 301 893 V2.1.0
EN 301 908-1 V11.1.1
EN 301 908-2 V11.1.1
EN 301 908-13 V11.1.1
EN 303 413 V1.1.0

екодизайна

Регламент (EO) No 617/2013
EN 62623:2013
Регламент (EC) No 1275/2008
EN 50564:2011
IEC 62301:2011

RoHS

EN 50581:2012

Този апарат в съответствие с изискванията на Директивата RED 2014/53/EC, Директивата за екодизайна 2009/125/OT, Директивата RoHS 2011/65/EC и носи маркировката съответно **CE**.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Допълнителна информация:

- 1) Този продукт има нормативен номер на модела, който остава с регулаторните аспекти на дизайн. Номер на Нормативен модел е идентификатора основен продукт в нормативната документация и протоколи от изпитвания, този брой не трябва да се бърка с пазарното име или номера на продукта.
- 2) Нотифицираният орган **SGS Fimko Ltd.** с номер **0598** е извършена оценка на съответствието (съгласно приложение III, поради липсващи хармонизирани стандарти) и издаде сертификата за ЕС изследване на типа: RED-1041
- 3) Този продукт е изпробван в типична HP среда във връзка с хост система HP.

Palo Alto, CA
14-06-2017

проверка на подписа върху оригинала на декларацията,

приложена
Gilles Soulard, Manager
Product Compliance Center

Local контакт за регулаторни теми само:

EU: HP Deutschland GmbH, HP HQ-TRE, 71025 Boeblingen, Germany
U.S.: HP Inc., 1501 Page Mill Road, Palo Alto 94304, U.S.A. 650-857-1501

www.hp.eu/certificates




ВЪРХО С ОРИГИНАЛА

000042

THE ECO DECLARATION

Product environmental attributes – THE ECO DECLARATION

The declaration may be published only when all rows and/or fields marked with an * are filled-in (n.a. for not applicable).
Additional information regarding each item may be found under P14.

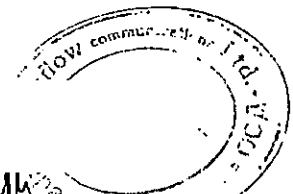
Brand *	HP	Logo 
Company name *	HP	
Contact information *	HP Environmental Contact Center environment@hp.com	
Internet site *	http://www.hp.com/hpinfo/globalcitizenship/environment/	
Additional Information		

The company declares (based on product specification or test results based obtained from sample testing), that the product conforms to the statements given in this declaration.	
Type of product *	Notebook PC
Commercial name *	HP ProBook 640 G3 Notebook PC
Model number *	640 G3
Issue date *	12/24/2016
Intended market *	<input checked="" type="checkbox"/> Global <input type="checkbox"/> Europe <input type="checkbox"/> Asia, Pacific & Japan <input type="checkbox"/> Americas <input type="checkbox"/> Other
Additional Information	


This is an uncontrolled copy when in printed form. Please refer to the contact information for the latest version.

Quality Control Item	Requirement met	Yes	No
		QC1 * The company enforces an internal quality control scheme to ensure the correctness of this eco declaration	<input checked="" type="checkbox"/>
QC2 * The company is a member of an eco declaration system that enforces regular independent quality control such as organized by IT-Företagen (see www.itecodeclaration.org).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

000043

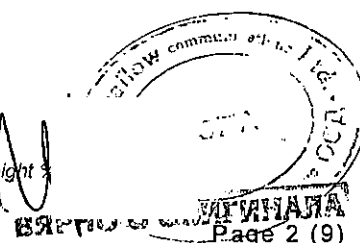


ВЪРНО С-ОРИГИНАЛА

Model number *	640 G3		
Issue date *	12/24/2016	Logo	

Product environmental attributes - Legal requirements		Requirement met		
Item		Yes	No	n.a.
P1	Hazardous substances and preparations			
P1.1*	Products do not contain more than; 0.1% lead, 0.01% cadmium, 0.1% mercury, 0.1% hexavalent chromium, 0.1% polybrominated biphenyls (PBB) or 0.1% polybrominated diphenyl ethers (PBDE). (See legal reference and Note B1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.2*	Products do not contain Asbestos (see legal reference). Comment: Legal reference has no maximum concentration value.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.3*	Products do not contain Ozone Depleting Substances: Chlorofluorocarbons (CFC), hydrobromofluorocarbons (HBFC), hydrochlorofluorocarbons (HCFC), Halons, carbontetrachloride, 1,1,1-trichloroethane, methyl bromide (see legal reference). Comment: Legal reference has no maximum concentration values.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.4*	Products do not contain more than; 0.005% polychlorinated biphenyl (PCB), 0.005% polychlorinated terphenyl (PCT) in preparations (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.5*	Products do not contain more than 0.1% short chain chloroparaffins (SCCP) with 10-13 carbon atoms in the chain containing at least 48% per mass of chlorine in the SCCP (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.6*	Textile and leather parts with direct skin contact do not contain Tri-(2,3-dibromopropyl)-phosphate (TRIS), Tris-(aziridinyl)-phosphineoxide (TEPA), polybrominated biphenyl (PBB) (see legal reference). Comment: Legal reference has no maximum concentration values.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P1.7*	Textile and leather parts with direct skin contact do not contain more than 0.003% Azo colorants that split aromatic amines. (See legal reference and Note B1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P1.8*	Wooden parts do not contain arsenic and chromium as a wood preservation treatment as well as pentachlorophenol and derivatives (see legal reference). Comment: Legal reference has no maximum concentration values.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P1.9*	Parts with direct and prolonged skin contact do not release nickel in concentrations above 0.5 microgram/cm ² /week (see legal reference). Comment: Max limit in legal reference when tested according to EN1811:1998.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P1.10*	REACH Article 33 information about substances in articles is available at (add URL or mail contact): http://www.hp.com/hpinfo/globalcitizenship/environment/productdata/reachdesktop-pcs.html	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2	Batteries			
P2.1*	If the product contains a battery or an accumulator, it is labeled with the disposal symbol and if it contains more than 0.0005% of mercury (for button cells only) by weight, or more than 0.004% of lead, it shall be marked with the chemical symbol for the metal concerned, Hg or Pb. Information on proper disposal is provided in user manual. (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2.2*	Button cells used in the product do not contain more than 2% by weight of mercury. Other batteries or accumulators do not contain more than 0.0005% of mercury or 0.002% of cadmium. (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2.3*	Batteries and accumulators are easily removable by either users or service providers (as dependent on the design of the product). Exception: Batteries that are permanently installed for safety, performance, medical or data integrity reasons do not have to be "easily removable". (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3	Safety, EMC connection to the telephone network and labeling			
P3.1*	The product complies with legally required safety standards as specified (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.2*	The product complies with legally required standards for electromagnetic compatibility (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.3*	If product is intended for connection to a public telecom network or contains a radio transmitter, it complies with legally required standards for radio and telecommunication devices (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.4*	The product is labeled to show conformance with applicable legal requirements (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P4	Consumable materials			
P4.1*	If a photo conductor (drum, belt etc.) is used in the product, it does not contain cadmium max 0.01% (see legal reference and Note B1).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P4.2*	If ink/toner is used in the product, it does not contain cadmium max 0.1% by weight (see legal reference).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P4.3*	If the ink/toner formulation/preparation is classified as hazardous according to applicable regulations, the product/packaging is adequately labeled and a Safety Data Sheet (SDS) in accordance with these requirements is available (see legal reference).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P5	Product packaging			
P5.1*	Packaging and packaging components do not contain more than 0.01% lead, mercury, cadmium and hexavalent chromium by weight of these together.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P5.2*	Plastic packaging material is marked according to ISO 11469 referring ISO 1043 (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P5.3*	The product packaging material is free from ozone depleting substances as specified in the Montreal Protocol (see legal reference). Comment: Legal reference has no maximum concentration values.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note B1: Restriction applies to the homogeneous material, unless other specified and expressed in weight %



Handwritten mark resembling a stylized 'E' or '3'.

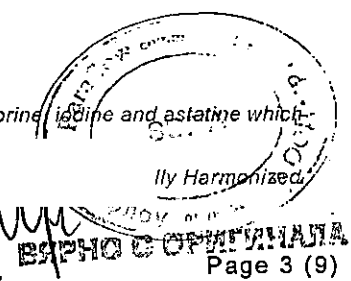
Model number *	640 G3	
Issue date *	12/24/2016	Logo 


Product environmental attributes - Market requirements - Environmental conscious design		Requirement met		
Item	*=mandatory to fill in. Additional information regarding each item may be found under P14.	Yes	No	n.a.
P6	Treatment Information			
P6.1*	Information for recyclers/treatment facilities is available (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7	Design			
	Disassembly, recycling			
P7.1*	Parts that have to be treated separately are easily separable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.2*	Plastic materials in covers/housing have no surface coating.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.3*	Plastic parts >100g consist of one material or of easily separable materials.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.4*	Plastic parts >25g have material codes according to ISO 11469 referring ISO 1043.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.5	Plastic parts are free from metal inlays or have inlays that can be removed with commonly available tools.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.6*	Labels are easily separable. (This requirement does not apply to safety/regulatory labels).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Product lifetime			
P7.7*	Upgrading can be done e.g. with processor, memory, cards or drives	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.8*	Upgrading can be done using commonly available tools	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.9.	Spare parts are available after end of production for: 5 years			<input type="checkbox"/>
P7.10	Service is available after end of production for: years			<input checked="" type="checkbox"/>
	Material and substance requirements			
P7.11*	Product cover/housing material type: Material type: PC+ABS Material type: PC+ABS FR(30) Material type: FR(30)/PC+ABS C7230P			
P7.12	Electrical cable insulation materials of power cables are PVC free.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.13	Electrical cable insulation materials of signal cables are PVC free	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.14	All cover/housing plastic parts >25g are free from chlorine and bromine.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.15	All printed circuit boards (without components) >25g are halogen free. as defined in IEC61249-2-21. (See Note B2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.16	Flame retarded plastic parts >25g in covers / housings are marked according ISO 1043-4: Marking: C7230P PC+ABS FR(40) / FR3021 PC+ABS FR(40),	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.17	Alt. 1 Chemical specifications of flame retardants in printed circuit boards >25g (without components): TBBPA (additive) <input type="checkbox"/> , TBBPA (reactive) <input type="checkbox"/> , Other; chemical name: , CAS #: Alt. 2 Chemical specifications of flame retardants in printed circuit boards (without components) >25g according ISO 1043-4: FR(40)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.18	Alt. 1 Flame retarded plastic parts >25g contain the following flame retardant substances/preparations in concentrations above 0.1%: Comment: No legal limits exist, this is a market requirement. 1. Chemical name: , CAS #: 2. Chemical name: , CAS #: 3. Chemical name: , CAS #: Alt. 2 Chemical specifications of flame retardants in plastic parts >25g according ISO 1043-4: C7230P PC+ABS FR(40) / FR3021 PC+ABS FR(40), FR3021 PC+ABS FR(40)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.19	Plastic parts >25g are free from flame retardant substances/ preparations above 0.1% classified as R45, R40, R46, R48, R50, R51, R53, R60, R61 and any combination of these (See Note B3)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.20	Of total plastic parts' weight >25g, recycled material content is 0%.			
P7.21	Of total plastic parts' weight >25g, biobased material content is 0%.			
P7.22	Light sources are free from mercury If mercury is used specify: Number of lamps: and max. mercury content per lamp: mg	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P8	Batteries			
P8.1*	Battery chemical composition: lithium ion, lithium/manganese dioxide			<input type="checkbox"/>
P8.2	Batteries meet the requirements of the following voluntary program/s:			<input checked="" type="checkbox"/>

Note B2: IEC61249-2-21 has maximum limits for chlorine and bromine but does not address fluorine, iodine and astatine which are included in the group of halogens.

Note B3: Starting from January 2009, Risk phrases can be replaced by Hazard phrases according to the Globally Harmonized System (GHS), mandatory by December 2010.

000045



Model number *	640 G3	
Issue date *	12/24/2016	Logo 

Product environmental attributes - Market requirements (continued) **Requirement met**

Item Yes No n.a.

P9 Energy consumption

9.1 For the product the following power levels or energy consumptions are reported:

Energy mode *	Power level at 100 V AC	Power level at 115 V AC	Power level at 230 V AC	Reference / Standard for energy modes and test method *	<input type="checkbox"/>
ENERGY STAR® On Mode * (System Short Idle)	5.53 W	5.53 W	5.95 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
ENERGY STAR® On Mode * (System Long Idle)	3.56 W	3.47 W	3.71 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
ENERGY STAR® Low Power Sleep Mode * (S3 - Windows "Standby") With Wake On LAN (WOL) Enabled	0.53 W	0.53 W	0.58 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
ENERGY STAR® System Off/Apparent Off Mode* (ACPI S5) With Wake On LAN(WOL) Enabled (Test Unit connected to AC Mains, AC adapter connected to notebook)	0.36 W	0.36 W	0.41 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
ETEC * Annual Energy Consumption (calculated value) for each input voltage	20.07 kWh/year	19.98 kWh/year	21.55 kWh/year	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
Display resolution* : Megapixels					<input checked="" type="checkbox"/>
Print Speed * : Images per minute					<input checked="" type="checkbox"/>
Default time to enter energy save mode: minutes				ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>

P9.2* Information about the energy save function is provided with the product.

P9.3* The product meets the energy requirements of the following voluntary program/s:
 ENERGY STAR® version: 6.1 Tier: Product category: Notebook PC
 Others specify:

P10 Emissions


Noise emission – Declared according to ISO 9296

P10.1	Mode	Mode description	Declared A-weighted sound power level L_{WAd} (B)	Declared A-weighted sound pressure level L_{pAm} (dB)		<input type="checkbox"/>
				Operator position <input checked="" type="checkbox"/> Desktop <input checked="" type="checkbox"/> or Desk side <input type="checkbox"/>	Bystander positions <input type="checkbox"/> (only if product is not operator attended)	
	Idle	* Fans on, HDD spinning (if applicable)	* 2.8	18		<input type="checkbox"/>
	Operation	* Fans on, HDD spinning	* 2.8	19		<input type="checkbox"/>
	Other mode					<input type="checkbox"/>
Measured according to: <input checked="" type="checkbox"/> ISO7779 <input checked="" type="checkbox"/> ECMA-74 <input type="checkbox"/> Other (only if not covered by ECMA-74 with L_{pAm} measurement distance m)						

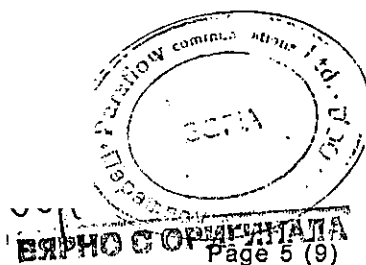
P10.2 The product meets the acoustic noise requirements of the following voluntary program/s:



СЕРТИФИКАЦИЯ
 СИСТЕМА ЗА УПРАВЛЕНИЕ НА ЕНЕРГИЯТА
 ENVIRO-PROTECT

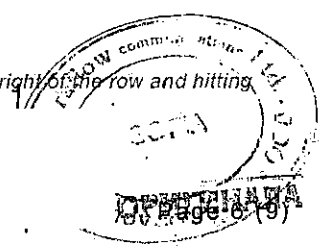
Model number *	640 G3	
Issue date *	12/24/2016	Logo 

Product environmental attributes - Market requirements (continued)		Requirement met		
Item		Yes	No	n.a.
Chemical emissions from printing products				
P10.3*	Test performed according to ECMA-328 (ISO/IEC 28360) standard <input type="checkbox"/> , other specify:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P10.4	Typical emission rate (print phase) is (mg/h): Dust Ozone Styrene Benzene TVOC			<input checked="" type="checkbox"/>
P10.5	Chemical emission requirements of the following voluntary program/s are met for : Dust <input type="checkbox"/> Ozone <input type="checkbox"/> Styrene <input type="checkbox"/> Benzene <input type="checkbox"/> TVOC <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Electromagnetic emissions				
P10.6	Computer display meets the requirement for low frequency electromagnetic fields of the following voluntary program/s:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P11 Consumable materials for printing products				
P11.1*	A Safety Data Sheet (SDS) is available for the ink/toner preparation, even if not legally required (see P4.3).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P11.2*	Paper containing post-consumer recycled fibers can be used, provided that it meets the requirements of EN12281.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P11.3*	2-sided (duplex) printing/copying is an integrated product function.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P12 Ergonomics for computing products				
P12.1*	The display meets the ergonomic requirements of ISO 9241-307 for visual display technologies.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P12.2*	The physical input device meets the requirements of ISO 9995 and ISO 9241-410.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P13 Packaging and documentation				
P13.1*	Product packaging material type(s): <i>PAPER/Corrugated</i> weight (kg): 0.326 Product packaging material type(s): <i>PLASTIC/Polyethylene Expanded - EPE</i> weight (kg): 0.042 Product packaging material type(s): <i>PLASTIC/Polyethylene low density - LDPE</i> weight (kg): 0.015 Product packaging material type(s): <i>PLASTIC/Polypropylene - PP</i> weight (kg): 0.004			
P13.2*	Product plastic packaging is free from PVC.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P13.3*	Specify media for user and product documentation (tick box): Electronic <input checked="" type="checkbox"/> . Paper <input type="checkbox"/> . Other <input type="checkbox"/>			<input type="checkbox"/>
P13.4*	For paper user and product documentation, please specify contained percentage of post-consumer recycled fiber: 0%			<input type="checkbox"/>
Rev. P13.5	User and product documentation do not contain chlorine bleached paper	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



P14	Additional information (See Note B4)															
All sections	1. Product environmental information contained in this declaration is valid as of the date the declaration is published. Changes to external standards referenced in the IT Eco-Declaration may invalidate some information contained in this declaration over time.															
P9	<p>1. Many PCs are offered in multiple configurations within the model family. Energy efficiency data listed in this declaration is for an ENERGY STAR® compliant configuration if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. For more information about HP's ENERGY STAR® qualified products, go to hp.com: http://www.hp.com/ and select the applicable market segments and product categories to find PC configurations that meet the ENERGY STAR® specifications.</p> <p>2. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured model.</p> <p>3. Energy Efficiency information published on the ECMA 370 The Eco Declaration represents a typically configured product base model meeting ENERGY STAR® specifications if offered within the model family. If optional components or modules are added, like extra hard disks or graphic cards etc, these can change the energy efficiency data listed above.</p> <p>4. Power consumption in the Off / Apparent Off mode is measured and reported with the network interface controller (NIC) WOL disabled.</p> <p>5. European Union Commission Regulation 1275/2008- Energy Efficiency Information:</p> <table border="1"> <thead> <tr> <th>Mode / Condition</th> <th>Power Consumption in Watts at 230 VAC Input Voltage</th> <th>Default Time to Mode / Condition (if applicable)</th> </tr> </thead> <tbody> <tr> <td>Off Mode (if applicable)</td> <td></td> <td>Not Applicable</td> </tr> <tr> <td>Standby Mode (if applicable)</td> <td>Not Applicable</td> <td>Not Applicable</td> </tr> <tr> <td>Network Standby / Sleep / Long Idle Mode if all wired network ports are connected and all wireless network ports are activated (if applicable)</td> <td></td> <td></td> </tr> <tr> <td>Network Standby / Sleep / Long Idle Mode (if applicable)</td> <td></td> <td></td> </tr> </tbody> </table> <p>6. European Union Commission Regulation 1275/2008- Wireless Network Instructions:</p> <p>Where applicable, activate and deactivate a wireless network using the instructions provided in the product user guide or the operating system. Information is also available at www.hp.com/support.</p>	Mode / Condition	Power Consumption in Watts at 230 VAC Input Voltage	Default Time to Mode / Condition (if applicable)	Off Mode (if applicable)		Not Applicable	Standby Mode (if applicable)	Not Applicable	Not Applicable	Network Standby / Sleep / Long Idle Mode if all wired network ports are connected and all wireless network ports are activated (if applicable)			Network Standby / Sleep / Long Idle Mode (if applicable)		
Mode / Condition	Power Consumption in Watts at 230 VAC Input Voltage	Default Time to Mode / Condition (if applicable)														
Off Mode (if applicable)		Not Applicable														
Standby Mode (if applicable)	Not Applicable	Not Applicable														
Network Standby / Sleep / Long Idle Mode if all wired network ports are connected and all wireless network ports are activated (if applicable)																
Network Standby / Sleep / Long Idle Mode (if applicable)																
P10	1. Acoustic noise information published on the ECMA 370 The Eco Declaration represents a typically configured product base model only. If optional items with moving parts are added, like extra hard disks or graphic cards with fans etc, these can change acoustic noise values for which HP can take no responsibility.															

Note B4: Additional lines may be inserted to declare further items, by positioning the cursor at the far right of the row and hitting the <Enter> key.



Legal references Europe Annex B

Reference	Declaration item
2002/95/EC (ROHS Directive)	P1.1, P4.1
REACH, Annex XVII	P1.6, P1.8, P4.2
REACH, Annex XVII	P1.4
REACH, Annex XVII	P1.2
REACH, Annex XVII	P1.7
REACH, Annex XVII	P1.9
Regulation (EC) No. 2037/2000, 2038/2000, 2039/2000	P1.3
Norwegian regulation relating to restrictions on the use of certain dangerous chemicals 20.12.2002	P1.5
2006/66/EC (Battery and accumulators Directive)	P2.1, P2.2, P2.3, P3.4, P8.1
2006/95/EC (Low Voltage Directive)	P3.1, 3.4
2004/108/EEC (New EMC Directive)	P3.2, 3.4
1999/5/EC (R&TTE Directive)	P3.3, 3.4
"REACH" Regulation (1907/2006), annex VII	P1.10
(EC) No.1272/2008 regulation on classification, labeling and packaging (CLP)	P4.3
REACH article 31, annex II	P4.3
2004/12/EC (Directive on packaging and packaging waste)	P5.1
(97/129/EC) (Commission Decision on Identification System for Packaging Materials)	P5.2
2037/2000/EC Regulation on Substances that Deplete the Ozone Layer	P5.3
2002/96/EC (WEEE directive)	P3.4, P6.1
(EC) No.1272/2008 regulation on classification, labeling and packaging (CLP)	P7.19

THE ECO DECLARATION



Company environmental profile - THE ECO DECLARATION

Brand	HP	Logo
Company name *	HP	
Contact information *	HP Environmental Contact Centre (ECC) environment@hp.com	
Internet site *	www.hp.com/hpinfo/globalcitizenship/environment/index.html	
Issue date *	2014-06	
Intended market *	<input checked="" type="checkbox"/> Global <input type="checkbox"/> Europe <input type="checkbox"/> Asia, Pacific & Japan <input type="checkbox"/> Americas <input type="checkbox"/> Other	
Additional Information		

This is an uncontrolled copy when in printed form. Please refer to the contact information for the latest version.

The declaration may be published only when all rows and/or fields marked with an * are filled-in (n.a. for not applicable). Additional information regarding each item may be found under C6.

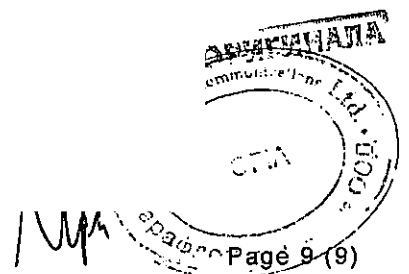
Quality control	Item	Requirement met	
		Yes	No
QC1 *	The company enforces an internal quality control system to ensure the correctness of this eco declaration	<input checked="" type="checkbox"/>	<input type="checkbox"/>
QC2 *	The company is a member of an eco declaration system that enforces regular independent quality control.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Company environmental profile - Legal requirements		Requirement met		
Item		Yes	No	n.a.
C1	Product recycling			
C1.1*	The company participates in a system or has its own system for collection and recycling of end of life products in countries where the company puts them on the market and where required (see legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C2	Battery recycling			
C2.1*	The company participates in a system or has its own system for collection and recycling of batteries in countries where the company puts products on the market (see legal reference) or pays eco tax / fee where required.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C3	Packaging recycling			
C3.1*	The company participates in a system or has its own system for collection and recycling of packaging material in countries where the company puts products on the market and where required (see legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Company environmental profile - Market requirements		Requirement met		
Item		Yes	No	n.a.
C4	Environmental policy and environmental management			
C4.1*	The company has a documented environmental policy approved by the management.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C4.2*	The company has an environmental management system covering: Product development Manufacturing If so certified according to: <input checked="" type="checkbox"/> ISO 14001 <input type="checkbox"/> Other as specified in C6	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	
C4.3	The company regularly publishes an environmental report. If so, it meets the recommendations of <input checked="" type="checkbox"/> The Global Reporting Initiative <input type="checkbox"/> Other as specified in C6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C5	Recycling			
C5.1*	Information about the product, battery & packaging take back system (C1, C2, C3) is available in printed or electronic format.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C6	Additional information			
<p><i>HP is committed to responsible business practices and transparency in its global citizenship policies and performance. We have a long history of working with suppliers to improve their social and environmental (SER) performance, as well as improving industry standards. HP endorses the EICC Code of Conduct in its entirety, and we supplement it with additional requirements specific to freedom of association and HP's Student and Dispatch Worker Guidance Standard for Supplier Facilities in the People's Republic of China (PRC). HP also has a strong Global Human Rights Policy in place. HP sets expectations for its suppliers to establish policies and processes regarding conflict minerals. HP conducts due diligence on its supply chain annually including requesting information about our suppliers' own due diligence and the smelters and refiners used. HP became the first IT company to publish its supply chain smelter list. HP follows the Global Reporting Initiative (GRI) guidelines as a basis for reporting. The GRI index provides easy reference to HP's Living Progress Report (LPR) content. HP offers take back services of products and printing suppliers in some 70 countries. Please refer to HP's Living Progress Report for more details on our global efforts.</i></p>				

Legal references Europe Annex A

Reference	Declaration item
2002/96/EC (WEEE directive)	C1.1
2006/66/EC (Battery and accumulators Directive)	C1.2
2004/12/EC (Directive on packaging and packaging waste)	C1.3



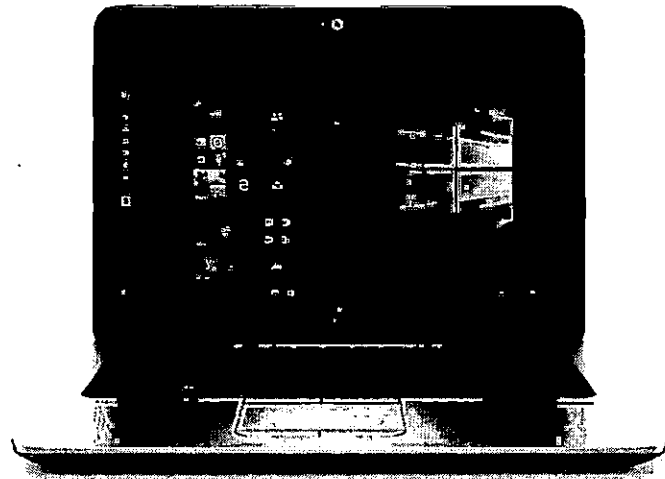
Datasheet

HP EliteBook 820 G4 Notebook PC



Security, manageability, and performance in an ultrathin design.

Elevate your business with an ultrathin, professional laptop that empowers users to perform at their very best. Enterprise-class features, comprehensive security, and a refined collaboration experience handle even the most demanding tasks with streamlined efficiency.



HP recommends Windows 10 Pro.

Strong security, powerful manageability

- Get powerful protection and simplified management from HP's most secure and manageable PCs. HP Sure Start Gen3² protects against BIOS attacks and easily manage devices through Microsoft SCCM with HP Manageability Integration Kit³.

High performance, high portability

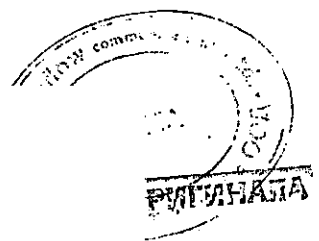
- Speed up demanding business applications and data. Combine high-performance and long battery life with 7th Gen Intel[®] Core™ processors⁴, and PCIe Gen3 solid state drives⁵. Amplify performance with up to 32 GB of DDR4 memory⁶.

Thin design, no adapters needed

- Give portability a whole new meaning with an ultrathin design that doesn't cut corners. Starting at an incredible 18.9mm, the HP EliteBook 820 includes several ports like full-size VGA, DisplayPort™, RJ-45, and enterprise docking.

See and hear them clearly

- Give your online collaboration the sharpness and clarity of a face-to-face meeting with HP Audio Boost, HP Noise Cancellation software, Audio by Bang & Olufsen, and an optional 720p webcam⁷.
- Power through your day with Windows 10 Pro⁸ and the powerful, sleek, thin, and light HP EliteBook 820.
- Start with a genuine HP BIOS every time. HP Sure Start Gen3² monitors in-memory BIOS, recovers the platform without user or admin intervention, restores the BIOS to a custom state, and is enterprise ready for centralized management.
- Improve the quality and security of custom Windows images with HP Image Assistant which assists ITDMs with image creation, identifies problems, and provides recommendations and remediation.
- Deploy the HP Manageability Integration Kit³ to help speed up image creation and the management of hardware, BIOS, and security when managing devices through Microsoft SCCM.
- Get up to 50% battery life in just 30 minutes of charging⁹ with an HP fast charging battery.
- HP Audio Boost balances loudness and clarity, and enhances bass for improved speech quality.
- Suppress background noise including keyboard clicks with HP Noise Cancellation Software.
- HP WorkWise⁷ is office intelligence rolled into one smartphone app to provide PC security, real-time PC performance information, and simplified printer driver installation for HP PC users.



000052^U 1

HP EliteBook 820 G4 Notebook PC

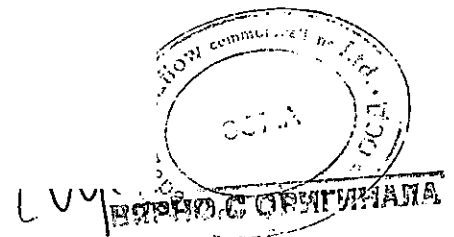
Specifications Table

HP recommends Windows 10 Pro.



Available Operating System	Windows 10 Pro 64 – HP recommends Windows 10 Pro. ¹ Windows 10 Home 64 ¹ FreeDOS 2.0
Processor Family	7th Generation Intel® Core™ i7 processor; 7th Generation Intel® Core™ i5 processor
Available Processors^{2,3}	Intel® Core™ i7-7600U with Intel HD Graphics 620 (2.8 GHz, up to 3.9 GHz with Intel Turbo Boost Technology, 4 MB cache, 2 cores); Intel® Core™ i5-7300U with Intel HD Graphics 620 (2.6 GHz, up to 3.5 GHz with Intel Turbo Boost Technology, 3 MB cache, 2 cores); Intel® Core™ i7-7500U with Intel HD Graphics 620 (2.7 GHz, up to 3.5 GHz with Intel Turbo Boost Technology, 4 MB cache, 2 cores); Intel® Core™ i5-7200U with Intel HD Graphics 620 (2.5 GHz, up to 3.1 GHz with Intel Turbo Boost Technology, 3 MB cache, 2 cores)
Chipset	Chipset is integrated with processor
Maximum Memory	Up to 32 GB DDR4-2133 SDRAM
Memory Slots	2 SODIMM
Internal Storage	up to 500 GB SATA (7200 rpm) ¹¹ up to 128 GB M.2 SATA SSD ¹¹ up to 360 GB M.2 PCIe NVMe TLC SSD ¹¹ up to 512 GB M.2 PCIe Gen 3x4 MLC SSD ¹¹ up to 512 GB M.2 PCIe NVMe MLC SSD ¹¹
Display	31.75 cm (12.5") diagonal HD SVA anti-glare slim LED-backlit (1366 x 768); 31.75 cm (12.5") diagonal HD SVA anti-glare slim LED-backlit with camera (1366 x 768); 31.75 cm (12.5") diagonal FHD UWVA anti-glare ultra slim LED-backlit (1920 x 1080); 31.75 cm (12.5") diagonal FHD UWVA anti-glare ultra slim LED-backlit with camera (1920 x 1080); 31.75 cm (12.5") diagonal FHD UWVA ultra slim with camera, Corning® Gorilla® Glass 4 LED-backlit touch screen (1920 x 1080) ^{5,6}
Available Graphics	Integrated: Intel® HD Graphics 620 ⁸
Wireless Technologies	HP i4120 Qualcomm® Snapdragon™ X5 LTE Mobile Broadband Module; HP i4132 LTE/HSPA+ Mobile Broadband; HP i43210 WW HSPA+ Mobile Broadband; Intel® Dual Band Wireless-AC 8265 802.11 a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 4.2 Combo (vPro™ and non-vPro™); Intel® Dual Band Wireless-AC 3168 802.11 a/b/g/n/ac (1x1) Wi-Fi® and Bluetooth® 4.2 Combo (non-vPro™); Near Field Communication (NFC) module ^{3,4,5,13} (Support for Miracast (Windows 10))
Communications	Intel® Ethernet Connection I219-V; Intel® Ethernet Connection I219-LM
Expansion Slots	1 SD; 1 external SIM (Supports SD, SDHC, SDXC)
Ports and Connectors	2 USB 3.1 Gen 1 (1 charging); 1 USB Type-C™; 1 DisplayPort™ 1.2; 1 VGA; 1 RJ-45; 1 docking connector; 1 headphone/microphone combo; 1 AC power (Cables are not included)
Input Device	HP Premium Keyboard with drain, optional backlit and DuraKeys Touchpad with on/off button, two-way scroll, taps and gestures enabled, two-finger scrolling, two finger zoom (pinch)
Webcam	720p HD webcam (optional) ^{3,6,7}
Available Software	HP Mobile Connect Pro (models with Windows 8.1 and Windows 10); HP 3D DriveGuard (Windows required); HP ePrint Driver+JetAdvantage; HP Hotkey Support; HP Recovery Manager; HP Support Assistant; HP Noise Cancellation; Buy Office; Bing Search; Skype; HP Workwise; HP Velocity; HP Image Assistant ^{12,14,15,24}
Security Management¹	HP Device Access Manager; HP BIOSphere with HP Sure Start Gen 3; HP Secure Erase; Preboot Authentication; Absolute Persistence Module; HP Client Security; HP Fingerprint Sensor; HP Password Manager; Fingerprint reader (select models); Security lock slot (lock must be purchased separately); TPM 2.0; Integrated smart card reader (active) ^{10,12,22,23}
Power	45 W Smart AC adapter (not available for China and India); 65 W Smart AC adapter (not available for China and India) HP Long Life 3-cell, 49 Wh Li-Ion Up to 14 hours and 45 minutes ²²
Dimensions	31 x 21.89 x 1.89 cm (Height varies depending upon where on the notebook the measurement is made.)
Weight	Starting at 1.26 kg (Weight varies by configuration and components)
Energy Efficiency Compliance	ENERGY STAR® certified configurations available
Warranty	3-year limited warranty (optional Care Packs available, sold separately); 3-year limited warranty on HP Long Life Battery (available only with the 3-year limited platform warranty)

000053



HP EliteBook 820 G4 Notebook PC

HP recommends Windows 10 Pro.

Accessories and services (not included)

HP Docking Station Cable Lock



The HP Docking Station Cable Lock is dramatically simpler to use than previous locks and delivers enhanced security. The HP Docking Station Cable Lock gives you two locking options: lock the docking station only (which also prevents access to the advanced docking stations drive bay) or lock both the docking station and the notebook.
Product number: AU656AA

HP UltraSlim Docking Station



Designed exclusively for ultraslim HP EliteBook Notebook PCs, the HP UltraSlim Docking Station expands display, network, and device connectivity so you can be more productive throughout the day—all through a simple one-click slide-in side dock.
Product number: D9Y32AA

HP 65W Smart AC Adapter



Feed your notebook with controlled servings of electricity. HP's new 65W Smart AC Adapter regulates power and offsets electrical spikes, is designed to reduce cable stress, and includes a special dongle to support current and prior HP models—perfect for replacing your notebook's power adapter or as a needed back-up.
Product number: H6Y89AA

HP 15.6 Executive Black Top Load



Protect your bag's contents while you're on the move with the black HP Executive Top Load, which has a lockable, double-teeth zippered notebook compartment, secure RFID pocket to safeguard your ID, and a discrete pocket for an optional tracking device.
Product number: P6N18AA

HP UC Wireless Duo Headset

Take a call up to 100 feet away from your desk or phone with the HP UC Wireless Duo Headset and get premium stereo sound and noise cancelling even in the busiest environments, in a design that's comfortable to wear throughout the work day.¹⁴
Product number: W3K09AA

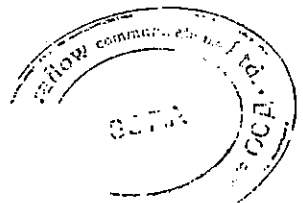
HP 4 year Next Business Day Onsite Hardware Support for Notebooks



Receive 4 years of next business day onsite HW support from an HP-qualified technician for your computing device, if the issue cannot be solved remotely.
Product number: U7860E

Learn more at
www.hp.eu/hpoptions

7



000054

027A

HP EliteBook 820 G4 Notebook PC

HP recommends Windows 10 Pro.

Messaging Footnotes

- ¹ Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com>.
- ² Available on HP EliteBook and HP EliteDesk products equipped with Intel® and AMD 7th generation processors/APUs.
- ³ HP Manageability Integration Kit can be downloaded from <http://www8.hp.com/Aus/en/ads/clientmanagement/overview.html>.
- ⁴ Multi-Core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
- ⁵ Sold separately or as an optional feature.
- ⁶ Recharges your battery up to 50% within 30 minutes when the system is off or in standby mode. Power adapter with a minimum capacity of 65 watts is required. After charging has reached 50% capacity, charging will return to normal. Charging time may vary +/-10% due to system tolerance.
- ⁷ HP WorkWise smartphone app will soon be available as a free download on the App Store and Google Play.

Technical specifications disclaimers

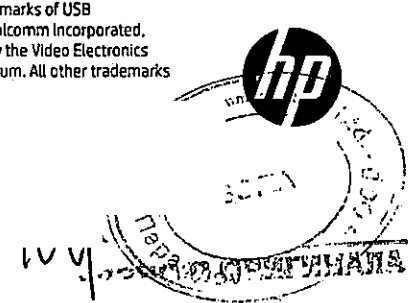
- ¹ Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com>.
- ² Planned to be available first quarter 2017.
- ³ Sold separately or as an optional feature.
- ⁴ WiFi is optional. Wireless access point and internet service is required and is not included. Availability of public wireless access points limited.
- ⁵ WWAN module is optional and requires separately purchased service contract. Check with service provider for coverage and availability in your area. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, in all regions.
- ⁶ HD content required to view HD images.
- ⁷ Internet access required.
- ⁸ Available only on business PCs with HP BIOS.
- ⁹ vPro™ is not available on Intel i5-7200U, or i7-7500U processors.
- ¹⁰ For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88.
- ¹¹ For storage drives: GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30GB of system disk is reserved for system recovery software.
- ¹² HP Mobile Connect Pro is only available on preconfigured devices with WWAN. For geographic availability refer to www.hp.com/go/mobileconnect.
- ¹³ NFC is optional.
- ¹⁴ HP ePrint Driver requires an Internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see www.hp.com/go/eprintcenter).
- ¹⁵ Skype is not offered in China.
- ¹⁶ HP MEK is not preinstalled, coming soon at <http://www.hp.com/go/clientmanagement>.
- ¹⁷ LANDesk Management subscription required.
- ¹⁸ Absolute agent is shipped turned off and will be activated when customers activate a purchased subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: <http://www.absolute.com/company/legal/agreements/computer-use-agreement>. Data Delete is an optional service provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.
- ¹⁹ Opt in and Internet connection required for updates.
- ²⁰ Multi-core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
- ²¹ Windows 10/11/14 battery life will vary depending on various factors including product model, configuration, loaded applications, features, use, wireless functionality and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See www.hp.com for additional details.
- ²² HP Sure Start Gen 3 is available on HP EliteBook products equipped with Intel® 7th generation processors.
- ²³ HP WorkWise app will soon be available as a free download on the App Store and Google Play.

Learn more at www.hp.eu/notebooks

Sign up for updates www.hp.com/go/getupdated

Copyright © 2017 HP Development Company, L.P. The only warranties for HP products are set forth in the express limited warranty statements accompanying such products. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein. Intel, Core and vPro are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries. Bluetooth is a trademark of its proprietor and used by HP Inc. under license. USB Type-C™ and USB-C™ are trademarks of USB Implementers Forum. ENERGY STAR is a registered trademark of the U.S. Environmental Protection Agency. Qualcomm is a trademark of Qualcomm Incorporated, registered in the United States and other countries, used with permission. DisplayPort™ and the DisplayPort™ logo are trademarks owned by the Video Electronics Standards Association (VESA®) in the United States and other countries. USB Type-C™ and USB-C™ are trademarks of USB Implementers Forum. All other trademarks are the property of their respective owners.

4AA6-905BEEE, January 2017



000055



ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ
в съответствие с ISO / IEC 17050-1 и EN 17050-1

ДоС #: HSN-I01C-R3Превод/bg

Наименование на производителя: **HP Inc.**
Производителя Адрес: 1501 Page Mill Road, Palo Alto, CA 94303-1112 USA

заявява, че продуктът

Име на продукта и модел:²⁾ HP EliteBook 820 G4 Notebook PC / HP EliteBook 828 G4 Notebook PC
Нормативен номер на модела:¹⁾ HSN-I01C
Опции на продукта: Виж приложение I

съответства на следните спецификации на продукта и регламенти:

Безопасност:

IEC 60950-1:2005 +A1:2009 +A2:2013
EN 60950-1:2006 +A11:2009 +A1:2010
+A12:2011 +A2:2013
EN 50364:2010
EN 50566:2013
EN 62311:2008
EN 62479:2010

EMC

EN 301 489-1 V2.1.1
EN 301 489-3 V2.1.1
EN 301 489-17 V3.1.1
EN 301 489-52 V1.1.0
FCC CFR 47 Part 15
ICES-003, Issue 6:2016

Радиочестотният спектър

EN 62209-2:2010
EN 300 328 V2.1.1
EN 300 330 V2.1.1
EN 301 511 V12.5.1
EN 301 893 V2.1.0
EN 301 908-1 V11.1.1
EN 301 908-2 V11.1.1
EN 301 908-13 V11.1.1
EN 303 413 V1.1.0
EN 300 440 V2.1.1

екодизайна

Регламент (ЕО) No 617/2013
EN 62623:2013
Регламент (ЕС) № 1275/2008
EN 50564:2011
IEC 62301:2011

RoHS

EN 50581:2012

Този апарат в съответствие с изискванията на Директивата RED 2014/53/EC, Директивата за екодизайна 2009/125/OT, Директивата RoHS 2011/65/EC и носи маркировката съответно **CE**.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Допълнителна информация:

- 1) Този продукт има нормативен номер на модела, който остава с регулаторните аспекти на дизайн. Номер на Нормативен модел е идентификатора основен продукт в нормативната документация и протоколи от изпитвания, този брой не трябва да се бърка с пазарното име или номера на продукта.
- 2) Нотифицираният орган **SIEMIC, Inc.** с номер **2200** е извършена оценка на съответствието (съгласно приложение III, поради липсващи хармонизирани стандарти) и издаде сертификата за ЕС изследване на типа: RE-17060207; RE-17060208; RE-17060511; RE-17060512; RE-17060212; RE-17060920; RE-17061206; RE-17060911
- 3) Този продукт е изпробван в типична HP среда във връзка с хост система HP.

Palo Alto, CA
20-06-2017

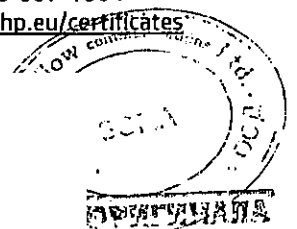
проверка на подписа върху оригинала на декларацията,

приложена
Gilles Soulard, Manager
Product Compliance Center

Local контакт за регулаторни теми само:

EU: HP Deutschland GmbH, HP HQ-TRE, 71025 Boeblingen, Germany
U.S.: HP Inc., 1501 Page Mill Road, Palo Alto 94304, U.S.A. 650-857-1501

www.hp.eu/certificates




000056

THE ECO DECLARATION

Product environmental attributes – THE ECO DECLARATION

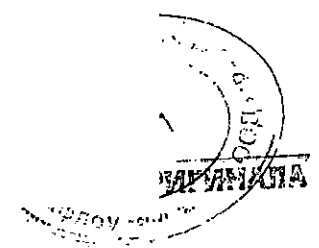
The declaration may be published only when all rows and/or fields marked with an * are filled-in (n.a. for not applicable).
Additional information regarding each item may be found under P14.


Brand *	HP	
Company name *	HP	
Contact information *	HP Environmental Contact Center environment@hp.com	
Internet site *	http://www.hp.com/hpinfo/globalcitizenship/environment/	
Additional information		

The company declares (based on product specification or test results based obtained from sample testing), that the product conforms to the statements given in this declaration.	
Type of product *	Notebook PC
Commercial name *	HP EliteBook 820 G4 Notebook PC
Model number *	820 G4
Issue date *	12/16/2016
Intended market *	<input checked="" type="checkbox"/> Global <input type="checkbox"/> Europe <input type="checkbox"/> Asia, Pacific & Japan <input type="checkbox"/> Americas <input type="checkbox"/> Other
Additional information	

This is an uncontrolled copy when in printed form. Please refer to the contact information for the latest version.

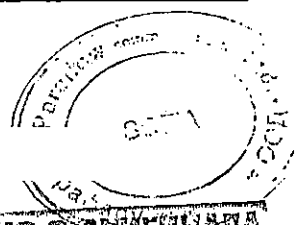
Quality Control		Requirement met	
		Yes	No
QC1 *	The company enforces an internal quality control scheme to ensure the correctness of this eco declaration	<input checked="" type="checkbox"/>	<input type="checkbox"/>
QC2 *	The company is a member of an eco declaration system that enforces regular independent quality control such as organized by IT-Företagen (see www.itcodeclaration.org).	<input checked="" type="checkbox"/>	<input type="checkbox"/>




Model number *	820 G4	
Issue date *	12/16/2016	Logo 

Product environmental attributes - Legal requirements		Requirement met		
Item		Yes	No	n.a.
P1	Hazardous substances and preparations			
P1.1*	Products do not contain more than; 0.1% lead, 0.01% cadmium, 0.1% mercury, 0.1% hexavalent chromium, 0.1% polybrominated biphenyls (PBB) or 0.1% polybrominated diphenyl ethers (PBDE). (See legal reference and Note B1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.2*	Products do not contain Asbestos (see legal reference). Comment: Legal reference has no maximum concentration value.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.3*	Products do not contain Ozone Depleting Substances: Chlorofluorocarbons (CFC), hydrobromofluorocarbons (HBFC), hydrochlorofluorocarbons (HCFC), Halons, carbontetrachloride, 1,1,1-trichloroethane, methyl bromide (see legal reference). Comment: Legal reference has no maximum concentration values.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.4*	Products do not contain more than; 0.005% polychlorinated biphenyl (PCB), 0.005% polychlorinated terphenyl (PCT) in preparations (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.5*	Products do not contain more than 0.1% short chain chloroparaffins (SCCP) with 10-13 carbon atoms in the chain containing at least 48% per mass of chlorine in the SCCP (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.6*	Textile and leather parts with direct skin contact do not contain Tri-(2,3-dibromopropyl)-phosphate (TRIS), Tris-(aziridiny)-phosphineoxide (TEPA), polybrominated biphenyl (PBB) (see legal reference). Comment: Legal reference has no maximum concentration values.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P1.7*	Textile and leather parts with direct skin contact do not contain more than 0.003% Azo colorants that split aromatic amines. (See legal reference and Note B1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P1.8*	Wooden parts do not contain arsenic and chromium as a wood preservation treatment as well as pentachlorophenol and derivatives (see legal reference). Comment: Legal reference has no maximum concentration values.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P1.9*	Parts with direct and prolonged skin contact do not release nickel in concentrations above 0.5 microgram/cm ² /week (see legal reference). Comment: Max limit in legal reference when tested according to EN1811:1998.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P1.10*	REACH Article 33 information about substances in articles is available at (add URL or mail contact): http://www.hp.com/hpinfo/globalcitizenship/environment/productdata/reachdesktop-pcs.html	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2	Batteries			
P2.1*	If the product contains a battery or an accumulator, it is labeled with the disposal symbol and if it contains more than 0.0005% of mercury (for button cells only) by weight, or more than 0.004% of lead, it shall be marked with the chemical symbol for the metal concerned, Hg or Pb. Information on proper disposal is provided in user manual. (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2.2*	Button cells used in the product do not contain more than 2% by weight of mercury. Other batteries or accumulators do not contain more than 0.0005% of mercury or 0.002% of cadmium. (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2.3*	Batteries and accumulators are easily removable by either users or service providers (as dependent on the design of the product). Exception: Batteries that are permanently installed for safety, performance, medical or data integrity reasons do not have to be "easily removable". (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3	Safety, EMC connection to the telephone network and labeling			
P3.1*	The product complies with legally required safety standards as specified (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.2*	The product complies with legally required standards for electromagnetic compatibility (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.3*	If product is intended for connection to a public telecom network or contains a radio transmitter, it complies with legally required standards for radio and telecommunication devices (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.4*	The product is labeled to show conformance with applicable legal requirements (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P4	Consumable materials			
P4.1*	If a photo conductor (drum, belt etc.) is used in the product, it does not contain cadmium max 0.01% (see legal reference and Note B1).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P4.2*	If ink/toner is used in the product, it does not contain cadmium max 0.1% by weight (see legal reference).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P4.3*	If the ink/toner formulation/preparation is classified as hazardous according to applicable regulations, the product/packaging is adequately labeled and a Safety Data Sheet (SDS) in accordance with these requirements is available (see legal reference).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P5	Product packaging			
P5.1*	Packaging and packaging components do not contain more than 0.01% lead, mercury, cadmium and hexavalent chromium by weight of these together.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P5.2*	Plastic packaging material is marked according to ISO 11469 referring ISO 1043 (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P5.3*	The product packaging material is free from ozone depleting substances as specified in the Montreal Protocol (see legal reference). Comment: Legal reference has no maximum concentration values.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note B1: Restriction applies to the homogeneous material, unless other specified and expressed in weight %

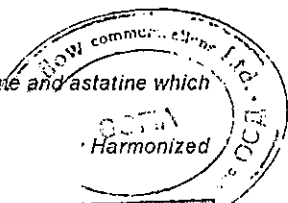



Model number *	820 G4	
Issue date *	12/16/2016	Logo 

Product environmental attributes - Market requirements - Environmental conscious design		Requirement met		
Item	*=mandatory to fill in. Additional information regarding each item may be found under P14.	Yes	No	n.a.
P6	Treatment information			
P6.1*	Information for recyclers/treatment facilities is available (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7	Design			
	Disassembly, recycling			
P7.1*	Parts that have to be treated separately are easily separable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.2*	Plastic materials in covers/housing have no surface coating.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.3*	Plastic parts >100g consist of one material or of easily separable materials.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.4*	Plastic parts >25g have material codes according to ISO 11469 referring ISO 1043.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.5	Plastic parts are free from metal inlays or have inlays that can be removed with commonly available tools.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.6*	Labels are easily separable. (This requirement does not apply to safety/regulatory labels).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Product lifetime			
P7.7*	Upgrading can be done e.g. with processor, memory, cards or drives	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.8*	Upgrading can be done using commonly available tools	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.9.	Spare parts are available after end of production for: 5 years			<input type="checkbox"/>
P7.10	Service is available after end of production for: years			<input checked="" type="checkbox"/>
	Material and substance requirements			
P7.11*	Product cover/housing material type: Material type: > PC + ABS FR40 < Material type: Material type:			
P7.12	Electrical cable insulation materials of power cables are PVC free.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.13	Electrical cable insulation materials of signal cables are PVC free	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.14	All cover/housing plastic parts >25g are free from chlorine and bromine.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.15	All printed circuit boards (without components) >25g are halogen free. as defined in IEC61249-2-21. (See Note B2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.16	Flame retarded plastic parts >25g in covers / housings are marked according ISO 1043-4: Marking: > PC + ABS FR40 <	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.17	Alt. 1 Chemical specifications of flame retardants in printed circuit boards >25g (without components): TBBPA (additive) <input type="checkbox"/> , TBBPA (reactive) <input type="checkbox"/> , Other; chemical name: , CAS #: Alt. 2 Chemical specifications of flame retardants in printed circuit boards (without components) >25g according ISO 1043-4: FR(40)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.18	Alt. 1 Flame retarded plastic parts >25g contain the following flame retardant substances/preparations in concentrations above 0.1%: Comment: No legal limits exist, this is a market requirement. 1. Chemical name: , CAS #: 2. Chemical name: , CAS #: 3. Chemical name: , CAS #: Alt. 2 Chemical specifications of flame retardants in plastic parts >25g according ISO 1043-4: > PC + ABS FR40 <	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.19	Plastic parts >25g are free from flame retardant substances/ preparations above 0.1% classified as R45, R40, R46, R48, R50, R51, R53, R60, R61 and any combination of these (See Note B3)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.20	Of total plastic parts' weight >25g, recycled material content is 0 %.			
P7.21	Of total plastic parts' weight >25g, biobased material content is 0%.			
P7.22	Light sources are free from mercury If mercury is used specify: Number of lamps: and max. mercury content per lamp: mg	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P8	Batteries			
P8.1*	Battery chemical composition: <i>lithium ion, lithium/manganese dioxide</i>			<input type="checkbox"/>
P8.2	Batteries meet the requirements of the following voluntary program/s:			<input checked="" type="checkbox"/>

Note B2: IEC61249-2--21 has maximum limits for chlorine and bromine but does not address fluorine, iodine and astatine which are included in the group of halogens.

Note B3: 'Starting from January 2009. Risk phrases can be replaced by Hazard phrases & System (GHS), mandatory by December 2010.



Model number *	820 G4	
Issue date *	12/16/2016	Logo 

Product environmental attributes - Market requirements (continued) **Requirement met**

Item Yes No n.a.

P9 Energy consumption

9.1 For the product the following power levels or energy consumptions are reported:

Energy mode *	Power level at 100 V AC	Power level at 115 V AC	Power level at 230 V AC	Reference / Standard for energy modes and test method *	<input type="checkbox"/>
ENERGY STAR® On Mode * (System Short Idle)	4.66 W	5.15 W	5.15 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
ENERGY STAR® On Mode * (System Long Idle)	2.80 W	2.80 W	3.23 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
ENERGY STAR® Low Power Sleep Mode * (S3 - Windows "Standby") With Wake On LAN (WOL) Enabled	0.77 W	0.74 W	0.83 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
ENERGY STAR® System Off/Apparent Off Mode* (ACPI S5) With Wake On LAN (WOL) Enabled (Test Unit connected to AC Mains, AC adapter connected to notebook)	0.40 W	0.40 W	0.48 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
ETEC * Annual Energy Consumption (calculated value) for each input voltage	17.91 kWh/year	19.13 kWh/year	19.95 kWh/year	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
Display resolution* : Megapixels					<input checked="" type="checkbox"/>
Print Speed* : Images per minute					<input checked="" type="checkbox"/>
Default time to enter energy save mode: minutes				ENERGY STAR® Program Requirements for Computers: Ver. 6.0	<input type="checkbox"/>

P9.2* Information about the energy save function is provided with the product.

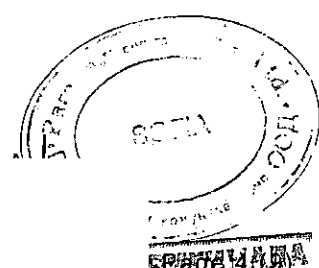
P9.3* The product meets the energy requirements of the following voluntary program/s:
 ENERGY STAR® version: 6.1 Tier: Product category: Notebook PC
 Others specify:


P10 Emissions

Noise emission -- Declared according to ISO 9296

P10.1 Mode	Mode description	Declared A-weighted sound power level L_{WAd} (B)	Declared A-weighted sound pressure level L_{pAm} (dB)		<input type="checkbox"/>
			Operator position <input checked="" type="checkbox"/> Desktop <input type="checkbox"/> or Desk side <input type="checkbox"/>	Bystander positions <input type="checkbox"/> (only if product is not operator attended)	
Idle	* Fans on, HDD spinning (if applicable)	* 3.2	26		<input type="checkbox"/>
Operation	* Fans on, HDD spinning	* 3.5	27		<input type="checkbox"/>
Other mode					<input type="checkbox"/>
Measured according to: <input checked="" type="checkbox"/> ISO7779 <input checked="" type="checkbox"/> ECMA-74 <input type="checkbox"/> Other (only if not covered by ECMA-74 with L_{pAm} measurement distance m) <input type="checkbox"/>					

P10.2 The product meets the acoustic noise requirements of the following voluntary program/s:



Model number *	820 G4	
Issue date *	12/16/2016	Logo 

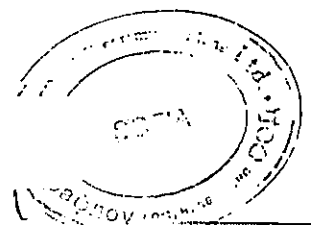
Product environmental attributes - Market requirements (continued)		Requirement met		
Item		Yes	No	n.a.
Chemical emissions from printing products				
P10.3*	Test performed according to ECMA-328 (ISO/IEC 28360) standard <input type="checkbox"/> , other specify:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P10.4	Typical emission rate (print phase) is (mg/h): Dust Ozone Styrene Benzene TVOC			<input checked="" type="checkbox"/>
P10.5	Chemical emission requirements of the following voluntary program/s are met for : Dust <input type="checkbox"/> Ozone <input type="checkbox"/> Styrene <input type="checkbox"/> Benzene <input type="checkbox"/> TVOC <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Electromagnetic emissions				
P10.6	Computer display meets the requirement for low frequency electromagnetic fields of the following voluntary program/s:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P11 Consumable materials for printing products				
P11.1*	A Safety Data Sheet (SDS) is available for the ink/toner preparation, even if not legally required (see P4.3).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P11.2*	Paper containing post-consumer recycled fibers can be used, provided that it meets the requirements of EN12281.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P11.3*	2-sided (duplex) printing/copying is an integrated product function.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P12 Ergonomics for computing products				
P12.1*	The display meets the ergonomic requirements of ISO 9241-307 for visual display technologies.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P12.2'	The physical input device meets the requirements of ISO 9995 and ISO 9241-410.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P13 Packaging and documentation				
P13.1*	Product packaging material type(s): <i>PAPER/Corrugated</i> weight (kg): <i>0.328</i> Product packaging material type(s): <i>PLASTIC/Polyethylene Expanded - EPE</i> weight (kg): <i>0.038</i> Product packaging material type(s): <i>PLASTIC/Polyethylene low density - LDPE</i> weight (kg): <i>0.014</i> Product packaging material type(s): <i>PLASTIC/Polypropylene - PP</i> weight (kg): <i>0.003</i>			
P13.2*	Product plastic packaging is free from PVC.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P13.3*	Specify media for user and product documentation (tick box): Electronic <input checked="" type="checkbox"/> , Paper <input type="checkbox"/> , Other <input type="checkbox"/>			<input type="checkbox"/>
P13.4*	For paper user and product documentation, please specify contained percentage of post-consumer recycled fiber: <i>0%</i>			<input type="checkbox"/>
Rev. P13.5	User and product documentation do not contain chlorine bleached paper	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

P14	Additional Information (See Note B4)																
All sections	1. Product environmental information contained in this declaration is valid as of the date the declaration is published. Changes to external standards referenced in the IT Eco-Declaration may invalidate some information contained in this declaration over time.																
P9	<p>1. Many PCs are offered in multiple configurations within the model family. Energy efficiency data listed in this declaration is for an ENERGY STAR® compliant configuration if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. For more information about HP's ENERGY STAR® qualified products, go to hp.com: http://www.hp.com/ and select the applicable market segments and product categories to find PC configurations that meet the ENERGY STAR® specifications.</p> <p>2. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured model.</p> <p>3. Energy Efficiency information published on the ECMA 370 The Eco Declaration represents a typically configured product base model meeting ENERGY STAR® specifications if offered within the model family. If optional components or modules are added, like extra hard disks or graphic cards etc, these can change the energy efficiency data listed above.</p> <p>4. Power consumption in the Off / Apparent Off mode is measured and reported with the network interface controller (NIC) WOL disabled.</p> <p>5. European Union Commission Regulation 1275/2008- Energy Efficiency Information:</p> <table border="1"> <thead> <tr> <th>Mode / Condition</th> <th>Power Consumption in Watts at 230 VAC Input Voltage</th> <th>Default Time to Mode / Condition (if applicable)</th> </tr> </thead> <tbody> <tr> <td>Off Mode (if applicable)</td> <td></td> <td>Not Applicable</td> </tr> <tr> <td>Standby Mode (if applicable)</td> <td>Not Applicable</td> <td>Not Applicable</td> </tr> <tr> <td>Network Standby / Sleep / Long Idle Mode if all wired network ports are connected and all wireless network ports are activated (if applicable)</td> <td></td> <td></td> </tr> <tr> <td>Network Standby / Sleep / Long Idle Mode (if applicable)</td> <td></td> <td></td> </tr> </tbody> </table> <p>6. European Union Commission Regulation 1275/2008- Wireless Network Instructions:</p> <p>Where applicable, activate and deactivate a wireless network using the instructions provided in the product user guide or the operating system. Information is also available at www.hp.com/support.</p>		Mode / Condition	Power Consumption in Watts at 230 VAC Input Voltage	Default Time to Mode / Condition (if applicable)	Off Mode (if applicable)		Not Applicable	Standby Mode (if applicable)	Not Applicable	Not Applicable	Network Standby / Sleep / Long Idle Mode if all wired network ports are connected and all wireless network ports are activated (if applicable)			Network Standby / Sleep / Long Idle Mode (if applicable)		
Mode / Condition	Power Consumption in Watts at 230 VAC Input Voltage	Default Time to Mode / Condition (if applicable)															
Off Mode (if applicable)		Not Applicable															
Standby Mode (if applicable)	Not Applicable	Not Applicable															
Network Standby / Sleep / Long Idle Mode if all wired network ports are connected and all wireless network ports are activated (if applicable)																	
Network Standby / Sleep / Long Idle Mode (if applicable)																	
P10	1. Acoustic noise information published on the ECMA 370 The Eco Declaration represents a typically configured product base model only. If optional items with moving parts are added, like extra hard disks or graphic cards with fans etc, these can change acoustic noise values for which HP can take no responsibility.																

Note B4: Additional lines may be inserted to declare further items, by positioning the cursor at the far right of the row and hitting the <Enter> key.

Legal references Europe Annex B

Reference	Declaration item
2002/95/EC (ROHS Directive)	P1.1, P4.1
REACH, Annex XVII	P1.6, P1.8, P4.2
REACH, Annex XVII	P1.4
REACH, Annex XVII	P1.2
REACH, Annex XVII	P1.7
REACH, Annex XVII	P1.9
Regulation (EC) No. 2037/2000, 2038/2000, 2039/2000	P1.3
Norwegian regulation relating to restrictions on the use of certain dangerous chemicals 20.12.2002	P1.5
2006/66/EC (Battery and accumulators Directive)	P2.1, P2.2, P2.3, P3.4, P8.1
2006/95/EC (Low Voltage Directive)	P3.1, 3.4
2004/108/EEC (New EMC Directive)	P3.2, 3.4
1999/5/EC (R&TTE Directive)	P3.3, 3.4
*REACH" Regulation (1907/2006), annex VII	P1.10
(EC) No.1272/2008 regulation on classification, labeling and packaging (CLP)	P4.3
REACH article 31, annex II	P4.3
2004/12/EC (Directive on packaging and packaging waste)	P5.1
(97/129/EC) (Commission Decision on Identification System for Packaging Materials	P5.2
2037/2000/EC Regulation on Substances that Deplete the Ozone Layer	P5.3
2002/96/EC (WEEE directive)	P3.4, P6.1
(EC) No.1272/2008 regulation on classification, labeling and packaging (CLP)	P7.19



THE ECO DECLARATION



Company environmental profile - THE ECO DECLARATION

Brand	HP	Logo
Company name *	HP	
Contact information *	HP Environmental Contact Centre (ECC) environment@hp.com	
Internet site *	www.hp.com/hpinfo/globalcitizenship/environment/index.html	
Issue date *	2014-06	
Intended market *	<input checked="" type="checkbox"/> Global <input type="checkbox"/> Europe <input type="checkbox"/> Asia, Pacific & Japan <input type="checkbox"/> Americas <input type="checkbox"/> Other	
Additional Information		

This is an uncontrolled copy when in printed form. Please refer to the contact information for the latest version.

The declaration may be published only when all rows and/or fields marked with an * are filled-in (n.a. for not applicable). Additional information regarding each item may be found under C6.

Quality control		Requirement met	
Item		Yes	No
QC1 *	The company enforces an internal quality control system to ensure the correctness of this eco declaration	<input checked="" type="checkbox"/>	<input type="checkbox"/>
QC2 *	The company is a member of an eco declaration system that enforces regular independent quality control.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Company environmental profile - Legal requirements		Requirement met		
Item		Yes	No	n.a.
C1	Product recycling			
C1.1*	The company participates in a system or has its own system for collection and recycling of end of life products in countries where the company puts them on the market and where required (see legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C2	Battery recycling			
C2.1*	The company participates in a system or has its own system for collection and recycling of batteries in countries where the company puts products on the market (see legal reference) or pays eco tax / fee where required.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C3	Packaging recycling			
C3.1*	The company participates in a system or has its own system for collection and recycling of packaging material in countries where the company puts products on the market and where required (see legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Company environmental profile - Market requirements		Requirement met		
Item		Yes	No	n.a.
C4	Environmental policy and environmental management			
C4.1*	The company has a documented environmental policy approved by the management.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C4.2*	The company has an environmental management system covering: Product development Manufacturing If so certified according to: <input checked="" type="checkbox"/> ISO 14001 <input type="checkbox"/> Other as specified in C6	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	
C4.3	The company regularly publishes an environmental report. If so, it meets the recommendations of <input checked="" type="checkbox"/> The Global Reporting Initiative <input type="checkbox"/> Other as specified in C6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C5	Recycling			
C5.1*	Information about the product, battery & packaging take back system (C1, C2, C3) is available in printed or electronic format.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C6	Additional information			

HP is committed to responsible business practices and transparency in its global citizenship policies and performance. We have a long history of working with suppliers to improve their social and environmental (SER) performance, as well as improving industry standards. HP endorses the EICC Code of Conduct in its entirety, and we supplement it with additional requirements specific to freedom of association and HP's Student and Dispatch Worker Guidance Standard for Supplier Facilities in the People's Republic of China (PRC). HP also has a strong Global Human Rights Policy in place. HP sets expectations for its suppliers to establish policies and processes regarding conflict minerals. HP conducts due diligence on its supply chain annually including requesting information about our suppliers' own due diligence and the smelters and refiners used. HP became the first IT company to publish its supply chain smelter list. HP follows the Global Reporting Initiative (GRI) guidelines as a basis for reporting. The GRI index provides easy reference to HP's Living Progress Report (LPR) content. HP offers take back services of products and printing suppliers in some 70 countries. Please refer to HP's Living Progress Report for more details on our global efforts.

Legal references Europe Annex A

Reference	Declaration item
2002/96/EC (WEEE directive)	C1.1
2006/66/EC (Battery and accumulators Directive)	C1.2
2004/12/EC (Directive on packaging and packaging waste)	C1.3



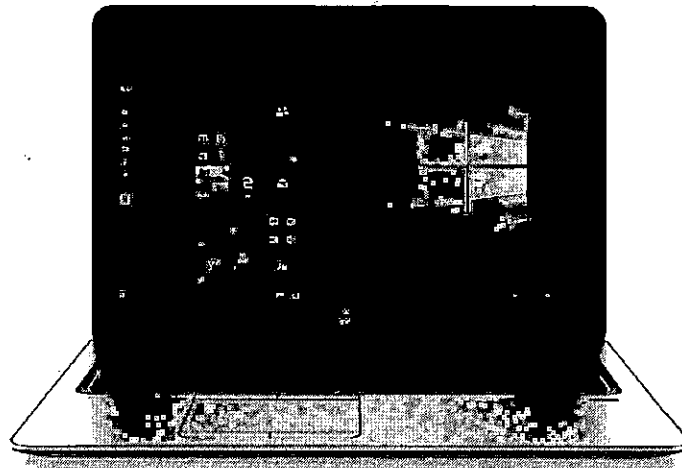
РЕПУБЛИКА БЪЛГАРИЯ

HP EliteBook 850 G4 Notebook PC



Security, manageability, and performance in an ultrathin design.

Elevate your business with an ultrathin, professional laptop that empowers users to perform at their very best. Enterprise-class features, comprehensive security, and a refined collaboration experience handle even the most demanding tasks with streamlined efficiency.



HP recommends Windows 10 Pro.

Strong security, powerful manageability

- Get powerful protection and simplified management from HP's most secure and manageable PCs. HP Sure Start Gen3² protects against BIOS attacks and easily manage devices through Microsoft SCCM with HP Manageability Integration Kit³.

High performance, high portability

- Speed up demanding business applications and data. Combine high-performance and long battery life with 7th Gen Intel[®] Core™ processors⁴, and PCIe Gen3 solid state drives⁵. Amplify performance with up to 32 GB of DDR4 memory and dual storage options⁵.

Thin design, no adapters needed

- Give portability a whole new meaning with an ultrathin design that doesn't cut corners. Starting at an incredible 19.4mm, the HP EliteBook 850 includes several ports like full-size VGA, DisplayPort™, RJ-45, and enterprise docking.

See and hear them clearly

- Give your online collaboration the sharpness and clarity of a face-to-face meeting with HP Audio Boost, HP Noise Cancellation software, Audio by Bang & Olufsen, and an optional 720p webcam².
- Power through your day with Windows 10 Pro¹ and the powerful, sleek, thin, and light HP EliteBook 850.
- HP Sure Start Gen3² monitors in-memory BIOS, recovers the platform without intervention, restores the BIOS to a custom state, and is enterprise ready for centralized management.
- Improve the quality and security of custom Windows images with HP Image Assistant which assists ITDMs with image creation, identifies problems, and provides recommendations and remediation.
- Deploy the HP Manageability Integration Kit³ to help speed up image creation and the management of hardware, BIOS, and security when managing devices through Microsoft SCCM.
- Get up to 50% battery life in just 30 minutes of charging⁶ with an HP fast charging battery.
- HP Audio Boost balances loudness and clarity, and enhances bass for improved speech quality.
- Suppress background noise including keyboard clicks with HP Noise Cancellation Software.
- Get the speed and space you need without having to use external storage. Dual drive support options quickly boot, wake, and run your system on a fast SSD⁵ and let you maintain access to your files with a high-capacity HDD⁵.



000066

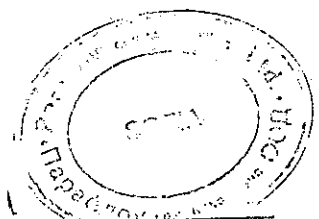
HP EliteBook 850 G4 Notebook PC

Specifications Table

HP recommends Windows 10 Pro.



Available Operating System	Windows 10 Pro 64 – HP recommends Windows 10 Pro. ¹ Windows 10 Home 64 ¹ FreeDOS 2.0
Processor Family	7th Generation Intel® Core™ i7 processor; 7th Generation Intel® Core™ i5 processor
Available Processors^{2,3}	Intel® Core™ i7-7600U with Intel HD Graphics 620 (2.8 GHz, up to 3.9 GHz with Intel Turbo Boost Technology, 4 MB cache, 2 cores); Intel® Core™ i5-7300U with Intel HD Graphics 620 (2.6 GHz, up to 3.5 GHz with Intel Turbo Boost Technology, 3 MB cache, 2 cores); Intel® Core™ i7-7500U with Intel HD Graphics 620 (2.7 GHz, up to 3.5 GHz with Intel Turbo Boost Technology, 4 MB cache, 2 cores); Intel® Core™ i5-7200U with Intel HD Graphics 620 (2.5 GHz, up to 3.1 GHz with Intel Turbo Boost Technology, 3 MB cache, 2 cores); Intel® Core™ i3-7100U with Intel® HD Graphics 620 (2.4 GHz, 3 MB cache, 2 cores)
Chipset	Chipset is integrated with processor
Maximum Memory	Up to 32 GB DDR4-2133 SDRAM
Memory Slots	2 SODIMM
Internal Storage	up to 500 GB SATA (7200 rpm) ¹¹ up to 128 GB M.2 SATA SSD ¹¹ up to 360 GB M.2 PCIe NVMe TLC SSD ¹¹ up to 512 GB M.2 PCIe Gen 3x4 MLC SSD ^{2, 11} up to 512 GB M.2 PCIe NVMe MLC SSD ¹¹
Display	39.6 cm (15.6") diagonal HD SVA anti-glare slim LED-backlit (1366 x 768); 39.6 cm (15.6") diagonal HD SVA anti-glare slim LED-backlit with camera (1366 x 768); 39.6 cm (15.6") diagonal FHD SVA anti-glare slim LED-backlit (1920 x 1080); 39.6 cm (15.6") diagonal FHD SVA anti-glare slim LED-backlit with camera (1920 x 1080); 39.6 cm (15.6") diagonal UHD UWVA anti-glare slim LED-backlit (3840 x 2160); 39.6 cm (15.6") diagonal UHD UWVA anti-glare slim LED-backlit with camera (3840 x 2160); 39.6 cm (15.6") diagonal FHD SVA slim with camera, Corning® Gorilla® Glass 4 LED-backlit touch screen (1920 x 1080) ^{5, 6}
Available Graphics	Integrated: Intel® HD Graphics 620 ⁶ Discrete: AMD Radeon™ R7 M465 (2 GB GDDR5 dedicated)
Wireless Technologies	HP i4120 Qualcomm® Snapdragon™ X5 LTE Mobile Broadband Module; HP i4132 LTE/HSPA+ Mobile Broadband; HP i53210 WW HSPA+ Mobile Broadband; Intel® Dual Band Wireless-AC 8265 802.11 a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 4.2 Combo (vPro™ and non-vPro™); Intel® Dual Band Wireless-AC 3168 802.11 a/b/g/n/ac (1x1) Wi-Fi® and Bluetooth® 4.2 Combo (non-vPro™); Near Field Communication (NFC) module ^{3, 4, 5, 17} (Support for Miracast (Windows 10))
Communications	Intel® Ethernet Connection I219-V; Intel® Ethernet Connection I219-LM
Expansion Slots	1 SD; 1 external SIM (Supports SD, SDHC, SDXC)
Ports and Connectors	2 USB 3.1 Gen 1 (1 charging); 1 USB Type-C™; 1 DisplayPort™ 1.2; 1 VGA; 1 RJ-45; 1 docking connector; 1 headphone/microphone combo; 1 AC power (Cables are not included.)
Input Device	HP Premium Keyboard with drain, optional backlit and DuraKeys Touchpad with on/off button, two-way scroll, taps and gestures enabled, two-finger scrolling, two finger zoom (pinch)
Webcam	720p HD webcam (optional) ^{3, 5, 7}
Available Software	HP Mobile Connect Pro (models with Windows 8.1 and Windows 10); HP 3D DriveGuard (Windows required); HP ePrint Driver+JetAdvantage; HP Hotkey Support; HP Recovery Manager; HP Support Assistant; HP Noise Cancellation; Buy Office; Bing Search; Skype; HP Workwise; HP Image Assistant; HP Velocity ^{12, 14, 15, 24}
Security Management	HP Device Access Manager; HP BIOSphere with HP Sure Start Gen 3; HP Secure Erase; Preboot Authentication; Absolute Persistence Module; HP Client Security; HP Fingerprint Sensor; HP Password Manager; Fingerprint reader (select models); Security lock slot (lock must be purchased separately); TPM 2.0; Integrated smart card reader (active) ^{10, 13, 23, 29}
Power	45 W Smart AC adapter (not available for China and India); 65 W Smart AC adapter (not available for China and India) HP Long Life 3-cell, 51 Wh Li-ion Up to 14 hours and 15 minutes ²²
Dimensions	38.36 x 25.77 x 1.94 cm (non-touch); 38.36 x 25.77 x 2.08 cm (touch) (Height varies depending upon where on the notebook the measurement is made.)
Weight	Starting at 1.84 kg (Weight varies by configuration and components)
Energy Efficiency Compliance	ENERGY STAR® certified configurations available
Warranty	3-year limited warranty (optional Care Packs available, sold separately), 3-year limited warranty on HP Long Life Battery (available only with the 3-year limited platform warranty)



ՀԱՅԱՍՏԱՆԻ ՀԱՆՐԱՊԵՏՈՒԹՅԱՆ ԱՐՄԱՅՈՒՄԻ ՄԻՆԻՍՏԵՐԱՆ

000067

HP EliteBook 850 G4 Notebook PC

HP recommends Windows 10 Pro.

Accessories and services (not included)

HP Docking Station Cable Lock



The HP Docking Station Cable Lock is dramatically simpler to use than previous locks and delivers enhanced security. The HP Docking Station Cable Lock gives you two locking options: lock the docking station only (which also prevents access to the advanced docking stations drive bay) or lock both the docking station and the notebook.

Product number: AU656AA

HP UltraSlim Docking Station



Designed exclusively for ultraslim HP EliteBook Notebook PCs, the HP UltraSlim Docking Station expands display, network, and device connectivity so you can be more productive throughout the day—all through a simple one-click slide-in side dock.

Product number: D9Y32AA

HP Comfort Grip Wireless Mouse



The HP Comfort Grip Wireless Mouse features a 30-month battery life and a bold, modern design that integrates seamlessly with HP Business Notebooks.

Product number: H2L63AA

HP 65W Smart AC Adapter



Feed your notebook with controlled servings of electricity. HP's new 65W Smart AC Adapter regulates power and offsets electrical spikes, is designed to reduce cable stress, and includes a special dongle to support current and prior HP models — perfect for replacing your notebook's power adapter or as a needed back-up.

Product number: H6Y89AA

HP 15.6 Executive Black Top Load



Protect your bag's contents while you're on the move with the black HP Executive Top Load, which has a lockable, double-teeth zippered notebook compartment, secure RFID pocket to safeguard your ID, and a discrete pocket for an optional tracking device.¹

Product number: P6N18AA

HP UC Wireless Duo Headset

Take a call up to 100 feet away from your desk or phone with the HP UC Wireless Duo Headset and get premium stereo sound and noise cancelling even in the busiest environments, in a design that's comfortable to wear throughout the work day.¹²

Product number: W3K09AA

HP 4 year Next Business Day Onsite Hardware Support for Notebooks

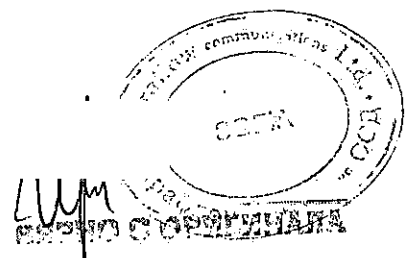
Receive 4 years of next business day onsite HW support from an HP-qualified technician for your computing device, if the issue cannot be solved remotely.

Product number: U7860E



Learn more at
www.hp.eu/hpoptions

000068



HP EliteBook 850 G4 Notebook PC

HP recommends Windows 10 Pro.

Messaging Footnotes

- ¹ Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.microsoft.com>.
- ² Available on HP EliteBook and HP EliteDesk products equipped with Intel® and AMD 7th generation processors/APUs.
- ³ HP Manageability Integration Kit can be downloaded from <http://www.hp.com/us/en/ldts/clientmanagement/overview.html>.
- ⁴ Multi-Core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
- ⁵ Sold separately or as an optional feature.
- ⁶ Recharges your battery up to 50% within 30 minutes when the system is off or in standby mode. Power adapter with a minimum capacity of 65 watts is required. After charging has reached 50% capacity, charging will return to normal. Charging time may vary +/-10% due to System tolerance.
- ⁷ HP WorkWise smartphone app will soon be available as a free download on the App Store and Google Play.

Technical specifications disclaimers

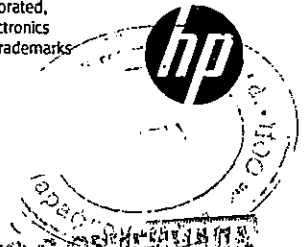
- ¹ Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com>.
- ² Planned to be available first quarter 2017.
- ³ Sold separately or as an optional feature.
- ⁴ WiFi is optional. Wireless access point and Internet service is required and is not included. Availability of public wireless access points limited.
- ⁵ WWAN module is optional and requires separately purchased service contract. Check with service provider for coverage and availability in your area. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, in all regions.
- ⁶ HD content required to view HD images.
- ⁷ Internet access required.
- ⁸ Available only on business PCs with HP BIOS.
- ⁹ vPro™ is not available on Intel i5-7200U, or i7-7500U processors.
- ¹⁰ For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88.
- ¹¹ For storage drives: GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30GB of system disk is reserved for system recovery software.
- ¹² HP Mobile Connect Pro is only available on preconfigured devices with WWAN. For geographic availability refer to www.hp.com/go/mobileconnect
- ¹³ NFC is optional.
- ¹⁴ HP ePrint Driver requires an Internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see www.hp.com/go/eprintcenter).
- ¹⁵ HP iPK is not preinstalled, coming soon at <http://www.hp.com/go/clientmanagement>
- ¹⁷ LANDESK Management subscription required.
- ¹⁹ Absolute agent is shipped turned off, and will be activated when customers activate a purchased subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: <http://www.absolute.com/company/legal/agreements/computer-use-agreement>. Data Delete is an optional service provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.
- ²⁰ Opt in and Internet connection required for updates.
- ²¹ MultiCore is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
- ²² Windows 10/MM14 battery life will vary depending on various factors including product model, configuration, loaded applications, features, use, wireless functionality, and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See www.bpcp.com for additional details.
- ²³ HP Sure Start Gen 3 is available on HP EliteBook products equipped with Intel® 7th generation processors.
- ²⁴ HP WorkWise app will soon be available as a free download on the App Store and Google Play.

Learn more at www.hp.eu/notebooks

Sign up for updates www.hp.com/go/getupdated

Copyright © 2017 HP Development Company, L.P. The only warranties for HP products are set forth in the express limited warranty statements accompanying such products. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein. Intel, Core and vPro are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries. Bluetooth is a trademark of its proprietor and used by HP Inc. under license. USB Type-C™ and USB-C™ are trademarks of USB Implementers Forum. ENERGY STAR is a registered trademark of the U.S. Environmental Protection Agency. Qualcomm is a trademark of Qualcomm Incorporated, registered in the United States and other countries, used with permission. DisplayPort™ and the DisplayPort™ logo are trademarks owned by the Video Electronics Standards Association (VESA®) in the United States and other countries. USB Type-C™ and USB-C™ are trademarks of USB Implementers Forum. All other trademarks are the property of their respective owners.

4AA6-9054EEE, January 2017



000069



ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ
в съответствие с ISO / IEC 17050-1 и EN 17050-1

Doc #: HSTNN-I33C-5-R5Превод/bg

Наименование на производителя: **HP Inc.**
Производителя Адрес: 1501 Page Mill Road, Palo Alto, CA 94303-1112 USA

заявява, че продуктът

Име на продукта и модел:²⁾ HP EliteBook 850 G3 Notebook PC
HP ZBook 15u Mobile Workstation

Нормативен номер на модела:¹⁾ HSTNN-I33C-5

Опции на продукта: Виж приложение I

съответства на следните спецификации на продукта и регламенти:

Безопасност:

IEC 60950-1:2005 +A1:2009 +A2:2013
EN 60950-1:2006 +A11:2009 +A1:2010
+A12:2011 +A2:2013
EN 50364:2010
EN 50566:2013
EN 62311:2008
EN 62479:2010

EMC

EN 301 489-1 V2.1.1
EN 301 489-3 V2.1.1
EN 301 489-17 V3.1.1
EN 301 489-52 V1.1.0
FCC CFR 47 Part 15
ICES-003, Issue 5

Радиочестотният спектър

EN 62209-2:2010
EN 300 328 V2.1.1
EN 300 330 V2.1.1
EN 301 511 V12.5.1
EN 301 893 V2.1.0
EN 301 908-1 V11.1.1
EN 301 908-2 V11.1.1
EN 301 908-13 V11.1.1
EN 303 413 V1.1.0

екодизайна

Регламент (EO) No 617/2013
EN 50563:2011
EN 62623:2013

RoHS

EN 50581:2012

Този апарат в съответствие с изискванията на Директивата RED 2014/53/EC, Директивата за екодизайна 2009/125/OT, Директивата RoHS 2011/65/EC и носи маркировката съответно **CE**.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Допълнителна информация:

- 1) Този продукт има нормативен номер на модела, който остава с регулаторните аспекти на дизайн. Номер на Нормативен модел е идентификатора основен продукт в нормативната документация и протоколи от изпитвания, този брой не трябва да се бърка с пазарното име или номера на продукта.
- 2) Нотифицираният орган **SIEMIC, Inc.** с номер **2200** е извършена оценка на съответствието (съгласно приложение III, поради липсващи хармонизирани стандарти) и издаде сертификата за ЕС изследване на типа: RE-17060220; RE-17060202; RE-17060203; RE-17060513
- 3) Този продукт е изпробван в типична HP среда във връзка с хост система HP.

Palo Alto, CA
16-06-2017

проверка на подписа върху оригинала на декларацията.

приложена
Gilles Soulard, Manager
Product Compliance Center

Local контакт за регулаторни теми само:

EU: HP Deutschland GmbH, HP HQ-TRE, 71025 Boeblingen, Germany
U.S.: HP Inc., 1501 Page Mill Road, Palo Alto 94304, U.S.A. 650-857-1501


www.hp.eu/certificates

000070

THE ECO DECLARATION

Product environmental attributes – THE ECO DECLARATION

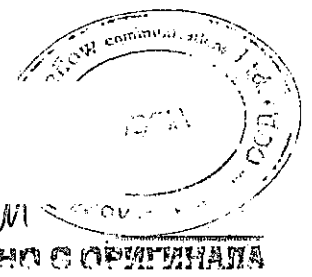
The declaration may be published only when all rows and/or fields marked with an * are filled-in (n.a. for not applicable).
Additional information regarding each item may be found under P14.


Brand *	HP	Logo 
Company name *	HP	
Contact information *	HP Environmental Contact Center environment@hp.com	
Internet site *	http://www.hp.com/hpinfo/globalcitizenship/environment/	
Additional Information		

The company declares (based on product specification or test results based obtained from sample testing), that the product conforms to the statements given in this declaration.	
Type of product *	Notebook PC
Commercial name *	HP EliteBook 850 G4 Notebook PC
Model number *	850 G4
Issue date *	12/16/2016
Intended market *	<input checked="" type="checkbox"/> Global <input type="checkbox"/> Europe <input type="checkbox"/> Asia, Pacific & Japan <input type="checkbox"/> Americas <input type="checkbox"/> Other
Additional Information	

This is an uncontrolled copy when in printed form. Please refer to the contact information for the latest version.


Quality Control	Item	Requirement met	
		Yes	No
QC1 *	The company enforces an internal quality control scheme to ensure the correctness of this eco declaration	<input checked="" type="checkbox"/>	<input type="checkbox"/>
QC2 *	The company is a member of an eco declaration system that enforces regular independent quality control such as organized by IT-Förelagen (see www.itecodeclaration.org).	<input checked="" type="checkbox"/>	<input type="checkbox"/>



Model number *	850 G4	
Issue date *	12/16/2016	Logo 

Product environmental attributes - Legal requirements		Requirement met		
Item		Yes	No	n.a.
P1	Hazardous substances and preparations			
P1.1*	Products do not contain more than; 0.1% lead, 0.01% cadmium, 0.1% mercury, 0.1% hexavalent chromium, 0.1% polybrominated biphenyls (PBB) or 0.1% polybrominated diphenyl ethers (PBDE). (See legal reference and Note B1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.2*	Products do not contain Asbestos (see legal reference). Comment: Legal reference has no maximum concentration value.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.3*	Products do not contain Ozone Depleting Substances: Chlorofluorocarbons (CFC), hydrobromofluorocarbons (HBFC), hydrochlorofluorocarbons (HCFC), Halons, carbon tetrachloride, 1,1,1-trichloroethane, methyl bromide (see legal reference). Comment: Legal reference has no maximum concentration values.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.4*	Products do not contain more than; 0.005% polychlorinated biphenyl (PCB), 0.005% polychlorinated terphenyl (PCT) in preparations (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.5*	Products do not contain more than 0.1% short chain chloroparaffins (SCCP) with 10-13 carbon atoms in the chain containing at least 48% per mass of chlorine in the SCCP (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.6*	Textile and leather parts with direct skin contact do not contain Tri-(2,3-dibromopropyl)-phosphate (TRIS), Tris-(aziridinyl)-phosphineoxide (TEPA), polybrominated biphenyl (PBB) (see legal reference). Comment: Legal reference has no maximum concentration values.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P1.7*	Textile and leather parts with direct skin contact do not contain more than 0.003% Azo colorants that split aromatic amines. (See legal reference and Note B1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P1.8*	Wooden parts do not contain arsenic and chromium as a wood preservation treatment as well as pentachlorophenol and derivatives (see legal reference). Comment: Legal reference has no maximum concentration values.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P1.9*	Parts with direct and prolonged skin contact do not release nickel in concentrations above 0.5 microgram/cm ² /week (see legal reference). Comment: Max limit in legal reference when tested according to EN1811:1998.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P1.10*	REACH Article 33 information about substances in articles is available at (add URL or mail contact): http://www.hp.com/hpinfo/globalcitizenship/environment/productdata/reachdesktop-pcs.html	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2	Batteries			
P2.1*	If the product contains a battery or an accumulator, it is labeled with the disposal symbol and if it contains more than 0.0005% of mercury (for button cells only) by weight, or more than 0.004% of lead, it shall be marked with the chemical symbol for the metal concerned, Hg or Pb. Information on proper disposal is provided in user manual. (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2.2*	Button cells used in the product do not contain more than 2% by weight of mercury. Other batteries or accumulators do not contain more than 0.0005% of mercury or 0.002% of cadmium. (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2.3*	Batteries and accumulators are easily removable by either users or service providers (as dependent on the design of the product). Exception: Batteries that are permanently installed for safety, performance, medical or data integrity reasons do not have to be "easily removable". (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3	Safety, EMC connection to the telephone network and labeling			
P3.1*	The product complies with legally required safety standards as specified (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.2*	The product complies with legally required standards for electromagnetic compatibility (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.3*	If product is intended for connection to a public telecom network or contains a radio transmitter, it complies with legally required standards for radio and telecommunication devices (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.4*	The product is labeled to show conformance with applicable legal requirements (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P4	Consumable materials			
P4.1*	If a photo conductor (drum, belt etc.) is used in the product, it does not contain cadmium max 0.01% (see legal reference and Note B1).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P4.2*	If ink/toner is used in the product, it does not contain cadmium max 0.1% by weight (see legal reference).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P4.3*	If the ink/toner formulation/preparation is classified as hazardous according to applicable regulations, the product/packaging is adequately labeled and a Safety Data Sheet (SDS) in accordance with these requirements is available (see legal reference).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P5	Product packaging			
P5.1*	Packaging and packaging components do not contain more than 0.01% lead, mercury, cadmium and hexavalent chromium by weight of these together.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P5.2*	Plastic packaging material is marked according to ISO 11469 referring ISO 1043 (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P5.3*	The product packaging material is free from ozone depleting substances as specified in the Montreal Protocol (see legal reference). Comment: Legal reference has no maximum concentration values.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

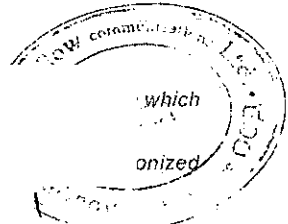
Note B1: Restriction applies to the homogeneous material, unless other specified and expressed in weight %.


Model number *	850 G4	
Issue date *	12/16/2016	Logo 

Product environmental attributes - Market requirements - Environmental conscious design		Requirement met		
Item	*=mandatory to fill in. Additional information regarding each item may be found under P14.	Yes	No	n.a.
P6	Treatment information			
P6.1*	Information for recyclers/treatment facilities is available (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7	Design			
	Disassembly, recycling			
P7.1*	Parts that have to be treated separately are easily separable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.2*	Plastic materials in covers/housing have no surface coating.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.3*	Plastic parts >100g consist of one material or of easily separable materials.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.4*	Plastic parts >25g have material codes according to ISO 11469 referring ISO 1043.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.5	Plastic parts are free from metal inlays or have inlays that can be removed with commonly available tools.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.6*	Labels are easily separable. (This requirement does not apply to safety/regulatory labels).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Product lifetime			
P7.7*	Upgrading can be done e.g. with processor, memory, cards or drives	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.8*	Upgrading can be done using commonly available tools	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.9.	Spare parts are available after end of production for: 5 years			<input type="checkbox"/>
P7.10	Service is available after end of production for: years			<input checked="" type="checkbox"/>
	Material and substance requirements			
P7.11*	Product cover/housing material type: Material type: > PC + ABS FR40 < Material type: > PC + ABS -MF15< Material type:			
P7.12	Electrical cable insulation materials of power cables are PVC free.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.13	Electrical cable insulation materials of signal cables are PVC free	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.14	All cover/housing plastic parts >25g are free from chlorine and bromine.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.15	All printed circuit boards (without components) >25g are halogen free. as defined in IEC61249-2-21. (See Note B2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.16	Flame retarded plastic parts >25g in covers / housings are marked according ISO 1043-4: Marking: > PC + ABS FR40 <, > PC + ABS -MF15<	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.17	Alt. 1 Chemical specifications of flame retardants in printed circuit boards >25g (without components): TBBPA (additive) <input type="checkbox"/> , TBBPA (reactive) <input type="checkbox"/> , Other, chemical name: , CAS #: Alt. 2 Chemical specifications of flame retardants in printed circuit boards (without components) >25g according ISO 1043-4: FR(40)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.18	Alt. 1 Flame retarded plastic parts >25g contain the following flame retardant substances/preparations in concentrations above 0.1%: Comment: No legal limits exist, this is a market requirement. 1. Chemical name: , CAS #: 2. Chemical name: , CAS #: 3. Chemical name: , CAS #: Alt. 2 Chemical specifications of flame retardants in plastic parts >25g according ISO 1043-4: > PC + ABS FR40 <, > PC + ABS -MF15<	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.19	Plastic parts >25g are free from flame retardant substances/ preparations above 0.1% classified as R45, R40, R46, R48, R50, R51, R53, R60, R61 and any combination of these (See Note B3)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.20	Of total plastic parts' weight >25g, recycled material content is 0.0%.			
P7.21	Of total plastic parts' weight >25g, biobased material content is 0%.			
P7.22	Light sources are free from mercury If mercury is used specify: Number of lamps: and max. mercury content per lamp: mg	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P8	Batteries			
P8.1*	Battery chemical composition: <i>lithium/manganese dioxide</i>			<input type="checkbox"/>
P8.2	Batteries meet the requirements of the following voluntary program/s:			<input checked="" type="checkbox"/>


Note B2: IEC61249-2-21 has maximum limits for chlorine and bromine but does not address fluorine are included in the group of halogens.

Note B3: Starting from January 2009, Risk phrases can be replaced by Hazard phrases according to System (GHS), mandatory by December 2010.



Model number *	850 G4	
Issue date *	12/16/2016	Logo 

Product environmental attributes - Market requirements (continued)				Requirement met		
Item				Yes	No	n.a.
P9 Energy consumption						
9.1 For the product the following power levels or energy consumptions are reported:						
Energy mode *	Power level at 100 V AC	Power level at 115 V AC	Power level at 230 V AC	Reference / Standard for energy modes and test method *		
ENERGY STAR® On Mode * (System Short Idle)	5.99 W	5.86 W	5.86 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>	
ENERGY STAR® On Mode * (System Long Idle)	3.40 W	3.14 W	3.73 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>	
ENERGY STAR® Low Power Sleep Mode * (S3 - Windows "Standby") With Wake On LAN (WOL) Enabled	0.72 W	0.71 W	0.79 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>	
ENERGY STAR® System Off/Apparent Off Mode* (ACPI S5) With Wake On LAN(WOL) Enabled (Test Unit connected to AC Mains, AC adapter connected to notebook)	0.40 W	0.40 W	0.48 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>	
ETEC * Annual Energy Consumption (calculated value) for each input voltage	21.79 kWh/year	21.18 kWh/year	22.14 kWh/year	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>	
Display resolution* :	Megapixels				<input checked="" type="checkbox"/>	
Print Speed* :	Images per minute				<input checked="" type="checkbox"/>	
Default time to enter energy save mode:	minutes			ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>	
P9.2*	Information about the energy save function is provided with the product.				<input checked="" type="checkbox"/>	<input type="checkbox"/>
P9.3*	The product meets the energy requirements of the following voluntary program/s: ENERGY STAR® version: 6.1 Tier: Product category: Notebook PC Others specify:				<input checked="" type="checkbox"/>	<input type="checkbox"/>
P10 Emissions						
Noise emission -- Declared according to ISO 9296						
P10.1	Mode	Mode description	Declared A-weighted sound power level $L_{WA,d}$ (B)	Declared A-weighted sound pressure level L_{pAm} (dB)		<input type="checkbox"/>
				Operator position <input checked="" type="checkbox"/>	Bystander positions <input type="checkbox"/>	
				Desktop <input checked="" type="checkbox"/>	(only if product is not operator attended)	
				or Desk side <input type="checkbox"/>		
	Idle	* Fans on, HDD spinning (if applicable)	* 2.9	23		<input type="checkbox"/>
	Operation	* Fans on, HDD spinning	* 3.2	26		<input type="checkbox"/>
	Other mode					<input type="checkbox"/>
Measured according to: <input checked="" type="checkbox"/> ISO7779 <input checked="" type="checkbox"/> ECMA-74 <input type="checkbox"/> Other (only if not covered by ECMA-74 with L_{pAm} measurement distance m)						
P10.2	The product meets the acoustic noise requirements of the following voluntary program/s:				<input type="checkbox"/>	<input checked="" type="checkbox"/>

Model number *	850 G4	
Issue date *	12/16/2016	Logo 

Product environmental attributes - Market requirements (continued)		Requirement met		
Item		Yes	No	n.a.
Chemical emissions from printing products				
P10.3*	Test performed according to ECMA-328 (ISO/IEC 28360) standard <input type="checkbox"/> , other specify:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P10.4	Typical emission rate (print phase) is (mg/h):			<input checked="" type="checkbox"/>
	Dust Ozone Styrene Benzene TVOC			
P10.5	Chemical emission requirements of the following voluntary program/s are met for :	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Dust <input type="checkbox"/> Ozone <input type="checkbox"/> Styrene <input type="checkbox"/> Benzene <input type="checkbox"/> TVOC <input type="checkbox"/>			
Electromagnetic emissions				
P10.6	Computer display meets the requirement for low frequency electromagnetic fields of the following voluntary program/s:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Consumable materials for printing products				
P11.1*	A Safety Data Sheet (SDS) is available for the ink/toner preparation, even if not legally required (see P4.3).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P11.2*	Paper containing post-consumer recycled fibers can be used, provided that it meets the requirements of EN12281.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P11.3*	2-sided (duplex) printing/copying is an integrated product function.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Ergonomics for computing products				
P12.1*	The display meets the ergonomic requirements of ISO 9241-307 for visual display technologies.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P12.2*	The physical input device meets the requirements of ISO 9995 and ISO 9241-410.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P13 Packaging and documentation				
P13.1*	Product packaging material type(s): <i>PAPER/Corrugated</i> weight (kg): <i>0.348</i> Product packaging material type(s): <i>PLASTIC/Polyethylene Expanded - EPE</i> weight (kg): <i>0.038</i> Product packaging material type(s): <i>PLASTIC/Polyethylene low density - LDPE</i> weight (kg): <i>0.015</i> Product packaging material type(s): <i>PLASTIC/Polypropylene - PP</i> weight (kg): <i>0.005</i>			
P13.2*	Product plastic packaging is free from PVC.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P13.3*	Specify media for user and product documentation (tick box): Electronic <input checked="" type="checkbox"/> , Paper <input type="checkbox"/> , Other <input type="checkbox"/>			<input type="checkbox"/>
P13.4*	For paper user and product documentation, please specify contained percentage of post-consumer recycled fiber: <i>0.0%</i>			<input type="checkbox"/>
Rev. P13.5	User and product documentation do not contain chlorine bleached paper	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

P14	Additional Information (See Note B4)															
All sections	1. Product environmental information contained in this declaration is valid as of the date the declaration is published. Changes to external standards referenced in the IT Eco-Declaration may invalidate some information contained in this declaration over time.															
P9	<p>1. Many PCs are offered in multiple configurations within the model family. Energy efficiency data listed in this declaration is for an ENERGY STAR® compliant configuration if offered within the model family . HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. For more information about HP's ENERGY STAR® qualified products, go to hp.com: http://www.hp.com/ and select the applicable market segments and product categories to find PC configurations that meet the ENERGY STAR® specifications.</p> <p>2. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured model.</p> <p>3. Energy Efficiency information published on the ECMA 370 The Eco Declaration represents a typically configured product base model meeting ENERGY STAR® specifications if offered within the model family. If optional components or modules are added, like extra hard disks or graphic cards etc, these can change the energy efficiency data listed above.</p> <p>4. Power consumption in the Off / Apparent Off mode is measured and reported with the network interface controller (NIC) WOL disabled.</p> <p>5. European Union Commission Regulation 1275/2008- Energy Efficiency Information:</p> <table border="1"> <thead> <tr> <th>Mode / Condition</th> <th>Power Consumption in Watts at 230 VAC Input Voltage</th> <th>Default Time to Mode / Condition (if applicable)</th> </tr> </thead> <tbody> <tr> <td>Off Mode (if applicable)</td> <td><i>0.55 W</i></td> <td>Not Applicable</td> </tr> <tr> <td>Standby Mode (if applicable)</td> <td>Not Applicable</td> <td>Not Applicable</td> </tr> <tr> <td>Network Standby / Sleep / Long Idle Mode if all wired network ports are connected and all wireless network ports are activated (if applicable)</td> <td><i>0.66 W</i></td> <td><i>20 Min</i></td> </tr> <tr> <td>Network Standby / Sleep / Long Idle Mode (if applicable)</td> <td><i>0.66 W</i></td> <td><i>20 Min</i></td> </tr> </tbody> </table> <p>6. European Union Commission Regulation 1275/2008- Wireless Network Instructions:</p> <p>Where applicable, activate and deactivate a wireless network using the instructions provided in the product user guide or the operating system. Information is also available at www.hp.com/support.</p>	Mode / Condition	Power Consumption in Watts at 230 VAC Input Voltage	Default Time to Mode / Condition (if applicable)	Off Mode (if applicable)	<i>0.55 W</i>	Not Applicable	Standby Mode (if applicable)	Not Applicable	Not Applicable	Network Standby / Sleep / Long Idle Mode if all wired network ports are connected and all wireless network ports are activated (if applicable)	<i>0.66 W</i>	<i>20 Min</i>	Network Standby / Sleep / Long Idle Mode (if applicable)	<i>0.66 W</i>	<i>20 Min</i>
Mode / Condition	Power Consumption in Watts at 230 VAC Input Voltage	Default Time to Mode / Condition (if applicable)														
Off Mode (if applicable)	<i>0.55 W</i>	Not Applicable														
Standby Mode (if applicable)	Not Applicable	Not Applicable														
Network Standby / Sleep / Long Idle Mode if all wired network ports are connected and all wireless network ports are activated (if applicable)	<i>0.66 W</i>	<i>20 Min</i>														
Network Standby / Sleep / Long Idle Mode (if applicable)	<i>0.66 W</i>	<i>20 Min</i>														
P10	1. Acoustic noise information published on the ECMA 370 The Eco Declaration represents a typically configured product base model only. If optional items with moving parts are added, like extra hard disks or graphic cards with fans etc, these can change acoustic noise values for which HP can take no responsibility.															

Note B4: Additional lines may be inserted to declare further items, by positioning the cursor at the far right, the <Enter> key.

11
000076

РАБОТА С КОМПЬЮТЕРОМ

Legal references Europe Annex B

Reference	Declaration item
2002/95/EC (ROHS Directive)	P1.1, P4.1
REACH, Annex XVII	P1.6, P1.8, P4.2
REACH, Annex XVII	P1.4
REACH, Annex XVII	P1.2
REACH, Annex XVII	P1.7
REACH, Annex XVII	P1.9
Regulation (EC) No. 2037/2000, 2038/2000, 2039/2000	P1.3
Norwegian regulation relating to restrictions on the use of certain dangerous chemicals 20.12.2002	P1.5
2006/66/EC (Battery and accumulators Directive)	P2.1, P2.2, P2.3, P3.4, P8.1
2006/95/EC (Low Voltage Directive)	P3.1, 3.4
2004/108/EEC (New EMC Directive)	P3.2, 3.4
1999/5/EC (R&TTE Directive)	P3.3, 3.4
"REACH" Regulation (1907/2006), annex VII	P1.10
(EC) No.1272/2008 regulation on classification, labeling and packaging (CLP)	P4.3
REACH article 31, annex II	P4.3
2004/12/EC (Directive on packaging and packaging waste)	P5.1
(97/129/EC) (Commission Decision on Identification System for Packaging Materials)	P5.2
2037/2000/EC Regulation on Substances that Deplete the Ozone Layer	P5.3
2002/96/EC (WEEE directive)	P3.4, P6.1
(EC) No.1272/2008 regulation on classification, labeling, and packaging (CLP)	P7.19

THE ECO DECLARATION



Company environmental profile - THE ECO DECLARATION

Brand	HP	Logo
Company name *	HP	
Contact information *	HP Environmental Contact Centre (ECC) environment@hp.com	
Internet site *	www.hp.com/hpinfo/globalcitizenship/environment/index.html	
Issue date *	2014-06	
Intended market *	<input checked="" type="checkbox"/> Global <input type="checkbox"/> Europe <input type="checkbox"/> Asia, Pacific & Japan <input type="checkbox"/> Americas <input type="checkbox"/> Other	
Additional Information		

This is an uncontrolled copy when in printed form. Please refer to the contact information for the latest version.

The declaration may be published only when all rows and/or fields marked with an * are filled-in (n.a. for not applicable). Additional information regarding each item may be found under C6.

Quality control		Requirement met	
Item		Yes	No
QC1 *	The company enforces an internal quality control system to ensure the correctness of this eco declaration	<input checked="" type="checkbox"/>	<input type="checkbox"/>
QC2 *	The company is a member of an eco declaration system that enforces regular independent quality control.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Company environmental profile - Legal requirements		Requirement met		
Item		Yes	No	n.a.
C1	Product recycling			
C1.1*	The company participates in a system or has its own system for collection and recycling of end of life products in countries where the company puts them on the market and where required (see legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C2	Battery recycling			
C2.1*	The company participates in a system or has its own system for collection and recycling of batteries in countries where the company puts products on the market (see legal reference) or pays eco tax / fee where required.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C3	Packaging recycling			
C3.1*	The company participates in a system or has its own system for collection and recycling of packaging material in countries where the company puts products on the market and where required (see legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Company environmental profile - Market requirements		Requirement met		
Item		Yes	No	n.a.
C4	Environmental policy and environmental management			
C4.1*	The company has a documented environmental policy approved by the management.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C4.2*	The company has an environmental management system covering: Product development Manufacturing If so certified according to: <input checked="" type="checkbox"/> ISO 14001 <input type="checkbox"/> Other as specified in C6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C4.3	The company regularly publishes an environmental report. If so, it meets the recommendations of <input checked="" type="checkbox"/> The Global Reporting Initiative <input type="checkbox"/> Other as specified in C6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C5	Recycling			
C5.1*	Information about the product, battery & packaging take back system (C1, C2, C3) is available in printed or electronic format.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

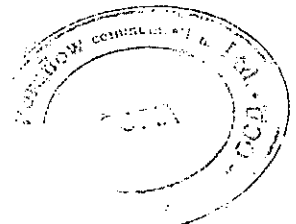
C6 Additional Information

HP is committed to responsible business practices and transparency in its global citizenship policies and performance. We have a long history of working with suppliers to improve their social and environmental (SER) performance, as well as improving industry standards. HP endorses the EICC Code of Conduct in its entirety, and we supplement it with additional requirements specific to freedom of association and HP's Student and Dispatch Worker Guidance Standard for Supplier Facilities in the People's Republic of China (PRC). HP also has a strong Global Human Rights Policy in place. HP sets expectations for its suppliers to establish policies and processes regarding conflict minerals. HP conducts due diligence on its supply chain annually including requesting information about our suppliers' own due diligence and the smelters and refiners used. HP became the first IT company to publish its supply chain smelter list. HP follows the Global Reporting Initiative (GRI) guidelines as a basis for reporting. The GRI index provides easy reference to HP's Living Progress Report (LPR) content. HP offers take back services of products and printing suppliers in some 70 countries. Please refer to HP's Living Progress Report for more details on our global efforts.

Legal references Europe Annex A

Reference	Declaration item
2002/96/EC (WEEE directive)	C1.1
2006/66/EC (Battery and accumulators Directive)	C1.2
2004/12/EC (Directive on packaging and packaging waste)	C1.3

NI



000079

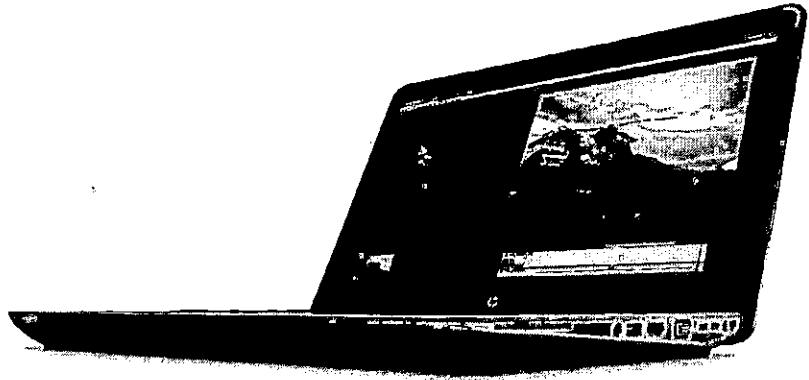
Datasheet

HP ZBook 17 G4 Mobile Workstation



Portable powerhouse

We built desktop workstation power, performance and expandability into a device designed for the road. Made for mobile creative and design professionals with the most demanding projects, where compromise is simply not an option.



HP recommends Windows 10 Pro.

Extreme power and expandability

- Our most powerful mobile workstation is designed for demanding workloads. Configure your HP ZBook 17 with the latest Intel® Xeon® processors², NVIDIA® Quadro® or AMD Radeon™ Pro graphics, up to 4 TB of storage⁴ and dual Thunderbolt™ 3 ports.

No compromise reliability

- Confidently take on your workday with our durable & reliable HP ZBook 17. With a 3-year onsite⁶ limited warranty, 120,000 hours of testing, and 30 years of HP Z DNA this is where the fusion of innovation, performance & reliability meet.

Featuring

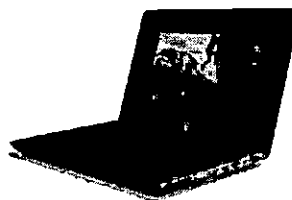
- Be productive in any situation. Windows 10 Pro and powerful security, collaboration, and connectivity features from HP help you power through your day on the HP ZBook 17.
- Choose from 7th generation Intel® Core™3 or Intel® Xeon® processor options that bring speed and superior performance to the HP ZBook 17.
- For real-time visualization of multi-layered files and projects, experience AMD Radeon™ Pro or NVIDIA® Quadro® 3D graphics with up to 16 GB of video memory.
- Extremely responsive experience with heavy workloads and file sizes with up to 64 GB DDR4 memory. Plus, help protect your data with optional ECC memory.
- Reduce boot up, file transfers and application load times by revolutionizing how your HP ZBook handles large files with 4 TB storage, including the optional dual HP Z Turbo Drives.
- Quickly and easily transfer data and connect to devices. This HP ZBook 17 is packed with multiple ports including HDMI 2.0, USB 3.0, and dual Thunderbolt™ 3 ports.
- When color accuracy is critical, the optional 4K UHD display with HP DreamColor technology provides 8 million color accurate pixels, which means crystal clear, immersive imagery.
- The HP ZBook Dock with Thunderbolt 3 quickly connects and powers your HP ZBook to compatible devices and provides support for dual 4K monitors at native resolutions.
- Get long lasting battery life, and when you need it, recharge quickly with HP Fast Charge. You'll get up 50% battery life in just 30 minutes.
- Reliable HP service is ready when you need it, including 3 years of parts, labor and onsite service with our limited warranty.
- Experience the dual-fan active cooling system designed to dissipate heat from the powerful NVIDIA® graphics cards and Intel® processors.
- The embedded Trusted Platform Module (TPM), Smart Card Reader and optional Finger Print Reader can help secure your data, e-mail, and user credentials.

000080

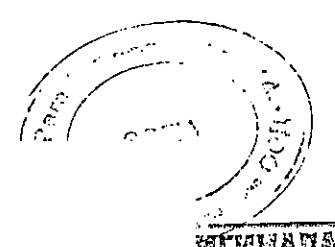


HP ZBook 17 G4 Mobile Workstation Specifications Table

HP recommends Windows 10 Pro.



Operating System	Windows 10 Pro 64 – HP recommends Windows 10 Pro. ¹ Windows 10 Home 64 ¹ FreeDOS 2.0
Processor Family	7th Generation Intel® Xeon® processor (E3-1535M v6, E3-1505M v6 models); 7th Generation Intel® Core™ i7 processor (i7-7700HQ, i7-7820HQ models); 7th Generation Intel® Core™ i5 processor (i5-7300HQ, i5-7440HQ models) ^{2,3}
Processors^{2,3}	Intel® Xeon® E3-1535M v6 with Intel® HD Graphics P630 (3.1 GHz, up to 4.2 GHz with Intel® Turbo Boost Technology 2.0, 8 MB L3 cache, 4 cores); Intel® Xeon® E3-1505M v6 with Intel® HD Graphics P630 (3 GHz, up to 4 GHz with Intel® Turbo Boost Technology 2.0, 8 MB L3 cache, 4 cores); Intel® Core™ i7-7820HQ with Intel® HD Graphics 630 (2.9 GHz, up to 3.9 GHz with Intel® Turbo Boost Technology 2.0, 8 MB L3 cache, 4 cores); Intel® Core™ i7-7700HQ with Intel® HD Graphics 630 (2.8 GHz, up to 3.8 GHz with Intel® Turbo Boost Technology 2.0, 8 MB L3 cache, 4 cores); Intel® Core™ i5-7440HQ with Intel® HD Graphics 630 (2.8 GHz, up to 3.8 GHz with Intel® Turbo Boost Technology 2.0, 6 MB L3 cache, 4 cores); Intel® Core™ i5-7300HQ with Intel® HD Graphics 630 (2.5 GHz, up to 3.5 GHz with Intel® Turbo Boost Technology 2.0, 6 MB L3 cache, 4 cores)
Chipset	Mobile Intel® CM236 integrated with processor
Maximum Memory	Up to 64 GB DDR4-2400 ECC or non-ECC SDRAM ^{4,5} Standard memory note: Transfer rates up to 2400 MT/s for systems with less than 32 GB. Transfer rates up to 2133 MT/s for systems with greater than 32 GB. Non-ECC memory only available with Intel® Core™ processors. ECC memory only available with Intel® Xeon® processors.
Memory Slots	4 SODIMM
Internal Storage	up to 1 TB SATA (7200 rpm) ⁶ 500 GB up to 1 TB SATA (7200 rpm) ⁶ up to 500 GB SATA SED (7200 rpm) ⁶ up to 500 GB SATA SED FIPS 140-2 (7200 rpm) ⁶ up to 500 GB (8 GB cache) SATA SSHD ⁶ 256 GB up to 1 TB SATA SSD ⁶ up to 256 GB M.2 SATA SED SSD ⁶
Display	49.3 cm (17.3") diagonal HD+ anti-glare (1600 x 900); 49.3 cm (17.3") diagonal FHD IPS anti-glare (1920 x 1080); 49.3 cm (17.3") diagonal FHD IPS touch screen (1920 x 1080); 49.3 cm (17.3") diagonal UHD DreamColor IPS anti-glare (3840 x 2160)
Available Graphics	Integrated: Intel® HD Graphics 630; Intel® HD Graphics P630 ^{7,10} Discrete: AMD Radeon™ Pro WX 4170 (4 GB GDDR5 dedicated); NVIDIA® Quadro® M1200 (4 GB GDDR5 dedicated); NVIDIA® Quadro® M2200 (4 GB GDDR5 dedicated); NVIDIA® Quadro® P3000 (6 GB GDDR5 dedicated); NVIDIA® Quadro® P4000 (8 GB GDDR5 dedicated); NVIDIA® Quadro® P5000 (16 GB GDDR5 dedicated) ^{11,12} Intel® HD Graphics 630 integrated on Core™ i7 and Core™ i5 processors. Intel® HD Graphics P530 integrated on Xeon® processors.
Expansion Slots	1 SD UHS-II flash media ¹ smart card reader SD supports next generation secure digital and is backward compatible to SDHC, SDXC
Ports and Connectors	Left side: 1 RJ-45; 1 USB 3.0 (charging); 2 USB 3.0 Right side: 1 power connector; 2 USB Type-C™ (Thunderbolt™ 3, DisplayPort™ 1.2, USB 3.1); 1 HDMI 2.0; 1 headphone/microphone combo; 3 USB 3.0; 1 VGA
Communications	LAN: Integrated Intel® I219-LM Gigabit Network Connection WLAN: Intel® Dual Band Wireless-AC 8265 802.11 a/b/g/n/ac (2x2) Wi-Fi and Bluetooth® 4.2 Combo; Intel® Dual Band Wireless-AC 8265 802.11 a/b/g/n/ac (2x2) non-vPro™ Wi-Fi and Bluetooth® 4.2 Combo ⁷ WWAN: HP hs3210 HSPA+ Mobile Broadband Module; HP li4132 LTE/HSPA+ 4G Mobile Broadband Module; HP li4120 LTE/HSPA+ 4G Mobile Broadband Module ⁸
Audio	Bang & Olufsen HD audio. Integrated stereo speakers and microphone (dual-microphone array when equipped with optional webcam). Button for volume mute, functions keys for volume up and down. Combo microphone+stereo headphone-out jack.
Camera	720p HD webcam (optional) ^{9,12}
Power	200 W Slim Smart AC adapter (external)
Input Device	HP Spill Resistant Keyboard (backlit with function key control) with numeric keypad Image sensor touchpad with on/off button, two-way scroll, gestures, three pck buttons. Pointstick with three additional pointstick buttons.
Security	Absolute Persistence Module; DriveLock and Automatic DriveLock; HP BIOSphere with Sure Start; HP FingerPrint Sensor (optional); Integrated smart card reader; One-step login; Optional USB port disable at factory (user configurable via BIOS); RAID (available as a configurable option); Removable media write/boot control; SATA port disablement (via BIOS); Security lock slot; Serial, parallel, USB enable/disable (via BIOS); Setup password (via BIOS) Support for Intel® AT; Power-on password (via BIOS); Common Criteria EAL4+ Augmented Certified Discrete TPM 2.0 Embedded Security Chip ^{13,14,15}
Software	HP Mobile Workstations are shipped with a variety of software titles including: HP Performance Advisor, HP Remote Graphics Software (HP RGS), HP Velocity, HP Client Security Suite Gen3, HP ePrint Driver + JetAdvantage, HP Recovery Manager; HP WorkWire (requires Bluetooth), HP LAN-WLAN Protection, HP Hotkey Support, HP Jumpstart, HP Support Assistant, HP Noise Cancellation, Buy Office, Bing Search, Skype. Please refer to this product's QuickSpecs document for a full list of preinstalled software. ^{13,14,15,16}
Dimensions	420 x 280 x 33 mm Height measurement taken at front of notebook
Weight	Starting at 3.14 kg Weight varies by configuration and components
Energy Efficiency Compliance	ENERGY STAR® certified and EPEAT® registered configurations available ¹⁰
Environmental Certification	Low halogen ²¹
Warranty	3-year (3-3-0) limited warranty and service offering includes 3 years of parts and labor. Terms and conditions vary by country.



000081

HP INFORMATION

HP ZBook 17 G4 Mobile Workstation

HP recommends Windows 10 Pro.

Accessories and services (not included)

HP Z27s 27-Inch IPS UHD Display



Join the Ultra High Definition movement and expand your visual workspace with the HP Z27s 68.6 cm (27") IPS UHD Display, which delivers an extra-large screen with UHD/4K¹ presentation and flexible connectivity and comfort features.
Product number: J3G07A4

3Dconnexion CadMouse



Simplify scroll, click, and zoom functions and comfortably drive your CAD projects with the 3Dconnexion CADMouse.
Product number: M5C35AA

HP 16GB DDR4 2133MHz ECC Memory



Boost the capabilities of your HP Business Notebook PC and improve system performance and application responsiveness with low-power, high-speed, DDR4 ECC memory from HP.
Product number: V1D59AA

HP 1TB SSD 2280 M.2 PCI-E 3x4 NVME



Reduce boot up, calculation, and graphics response times and revolutionize how your HP Business Notebook handles large files with the HP 1TB SSD 2280 M.2 PCI-E 3x4 NVME, a remarkably affordable and innovative PCIe-based NVMe memory SSD storage solution.
Product number: X2E90AA

HP ZBook Thunderbolt 3 1m Cable



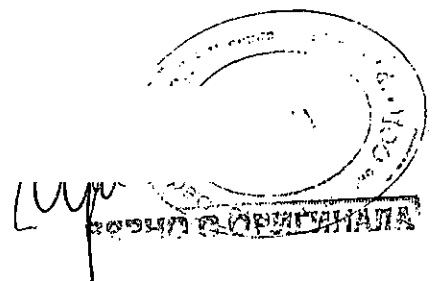
Use the cable to connect your HP ZBook 150W or 200W Thunderbolt 3 Dock to your notebook.
Product number: Z4P20AA

HP 3 year Next Business Day Onsite Hardware Support for Notebooks



Receive 3 years of next business day onsite HW Support from an HP-qualified technician for your computing device, if the issue cannot be solved remotely.
Product number: U4414E

000082



HP ZBook 17 G4 Mobile Workstation

HP recommends Windows 10 Pro.

Messaging Footnotes:

- ¹ Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com>.
- ² Multi-Core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
- ³ Sold separately or as an optional feature.
- ⁴ For hard drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30GB (for Windows 10) of system disk is reserved for system recovery software.
- ⁵ Must be configured with HP approved VR Ready graphics and CPUs.
- ⁶ Onsite service may require an optional HP Care Pack. Availability may vary.
- ⁷ Recharges your battery up to 50% within 30 minutes when the system is off or in standby mode. Power adapter with a minimum capacity of 65 watts is required. After charging has reached 50% capacity, charging will return to normal. Charging time may vary +/-10% due to System tolerance.

Technical Specifications Footnotes:

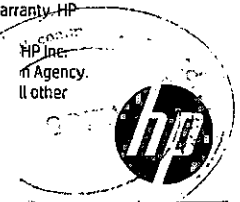
- ¹ Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.microsoft.com>
- ² Multicore is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
- ³ In accordance with Microsoft's support policy, HP does not support the Windows® 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows® 8 or Windows 7 drivers on <http://www.support.hp.com>
- ⁴ Maximum memory capacities assume Windows 64-bit operating systems. With Windows 32-bit operating systems, memory above 3 GB may not all be available due to system resource requirements.
- ⁵ Only 2 DIMM configurations run at 2400 MHz. 4 DIMM configurations run at 2133 MHz.
- ⁶ For storage drives GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10) is reserved for system recovery software.
- ⁷ Wireless cards are optional or add-on features and requires separately purchased wireless access point and internet service. Availability of public wireless access points limited. The specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ac WLAN devices.
- ⁸ WWAN is an optional feature. Check with service provider for coverage and availability in your area. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, and in all regions.
- ⁹ HD content required to view HD images.
- ¹⁰ Intel® HD graphics 630 is configurable as a standalone graphics option; Intel® HD graphics P630 only used when NVIDIA® Optimus™ Technology is enabled.
- ¹¹ NVIDIA® Quadro® mobile professional graphics support up to four independent displays when using a HP ZBook Dock with Thunderbolt 3 (sold separately) or DP 1.2 hubs with MST. AMD Radeon™ Pro professional graphics support up to six independent displays when using an HP ZBook Dock with Thunderbolt 3 (sold separately) or DP 1.2 hubs with MST.
- ¹² Optional or add-on feature.
- ¹³ HP ePrint Driver requires an internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see www.hp.com/go/businessmobileprinting)
- ¹⁴ HP Remote Graphics Software requires a Windows, Linux®, or Mac® OS X 10.10 and newer operating system and network access.
- ¹⁵ HP Workwise smartphone app is available as a free download on the App Store and Google Play. See requirements at www.hp.com/go/workwise
- ¹⁶ HP Client Security Suite Gen3 requires Windows and Intel® or AMD 7th Gen processors.
- ¹⁷ BIOS Absolute Persistence module is shipped turned off, and will be activated when customers purchase and activate a subscription. Service may be limited. Check with Absolute for availability outside the U.S. The optional subscription service of Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: <http://www.absolute.com/company/legal/agreements/computrace-agreement>. If Data Delete is utilized, the Recovery Guarantee payment is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either create a PIN or purchase one or more RSA SecurID tokens from Absolute Software.
- ¹⁸ Intel AT security requires a separately purchased Absolute Computrace service subscription and must be activated and configured. Check with Absolute for availability in your country. Intel and HP assume no liability for lost or stolen data and/or systems or any other damages resulting therefrom. See <http://www.intel.com/technology/anti-theft/>
- ¹⁹ Sure Start Gen3 is available on HP ZBook products equipped with Intel® 7th generation processors.
- ²⁰ EPEAT® registered where applicable. EPEAT registration varies by country. See www.epeat.net for registration status by country.
- ²¹ External power supplies, power cords, cables and peripherals are not low halogen. Service parts obtained after purchase may not be low halogen.

Sign up for updates
hp.com/go/getupdated

© Copyright 2017 HP Development Company, L.P.. The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Intel, Core and vPro are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries. Bluetooth is a trademark of its proprietor under license. USB Type-C™ and USB-C™ are trademarks of USB Implementers Forum. ENERGY STAR is a registered trademark of the U.S. Environmental Protection Agency. DisplayPort™ and the DisplayPort™ logo are trademarks owned by the Video Electronics Standards Association (VESA®) in the United States and other countries. AMD and Radeon are trademarks of Advanced Micro Devices, Inc. NVIDIA, the NVIDIA logo and the NVIDIA logo are trademarks and/or registered trademarks of NVIDIA Corporation in the U.S. and other countries.

4AA6-9990EEE, May 2017



000083

HP ENVIRONMENTAL



ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ
в съответствие с ISO / IEC 17050-1 и EN 17050-1

ДоС #: HSN-C01C-R3Превод/bg

Наименование на производителя: **HP Inc.**
Производителя Адрес: 1501 Page Mill Road, Palo Alto, CA 94303-1112 USA

заявява, че продуктът

Име на продукта и модел:²⁾ HP ZBook 17 G4 Mobile Workstation
Нормативен номер на модела:¹⁾ HSN-C01C
Опции на продукта: Виж приложение I

съответства на следните спецификации на продукта и регламенти:

Безопасност:

IEC 60950-1:2005 +A1:2009 +A2:2013
EN 60950-1:2006 +A11:2009 +A1:2010
+A12:2011 +A2:2013
EN 50566:2013
EN 62311:2008
EN 62479:2010

EMC

EN 301 489-1 V2.1.1
EN 301 489-3 V2.1.1
EN 301 489-17 V3.1.1
EN 301 489-52 V1.1.0
FCC CFR 47 Part 15
ICES-003, Issue 6

Радиочестотният спектър

EN 62209-2:2010
EN 300 328 V2.1.1
EN 300 440 V2.1.1
EN 301 511 V9.0.2
EN 301 511 V12.5.1
EN 301 893 V2.1.0
EN 301 908-1 V11.1.1
EN 301 908-2 V11.1.1
EN 301 908-13 V11.1.1

екодизайна

Регламент (EC) № 1275/2008
EN 50564:2011
IEC 62301:2011

RoHS

EN 50581:2012

Този апарат в съответствие с изискванията на Директивата RED 2014/53/EC, Директивата за екодизайна 2009/125/OT, Директивата RoHS 2011/65/EC и носи маркировката съответно **CE**.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Допълнителна информация:

- 1) Този продукт има нормативен номер на модела, който остава с регулаторните аспекти на дизайн. Номер на Нормативен модел е идентификатора основен продукт в нормативната документация и протоколи от изпитвания, този брой не трябва да се бърка с пазарното име или номера на продукта.
- 2) Нотифицираният орган **TUV Rheinland LGA Products GmbH** с номер **0197** е извършена оценка на съответствието (съгласно приложение III, поради липсващи хармонизирани стандарти) и издаде сертификата за ЕС изследване на типа: RT 60120229 0001
- 3) Този продукт е изпробван в типична HP среда във връзка с хост система HP.

Palo Alto, CA
12-06-2017

проверка на подписа върху оригинала на декларацията,

приложена
Gilles Soulard, Manager
Product Compliance Center

Local контакт за регулаторни теми само:

EU: HP Deutschland GmbH, HP HQ-TRE, 71025 Boeblingen, Germany
U.S.: HP Inc., 1501 Page Mill Road, Palo Alto 94304, U.S.A. 650-857-1501

www.hp.eu/certificates




000084 / УМ **ОРИГИНАЛ**

THE ECO **DECLARATION**

Product environmental attributes – THE ECO DECLARATION

The declaration may be published only when all rows and/or fields marked with an * are filled-in (n.a. for not applicable).
 Additional information regarding each item may be found under P14.

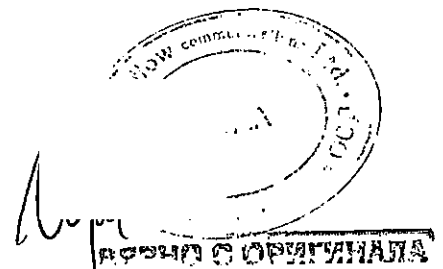
Brand *	HP	
Company name *	HP	
Contact information *	HP Environmental Contact Center environment@hp.com	
Internet site *	http://www.hp.com/hpinfo/globalcitizenship/environment/	
Additional information		


The company declares (based on product specification or test results based obtained from sample testing), that the product conforms to the statements given in this declaration.	
Type of product *	Notebook PC
Commercial name *	HP Zbook 17 G4 Mobile Workstation
Model number *	17 G4
Issue date *	3/24/2017
Intended market *	<input checked="" type="checkbox"/> Global <input type="checkbox"/> Europe <input type="checkbox"/> Asia, Pacific & Japan <input type="checkbox"/> Americas <input type="checkbox"/> Other
Additional information	

This is an uncontrolled copy when in printed form. Please refer to the contact information for the latest version.

Quality Control		Requirement met	
Item	Description	Yes	No
QC1 *	The company enforces an internal quality control scheme to ensure the correctness of this eco declaration	<input checked="" type="checkbox"/>	<input type="checkbox"/>
QC2 *	The company is a member of an eco declaration system that enforces regular independent quality control such as organized by IT-Företagen (see www.itecodeclaration.org).	<input checked="" type="checkbox"/>	<input type="checkbox"/>


000085



Model number *	17 G4	
Issue date *	3/24/2017	Logo 

Product environmental attributes - Legal requirements		Requirement met		
Item		Yes	No	n.a.
P1	Hazardous substances and preparations			
P1.1*	Products do not contain more than; 0.1% lead, 0.01% cadmium, 0.1% mercury, 0.1% hexavalent chromium, 0.1% polybrominated biphenyls (PBB) or 0.1% polybrominated diphenyl ethers (PBDE). (See legal reference and Note B1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.2*	Products do not contain Asbestos (see legal reference). Comment: Legal reference has no maximum concentration value.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.3*	Products do not contain Ozone Depleting Substances: Chlorofluorocarbons (CFC), hydrobromofluorocarbons (HBFC), hydrochlorofluorocarbons (HCFC), Halons, carbontetrachloride, 1,1,1-trichloroethane, methyl bromide (see legal reference). Comment: Legal reference has no maximum concentration values.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.4*	Products do not contain more than; 0.005% polychlorinated biphenyl (PCB), 0.005% polychlorinated terphenyl (PCT) in preparations (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.5*	Products do not contain more than 0.1% short chain chloroparaffins (SCCP) with 10-13 carbon atoms in the chain containing at least 48% per mass of chlorine in the SCCP (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P1.6*	Textile and leather parts with direct skin contact do not contain Tri-(2,3-dibromopropyl)-phosphate (TRIS), Tris-(aziridinyl)-phosphineoxide (TEPA), polybrominated biphenyl (PBB) (see legal reference). Comment: Legal reference has no maximum concentration values.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P1.7*	Textile and leather parts with direct skin contact do not contain more than 0.003% Azo colorants that split aromatic amines. (See legal reference and Note B1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P1.8*	Wooden parts do not contain arsenic and chromium as a wood preservation treatment as well as pentachlorophenol and derivatives (see legal reference). Comment: Legal reference has no maximum concentration values.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P1.9*	Parts with direct and prolonged skin contact do not release nickel in concentrations above 0.5 microgram/cm ² /week (see legal reference). Comment: Max limit in legal reference when tested according to EN1811:1998.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P1.10*	REACH Article 33 information about substances in articles is available at (add URL or mail contact): http://www.hp.com/hpinfo/globalcitizenship/environment/productdata/reachdesktop-pcs.html	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2	Batteries			
P2.1*	If the product contains a battery or an accumulator, it is labeled with the disposal symbol and if it contains more than 0.0005% of mercury (for button cells only) by weight, or more than 0.004% of lead, it shall be marked with the chemical symbol for the metal concerned, Hg or Pb. Information on proper disposal is provided in user manual. (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2.2*	Button cells used in the product do not contain more than 2% by weight of mercury. Other batteries or accumulators do not contain more than 0.0005% of mercury or 0.002% of cadmium. (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2.3*	Batteries and accumulators are easily removable by either users or service providers (as dependent on the design of the product). Exception: Batteries that are permanently installed for safety, performance, medical or data integrity reasons do not have to be "easily removable". (See legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3	Safety, EMC connection to the telephone network and labeling			
P3.1*	The product complies with legally required safety standards as specified (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.2*	The product complies with legally required standards for electromagnetic compatibility (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.3*	If product is intended for connection to a public telecom network or contains a radio transmitter, it complies with legally required standards for radio and telecommunication devices (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3.4*	The product is labeled to show conformance with applicable legal requirements (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P4	Consumable materials			
P4.1*	If a photo conductor (drum, belt etc.) is used in the product, it does not contain cadmium max 0.01% (see legal reference and Note B1).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P4.2*	If ink/toner is used in the product, it does not contain cadmium max 0.1% by weight (see legal reference).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P4.3*	If the ink/toner formulation/preparation is classified as hazardous according to applicable regulations, the product/packaging is adequately labeled and a Safety Data Sheet (SDS) in accordance with these requirements is available (see legal reference).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P5	Product packaging			
P5.1*	Packaging and packaging components do not contain more than 0.01% lead, mercury, cadmium and hexavalent chromium by weight of these together.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
P5.2*	Plastic packaging material is marked according to ISO 11469 referring ISO 1043 (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P5.3*	The product packaging material is free from ozone depleting substances as specified in the Montreal Protocol (see legal reference). Comment: Legal reference has no maximum concentration values.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note B1: Restriction applies to the homogeneous material, unless other specified and expressed in weight%

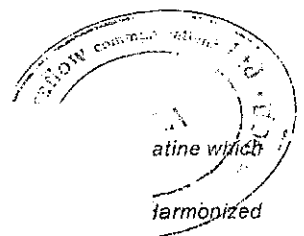
Model number *	17 G4	
Issue date *	3/24/2017	Logo 


Product environmental attributes - Market requirements - Environmental conscious design		Requirement met		
Item	*=mandatory to fill in. Additional information regarding each item may be found under P14.	Yes	No	n.a.
P6	Treatment information			
P6.1*	Information for recyclers/treatment facilities is available (see legal reference).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7	Design			
	Disassembly, recycling			
P7.1*	Parts that have to be treated separately are easily separable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.2*	Plastic materials in covers/housing have no surface coating.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P7.3*	Plastic parts >100g consist of one material or of easily separable materials.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P7.4*	Plastic parts >25g have material codes according to ISO 11469 referring ISO 1043.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.5	Plastic parts are free from metal inlays or have inlays that can be removed with commonly available tools.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.6*	Labels are easily separable. (This requirement does not apply to safety/regulatory labels).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Product lifetime			
P7.7*	Upgrading can be done e.g. with processor, memory, cards or drives	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.8*	Upgrading can be done using commonly available tools	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.9.	Spare parts are available after end of production for: 5 years			<input type="checkbox"/>
P7.10	Service is available after end of production for: years			<input checked="" type="checkbox"/>
	Material and substance requirements			
P7.11*	Product cover/housing material type: Material type: PC+ABS(FR40) Material type: Material type:			
P7.12	Electrical cable insulation materials of power cables are PVC free.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.13	Electrical cable insulation materials of signal cables are PVC free	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.14	All cover/housing plastic parts >25g are free from chlorine and bromine.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.15	All printed circuit boards (without components) >25g are halogen free. as defined in IEC61249-2-21. (See Note B2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.16	Flame retarded plastic parts >25g in covers / housings are marked according ISO 1043-4: Marking: PC+ABS(FR40)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.17	Alt. 1 Chemical specifications of flame retardants in printed circuit boards >25g (without components): TBBPA (additive) <input type="checkbox"/> , TBBPA (reactive) <input type="checkbox"/> , Other; chemical name: , CAS #: Alt. 2 Chemical specifications of flame retardants in printed circuit boards (without components) >25g according ISO 1043-4: FR(40), FR(41)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.18	Alt. 1 Flame retarded plastic parts >25g contain the following flame retardant substances/preparations in concentrations above 0.1%: Comment: No legal limits exist, this is a market requirement. 1. Chemical name: , CAS #: 2. Chemical name: , CAS #: 3. Chemical name: , CAS #: Alt. 2 Chemical specifications of flame retardants in plastic parts >25g according ISO 1043-4: PC+ABS(FR40)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.19	Plastic parts >25g are free from flame retardant substances/ preparations above 0.1% classified as R45, R40, R46, R48, R50, R51, R53, R60, R61 and any combination of these (See Note B3)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P7.20	Of total plastic parts' weight >25g, recycled material content is 0.0%.			
P7.21	Of total plastic parts' weight >25g, biobased material content is 0%.			
P7.22	Light sources are free from mercury If mercury is used specify: Number of lamps: and max. mercury content per lamp: mg	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P8	Batteries			
P8.1*	Battery chemical composition: lithium/manganese dioxide			<input type="checkbox"/>
P8.2	Batteries meet the requirements of the following voluntary program/s:			<input checked="" type="checkbox"/>

Note B2: IEC61249-2--21 has maximum are included in the group of halogens.

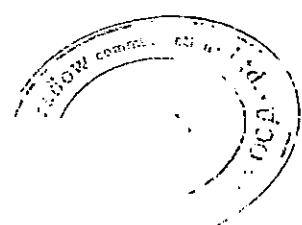
chlorine and bromine but does not address fluor.


Note B3: 'Starting from January 2009, Risk phrases can be replaced by Hazard phrases according System (GHS). mandatory by December 2010.



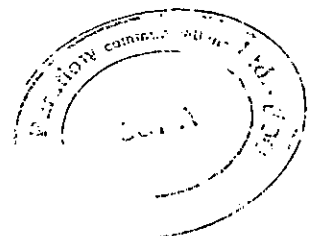
Model number *	17 G4	
Issue date *	3/24/2017	Logo 

Product environmental attributes - Market requirements (continued)				Requirement met	
Item	Yes	No	n.a.		
P9 Energy consumption					
9.1 For the product the following power levels or energy consumptions are reported:					
Energy mode *	Power level at 100 V AC	Power level at 115 V AC	Power level at 230 V AC	Reference / Standard for energy modes and test method *	<input type="checkbox"/>
ENERGY STAR® On Mode * (System Short Idle)	14.68 W	14.53 W	15.11 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
ENERGY STAR® On Mode * (System Long Idle)	6.84 W	6.94 W	7.37 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
ENERGY STAR® Low Power Sleep Mode * (S3 - Windows "Standby") With Wake On LAN (WOL) Enabled	0.83 W	0.83 W	0.88 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
ENERGY STAR® System Off/Apparent Off Mode* (ACPI S5) With Wake On LAN(WOL) Enabled (Test Unit connected to AC Mains, AC adapter connected to notebook)	0.44 W	0.44 W	0.47 W	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
ETEC * Annual Energy Consumption (calculated value) for each input voltage	48.07 kWh/year	47.78 kWh/year	49.87 kWh/year	ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
Display resolution* :	Megapixels				<input checked="" type="checkbox"/>
Print Speed* :	Images per minute				<input checked="" type="checkbox"/>
Default time to enter energy save mode:	minutes			ENERGY STAR® Program Requirements for Computers: Ver. 6.1	<input type="checkbox"/>
P9.2*	Information about the energy save function is provided with the product.			<input checked="" type="checkbox"/>	<input type="checkbox"/>
P9.3*	The product meets the energy requirements of the following voluntary program/s: ENERGY STAR® version: 6.1 Tier: Product category: Notebook PC Others specify:			<input checked="" type="checkbox"/>	<input type="checkbox"/>
P10 Emissions					
Noise emission – Declared according to ISO 9296					
P10.1	Mode	Mode description	Declared A-weighted sound power level $L_{WA,d}$ (B)	Declared A-weighted sound pressure level L_{pAm} (dB)	<input type="checkbox"/>
				Operator position <input checked="" type="checkbox"/> Desktop <input checked="" type="checkbox"/> or Desk side <input type="checkbox"/>	Bystander positions <input type="checkbox"/>
	Idle	* Fans on, HDD spinning (if applicable)	* 3.3	29	<input type="checkbox"/>
	Operation	* Fans on, HDD spinning	* 3.4	29	<input type="checkbox"/>
	Other mode				<input type="checkbox"/>
	Measured according to: <input checked="" type="checkbox"/> ISO7779 <input checked="" type="checkbox"/> ECMA-74 <input type="checkbox"/> Other (only if not covered by ECMA-74 with L_{pAm} measurement distance m)				
P10.2	The product meets the acoustic noise requirements of the following voluntary program/s:			<input type="checkbox"/>	<input checked="" type="checkbox"/>



Model number *	17 G4	
Issue date *	3/24/2017	Logo 

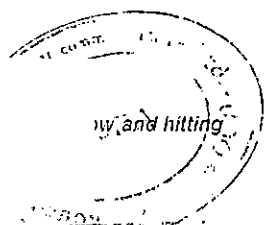
Product environmental attributes - Market requirements (continued)		Requirement met		
Item		Yes	No	n.a.
Chemical emissions from printing products				
P10.3*	Test performed according to ECMA-328 (ISO/IEC 28360) standard <input type="checkbox"/> , other specify:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P10.4	Typical emission rate (print phase) is (mg/h):			<input checked="" type="checkbox"/>
	Dust Ozone Styrene Benzene TVOC			
P10.5	Chemical emission requirements of the following voluntary program/s are met for:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Dust <input type="checkbox"/> Ozone <input type="checkbox"/> Styrene <input type="checkbox"/> Benzene <input type="checkbox"/> TVOC <input type="checkbox"/>			
Electromagnetic emissions				
P10.6	Computer display meets the requirement for low frequency electromagnetic fields of the following voluntary program/s:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P11 Consumable materials for printing products				
P11.1*	A Safety Data Sheet (SDS) is available for the ink/toner preparation, even if not legally required (see P4.3).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P11.2*	Paper containing post-consumer recycled fibers can be used, provided that it meets the requirements of EN12281.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P11.3*	2-sided (duplex) printing/copying is an integrated product function.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P12 Ergonomics for computing products				
P12.1*	The display meets the ergonomic requirements of ISO 9241-307 for visual display technologies.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
P12.2*	The physical input device meets the requirements of ISO 9995 and ISO 9241-410.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P13 Packaging and documentation				
P13.1*	Product packaging material type(s): <i>PAPER/Corrugated</i> weight (kg): 0.445 Product packaging material type(s): <i>PLASTIC/Polyethylene low density - LDPE</i> weight (kg): 0.019 Product packaging material type(s): <i>PLASTIC/Polyethylene Expanded - EPE</i> weight (kg): 0.09 Product packaging material type(s): <i>PLASTIC/Polypropylene - PP</i> weight (kg): 0.007			
P13.2*	Product plastic packaging is free from PVC.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P13.3*	Specify media for user and product documentation (tick box): Electronic <input type="checkbox"/> , Paper <input checked="" type="checkbox"/> , Other <input type="checkbox"/>			<input type="checkbox"/>
P13.4*	For paper user and product documentation, please specify contained percentage of post-consumer recycled fiber: 1 %			<input type="checkbox"/>
Rev. P13.5	User and product documentation do not contain chlorine bleached paper	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



P14	Additional information (See Note B4)															
All sections	1. Product environmental information contained in this declaration is valid as of the date the declaration is published. Changes to external standards referenced in the IT Eco-Declaration may invalidate some information contained in this declaration over time.															
P9	<p>1. Many PCs are offered in multiple configurations within the model family. Energy efficiency data listed in this declaration is for an ENERGY STAR® compliant configuration if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. For more information about HP's ENERGY STAR® qualified products, go to hp.com: http://www.hp.com/ and select the applicable market segments and product categories to find PC configurations that meet the ENERGY STAR® specifications.</p> <p>2. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured model.</p> <p>3. Energy Efficiency information published on the ECMA 370 The Eco Declaration represents a typically configured product base model meeting ENERGY STAR® specifications if offered within the model family. If optional components or modules are added, like extra hard disks or graphic cards etc, these can change the energy efficiency data listed above.</p> <p>4. Power consumption in the Off / Apparent Off mode is measured and reported with the network interface controller (NIC) WOL disabled.</p> <p>5. European Union Commission Regulation 1275/2008- Energy Efficiency Information:</p> <table border="1"> <thead> <tr> <th>Mode / Condition</th> <th>Power Consumption in Watts at 230 VAC Input Voltage</th> <th>Default Time to Mode / Condition (if applicable)</th> </tr> </thead> <tbody> <tr> <td>Off Mode (if applicable)</td> <td>0.387 W</td> <td>Not Applicable</td> </tr> <tr> <td>Standby Mode (if applicable)</td> <td>Not Applicable</td> <td>Not Applicable</td> </tr> <tr> <td>Network Standby / Sleep / Long Idle Mode if all wired network ports are connected and all wireless network ports are activated (if applicable)</td> <td>0.680 W</td> <td>20 Min</td> </tr> <tr> <td>Network Standby / Sleep / Long Idle Mode (if applicable)</td> <td>0.680 W</td> <td>20 Min</td> </tr> </tbody> </table> <p>6. European Union Commission Regulation 1275/2008- Wireless Network Instructions:</p> <p>Where applicable, activate and deactivate a wireless network using the instructions provided in the product user guide or the operating system. Information is also available at www.hp.com/support.</p>	Mode / Condition	Power Consumption in Watts at 230 VAC Input Voltage	Default Time to Mode / Condition (if applicable)	Off Mode (if applicable)	0.387 W	Not Applicable	Standby Mode (if applicable)	Not Applicable	Not Applicable	Network Standby / Sleep / Long Idle Mode if all wired network ports are connected and all wireless network ports are activated (if applicable)	0.680 W	20 Min	Network Standby / Sleep / Long Idle Mode (if applicable)	0.680 W	20 Min
Mode / Condition	Power Consumption in Watts at 230 VAC Input Voltage	Default Time to Mode / Condition (if applicable)														
Off Mode (if applicable)	0.387 W	Not Applicable														
Standby Mode (if applicable)	Not Applicable	Not Applicable														
Network Standby / Sleep / Long Idle Mode if all wired network ports are connected and all wireless network ports are activated (if applicable)	0.680 W	20 Min														
Network Standby / Sleep / Long Idle Mode (if applicable)	0.680 W	20 Min														
P10	1. Acoustic noise information published on the ECMA 370 The Eco Declaration represents a typically configured product base model only. If optional items with moving parts are added, like extra hard disks or graphic cards with fans etc, these can change acoustic noise values for which HP can take no responsibility.															

1
1

Note B-4: Additional lines may be inserted to declare further items, by positioning the cursor at the the <Enter> key.



Legal references Europe Annex B

Reference	Declaration item
2002/95/EC (ROHS Directive)	P1.1, P4.1
REACH, Annex XVII	P1.6, P1.8, P4.2
REACH, Annex XVII	P1.4
REACH, Annex XVII	P1.2
REACH, Annex XVII	P1.7
REACH, Annex XVII	P1.9
Regulation (EC) No. 2037/2000, 2038/2000, 2039/2000	P1.3
Norwegian regulation relating to restrictions on the use of certain dangerous chemicals 20.12.2002	P1.5
2006/66/EC (Battery and accumulators Directive)	P2.1, P2.2, P2.3, P3.4, P8.1
2006/95/EC (Low Voltage Directive)	P3.1, 3.4
2004/108/EEC (New EMC Directive)	P3.2, 3.4
1999/5/EC (R&TTE Directive)	P3.3, 3.4
"REACH" Regulation (1907/2006), annex VII	P1.10
(EC) No.1272/2008 regulation on classification, labeling and packaging (CLP)	P4.3
REACH article 31, annex II	P4.3
2004/12/EC (Directive on packaging and packaging waste)	P5.1
(97/129/EC) (Commission Decision on Identification System for Packaging Materials	P5.2
2037/2000/EC Regulation on Substances that Deplete the Ozone Layer	P5.3
2002/96/EC (WEEE directive)	P3.4, P6.1
(EC) No.1272/2008 regulation on classification, labeling, and packaging (CLP)	P7.19

THE ECO DECLARATION



Company environmental profile - THE ECO DECLARATION

Brand	HP	Logo
Company name *	HP	
Contact information *	HP Environmental Contact Centre (ECC) environment@hp.com	
Internet site *	www.hp.com/hpinfo/globalcitizenship/environment/index.html	
Issue date *	2014-06	
Intended market *	<input checked="" type="checkbox"/> Global <input type="checkbox"/> Europe <input type="checkbox"/> Asia, Pacific & Japan <input type="checkbox"/> Americas <input type="checkbox"/> Other	
Additional information		

This is an uncontrolled copy when in printed form. Please refer to the contact information for the latest version.

The declaration may be published only when all rows and/or fields marked with an * are filled-in (n.a. for not applicable). Additional information regarding each item may be found under C6.

Quality control		Requirement met	
Item		Yes	No
QC1 *	The company enforces an internal quality control system to ensure the correctness of this eco declaration	<input checked="" type="checkbox"/>	<input type="checkbox"/>
QC2 *	The company is a member of an eco declaration system that enforces regular independent quality control.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Company environmental profile - Legal requirements		Requirement met		
Item		Yes	No	n.a.
C1	Product recycling			
C1.1*	The company participates in a system or has its own system for collection and recycling of end of life products in countries where the company puts them on the market and where required (see legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C2	Battery recycling			
C2.1*	The company participates in a system or has its own system for collection and recycling of batteries in countries where the company puts products on the market (see legal reference) or pays eco tax / fee where required.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C3	Packaging recycling			
C3.1*	The company participates in a system or has its own system for collection and recycling of packaging material in countries where the company puts products on the market and where required (see legal reference)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Company environmental profile - Market requirements		Requirement met		
Item		Yes	No	n.a.
C4	Environmental policy and environmental management			
C4.1*	The company has a documented environmental policy approved by the management.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C4.2*	The company has an environmental management system covering: Product development Manufacturing If so certified according to: <input checked="" type="checkbox"/> ISO 14001 <input type="checkbox"/> Other as specified in C6	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	
C4.3	The company regularly publishes an environmental report. If so, it meets the recommendations of <input checked="" type="checkbox"/> The Global Reporting Initiative <input type="checkbox"/> Other as specified in C6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C5	Recycling			
C5.1*	Information about the product, battery & packaging take back system (C1, C2, C3) is available in printed or electronic format.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C6	Additional information			

HP is committed to responsible business practices and transparency in its global citizenship policies and performance. We have a long history of working with suppliers to improve their social and environmental (SER) performance, as well as improving industry standards. HP endorses the EICC Code of Conduct in its entirety, and we supplement it with additional requirements specific to freedom of association and HP's Student and Dispatch Worker Guidance Standard for Supplier Facilities in the People's Republic of China (PRC). HP also has a strong Global Human Rights Policy in place. HP sets expectations for its suppliers to establish policies and processes regarding conflict minerals. HP conducts due diligence on its supply chain annually including requesting information about our suppliers' own due diligence and the smelters and refiners used. HP became the first IT company to publish its supply chain smelter list. HP follows the Global Reporting Initiative (GRI) guidelines as a basis for reporting. The GRI index provides easy reference to HP's Living Progress Report (LPR) content. HP offers take back services of products and printing suppliers in some 70 countries. Please refer to HP's Living Progress Report for more details on our global efforts.

Legal references Europe Annex A

Reference	Declaration item
2002/96/EC (WEEE directive)	C1.1
2006/66/EC (Battery and accumulators Directive)	C1.2
2004/12/EC (Directive on packaging and packaging waste)	C1.3



Iconia Tab 10

A3-A40

Hear More, See More, Touch More

- Hear more
- See more
- Touch more



Quadco



Acer Precision Plus



Resolution



Android™ 6.0

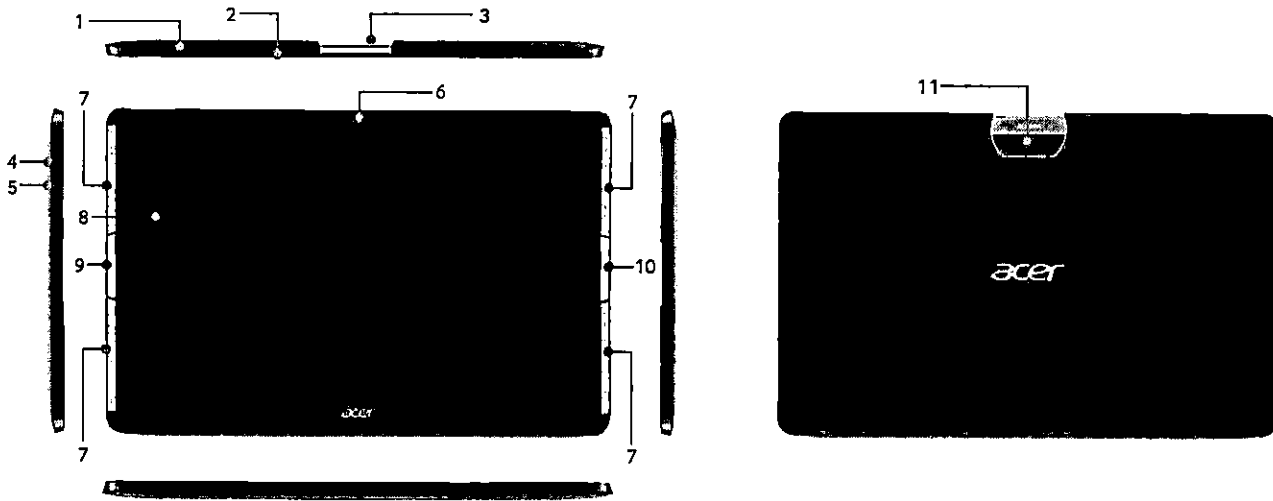


000094

BY PHO G CPHTHAI A

Iconia Tab 10 A3-A40

SPECIFICATIONS



Product views	1. Power button 2. Microphone 3. Cover for Micro HDMI and MicroSD™ card reader	4. Headphone/speaker jack 5. Micro USB 2.0 port 6. Front-facing camera 7. Speakers	8. 10.1" Touchscreen 9. Volume up/down button 10. MediaMaster button 11. Rear-facing camera
Operating system¹	Android™ 6.0 (Marshmallow)		
Dimensions and weight²	Dimensions: 259 (W) x 167.5 (D) x 9.985 (H) mm (10.2 x 6.59 x 0.35 inches)		Weight: 0.529 kg (1.17 lbs.) with 2-cell battery pack
Color options	Black		
CPU and chipset¹	MTK MT8163V/A quad-core Cortex A53 1.5 GHz processor		
Memory^{1,3,4}	DDR3L memory support: • DDR3L 2 GB on-board system memory		
Display^{1,3}	10.1" display with IPS (In-Plane Switching) technology, FHD 1920 x 1200 resolution, high-brightness, LED-backlit TFT LCD with integrated multi-touch • Wide-viewing angle, mercury free, environment friendly		
Audio	Acer Quadrio audio with four front facing speakers and volume enhancement Optimized DTS-HD Premium Sound™, featuring DTS-HD® decoder, Virtual Surround Sound and Audio Enhancements, supports 7.1, 5.1 to stereo channels, from high-fidelity lossless to low bit rate compression High-definition audio support Built-in microphone		
Storage^{1,6}	32 or 16 GB eMMC Supporting: microSD™ card up to 128 GB (SDXC compatible)		
Webcam¹	Front webcam with: • 2 MP (1600 x 1200) resolution • 720p HD audio/video recording	Rear webcam with: • 5 MP (2560 x 1920) resolution • 1080p Full HD audio/video recording	
Wireless and networking^{1,5,7}	WLAN: 802.11a/b/g/n wireless LAN WPAN: Bluetooth® 4.0 GPS		
Power adapter and battery^{1,8}	Power adapter • 2-pin 10 W AC adapter	Battery • 22.4 Wh 6100 mAh 3.7 V 2-cell Li-ion battery pack • Battery life up to 8 hours (based on video playback test results)	
Input and control	Control Keys • MediaMaster button • Power button • Volume up, volume down		
Sensors	Accelerometer (G-sensor)		
Options and accessories	2-pin 10 W AC adapter	Micro USB 2.0 to USB 2.0 cable	
System compliance	RoHS compliance	SMT green process	WEEE compliance
Warranty	One-year International Travelers Warranty (ITW)		
1.	Specifications vary depending on model.	6.	1 GB is 1 billion bytes. Actual formatted capacity is less and may vary depending on preloaded materials and operating environment.
2.	Weights may vary depending on product configuration, vendor components, manufacturing variability, and selected options.	7.	Actual throughput may vary depending on network conditions and environmental factors such as network traffic or overhead, building construction and access point settings.
3.	Shared system memory may be allocated to support graphics, depending on system memory size and other factors. Actual system memory available to the operating system will be reduced by any memory used by the graphics solution and resources required by the operating environment.	8.	The listed battery life is obtained by simulating watching video clips stored on the mobile device. The test clip loops and continues to run, without interruption or any other inputs, until the battery is drained. Stated battery life is for comparison purposes only. Actual battery life varies by model, configuration, applications, power management settings, operating conditions, video clip format, and features used. A battery's maximum capacity decreases with time and use.
4.	Memory speed may vary, depending on the CPU, chipset or memory fitted.		
5.	All brands and product names mentioned herein include trademarks of their respective companies and are used solely to describe or identify the products.		

In a continuing effort to improve the quality of our products, information in this document is subject to change without notice. Images shown are only representations of some of the configurations available for this model. Availability may vary depending on region. As a phenomenon known to thin-film transistors (TFTs), liquid crystal displays (LCDs) commonly exhibit a small number of discoloration dots, so-called "non-conforming pixels." This phenomenon is a limitation of TFT LCD technology, not a product defect, and is not covered by Acer's warranty. © 2015. All rights reserved.

About Acer

Established in 1976, Acer is a hardware + software + services company dedicated to the research, design, marketing, sale, and support of innovative products that enhance people's lives. Acer's product offerings include PCs, displays, projectors, servers, tablets, smartphones and wearables. It is also developing cloud solutions to bring together the Internet of Things. Acer is celebrating its 40th anniversary in 2016 and is one of the world's top 5 PC companies. It employs 7,000 people worldwide and has a presence in over 160 countries. Please visit www.acer.com for more information.



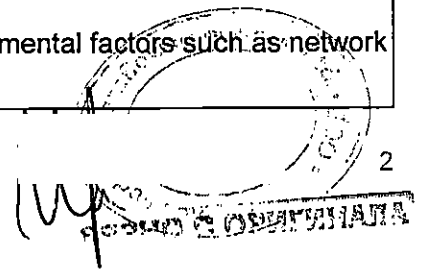


explore beyond limits™

Iconia A3-A40 Specifications (v3-0-3)		
Category	Description	Footnotes
Operating system	1 Android™ 6.0 (Marshmallow)	
Dimensions and weight	2 Dimensions <ul style="list-style-type: none">• 259 (W) x 167.5 (D) x 8.985 (H) mm (10.2 x 6.59 x 0.35 inches) Weight 0.529 kg (1.17 lbs.) with 2-cell battery pack	
Color options	Black	
CPU and chipset	1 MTK MT8163V/A quad-core Cortex A53 1.5 GHz processor	
Memory	1, 3 DDR3L memory support: <ul style="list-style-type: none">• 2 GB of onboard DDR3L system memory	4, 5
Display	1 10.1" display with IPS (In-Plane Switching) technology, FHD 1920 x 1200 resolution, high-brightness, LED-backlit TFT LCD with integrated multi-touch Wide viewing angle Mercury free, environment friendly	6
Storage	<ul style="list-style-type: none">• 32 GB eMMC• 16 GB eMMC Card reader <ul style="list-style-type: none">• Supporting: microSD™ Card (SDXC)	7 7
Audio	<ul style="list-style-type: none">• Acer Quadrio audio with four front facing speakers and volume enhancement• Optimized DTS-HD Premium Sound™, featuring DTS-HD® decoder, Virtual Surround Sound, Audio Enhancements, Volume Leveling and Bass Enhancement, supports outputs and headset 5.1 to stereo channels, from high-fidelity lossless to low bit rate compression• High-definition audio support• Built in microphone	
Webcam	1 Video conferencing Rear webcam with: <ul style="list-style-type: none">• 2560 x 1920 resolution• 1080p Full HD audio/video recording Front webcam with: <ul style="list-style-type: none">• 1600 x 1200 resolution• 720p HD audio/video recording	
Wireless and networking	1 WLAN <ul style="list-style-type: none">• 802.11a/b/g/n wireless LAN WPAN <ul style="list-style-type: none">• Bluetooth® 4.0 Location services	8, 9

Iconia A3-A40 Specifications (v3-0-3)

	<ul style="list-style-type: none"> • GPS 	
Power adapter and battery 1	<p>Power adapter</p> <p>2-pin 10 W AC adapter:</p> <ul style="list-style-type: none"> • 75.3 (W) x 45 (D) x 33.8 (H) mm • 75 g, without DC cable • AC power plug is interchangeable <p>2-pin 10 W AC adapter:</p> <ul style="list-style-type: none"> • 43 (W) x 43 (D) x 27.5 (H) mm • 57 g, without USB cable • Fixed AC pins <p>Battery</p> <ul style="list-style-type: none"> • 22.4 Wh 6100 mAh 3.7 V 2-cell Li-ion battery pack <p>Battery life:</p> <p>Up to 8 hours (based on video playback test results)</p>	10
Input and control	<p>Control Keys</p> <ul style="list-style-type: none"> • Power button • Volume up, volume down <p>MediaMaster</p>	
Input and output	<p>HDMI® Micro Connector with HDCP support</p> <p>microSD card up to 128 GB (SDXC compatible, exFAT compatible)</p> <p>Micro USB 2.0 Type B, supports OTG</p> <p>Headphone/speaker jack</p>	
Sensors	Accelerometer (G-sensor)	
System compliance	<ul style="list-style-type: none"> • RoHS compliance • WEEE compliance • SMT green process 	
Options and accessories	<ul style="list-style-type: none"> • Micro USB 2.0 to USB 2.0 cable • 2-pin 10 W AC adapter 	
Warranty	One-year International Travelers Warranty (ITW)	
<ol style="list-style-type: none"> 1. Specifications vary depending on model. 2. Weight may vary depending on product configuration, vendor components, manufacturing variability, and selected options. 3. Shared system memory may be allocated to support graphics, depending on system memory size and other factors. Actual system memory available to the operating system will be reduced by any memory used by the graphics solution and resources required by the operating environment. 4. Memory speed may vary, depending on the CPU, chipset or memory fitted. 5. A 64-bit operating system is required to enjoy the ultimate performance of 4 GB or higher memory. 6. All brands and product names mentioned herein include trademarks of their respective companies and are used solely to describe or identify the products. 7. 1 GB is 1 billion bytes. Actual formatted capacity is less and may vary depending on preloaded materials and operating environment. Acer Recovery Management uses a portion of the stated hard disk capacity as dedicated backup space. 8. Actual throughput may vary depending on network conditions and environmental factors such as network traffic or overhead, building construction and access point settings. 		



Iconia A3-A40 Specifications (v3-0-3)

9. Subject to availability.
10. The listed battery life is obtained by simulating watching video clips stored on the mobile device. The test clip loops and continues to run, without interruption or any other inputs, until the battery is drained. Stated battery life is for comparison purposes only. Actual battery life varies by model, configuration, applications, power management settings, operating conditions, video clip format, and features used. A battery's maximum capacity decreases with time and use.

In a continuing effort to improve the quality of our products, information in this document is subject to change without notice. Images shown are only representations of some of the configurations available for this model. Availability may vary depending on region.

As a phenomenon known to thin-film transistors (TFTs), liquid crystal displays (LCDs) commonly exhibit a small number of discoloration dots, as so-called "non-conforming pixels." This phenomenon is a limitation of TFT LCD technology, not a product defect, and as such is not covered by Acer's warranty.

© 2016. All rights reserved.

About Acer

Established in 1976, Acer is a *hardware + software + services* company dedicated to the research, design, marketing, sale, and support of innovative products that enhance people's lives. Acer's product offerings include PCs, displays, projectors, servers, tablets, smartphones and wearables. It is also developing cloud solutions to bring together the Internet of Things. Acer is celebrating its 40th anniversary in 2016 and is one of the world's top 5 PC companies. It employs 7,000 people worldwide and has a presence in over 160 countries. Please visit www.acer.com for more information.



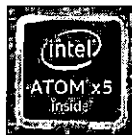
acer



FOUR FOR ONE

Acer One S1003

- **A mode for every moment**
Four modes – Notebook, Pad, Tent, Display – make this device incredibly versatile
- **Changing modes is a snap**
A latch-less magnetic hinge design makes transitioning between modes easy
- **Uncompromised visuals**
1280 x 800 HD resolution and IPS makes everything crisp and clear

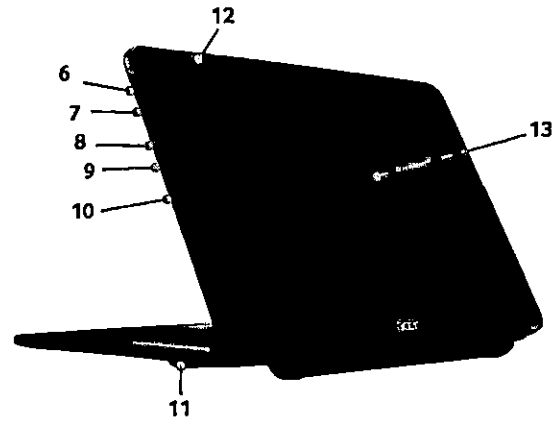
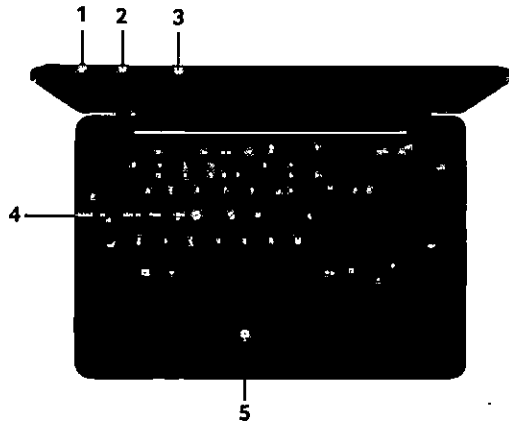


000099

MADE IN CHINA

Acer One S1003

SPECIFICATIONS



Product views	1. Power button 2. Volume control key 3. Home button 4. Keyboard	5. Touchpad 6. HDMI micro port 7. Micro USB port 8. microSD card slot	9. Microphone 10. Headset/speaker Jack 11. USB 2.0 port 12. Webcam	13. 10.1" IPS touchscreen display
Operating system	Windows 10 Home 32-bit			
CPU and chipset	Intel® Atom™ x5-Z8350 processor Intel® Atom™ x5-Z8300 processor			
Memory^{1,2}	DDR3 SDRAM support • 4 GB of dual-channel, on-board system memory		DDR3L memory support • 2 GB of onboard DDR3L system memory	
Display³	10.1" display with IPS (In-Plane Switching) technology, FHD 1920 x 1200 resolution, high-brightness, LED-backlit TFT LCD • 16:10 aspect ratio • Wide viewing angle • Mercury free, environment friendly	10.1" display with IPS (In-Plane Switching) technology, HD 1280 x 800, high-brightness LED-backlit TFT LCD with integrated multi-touch, supporting 10-finger touch • 16:10 aspect ratio • Wide viewing angle • Super-slim design • Mercury free, environment friendly	10.1" display with IPS (In-Plane Switching) technology, HD 1280 x 800, high-brightness LED-backlit TFT LCD with integrated multi-touch • 16:10 aspect ratio • Wide viewing angle • Mercury free, environment friendly	
Graphics	Intel® HD Graphics with 3D graphics hardware acceleration			
Audio	Two built-in stereo speakers Built-in digital microphone			
Storage⁴	microSD™ card 64 / 32 GB eMMC			
Webcam	Rear webcam with 1600 x 1200 resolution and 720p HD audio/video recording Front webcam with 640 x 480 resolution			
Wireless and networking^{5, 6, 7}	WLAN: 802.11b/g/n wireless LAN WPAN: Bluetooth® 4.0			
Dimensions and weight	Dimensions • 262 (W) x 173.5 (D) x 9.5 (H) mm (10.31 x 6.83 x 0.37 inches) pad only • 262 (W) x 173.5 (D) x 20.65 (H) mm (10.31 x 6.83 x 0.81 inches) pad and dock Weight • 0.65 kg (1.43 lbs.) with 2-cell battery pack, pad only • 1.27 kg (2.8 lbs.) with 2-cell battery pack, pad and dock			
Power adapter and battery⁸	Power adapter: 2-pin 10W AC adapter Battery: 22 Wh 5910 mAh 3.8 V 2-cell Li ion battery pack Battery life up to 10 hours			
Input and control	Touchpad: Multi-gesture touchpad, supporting two-finger scroll; pinch; gestures to open Cortana, Action Center, multitasking; application commands Control Keys: Volume up and down keys, Windows key			
Sensors	Accelerometer (G-sensor)			
Windows Desktop apps	• Acer Care Center • Acer Portal • abFiles • abPhoto • Accessory Store			
Warranty	One-year International Travelers Warranty (ITW)			
1.	Memory speed may vary depending on the CPU, chipset or memory fitted.	6.	Subject to availability.	
2.	A 64-bit operating system is required to enjoy the ultimate performance of 4 GB or higher memory.	7.	Specifications vary depending on model.	
3.	All brands and product names mentioned herein include trademarks of their respective companies and are used solely to describe or identify the products.	8.	The listed battery life is obtained by simulating watching video clips stored on the mobile device. The test clip loops and continues to run, without interruption or any other inputs, until the battery is drained. Stated battery life is for comparison purposes only. Actual battery life varies by model, configuration, applications, power management settings, operating conditions, video clip format, and features used. A battery's maximum capacity decreases with time and use.	
4.	1 GB is 1 billion bytes. Actual formatted capacity is less and may vary depending on preloaded materials and operating environment. Acer Recovery Management uses a portion of the stated hard disk capacity as dedicated backup space.			
5.	Actual throughput may vary depending on network conditions and environmental factors such as network traffic or overhead, building construction and access point settings.			

In a continuing effort to improve the quality of our products, information in this document is subject to change without notice. Images shown are only representations of some of the configurations available for this model. Availability may vary depending on region. As a phenomenon known to thin-film transistors (TFTs), liquid crystal displays (LCDs) commonly exhibit a small number of discoloration dots, as so-called "non-conforming pixels." This phenomenon is a limitation of TFT LCD technology, not a product defect, and as such is not covered by Acer's warranty.

© 2017. All rights reserved.

Microsoft and Windows are registered trademarks of Microsoft Corporation.

Intel, Intel Core, Core Inside, Pentium, and Pentium Inside are trademarks of Intel Corporation in the U.S. and other countries.

About Acer

Established in 1976, Acer is a hardware • software • services company dedicated to the research, design, marketing, sale, and support of innovative products that enhance people's lives. Acer's product offerings include PCs, displays, projectors, servers, tablets, smartphones and wearables. It is also developing cloud solutions to bring together the Internet of Things. Acer is celebrating its 40th anniversary in 2016 and is one of the world's top 5 PC companies. It employs 7,000 people worldwide and has a presence in over

000100

PHOTO COPY PROHIBITED

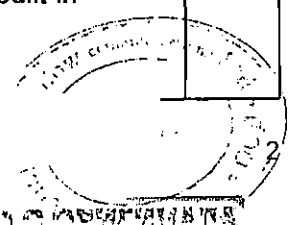


explore beyond limits™

One S1003 Specifications (v8-0-6)		
Category	Description	Footnotes
Operating system	Windows 10 Home 32-bit	
CPU and chipset	Intel® Atom™ x5-Z8350 processor (quad-core, 2 MB cache, 1.44 GHz with Turbo Boost up to 1.92 GHz, DDR3L-RS 1600 MHz) Intel® Atom™ x5-Z8300 processor (quad-core, 2MB L2 cache, 1.44 GHz with Turbo Boost up to 1.84 GHz, DDR3L 1600 MHz)	
Memory	DDR3 SDRAM support • 4 GB of dual-channel, on-board system memory	1, 2
	DDR3L memory support: • 2 GB of onboard DDR3L system memory	1, 2
Display	10.0" display with IPS (In-Plane Switching) technology, FHD 1920 x 1200 resolution, high-brightness, LED-backlit TFT LCD 16:10 aspect ratio Wide viewing angle Mercury free, environment friendly	3
	10.1" display with IPS (In-Plane Switching) technology, HD 1280 x 800, high-brightness LED-backlit TFT LCD with integrated multi-touch, supporting 10-finger touch 16:10 aspect ratio Wide viewing angle Super-slim design Mercury free, environment friendly	3
	10.1" display with IPS (In-Plane Switching) technology, HD 1280 x 800, high-brightness LED-backlit TFT LCD with integrated multi-touch 16:10 aspect ratio Wide viewing angle Mercury free, environment friendly	3
Graphics	Intel® HD Graphics with 3D graphics hardware acceleration, supporting Microsoft® DirectX® 11, OpenGL® 3.2, Open CL™ v1.2 Dual independent display support 16.7 million colors External resolution / refresh rate: • HDMI® port up to 1920 x 1080: 60 Hz Video post processing and hardware acceleration, supporting H.264, MPEG2, MVC, VC-1, WMV9, VP8, JPEG/MPEG HDMI® (High-Definition Multimedia Interface) with HDCP (High-bandwidth Digital Content Protection) support	
Audio	Two built-in stereo speakers	

One S1003 Specifications (v8-0-6)

	Built-in digital microphone	
Storage	<ul style="list-style-type: none"> • 32 / 64 GB eMMC Card reader <ul style="list-style-type: none"> • Supporting: microSD™ Card 	4
Webcam	Video conferencing Rear webcam with: <ul style="list-style-type: none"> • 1600 x 1200 resolution • 720p HD audio/video recording Front webcam with: <ul style="list-style-type: none"> • 640 x 480 resolution 	
Wireless and networking	WLAN <ul style="list-style-type: none"> • 802.11b/g/n wireless LAN WPAN <ul style="list-style-type: none"> • Bluetooth® 4.0 	5, 6 7
Dimensions and weight	Dimensions <ul style="list-style-type: none"> • 262 (W) x 173.5 (D) x 9.5 (H) mm (10.31 x 6.83 x 0.37 inches) pad only • 262 (W) x 173.5 (D) x 20.65 (H) mm (10.31 x 6.83 x 0.81 inches) pad and dock Weight <ul style="list-style-type: none"> • 0.65 kg (1.43 lbs.) with 2-cell battery pack, pad only • 1.27 kg (2.8 lbs.) with 2-cell battery pack, pad and dock 	
Power adapter and battery	Power adapter 2-pin 10 W AC adapter <ul style="list-style-type: none"> • 43.0 (W) x 43.0 (D) x 27.5 (H) mm (1.69 x 1.69 x 1.08 inches) • 48 g without USB cable • Fixed AC pins Battery <ul style="list-style-type: none"> • 22 Wh 5910 mAh 3.8 V 2-cell Li ion battery pack (for models with HD Panel) Battery life: Up to 10 hours (based on video playback test results)	8, 9
Input and control	Control Keys Volume up and down keys Windows key TouchPad Multi-gesture touchpad, supporting two-finger scroll; pinch; gestures to open Cortana, Action Center, multitasking; application commands	
Input and output	Micro USB 2.0 port HDMI® Micro Connector with HDCP support microSD card up to 32 GB (SDHC 2.0 compatible) 3.5 mm headphone/speaker jack, supporting headsets with built-in microphone USB 2.0 port (on dock)	

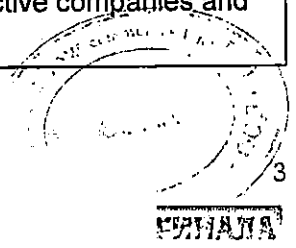


One S1003 Specifications (v8-0-6)

Sensors	Accelerometer (G-sensor)
Windows Desktop Apps	<p>Content</p> <ul style="list-style-type: none"> • Amazon® Kindle • BaiduIME • Music Maker Jam • Netflix • Pubu • Sohu Video <p>In-House</p> <ul style="list-style-type: none"> • Acer Care Center • Acer Portal • abFiles • abPhoto • Accessory Store <p>Lifestyle</p> <ul style="list-style-type: none"> • Agoda • Booking.com • Hao123 • Priceline.com • Yandex web link <p>Productivity</p> <ul style="list-style-type: none"> • Excel Mobile • Kingsoft Office Suite • Powerpoint Mobile • Word Mobile <p>Search</p> <ul style="list-style-type: none"> • Firefox <p>Security</p> <ul style="list-style-type: none"> • PC Manager <p>Shopping</p> <ul style="list-style-type: none"> • Amazon® • Amazon® 1Button • eBay® Worldwide • Gomaji • Lazada <p>Tools</p> <ul style="list-style-type: none"> • App Explorer • Dashlane
Warranty	One-year International Travelers Warranty (ITW)

1. Memory speed may vary, depending on the CPU, chipset or memory fitted.
2. A 64-bit operating system is required to enjoy the ultimate performance of 4 GB or higher memory.
3. All brands and product names mentioned herein include trademarks of their respective companies and are used solely to describe or identify the products.

7000103



One S1003 Specifications (v8-0-6)

4. 1 GB is 1 billion bytes. Actual formatted capacity is less and may vary depending on preloaded materials and operating environment. Acer Recovery Management uses a portion of the stated hard disk capacity as dedicated backup space.
5. Actual throughput may vary depending on network conditions and environmental factors such as network traffic or overhead, building construction and access point settings.
6. Subject to availability.
7. Specifications vary depending on model.
8. The listed battery life is obtained by simulating watching video clips stored on the mobile device. The test clip loops and continues to run, without interruption or any other inputs, until the battery is drained. Stated battery life is for comparison purposes only. Actual battery life varies by model, configuration, applications, power management settings, operating conditions, video clip format, and features used. A battery's maximum capacity decreases with time and use.
9. The listed battery life is obtained by simulating browsing various websites with wireless on. The test loops and continues running until the battery is drained. Stated battery life is for comparison purposes only. Actual battery life varies by model, configuration, applications, power management settings, operating conditions, and utilized features. A battery's maximum capacity decreases with time and use.

In a continuing effort to improve the quality of our products, information in this document is subject to change without notice. Images shown are only representations of some of the configurations available for this model. Availability may vary depending on region.

As a phenomenon known to thin-film transistors (TFTs), liquid crystal displays (LCDs) commonly exhibit a small number of discoloration dots, as so-called "non-conforming pixels." This phenomenon is a limitation of TFT LCD technology, not a product defect, and as such is not covered by Acer's warranty.

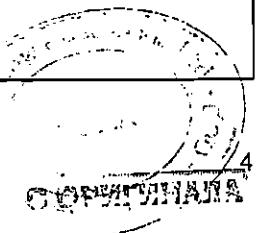
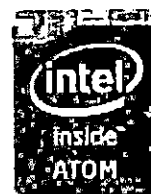
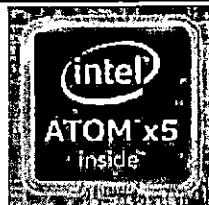
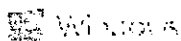
© 2017. All rights reserved.

Microsoft and Windows are registered trademarks of Microsoft Corporation.

Intel, Intel Core, Core Inside, Pentium, and Pentium Inside are trademarks of Intel Corporation in the U.S. and other countries.

About Acer

Established in 1976, Acer is a *hardware + software + services* company dedicated to the research, design, marketing, sale, and support of innovative products that enhance people's lives. Acer's product offerings include PCs, displays, projectors, servers, tablets, smartphones and wearables. It is also developing cloud solutions to bring together the Internet of Things. Acer is celebrating its 40th anniversary in 2016 and is one of the world's top 5 PC companies. It employs 7,000 people worldwide and has a presence in over 160 countries. Please visit www.acer.com for more information.



iPad – Technical Specifications

Езици

English

Size and weight**Height:**

9.56 inches (242.8 mm)

Width:

7.47 inches (189.7 mm)

Depth:

0.5 inch (13.4 mm)

Weight:

1.5 pounds (0.68 kg) Wi-Fi model;

1.6 pounds (0.73 kg) Wi-Fi + 3G model

Display

- 9.7-inch (diagonal) LED-backlit glossy widescreen Multi-Touch display with IPS technology
- 1024-by-768-pixel resolution at 132 pixels per inch (ppi)
- Fingerprint-resistant oleophobic coating
- Support for display of multiple languages and characters simultaneously

Wireless and cellular**Wi-Fi model**

- Wi-Fi (802.11a/b/g/n)
- Bluetooth 2.1 + EDR technology

Wi-Fi + 3G model

- UMTS/HSDPA (850, 1900, 2100 MHz)
- GSM/EDGE (850, 900, 1800, 1900 MHz)
- Data only²
- Wi-Fi (802.11a/b/g/n)
- Bluetooth 2.1 + EDR technology

Location

- Wi-Fi
- Digital compass
- Assisted GPS (Wi-Fi + 3G model)
- Cellular (Wi-Fi + 3G model)

In the box

- iPad
- Dock Connector to USB Cable
- 10W USB Power Adapter
- Documentation

Environmental Status Report

iPad embodies Apple's continuing environmental progress. It is designed with the following features to reduce environmental impact:

- Arsenic-free display glass
- BFR-free
- Mercury-free LCD display
- PVC-free
- Recyclable aluminum and glass enclosure

Capacity³

- 16GB, 32GB, or 64GB flash drive

Processor

- 1GHz Apple A4 custom-designed, high-performance, low-power system-on-a-chip

Sensors

- Accelerometer
- Ambient light sensor

Audio playback

- Frequency response: 20Hz to 20,000Hz
- Audio formats supported: HE-AAC (V1), AAC (16 to 320 Kbps), Protected AAC (from iTunes Store) (256 Kbps), MP3 VBR, Audible (formats 2, 3, and 4), Apple Lossless, AIFF, and WAV

- User-configurable maximum volume limit

TV and video

- Support for 1024 by 768 pixels with Dock Connector to VGA Adapter; 576p and 480p with Apple Component AV Cable; 576i and 480i with Apple Composite AV Cable
- H.264 video up to 720p, 30 frames per second, Main Profile level 3.1 with AAC-LC audio up to 160 Kbps per channel, 48kHz, stereo audio in .m4v, .mp4, and .mov file formats; MPEG-4 video, up to 2.5 Mbps, 640 by 480 pixels, 30 frames per second, Simple Profile with AAC-LC audio up to 160 Kbps, 48kHz, stereo audio in .m4v, .mp4, and .mov file formats; Motion JPEG (M-JPEG) up to 35 Mbps, 1280 by 720 pixels, 30 frames per second, audio in ulaw, PCM stereo audio in .avi file format

Mall attachment support

- Viewable document types: .jpg, .tiff, .gif (images); .doc and .docx (Microsoft Word); .htm and .html (web pages); .key (Keynote); .numbers (Numbers); .pages (Pages); .pdf (Preview and Adobe Acrobat); .ppt and .pptx (Microsoft PowerPoint); .txt (text); .rtf (rich text format); .vcf (contact information); .xls and .xlsx (Microsoft Excel)

Languages

- Language support for English (U.S.), English (UK), French (France), German, Traditional Chinese, Simplified Chinese, Dutch, Italian, Spanish, Portuguese (Brazil), Portuguese (Portugal), Danish, Swedish, Finnish, Norwegian, Korean, Japanese, Russian, Polish, Turkish, Ukrainian, Hungarian, Arabic, Thai, Czech, Greek, Hebrew, Indonesian, Malay, Romanian, Slovak, Croatian, Catalan, and Vietnamese
- Keyboard support for English (U.S.), English (UK), French (France), French (Canadian), French (Switzerland), German, Traditional Chinese (Handwriting, Pinyin, Zhuyin, Cangjie, Wubihua), Simplified Chinese (Handwriting, Pinyin, Wubihua), Dutch, Italian, Spanish, Portuguese (Brazil), Portuguese (Portugal), Danish, Swedish, Finnish, Norwegian, Korean, Japanese (Romaji, Fifty Key), Japanese (Kana), Russian, Polish, Turkish, Ukrainian, Estonian, Hungarian, Icelandic, Lithuanian, Latvian, Flemish, Arabic, Thai, Czech, Greek, Hebrew, Indonesian, Malay, Romanian, Slovak, Croatian, Bulgarian, Serbian (Cyrillic/Latin), Catalan, Vietnamese, Tibetan, Macedonian, and Cherokee
- Dictionary support (enables predictive text and autocorrect) for English (U.S.), English (UK), French, German, Traditional Chinese, Simplified Chinese, Dutch, Italian, Spanish, Portuguese (Brazil), Portuguese (Portugal), Danish, Swedish, Finnish, Norwegian, Korean, Japanese (Romaji), Japanese (Kana), Russian, Polish, Turkish, Ukrainian, Hungarian, Lithuanian, Flemish, Arabic, Thai, Czech, Greek, Hebrew, Indonesian, Malaysian, Romanian, Slovak, Croatian, Catalan, Vietnamese, and Cherokee

Accessibility

- Support for playback of closed-captioned content
- VoiceOver screen reader
- Full-screen zoom magnification
- White on black display
- Mono audio

Battery and power¹

- Built-in 25-watt-hour rechargeable lithium-polymer battery
- Up to 10 hours of surfing the web on Wi-Fi, watching video, or listening to music
- Up to 9 hours of surfing the web using 3G data network
- Charging via power adapter or USB to computer system

Input and output

- Dock connector port
- 3.5-mm stereo headphone jack
- Built-in speaker
- Microphone
- Micro-SIM card tray (Wi-Fi + 3G model only)

External buttons and controls

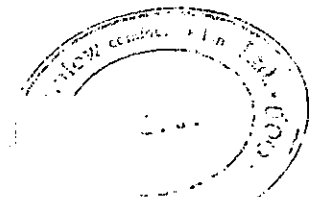
- On/Off, Sleep/wake
- Mute
- Volume up/down
- Home

Mac system requirements

- Mac computer with USB 2.0 port
- Mac OS X v10.5.8 or later
- iTunes 9.1 or later (free download from www.itunes.com/download)
- iTunes Store account
- Internet access

Windows system requirements

- PC with USB 2.0 port
- Windows 7; Windows Vista; or Windows XP Home or Professional with Service Pack 3 or later
- iTunes 9.1 or later (free download from www.itunes.com/download)
- iTunes Store account



000106

Министерство на образованието, младежта и спорта
България

- Internet access

Environmental requirements

- Operating temperature: 32° to 95° F (0° to 35° C)
- Nonoperating temperature: -4° to 113° F (-20° to 45° C)
- Relative humidity: 5% to 95% noncondensing

iPad Accessories

iPad Keyboard Dock

The iPad Keyboard Dock combines a dock for charging your iPad with a full-size keyboard. The dock has a rear dock connector port, which lets you connect to an electrical outlet using the USB Power Adapter, sync to your computer, and use accessories like the iPad Camera Connection Kit. An audio line out port lets you connect to a stereo or powered speakers (audio cable sold separately). [Buy now](#)

iPad Case

With a soft microfiber interior and reinforced panels to provide structure, the iPad Case is the perfect way to carry around your iPad. And it does double duty. It folds in just the right places to act as a stand that holds iPad at an ideal angle for watching videos and slideshows or for typing on the onscreen keyboard. [Buy now](#)

iPad Dock

With the iPad Dock, you get easy access to a dock connector port for syncing or charging, and an audio line out port for connecting to powered speakers via an optional audio cable. The iPad Dock also supports other iPad accessories, such as the iPad Dock Connector to VGA Adapter and the iPad Camera Connection Kit. [Buy now](#)

iPad Camera Connection Kit

The iPad Camera Connection Kit gives you two ways to import photos and videos from a digital camera: using your camera's USB cable or directly from an SD card. iPad supports standard photo formats, including JPEG and RAW. [Buy now](#)

iPad 10W USB Power Adapter

The iPad 10W USB Power Adapter lets you charge your iPad directly through an electrical outlet. And the 6-foot-long power cord allows you to charge it from an even greater distance. [Buy now](#)

1. Actual size and weight vary by configuration and manufacturing process.
2. 3G data plan sold separately.
3. 1GB = 1 billion bytes; actual formatted capacity less.
4. Testing conducted by Apple in March 2010 using preproduction iPad units and software. Testing consisted of full battery discharge while performing each of the following tasks: video playback, audio playback, and Internet browsing using Wi-Fi or 3G. Video content was a repeated 2-hour 23-minute movie purchased from the iTunes Store. Audio content was a playlist of 358 unique songs, consisting of a combination of songs imported from CDs using iTunes (128-Kbps AAC encoding) and songs purchased from the iTunes Store (256-Kbps AAC encoding). Internet over Wi-Fi and 3G tests were conducted using a closed network (for Wi-Fi only) and dedicated web and mail servers, browsing snapshot versions of 20 popular web pages, and receiving mail once an hour. All settings were default except: Wi-Fi was associated with a network (except for Internet browsing over 3G); the Wi-Fi feature Ask to Join Networks and Auto-Brightness were turned off. Battery life depends on device settings, usage, and many other factors. Battery tests are conducted using specific iPad units; actual results may vary.

Дата на публикуване: Oct 5, 2016

Поддръжка

Къде да купите: [открийте рикелър](#).

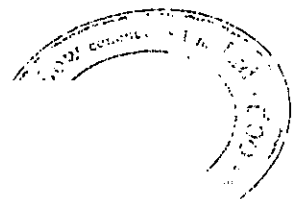
© 2016 Apple Inc. Всички права запазени

[Условия за употреба](#)

[Керта на сайта](#)

[Използване на мулти](#)

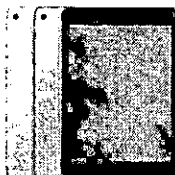
[Използване на мулти](#)



ИЗПРИЛО С ОПРИГИНАЛА

000107

iPad mini 4 – Технически характеристики

Езици Български**Покритие**

- Сребърно
- Златно
- Астро сиво

Капацитет¹⁾

- Модели с Wi-Fi
 - 16GB
 - 32GB
 - 64GB
 - 128GB
- Модели с Wi-Fi + Cellular
 - 16GB
 - 32GB
 - 64GB
 - 128GB

Бутони и конектори

- Вградени стерео тонколони
- Lightning конектор
- Home/Touch ID сензор
- 3,5 мм жак за слушалки
- Включване/Изключване – Заспиване/Събуждане
- Двойни микрофони
- Увеличаване/Намаляване на звука
- Nano-SIM трей (клетъчни модели)

Тегло и размери²⁾

- Wi-Fi модели
 - Височина: 203,2 мм (8,0 инча)
 - Ширина: 134,8 мм (5,3 инча)
 - Дълбочина: 6,1 мм (0,24 инча)
 - Тегло: 298,8 грама (0,65 фунта)
- Wi-Fi + Cellular модели
 - Височина: 203,2 мм (8,0 инча)
 - Ширина: 134,8 мм (5,3 инча)
 - Дълбочина: 6,1 мм (0,24 инча)
 - Тегло: 304 grams (0,67 фунта)

В кутията

- iPad mini 4
- Lightning към USB кабел
- USB адаптер за захранване

Дисплей

- Retina дисплей
 - Multi-Touch дисплей, 7,9-инчов (по диагонал), с LED подсветка
 - Резолюция 2048 x 1536 при 326 пиксела на инч (ppi)
 - Олеофобично покритие срещу отпечатъци
 - Изцяло ламиниран дисплей
 - Антирефлексно покритие

Чип

- A8 чип с 64-битова архитектура
- M8 копроцесор за движение



ОРИГИНАЛ

Камера

- 8MP камера
- Автофокус
- Панорама (до 43MP)
- Автоматичен HDR за снимки
- Контрол на експонацията
- Burst режим
- Тупни за фокус
- Timer режим
- Бленда f/2.4
- Обектив с пет елемента
- Хибриден инфрачервен филтър
- Задно осветен
- Автоматична стабилизация на картината
- Разпознаване на лица
- Фото геотагинг

Видеозапис

- 1080p HD видеозапис (30 fps)
- Бавен каданс (120 fps)
- Time-lapse видео със стабилизация
- Стабилизация на картината
- Подобро разпознаване на лица
- 3x видео зуум
- Видео геотагинг

FaceTime HD камера

- 1,2MP снимки
- Бленда f/2.2
- 720p HD видеозапис
- Задно осветен
- Auto HDR снимки и видео
- Подобро разпознаване на лица
- Burst режим
- Контрол на експонацията
- Таймер режим

FaceTime разговори³

- FaceTime аудио към всяко устройство с FaceTime през Wi-Fi или мобилна мрежа
- FaceTime видео към всяко устройство с FaceTime през Wi-Fi или мобилна мрежа

Микрофони

- Двойни микрофони за разговори и запис на видео и аудио

Мобилна и безжична връзка

- Модели с Wi-Fi
 - Wi-Fi (802.11a/b/g/n/ac); двойно лентов (2,4GHz и 5GHz); HT80 с MIMO
 - Bluetooth 4.2 технология
- Модели с Wi-Fi + Cellular
 - Wi-Fi (802.11a/b/g/n/ac); двойно лентов (2,4GHz и 5GHz); HT80 с MIMO
 - Bluetooth 4.2 технология
 - UMTS/HSPA/HSPA+/DC-HSDPA (850, 900, 1700/2100, 1900, 2100 MHz); GSM/EDGE (850, 900, 1800, 1900 MHz)
 - CDMA EV-DO Rev. A и Rev. B (800, 1900 MHz)
 - 4G LTE (диапазони 1, 2, 3, 4, 5, 7, 8, 13, 17, 18, 19, 20, 25, 26, 28, 29, 38, 39, 40, 41)⁴
 - Само данни⁵
 - Съвместим с Apple SIM (продава се отделно)

Научи повече за Apple SIM**SIM карта**

- Nano-SIM (поддържа Apple SIM)

Локация

- Всички модели
 - Цифров компас
 - Wi-Fi
 - iBeacon микролокация
- Модели с Wi-Fi + Cellular
 - Асистиран GPS и GLONASS
 - Cellular



000109 СЪХРАНЕНИЕ С ОРИГИНАЛА

Сензори

- Touch ID
- Три-осов жироскоп
- Акселерометър
- Барометър
- Сензор за околна светлина

Touch ID

- Отключване на iPad
- Защитени лични данни в приложения
- Пазаруване в iTunes Store, App Store и iBooks Store

Захранване и батерия*

- Всички модели
 - Вградена презареждаема литиево-полимерна батерия с мощност 19,1 ватчаса
 - До 10 часа сърфиране в интернет през Wi-Fi, гледане на видео или слушане на музика
 - Зареждане със захранващ адаптер или с USB към компютър
- Модели с Wi-Fi + Cellular
 - До 9 часа сърфиране в интернет през мобилна мрежа

Операционна система**iOS 11**

Благодарение на новите функции и възможности в iOS 11, с които всичко е по-бързо и лесно, твоят iPad е по-мощен и по-интелигентен отвсякога.

Виж новостите в iOS 11

Достъпност

Функциите за достъпност помагат на хората с увреждания да получат най-доброто от своя нов iPad mini 4. С вградената поддръжка за зрение, слух, физически и двигателни умения, обучение и грамотност можеш правиш невероятни неща.

Функциите включват:

- VoiceOver
- Zoom
- Magnifier
- Switch Control
- Closed Captions
- AssistiveTouch
- Speak Screen

Вградени приложения

- Camera
- Photos
- Messages
- FaceTime
- Mail
- Music
- Safari
- Maps
- Calendar
- iTunes Store
- App Store
- Notes
- Contacts
- iBooks
- Home
- Reminders
- Clock
- Videos
- Photo Booth
- Podcasts
- Find My iPhone
- Find My Friends
- Files

Безплатни Apple приложения⁷

Pages, Numbers, Keynote, iMovie, GarageBand и iTunes U са пре-инсталирани на iPad.

- Pages
- Numbers

- Keynote
- iMovie
- GarageBand
- iTunes U
- Remote
- Music Memos
- Clips
- Swift Playgrounds

Системни изисквания

- Apple ID (изисква се за някои функции)
- Интернет достъп*

Синхронизирането с iTunes на Mac или PC изисква:

- Mac: OS X v10.9.5 или по-нова
- PC: Windows 7 или по-нова
- iTunes 12.5 или по-нова (безплатен даунлоуд от www.apple.com/bg/itunes/download)

Езици

▪ Езикова поддръжка

Английски (Австралия, Обединеното кралство, САЩ), китайски (опростен, традиционен, традиционен Хонконг), френски (Канада, Франция), немски, италиански, японски, корейски, испански (Латинска Америка, Мексико, Испания), арабски, каталунски, хърватски, чешки, датски, нидерландски, фински, гръцки, иврит, хинди, унгарски, индонезийски, малайски, норвежки, полски, португалски (Бразилия, Португалия), румънски, руски, словашки, шведски, тайландски, турски, украински, вьетнамски

▪ Поддръжка на QuickType клавиатура

Английски (Австралия, Канада, Индия, Сингапур, Обединеното кралство, САЩ), китайски — опростен (ръкопис, линеен, символи), китайски — традиционен (канджи, ръкопис, линеен, символи, сученг, чжуин), френски (Белгия, Канада, Франция, Швейцария), немски (Австрия, Германия, Швейцария), италиански, японски (кана, ромаджи), корейски, испански (Латинска Америка, Мексико, Испания), арабски (съвременен стандартен, надждийски), арменски, азербайджански, беларуски, бенгалски, български, каталунски, черокски, хърватски, чешки, датски, нидерландски, емоджи, естонски, филипински, фински, фламански, грузински, гръцки, гуджарати, хавайски, иврит, хинди (деванагари, транслитериране), индийски английски, унгарски, исландски, индонезийски, ирландски, каннада, латвийски, литовски, македонски, малайски, малайлам, маорски, марати, норвежки, одийски, персийски, полски, португалски (Бразилия, Португалия), пунджаби, румънски, руски, сръбски (кирилица, латиница), словашки, словенски, кисуахили, шведски, тамилски (ръкопис, транслитериране), телугу, тайландски, тибетски, турски, украински, урду, вьетнамски, уелски

▪ Поддръжка на QuickType клавиатура с предсказващо въвеждане

Английски (Австралия, Канада, Индия, Сингапур, Обединеното кралство, САЩ), китайски (опростен, традиционен), френски (Белгия, Канада, Франция, Швейцария), немски (Австрия, Германия, Швейцария), италиански, японски, корейски, руски, испански (Латинска Америка, Мексико, Испания), португалски (Бразилия, Португалия), тайландски, турски

▪ Siri езици

Английски (Австралия, Канада, Индия, Ирландия, Нова Зеландия, Сингапур, Южна Африка, Обединеното кралство, САЩ), испански (Чили, Мексико, Испания, САЩ), френски (Белгия, Канада, Франция, Швейцария), немски (Австрия, Германия, Швейцария), италиански (Италия, Швейцария), японски, корейски, мандарин (континентален Китай, Тайван), кантонски (континентален Китай, Хонконг, Макао), арабски (Саудитска Арабия, Обединени арабски емирства), датски (Дания), нидерландски (Белгия, Нидерландия), фински (Финландия), иврит (Израел), малайски (Малайзия), норвежки (Норвегия), португалски (Бразилия), руски (Русия), шведски (Швеция), тайландски (Тайланд), турски (Турция)

▪ Езици за диктовка

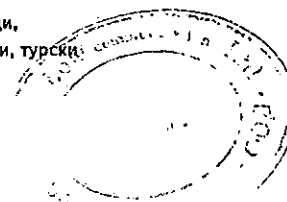
Английски (Австралия, Канада, Индия, Индонезия, Ирландия, Малайзия, Нова Зеландия, Филипини, Саудитска Арабия, Сингапур, Южна Африка, Обединени арабски емирства, Обединеното кралство, САЩ), испански (Аржентина, Чили, Колумбия, Коста Рика, Доминиканска република, Еквадор, Салвадор, Гватемала, Хондурас, Мексико, Панама, Парагвай, Перу, Испания, Уругвай, САЩ), френски (Белгия, Канада, Франция, Люксембург, Швейцария), немски (Австрия, Германия, Люксембург, Швейцария), италиански (Италия, Швейцария), японски, корейски, мандарин (континентален Китай, Тайван), кантонски (континентален Китай, Хонконг, Макао), арабски (Кувейт, Катар, Саудитска Арабия, Обединени арабски емирства), каталунски, хърватски, чешки, датски, нидерландски (Белгия, Нидерландия), фински, гръцки, иврит, хинди (Индия), унгарски, индонезийски, малайски, норвежки, полски, португалски (Бразилия, Португалия), румънски, руски, шанхайски (континентален Китай), словашки, шведски, тайландски, турски, украински, вьетнамски

▪ Поддръжка на тълковен речник

Английски, китайски (опростен, традиционен), датски, нидерландски, френски, немски, хинди, италиански, японски, корейски, норвежки, португалски, руски, испански, шведски, тайландски, турски

▪ Поддръжка на двуезичен речник

Китайски (опростен), нидерландски, френски, немски, италиански, японски, корейски, руски, испански



РЕПУБЛИКА БЪЛГАРИЯ

000111

- **Проверка на правописа**

Английски, френски, немски, италиански, испански, датски, нидерландски, фински, корейски, норвежки, полски, португалски, руски, шведски, турски

- **Аудио плейбек**

- Честотна характеристика: от 20Hz до 20 000Hz
- Поддържани аудиоформати: AAC (от 8 до 320 Kbps), Protected AAC (от iTunes Store), HE-AAC, MP3 (от 8 до 320 Kbps), MP3 VBR, Dolby Digital (AC-3), Dolby Digital Plus (E-AC-3), Audible (формати 2, 3, 4, Audible Enhanced Audio, AAX и AAX+), Apple Lossless, AIFF и WAV
- Лимит на силата на звука, регулируем от потребителя

- **TV и видео**

- AirPlay Mirroring, снимки, аудио и видео към Apple TV (2-ро или по-ново поколение)
- Видео миръринг и поддръжка на изходящ видеосигнал: до 1080p през цифров Lightning AV адаптер и Lightning към VGA адаптер (продават се отделно)
- Поддържани видеоформати: H.264 видео до 4K, 30 fps, високопрофилно ниво 4.2 с AAC-LC аудио до 160Kbps, 48kHz, стерео аудио или Dolby Audio до 1008 Kbps, 48kHz, стерео аудио или мултиканално аудио в .m4v, .mp4 и .mov файлови формати; MPEG-4 видео до 2,5Mbps, 640 x 480 пиксела, 30 fps, Simple Profile с AAC-LC аудио до 160Kbps на канал, 48kHz, стерео аудио или Dolby Audio до 1008 Kbps, 48kHz, стерео аудио или мултиканално аудио в .m4v, .mp4 и .mov файлови формати; Motion JPEG (M-JPEG) до 35Mbps, 1280 x 720 пиксела, 30 fps, аудио в ulaw, PCM стерео аудио в .avi формат

- **Поддръжка на прикачени файлове в мейл**

- Поддържани типове документи
jpg, tiff, .gif (изображения); .doc и .docx (Microsoft Word); .htm и .html (уеб страници); .key (Keynote); .numbers (Numbers); .pages (Pages); .pdf (Preview и Adobe Acrobat); .ppt и .pptx (Microsoft PowerPoint); .txt (текст); .rtf (rich text format); .vcf (информация за контакти); .xls и .xlsx (Microsoft Excel); .zip; .ics

- **Изисквания за околната среда**

- Работна температура на средата: от 0° до 35 °C (от 32° до 95 °F)
- Неработна температура: от -20° до 45° C (от -4° до 113° F)
- Относителна влажност: от 5% до 95% в некондензираща среда
- Работна надморска височина: тестван до 3000 м (10 000 фута)

1. Наличното пространство е по-малко и зависи от различни фактори. Стандартна конфигурация ползва приблизително от 8GB до 11GB (включително iOS и вградените приложения) според модела и настройките. Фабрично инсталираните приложения ползват приблизително 4GB, като можеш да ги триеш и възстановяваш.
2. Размерите и теглото зависят от конфигурацията и производствения процес.
3. FaceTime разговорите изискват и двамата участници в разговора да разполагат с FaceTime устройства и Wi-Fi връзка. Наличността на услугата през мобилна мрежа зависи от правилата, определени от оператора; възможно е да бъдат начислявани такси за данни.
4. За подробности относно поддръжката на 4G LTE се свържи с оператора си и виж www.apple.com/ipad/LTE.
5. План за данни се продава отделно. Моделът, който купуваш, е конфигуриран за работа с определена технология за мобилна мрежа. Попитай оператора си за съвместимост и наличност на планове за данни.
6. Тестовите са проведени от Apple през август 2015 г. с предпроизводствени устройства iPad mini 4 и софтуер. Тестът се състои в пълно разреждане на батерията, докато тече всяка от следните задачи: видео плейбек, аудио плейбек и сърфиране в интернет чрез Wi-Fi или мобилна мрежа. Видеосъдържанието представляваше многократно повторение на купен от iTunes Store филм с продължителност 2 часа и 23 минути. Аудио съдържанието представляваше плейлиста от 358 уникални аудиозаписа, купени от iTunes Store. Тестовите за работа в интернет през Wi-Fi и мобилна мрежа бяха проведени със специални уеб и мейл сървъри. Преглеждахме фото версии на 20 популярни уеб страници и получавахме електронна поща на всеки час. Всички настройки бяха зададени по подразбиране с изключение на това, че: Wi-Fi беше свързан с мрежа (освен при интернет сърфирането през мобилна мрежа); Wi-Fi функциите Ask to Join Networks и Auto-Brightness бяха изключени. Яркостта бе зададена на 50%; WPA2 криптирането беше разрешено. Животът на батерията зависи от настройките на устройството, начина на употреба и много други фактори. Тестовите на батерията бяха направени върху конкретни iPad устройства. Възможно е действителните резултати да се различават.
7. iMovie, GarageBand, Pages, Numbers и Keynote са налични в App Store. Даунлоудът на приложения изисква Apple ID и устройство, съвместимо с iOS версията, необходима за всяко приложение.
8. Препоръчваме използването на безжична широколентовата връзка; възможно е да бъдат начислявани такси.

Възможно е някои функции да не са налични във всички страни или региони. Кликни тук, за да видиш пълен списък.

Дата на публикуване: 23.10.2017

Поддръжка



ВАРШЕВО ОРГАНИЗАЦИЯ

Къде да купите: открийте реселър.

© 2018 Apple Inc. Всички права запазени.

[Условия за употреба](#)

[Карта на сайта](#)

[Използване на кукита](#)

[Използване на кукита](#)



000113

СОФИЙСКАТА

HP ProBook 450 G5 Notebook PC

By HP Inc

Compatibility-details

System ClientAero
 Verification-report: 1924294 - Certification Report - 11/16/2016 (en-US)/Hardware/LogoVerificationReport.aspx?id=1924294
 Compatibility status: 1933491 - Certification Report - 12/17/2016 (en-US)/Hardware/LogoVerificationReport.aspx?id=1933491
 Certified for Microsoft Windows 10 Client family versions 1506 and 1511, x64
 Certified for Microsoft Windows 10 Client family version 1607, x64
 Product-types; Feature-end AQ's-
 |Windows 10 Client

System.Client,BluetoothCon trol er. Base
 System nvGient, BluetoothCont mfer.US B
 System.Ctioht.Brig ht rtdssCo nt rpH-
 SystemGientf Button*
 SystemClient,Co mera
 SysEmClientCPU
 System.Cfcent. Dig i t ker.Preds fonToucbpad
 SystemClient.Dig it izerJ ouch
 System .Cie nt, F i rew al l
 SystemrGie nt.F i rpywre. U ER. GO P
 Sy stem.Gt f e nuG ra phrcs
 System,Client, Medial ro nscode
 *.Systemj-CNe n LMobite B roatfEtond
 System .Client,PCContainer
 System Client RadioManag emem
 SystemCbent.Sehsor
 System .Cfie W.S ensoriBase
 Sys tam.Oie rit. Sensor.Base. HID
 .System dee ntSystemCdn fsguratin n
 System-Cfie ntSystemi mage
 System :c/f* ntSystem Partition
 Sys tern ,Client,VideoEncbdo
 System',Cfta nr.Video?l ayba cV
 System. C lie nt-WI AN. BasicConnectNity
 System ^Gient^WLAN. Ha fig Detection ArsdRetoyety
 System.Cke ot. WLANSupportM AC Adde ssRa ntf nmfzati on
 System Cite nt,WLAN, WiFiO i rect-
 System. Fundamentals, Baha ry
 • System.Fjndam er it0is,DebugRo n
 . System ^Fundamental*.Debug Poi.USB
 System .Fundamentals. Energy Estimation
 System. Fundam entak.f] m wo re •
 System'.Fundamentak F i nmvta r e,Boot
 System ,fundam antels,Graphics
 System-f undam enta&Gfi,phrcs.Dlsplay
 System-Fund a'mehtaj\$.G tap hrce.Dtsplay, R hnwa re-VBE-
 System .Fundamentals.G raphtes.Disp layRentier
 System. Fundamentals.Gtaphks.HybjiiliGraphic,1,2
 System',Fundamental&IGtap hies.I ntemalDi splay
 System Jundarpenlals. G tap hi cs.RenderO n ly
 System.F unda mentals.H AL
 System funda mentalsj npu t
 System .Fundamentals, Marfe rfile-
 System.Lunda'mantak.Neiwprk
 System ,fundamentals-N X
 System; Fundartenta Is, PevrMa nsge ment
 Systemjfu nda'm enta Is,P J < E
 System .Fundamentals^ el3a bil itty
 System ,Fu ndamental s:S ecurly
 System -.Fundaments Is.Sig nerfDhv&rs
 System .Fundamentak.SM BIOS
 System.. Fu nd am entals System Aud to'
 System. Fund am enta IsSystem pCSContruller
 Sys tem.Fu rid am enta kSystem US B
 System sFundantentakTPM20
 System ;Fu rid am ental s.US BBoot
 System; Fe.1 ndam ehtals,US BDevice
 SystemvFb ndam entakWo tcbDaglim er
 SystembServwBase
 System S'ervecG rap hite
 Systemi e ry er-S MBIO S
 System.ServenSVVp.
 System^Setvgr.SystemSitejss
 System. Se rver.Virtua l I zati
 fun
 System,Server, WHE A



(<http://msdn.microsoft.com/en-US/>)

Windows Dev Center
 Windows Dev Center home
 (<https://dev.windows.com/en-US/>)
 Windows Store apps
 (<http://msdn.microsoft.com/en-US/windows/apps/>)
 Microsoft Edge (<https://dev.windows.com/en-US/microsoft-edge-for-devs>)
 Hardware Dev Center
 (<http://msdn.microsoft.com/en-US/windows/hardware/>)

Other links
 SUPPORT (<http://msdn.microsoft.com/en-US/windows/hardware/gg454528>)
 Microsoft Connect
 (<http://connect.microsoft.com/>)
 OEM (en-US/Hardware/oem)



© 2015 Microsoft. All rights reserved.

Terms of use (<http://msdn.microsoft.com/en-US/windows/hardware/cc300389/>) | Trademarks (<http://www.microsoft.com/library/toolbar/3.0/trademarks/en-us.mspx>) | Privacy & Cookies
 (<http://www.microsoft.com/info/privacy.mspx>) | United States (English)



Handwritten checkmark or signature.



000115

Handwritten text and a stamp, possibly containing the word 'COPYRIGHT'.

!FWLID%2FSignIn.aspx%3FReturnURL%3D%252Fen-US%252Fhardware%252FLPL%252FProductDetails.aspx%253FProductID%253D50771%2526OrganizationID%253D47888&lc=1033&id=281915&mkt=en-US&cbxt=

(http://msdn.microsoft.com/en-US/windows/hardware/)

Search Dev Center with Bing

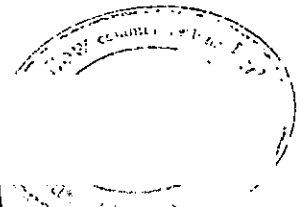
Home (http://msdn.microsoft.com/en-US/windows/hardware/)

Explore (https://msdn.microsoft.com/en-US/windows/hardware/m1269773.aspx)

Hardware Dev Center (http://msdn.microsoft.com/en-US/windows/hardware/) > Windows Compatible Products List (/en-US/Hardware/LPL/ProductDetails.aspx?ProductID=50771&OrganizationID=47888)

Windows Compatible Products List

Handwritten mark resembling a stylized 'A' or '1'.



Handwritten number 000116

Handwritten signature or initials

Handwritten text: КОМПЬЮТЕРНАТА

HP ProBook 650 G3 Notebook PC

By HP Inc.

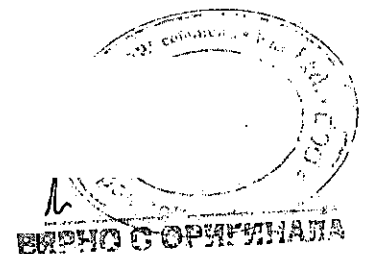
Compatibility details

Verification report: 1924293 - Certification Report - 11/16/2016 (/en-US/Hardware/LogoVerificationReport.aspx?sid=1924293)
 Compatibility status: Certified for Microsoft Windows 10 Client family version 1607, x64
 Product types: Mobile
 Feature and AQ's: Windows 10 Anniversary Update Client x64

- System.Client.Aero
- System.Client.BluetoothController.Base
- System.Client.BluetoothController.USB
- System.Client.BrightnessControls
- System.Client.Buttons
- System.Client.Camera
- System.Client.CPU
- System.Client.Digitizer.PrecisionTouchpad
- System.Client.Digitizer.Touch
- System.Client.Firewall
- System.Client.Firmware.UEFI.GOP
- System.Client.Graphics
- System.Client.MediaTranscode
- System.Client.MobileBroadBand
- System.Client.NearFieldProximity
- System.Client.PCContainer
- System.Client.RadioManagement
- System.Client.Sensor
- System.Client.Sensor.Base
- System.Client.Sensor.Base.HID
- System.Client.SystemConfiguration
- System.Client.SystemImage
- System.Client.SystemPartition
- System.Client.VideoEncode
- System.Client.VideoPlayback
- System.Client.WLAN.BasicConnectivity
- System.Client.WLAN.HangDetectionAndRecovery
- System.Client.WLAN.SupportMACAddressRandomization
- System.Client.WLAN.WiFiDirect
- System.Fundamentals.Battery
- System.Fundamentals.DebugPort
- System.Fundamentals.DebugPort.USB
- System.Fundamentals.EnergyEstimation
- System.Fundamentals.Firmware
- System.Fundamentals.Firmware.Boot
- System.Fundamentals.Graphics
- System.Fundamentals.Graphics.Display
- System.Fundamentals.Graphics.Display.Firmware.VBE
- System.Fundamentals.Graphics.DisplayRender
- System.Fundamentals.Graphics.HybridGraphics
- System.Fundamentals.Graphics.InternalDisplay
- System.Fundamentals.HAL
- System.Fundamentals.Input
- System.Fundamentals.MarkerFile
- System.Fundamentals.Network
- System.Fundamentals.NX
- System.Fundamentals.PowerManagement
- System.Fundamentals.PXE
- System.Fundamentals.Reliability
- System.Fundamentals.Security
- System.Fundamentals.SignedDrivers
- System.Fundamentals.SMBIOS
- System.Fundamentals.SystemAudio
- System.Fundamentals.SystemPCIController
- System.Fundamentals.SystemUSB
- System.Fundamentals.TPM20
- System.Fundamentals.USBBoot
- System.Fundamentals.USBDevice
- System.Fundamentals.WatchDogTimer
- System.Server.Base
- System.Server.Graphics
- System.Server.SMBIOS
- System.Server.SVVP
- System.Server.SystemStress
- System.Server.Virtualization
- System.Server.WHEA

7

117



(<http://msdn.microsoft.com/en-US/>)

Windows Dev Center

Windows Dev Center home
(<https://dev.windows.com/en-US/>)

Windows Store apps
(<http://msdn.microsoft.com/en-US/windows/apps/>)

Microsoft Edge (<https://dev.windows.com/en-US/microsoft-edge-for-devs/>)

Hardware Dev Center
(<http://msdn.microsoft.com/en-US/windows/hardware/>)

Other links

SUPPORT (<http://msdn.microsoft.com/en-US/windows/hardware/gg454528>)

Microsoft Connect
(<http://connect.microsoft.com/>)

OEM ([/en-US/Hardware/oem](http://en-US/Hardware/oem))

© 2015 Microsoft. All rights reserved.

Terms of use (<http://msdn.microsoft.com/en-US/windows/hardware/cc300389/>) | Trademarks (<http://www.microsoft.com/library/toolbar/3.0/trademarks/en-us.mspx>) | Privacy & Cookies (<http://www.microsoft.com/info/privacy.mspx>) | United States (English)

000118

000118

WLD%2FSignIn.ashx%3FReturnURL%3D%252fen-US%252fHardware%252fLPL%252FProductDetails.aspx%253fProductID%253d461462%2526OrganizationID%253d47888&lc=1033&id=281915&mkt=en-US&

(http)Hardware Dev Center (http://msdn.microsoft.com/en-US/windows/hardware/)

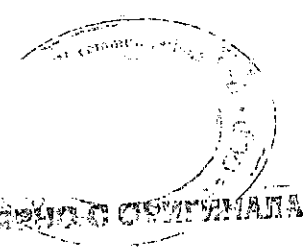
Search Dev Center with Bing

Home (http://msdn.microsoft.com/en-US/windows/hardware/)

Explore (https://msdn.microsoft.com/en-US/windows/hardware/mt269773.aspx)

Hardware Dev Center (http://msdn.microsoft.com/en-US/windows/hardware/) > Windows Compatible Products List (/en-US/Hardware/LPL/ProductDetails.aspx?ProductID=461462&OrganizationID=47888)

Windows Compatible Products List



000119

HP ProBook 640 G3 Notebook PC

By HP Inc.

Compatibility details

Verification report: 1924293 - Certification Report - 11/16/2016 (/en-US/Hardware/LogoVerificationReport.aspx?sid=1924293)
 Compatibility status: Certified for Microsoft Windows 10 Client family version 1607, x64
 Product types: Mobile
 Feature and AQ's: Windows 10 Anniversary Update Client x64

System.Client.Aero
 System.Client.BluetoothController.Base
 System.Client.BluetoothController.USB
 System.Client.BrightnessControls
 System.Client.Buttons
 System.Client.Camera
 System.Client.CPU
 System.Client.Digitizer.PrecisionTouchpad
 System.Client.Digitizer.Touch
 System.Client.Firewall
 System.Client.Firmware.UEFI.LOOP
 System.Client.Graphics
 System.Client.MediaTranscode
 System.Client.MobileBroadBand
 System.Client.NearFieldProximity
 System.Client.PCContainer
 System.Client.RadioManagement
 System.Client.Sensor
 System.Client.Sensor.Base
 System.Client.Sensor.Base.HID
 System.Client.SystemConfiguration
 System.Client.SystemImage
 System.Client.SystemPartition
 System.Client.VideoEncode
 System.Client.VideoPlayback
 System.Client.WLAN.BasicConnectivity
 System.Client.WLAN.HangDetectionAndRecovery
 System.Client.WLAN.SupportMACAddressRandomization
 System.Client.WLAN.WiFiDirect
 System.Fundamentals.Battery
 System.Fundamentals.DebugPort
 System.Fundamentals.DebugPort.USB
 System.Fundamentals.EnergyEstimation
 System.Fundamentals.Firmware
 System.Fundamentals.Firmware.Boot
 System.Fundamentals.Graphics
 System.Fundamentals.Graphics.Display
 System.Fundamentals.Graphics.Display.Firmware.VBE
 System.Fundamentals.Graphics.Display.Render
 System.Fundamentals.Graphics.HybridGraphics
 System.Fundamentals.Graphics.InternalDisplay
 System.Fundamentals.HAL
 System.Fundamentals.Input
 System.Fundamentals.MarkerFile
 System.Fundamentals.Network
 System.Fundamentals.NX
 System.Fundamentals.PowerManagement
 System.Fundamentals.PXE
 System.Fundamentals.Reliability
 System.Fundamentals.Security
 System.Fundamentals.SignedDrivers
 System.Fundamentals.SMBIOS
 System.Fundamentals.SystemAudio
 System.Fundamentals.SystemPCIController
 System.Fundamentals.SystemUSB
 System.Fundamentals.TPM20
 System.Fundamentals.USBBoot
 System.Fundamentals.USBDevice
 System.Fundamentals.WatchDogTimer
 System.Server.Base
 System.Server.Graphics
 System.Server.SMBIOS
 System.Server.SVVP
 System.Server.SystemStress
 System.Server.Virtualization
 System.Server.WHEA

000120

(<http://msdn.microsoft.com/en-US/>)

Windows Dev Center

Windows Dev Center home
(<https://dev.windows.com/en-US/>)

Windows Store apps
(<http://msdn.microsoft.com/en-US/windows/apps/>)

Microsoft Edge (<https://dev.windows.com/en-US/microsoft-edge-for-devs>)

Hardware Dev Center
(<http://msdn.microsoft.com/en-US/windows/hardware/>)

Other links

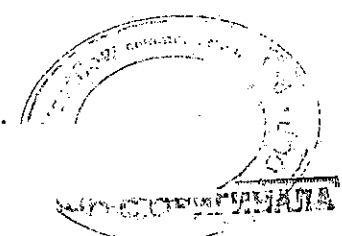
SUPPORT (<http://msdn.microsoft.com/en-US/windows/hardware/gg454528>)

Microsoft Connect
(<http://connect.microsoft.com/>)

OEM ([/en-US/Hardware/oem](http://en-US/Hardware/oem))

© 2015 Microsoft. All rights reserved.

Terms of use (<http://msdn.microsoft.com/en-US/windows/hardware/cc300389/>) | Trademarks (<http://www.microsoft.com/library/toolbar/3.0/trademarks/en-us.mspx>) | Privacy & Cookies (<http://www.microsoft.com/info/privacy.mspx>) | United States (English)



000121

:FWLID%2FSignIn.ashx%3FReturnURL%3D%252Fen-US%252FHardware%252FLPL%252FProductDetails.aspx%253FProductID%253D48220%2526OrganizationID%253D47888&lc=1033&id=281915&mkt=en-US&cc

(http://msdn.microsoft.com/en-US/windows/hardware/)

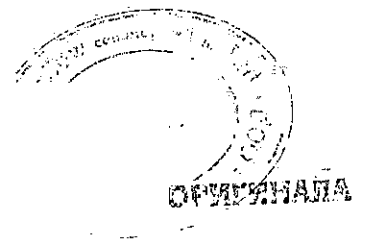
Search Dev Center with Bing

Home (http://msdn.microsoft.com/en-US/windows/hardware/)

Explore (https://msdn.microsoft.com/en-US/windows/hardware/mt269773.aspx)

Hardware Dev Center (http://msdn.microsoft.com/en-US/windows/hardware/) > Windows Compatible Products List (/en-US/Hardware/LPL/ProductDetails.aspx?ProductID=48220&OrganizationID=47888)

Windows Compatible Products List



000122

HP EliteBook 820 G4 Notebook PC

By HP Inc.

Compatibility details

Verification report: 1924825 - Certification Report - 11/20/2016 (/en-US/Hardware/LogoVerificationReport.aspx?sid=1924825)

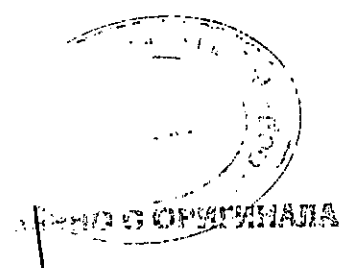
Compatibility status: Certified for Microsoft Windows 10 Client family version 1607, x64

Product types: Mobile

Feature and AQ's: Windows 10 Anniversary Update Client x64

- System.Client.Aero
- System.Client.BluetoothController.Base
- System.Client.BluetoothController.USB
- System.Client.BrightnessControls
- System.Client.Buttons
- System.Client.Camera
- System.Client.CPU
- System.Client.Digitizer.PrecisionTouchpad
- System.Client.Digitizer.Touch
- System.Client.Firewall
- System.Client.Firmware.UEFI.GOP
- System.Client.Graphics
- System.Client.MediaTranscode
- System.Client.MobileBroadBand
- System.Client.NearFieldProximity
- System.Client.PCContainer
- System.Client.RadioManagement
- System.Client.SystemConfiguration
- System.Client.SystemImage
- System.Client.SystemPartition
- System.Client.VideoEncode
- System.Client.VideoPlayback
- System.Client.WLAN.BasicConnectivity
- System.Client.WLAN.HangDetectionAndRecovery
- System.Client.WLAN.SupportMACAddressRandomization
- System.Client.WLAN.WiFiDirect
- System.Fundamentals.Battery
- System.Fundamentals.DebugPort
- System.Fundamentals.DebugPort.USB
- System.Fundamentals.EnergyEstimation
- System.Fundamentals.Firmware
- System.Fundamentals.Firmware.Boot
- System.Fundamentals.Graphics
- System.Fundamentals.Graphics.Display
- System.Fundamentals.Graphics.Display.Firmware.VBE
- System.Fundamentals.Graphics.Display.Render
- System.Fundamentals.Graphics.InternalDisplay
- System.Fundamentals.HAL
- System.Fundamentals.Input
- System.Fundamentals.MarkerFile
- System.Fundamentals.Network
- System.Fundamentals.NX
- System.Fundamentals.PowerManagement
- System.Fundamentals.PXE
- System.Fundamentals.Reliability
- System.Fundamentals.Security
- System.Fundamentals.SignedDrivers
- System.Fundamentals.SMBIOS
- System.Fundamentals.SystemAudio
- System.Fundamentals.SystemPCIController
- System.Fundamentals.SystemUSB
- System.Fundamentals.TPM20
- System.Fundamentals.USBBoot
- System.Fundamentals.USBDevice
- System.Fundamentals.WatchDogTimer
- System.Server.Base
- System.Server.Graphics
- System.Server.SMBIOS
- System.Server.SVVP
- System.Server.SystemStress
- System.Server.Virtualization
- System.Server.WHEA

000123



(<http://msdn.microsoft.com/en-US/>)

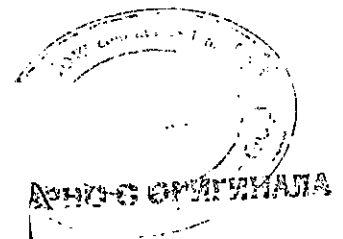
Windows Dev Center
 Windows Dev Center home
 (<https://dev.windows.com/en-US>)
 Windows Store apps
 (<http://msdn.microsoft.com/en-US/windows/apps/>)
 Microsoft Edge (<https://dev.windows.com/en-US/microsoft-edge-for-devs>)
 Hardware Dev Center
 (<http://msdn.microsoft.com/en-US/windows/hardware/>)

Other links
 SUPPORT (<http://msdn.microsoft.com/en-US/windows/hardware/gg454528>)
 Microsoft Connect
 (<http://connect.microsoft.com/>)
 OEM (en-US/Hardware/oem)

© 2015 Microsoft. All rights reserved.

Terms of use (<http://msdn.microsoft.com/en-US/windows/hardware/cc300389/>) | Trademarks (<http://www.microsoft.com/library/toolbar/3.0/trademarks/en-us.mspx>) | Privacy & Cookies
 (<http://www.microsoft.com/info/privacy.mspx>) | United States (English)

000124



?FWLID%2FSignIn.ashx%3FReturnURL%3D%252Fen-US%252FHardware%252FLPL%252FProductDetails.aspx%253FProductID%253D48244%2526OrganizationID%253D47888&lc=1033&id=281915&mkt=en-US&cbxct=

(http://msdn.microsoft.com/en-US/windows/hardware/)

Search Dev Center with Bing

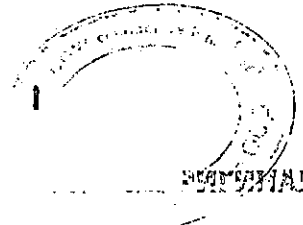


Home (http://msdn.microsoft.com/en-US/windows/hardware/)

Explore (https://msdn.microsoft.com/en-US/windows/hardware/mt269773.aspx)

Hardware Dev Center (http://msdn.microsoft.com/en-US/windows/hardware/) > Windows Compatible Products List (/en-US/Hardware/LPL/ProductDetails.aspx?ProductID=48244&OrganizationID=47888)

Windows Compatible Products List



000125

HP EliteBook 850 G4 Notebook PC

By HP Inc.

Compatibility details

Verification report: 1926084 - Certification Report - 11/21/2016 (/en-US/Hardware/LogoVerificationReport.aspx?sid=1926084)

Compatibility status: Certified for Microsoft Windows 10 Client family version 1607, x64

Product types: Mobile

Feature and AQ's: Windows 10 Anniversary Update Client x64

- System.Client.Aero
- System.Client.BluetoothController.Base
- System.Client.BluetoothController.USB
- System.Client.BrightnessControls
- System.Client.Buttons
- System.Client.Camera
- System.Client.CPU
- System.Client.Digitizer.PrecisionTouchpad
- System.Client.Digitizer.Touch
- System.Client.Firewall
- System.Client.Firmware.UEFI.GOP
- System.Client.Graphics
- System.Client.MediaTranscode
- System.Client.NearFieldProximity
- System.Client.PCContainer
- System.Client.RadioManagement
- System.Client.SystemConfiguration
- System.Client.SystemImage
- System.Client.SystemPartition
- System.Client.VideoEncode
- System.Client.VideoPlayback
- System.Client.WLAN.BasicConnectivity
- System.Client.WLAN.HangDetectionAndRecovery
- System.Client.WLAN.SupportMACAddressRandomization
- System.Client.WLAN.WiFiDirect
- System.Fundamentals.Battery
- System.Fundamentals.DebugPort
- System.Fundamentals.DebugPort.USB
- System.Fundamentals.EnergyEstimation
- System.Fundamentals.Firmware
- System.Fundamentals.Firmware.Boot
- System.Fundamentals.Graphics
- System.Fundamentals.Graphics.Display
- System.Fundamentals.Graphics.Display.Firmware.VBE
- System.Fundamentals.Graphics.Display.Render
- System.Fundamentals.Graphics.HybridGraphics
- System.Fundamentals.Graphics.InternalDisplay
- System.Fundamentals.HAL
- System.Fundamentals.Input
- System.Fundamentals.MarkerFile
- System.Fundamentals.Network
- System.Fundamentals.NX
- System.Fundamentals.PowerManagement
- System.Fundamentals.PXE
- System.Fundamentals.Reliability
- System.Fundamentals.Security
- System.Fundamentals.SignedDrivers
- System.Fundamentals.SMBIOS
- System.Fundamentals.SystemAudio
- System.Fundamentals.SystemPCIController
- System.Fundamentals.SystemUSB
- System.Fundamentals.TPM20
- System.Fundamentals.USBBoot
- System.Fundamentals.USBDevice
- System.Fundamentals.WatchDogTimer
- System.Server.Base
- System.Server.Graphics
- System.Server.SMBIOS
- System.Server.SVVP
- System.Server.SystemStress
- System.Server.Virtualization
- System.Server.WHEA

000126

✓ C

(<http://msdn.microsoft.com/en-US/>)

Windows Dev Center

Windows Dev Center home
(<https://dev.windows.com/en-US/>)

Windows Store apps
(<http://msdn.microsoft.com/en-US/windows/apps/>)

Microsoft Edge (<https://dev.windows.com/en-US/microsoft-edge-for-devs>)

Hardware Dev Center
(<http://msdn.microsoft.com/en-US/windows/hardware/>)

Other links

SUPPORT (<http://msdn.microsoft.com/en-US/windows/hardware/gg454528>)

Microsoft Connect
(<http://connect.microsoft.com/>)

OEM (en-US/Hardware/oem)

© 2015 Microsoft. All rights reserved.

Terms of use (<http://msdn.microsoft.com/en-US/windows/hardware/cc300389/>) | Trademarks (<http://www.microsoft.com/library/toolbar/3.0/trademarks/en-us.mspx>) | Privacy & Cookies (<http://www.microsoft.com/info/privacy.mspx>) | United States (English)

Handwritten mark resembling a stylized 'V' or '7'.

Handwritten mark resembling a stylized 'C' or '3'.

000127



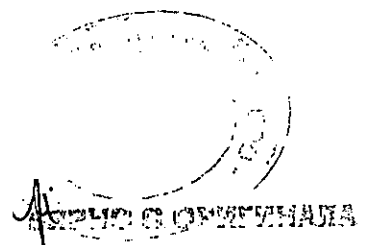
ВЕРНО С ОФИСАТА

HP ZBook 17 G4 Mobile Workstation
By HP Inc.

Compatibility details



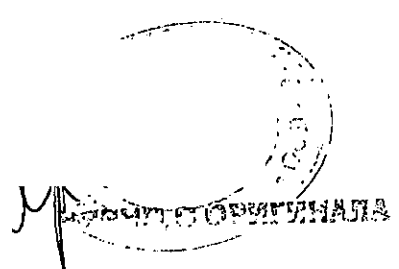
000128



Verification report: 1905662 - Certification Report - 10/12/2016 (/en-US/Hardware/LogoVerificationReport.aspx?sid=1905662)
 Compatibility status: Certified for Microsoft Windows 10 Client family version 1607, x64
 Product types: Mobile
 Feature and AQ's: Windows 10 Client x64

- System.Client.Aero
- System.Client.BluetoothController.Base
- System.Client.BluetoothController.USB
- System.Client.BrightnessControls
- System.Client.Buttons
- System.Client.Camera
- System.Client.CPU
- System.Client.Digitizer.Base
- System.Client.Digitizer.PrecisionTouchpad
- System.Client.Digitizer.Touch
- System.Client.Firewall
- System.Client.Firmware.UEFI.GOP
- System.Client.Graphics
- System.Client.MediaTranscode
- System.Client.MobileBroadBand
- System.Client.PCContainer
- System.Client.RadioManagement
- System.Client.Sensor
- System.Client.Sensor.Base
- System.Client.Sensor.Base.HiD
- System.Client.SystemConfiguration
- System.Client.SystemImage
- System.Client.SystemPartition
- System.Client.VideoEncode
- System.Client.VideoPlayback
- System.Client.Webcam
- System.Client.Webcam.Specification
- System.Client.WLAN.BasicConnectivity
- System.Client.WLAN.HangDetectionAndRecovery
- System.Client.WLAN.Support.MACAddressRandomization
- System.Client.WLAN.WiFiDirect
- System.Fundamentals.Battery
- System.Fundamentals.DebugPort
- System.Fundamentals.DebugPort.USB
- System.Fundamentals.EnergyEstimation
- System.Fundamentals.Firmware
- System.Fundamentals.Firmware.Boot
- System.Fundamentals.Graphics
- System.Fundamentals.Graphics.Display
- System.Fundamentals.Graphics.Display.Firmware.VBE
- System.Fundamentals.Graphics.Display.Render
- System.Fundamentals.Graphics.HybridGraphics
- System.Fundamentals.Graphics.InternalDisplay
- System.Fundamentals.HAL
- System.Fundamentals.Input
- System.Fundamentals.MarkerFile
- System.Fundamentals.Network
- System.Fundamentals.NX
- System.Fundamentals.PowerManagement
- System.Fundamentals.PXE
- System.Fundamentals.Reliability
- System.Fundamentals.Security
- System.Fundamentals.SignedDrivers
- System.Fundamentals.SMBIOS
- System.Fundamentals.SystemAudio
- System.Fundamentals.SystemAudio.3rdPartyDriver
- System.Fundamentals.SystemPCIController
- System.Fundamentals.SystemUSB
- System.Fundamentals.TPM.NonCS
- System.Fundamentals.TPM20
- System.Fundamentals.TrustedPlatformModule
- System.Fundamentals.USBBoot
- System.Fundamentals.USBDevice
- System.Fundamentals.WatchDogTimer
- System.Server.Base
- System.Server.Graphics
- System.Server.SMBIOS
- System.Server.SVVP
- System.Server.SystemStress
- System.Server.Virtualization
- System.Server.WHEA

129



(<http://msdn.microsoft.com/en-US/>)

Windows Dev Center

Windows Dev Center home
(<https://dev.windows.com/en-US>)

Windows Store apps
(<http://msdn.microsoft.com/en-US/windows/apps/>)

Microsoft Edge (<https://dev.windows.com/en-US/microsoft-edge-for-devs>)

Hardware Dev Center
(<http://msdn.microsoft.com/en-US/windows/hardware/>)

Other links

SUPPORT (<http://msdn.microsoft.com/en-US/windows/hardware/gg454528>)

Microsoft Connect
(<http://connect.microsoft.com/>)

OEM (</en-US/Hardware/oem>)

© 2015 Microsoft. All rights reserved.

Terms of use (<http://msdn.microsoft.com/en-US/windows/hardware/cc300389/>) | Trademarks (<http://www.microsoft.com/library/toolbar/3.0/trademarks/en-us.msp#>) | Privacy & Cookies (<http://www.microsoft.com/info/privacy.msp#>) | United States (English)

000130

17/11/2018



HP Europe B.V.
Amsterdam, Meyrin Branch
Route du Nant d'Avril 150
CH-1217 Meyrin/ Genève
Switzerland

Дата: 21.02.2018

Изходящ, №340

Оторизационна форма на производител

до:

Парафлоу Комуникейшънс ООД

България, София, п.к.1700, ул. Никола Габровски 79

+359 (2) 960 42 00

Уважаеми господа,

Ейч Пи Юрп Б.В., клон Мейрин, с адрес Route du Nant d'Avril 150, CH-1217 Meyrin/ Genève, Швейцария ("НРЕВУ") представлява производителя на HP продукти на територията на Европейския съюз, в т. ч. Р. България.

С настоящето потвърждавам от името на "НРЕВУ", че е наясно със следното:

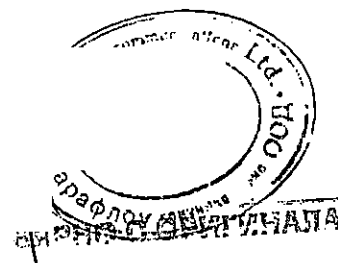
- Парафлоу Комуникейшънс ООД, България, София, п.к.1700, ул. Никола Габровски 79 ("HP Оторизиран Партньор") възнамерява да подаде оферта за участие в търг Обществената поръчка с предмет: "ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА", 00062-2018-0008 за Университет за национално и световно стопанство, 1700 София, Студентски град "Хр. Ботев" ("Клиент") включващ следните HP Personal Computers, Notebooks, Printers продукти и свързаните с тях услуги на HP за пакетна поддръжка ("HP Продукти"), и
- в случай, че поръчката бъде възложена на HP Оторизирания Партньор, той в последствие ще преговаря и ще подпише договор, подчинен изключително на правилата и условията между Клиента и HP Оторизирания Партньор за доставка на продукти и услуги на Клиента, включително посочените по-горе продукти на HP.

Само HP има право да упълномощава трети лица ("HP Оторизиран Партньор"), за да продава продукти на HP в определени територии, основани на селективни критерии за дистрибуция (специфични технически и професионални стандарти, които са определени от HP).

НРЕВУ потвърждава, че към датата на това писмо HP Оторизирания Партньор не е изключително оторизиран от HP препродавач, за продажба на по-горе споменатите HP Продукти за територията на България.

Продуктите на HP са обхванати от стандартна гаранция, съгласно правилата и условията приложими в България. Услугите на HP за пакетна поддръжка представляват стандартни предплатени и пакетни HP-брандирани услуги. HP Оторизирания Партньор има разрешение да предава тази стандартна гаранция на клиенти-крайни потребители които закупуват и използват такива HP Продукти в България и HP ще спазва тези стандартни гаранции.

000131

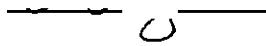


В рамките на горепосочената оферта за участие в търг и последващият потенциален договор, HP Оторизирания Партньор действа от свое име и за своя сметка и няма право, власт и не е опълномощен да създаде задължение или дълг, изричен или подразбиращ се от името на HPEBV.

HPEBV е единствено отговорен и задължен към Клиента съгласно стандартната HP продуктова гаранция и/или съгласно правилата и условията на HP за пакетна поддръжка. HP Оторизирания Партньор единствено се задължава относно удължаването и разширяването на тази гаранция и/или правила и условия.

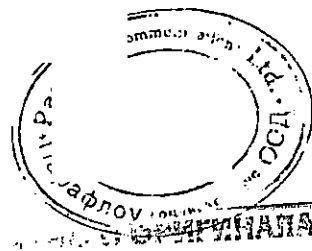
Доставката на стандартната HP продуктова гаранция и на услугата на HP за пакетна поддръжка се предоставят или от местният офис на HP в България, или от оторизиран от HP доставчик по поддръжка.

С уважение,


Erik Chang
Manager Channel Sales Operations
EMEA – Europe, Middle-East & Africa

HP Europe B.V.
Amsterdam, Meyrin Branch
Route du Nant-d'Avril 150
1217 Meyrin, Switzerland

000132

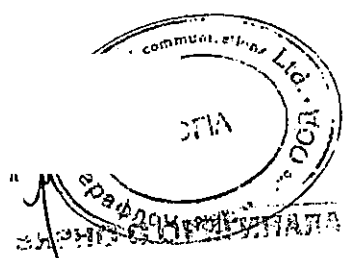


Приложение 1

HP Сервизни центрове за поддръжка на HP Consumer & Commercial продукти

Оторизирани сервизи на HP в България				Клиентски център за HP Consumer и HP Commercial продукти в София	Клиентски център за HP Consumer и HP Commercial продукти в Пловдив	Клиентски център за HP Consumer и HP Commercial продукти в Бургас	Клиентски център за HP Consumer и HP Commercial продукти в Варна	Клиентски център за HP Consumer и HP Commercial продукти в Благоевград
Град	Адрес	Телефон	E-mail					
Благоевград	бул. Св. Кирил и Методий 2	07001 7978	support@stemo.bg	•	•	•	•	•
Бургас	ул. Адам Нандевич 5	07001 7978	support@stemo.bg	•	•	•	•	•
Бургас	ул. Александър Стамболийски 39, офис 2	07001 0887; 0567840 197	service@paraflow.bg	•	•	•	•	•
Бургас	ул. Транспортна, Бизнес център Кандоско, офис 12	07001 6036; 0567811 896	support_burgas@cnsys.bg	•	•	•	•	•
Бургас	ул. Христо Фотев 94	06002 0199; 0567811 902	support@lrex.com	•	•	•	•	•
В.Търново	ул. Любен Карамелов 51	07001 6036; 0627602 404	support_velikotynovo@cnsys.bg	•	•	•	•	•
Варна	ул. Любен Карамелов 26	08002 0199; 0527681 881	support@lrex.com	•	•	•	•	•
Варна	ул. Мърз	07001 6036; 0527614 418	support_varna@cnsys.bg	•	•	•	•	•
Варна	бул. Отец Пансий 42	07001 7978	support@stemo.bg	•	•	•	•	•
Варна	ул. Тодор Боджевич 7	07001 0887; 0527321 997	service@paraflow.bg	•	•	•	•	•
Видин	ул. Цар Александър II 87	07001 6036; 0947600 410	support_vidin@cnsys.bg	•	•	•	•	•
Габрово	ул. Емануил Манолов 13	06002 0199; 0667804 662	support@lrex.com	•	•	•	•	•
Габрово	ул. Николаевска 41	07001 7978	support@stemo.bg	•	•	•	•	•
Делта	Промышлен зона	08002 0199; 0519795 959	support@lrex.com	•	•	•	•	•
Козлодуй	АЕЦ Козлодуй	07001 7978	support@stemo.bg	•	•	•	•	•
Козлодуй	ул. Васил Паденачерски 18, ет. 2	08002 0199; 0973780 407	support@lrex.com	•	•	•	•	•
Плевен	ул. Беласица 28	08002 0199; 027969 1691	support@lrex.com	•	•	•	•	•
Плевен	бул. Русе 6	07001 7978	support@stemo.bg	•	•	•	•	•
Пловдив	бул. България 108А	07001 7978	support@stemo.bg	•	•	•	•	•
Пловдив	ул. Тодор Бурнов 4	08002 0199; 0327622 618	support@lrex.com	•	•	•	•	•
Пловдив	ул. Самара 7	07001 0887; 0327960 046	service@paraflow.bg	•	•	•	•	•
Пловдив	бул. България 109	0327637 853	support_plovdiv@cnsys.bg	•	•	•	•	•
Русе	бул. Цар Освободител 42А, блок Проектант	07001 7978	support@stemo.bg	•	•	•	•	•
Русе	ул. Хан Крум 6, вх. в, ет. 2	08002 0199; 0827877 092	support@lrex.com	•	•	•	•	•
Русе	ул. Църковна независимост 27	07001 6036; 0827823 256	support_ruse@cnsys.bg	•	•	•	•	•
София	ул. Лерин 39	07001 6036	support@cnsys.bg	•	•	•	•	•
София	вх. Младост 3, бл. 302, вх. 4	08002 0199; 027969 1660	support@lrex.com	•	•	•	•	•
София	ул. Никола Габровски 75, Бизнес център ТУИНС	07001 0887; 027960 4200	service@paraflow.bg	•	•	•	•	•
София	бул. Цариградско шосе 135, Бизнес страда Офис Експрес	07001 7978	support@stemo.bg	•	•	•	•	•
Стара Загора	ул. Генерал Гурко 61	07001 7978	support@stemo.bg	•	•	•	•	•
Стара Загора	ул. Кольо Ганчев 52	08002 0199; 0427621 314	support@lrex.com	•	•	•	•	•
Стара Загора	ул. Св. Отец Пансий 92	07001 6036; 0427623 216	support_starazagora@cnsys.bg	•	•	•	•	•
Стара Загора	бул. Христо Ботев 100, ет. 5, офис 116	07001 0887; 0427605 350	service@paraflow.bg	•	•	•	•	•

133





Acer Sales International SA Representation in Bulgaria
3A, Nikolay Haitov Street, 1113 Sofia, Bulgaria
acer_bulgaria@acer-euro.com · www.acer.bg

До: Университет за национално и световно стопанство

Относно: Открита процедура по ЗОП за сключване на рамково споразумение с предмет:
„Доставка, инсталиране, въвеждане в експлоатация и гаранционен сервиз на информационно –
компютърна техника ”.

ОТОРИЗАЦИОННО ПИСМО ОТ ПРОИЗВОДИТЕЛЯ

С настоящето писмо № _____ Acer Computer, с адрес на представителство в България,
гр. София, ул. „Николай Хайтов“ № 3А

Оторизира:

**Парафлоу Комуникейшънс ООД, бул. Никола Габровски №70, Бизнес
център ТУИНС, София 1700, България**

да участва в гореспоменатата открита процедура и в следствие да преговаря и да подпише Договор
с Вас за доставка, инсталиране и сервизна гаранционна и следгаранционна поддръжка на монитори и
мултимедийни таблети, произведени от Acer Group, за количествата, спецификациите и графика на
доставка изисквани от възложителя на тази процедура.

Ние декларираме, че мониторите и мултимедийните таблети с марка Acer, носещи нашето име и лого
са в съответствие с директивите и стандартите на ЕС за този вид продукти, както и че предложените от
Парафлоу Комуникейшънс ООД продукти са нови, неупотребявани и фигурират в текущата ни
производствена листа към момента на подаване на офертата по тази процедура.

С настоящето удостоверяваме също, че Парафлоу Комуникейшънс ООД разполага с квалифициран
персонал, сертифициран да осъществява всички гаранционни и следгаранционни услуги и сервизни
процедури, свързани с гореизброените продукти, чрез оторизираните сервизни центрове на Парафлоу
Комуникейшънс ООД на Република България.

София, 07 март 2018 г.

С уважение:

Дателан Беликов
Мениджър бизнес развитие
Acer Group EMEA



000134





На вниманието на: Университет за национално и световно стопанство, 1700 София, ул. "8-ми декември"

Относно: Участие на "Парафлоу Комюникейшънс" ООД в открита процедура за сключване на рамково споразумение с потенциални изпълнители на обществена поръчка с предмет: "Доставка, инсталиране, въвеждане в експлоатация и гаранционен сервиз на информационно-компютърна техника"

ОТОРИЗАЦИОННО ПИСМО

С настоящето писмо фирма " _____", с адрес: бул. "Цариградско шосе N 90, офис 1902, 1784 София – Официален дистрибутор на продуктите на Apple за България

Оторизира:

**Парафлоу Комюникейшънс ООД,
бул. Никола Габровски 79
София
България**

да участва в гореспоменатата открита процедура и в последствие да преговаря и да подпише Договор с Вас за Доставка на Apple MacBook, iMac и iPad, за количествата, спецификациите и графика на доставка за нуждите на УНСС.

С настоящето писмо ние декларираме, че фирма Парафлоу Комюникейшънс ООД ще ни представлява в тази процедура.

Ние удостоверяваме също, че Парафлоу Комюникейшънс ООД разполага с квалифициран персонал, сертифициран да осъществява всички гаранционни услуги и сервизни процедури, свързани с тази процедура за обществена поръчка чрез оторизирания сервиз на Apple за България.

гр. София

23.02.2018

Подпис и печат:

/ Борислав Петров, Управител /

Apcom Ltd.
90 Tsarigradsko shose blvd.,
Sofia, Bulgaria
tel. +359 2 8186040
fax +359 2 9556011

www.apcom.bg

000135



ДЕКЛАРАЦИЯ

Долуподписаната _____ за, ЕГН _____, с л.к. № 645220501, изд. на _____ г. от МВР – гр. София, в качеството си на Експерт обществени поръчки и редовно упълномощена от Управителя на “Парафлоу Комуникейшънс” ООД, със седалище и адрес на управление: София 1700, бул. Никола Габровски 79, ЕИК 8 _____ 5, участник в процедура от Закона за обществени поръчки (ЗОП) с предмет: “ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА” за Обособена позиция 3 – Преносими компютри и таблети

ДЕКЛАРИРАМ:

Задължаваме се да осигурим в рамките на предложението в техническото ни предложение гаранционен срок на техниката по обособена позиция 3, необходимите гаранционни ремонти при следните условия:

- Срокът за реакция (регистрация на повредата) след уведомяване от страна на Възложителя е до 2 часа в работно време;
- Срокът за отстраняване на повредата е до 14 работни дни;
- При невъзможност в рамките на посочения срок за отстраняване на проблема в дефектирало оборудване, същото ще се заменя с работоспособно от същия или по-висок клас в срок до 5 работни дни.

Поемаме гаранция за качеството на стоката и за годността и за употреба за сроковете посочени в офертата ни и се задължаваме:

- да осигурим гаранционно обслужване и сервиз;
- да извършваме качествено сервизно техническо поддържане и ремонт на доставената компютърна техника в съответствие с действащите стандарти;
- да отстраняваме възникналите при нормалната експлоатация повреди;
- да отстраним безвъзмездно всички повреди и отклонения от изискванията за качество, които са възникнали в рамките на посочения гаранционен срок;

По време на гаранционния срок, се задължаваме при установяване на еднороден дефект на компоненти и това е установено на не по - малко от 20% от техниката от един вид, да подменяме дефектния компонент и на другата техника от същия вид, които не са проявили дефекта.

Гаранционното сервизно обслужване ще се извършва на мястото на използване на стоките, а ако това е невъзможно се извършва в наша сервизна база, оторизирана от производителите на предлаганата техника за осъществяване на сервизната услуга при условията посочени по-горе.

Адресът на базата е следният:

Гр. София 1700, Район студентски, бул. Никола Габровски 79.

За заявяване на услуга за обслужването Оборудване/ Системи, клиентът ни уведомява по един от следните начини:

- чрез регистриране на заявка в Сервизна информационна система „Paraflow Service Desk”, достъпна на адрес: support.paraflow.bg;
- по електронна поща на адреси hotline@paraflow.bg и service@paraflow.bg чрез попълнен формуляр на Потребителска заявка;
- на факс 02 960 4218 с попълнена сервизна заявка чрез попълнен формуляр на Потребителска заявка;
- по телефона за контакт с ИЗПЪЛНИТЕЛЯ 0700 10 887, 02 960 4222

гр. София, 12.03.2018 г.

/дата на подписване/

Декларатор:

Искра Берова

Експерт об

Парафлоу Комуникейшънс ООД

000136

**ДЕКЛАРАЦИЯ
ЗА СЪГЛАСИЕ С КЛАУЗИТЕ НА ПРИЛОЖЕНИЯ ПРОЕКТ НА ДОГОВОР**

Долуподписаният: **F**

(собствено, бащино, фамилно име)

с ЕГН: **F**, притежаващ л.к. № **F**, издадена на **F** г.,
от МВР – гр. София, с постоянен адрес: гр София, ул. Митрополит Вилчински 8 ет. 8
в качеството си на Управител,

(длъжност)

на участник Парафлоу Комуникейшънс ООД, ЕИК **F**

(наименование на участника)

в процедура от Закона за обществени поръчки (ЗОП) с предмет: "ДОСТАВКА,
ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ
НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА" за Обособена позиция 3 –
Преносими компютри и таблети

ДЕКЛАРИРАМ, ЧЕ:

Запознат съм с проекта на договора за възлагане на обществената поръчка за Обособена
позиция 3 – Преносими компютри и таблети, приемам го без възражения и ако участникът,
когото представлявам, бъде определен за изпълнител, ще сключа договора изцяло в
съответствие с проекта, приложен към документацията за участие, в законоустановения срок.

Известна ми е отговорността по чл. 313 от Наказателния кодекс за посочване на
неверни данни.

Дата: 12.03.2018 г.

Декларатор: **F**

Нико

/подпис и печат/

**ДЕКЛАРАЦИЯ
ЗА СЪГЛАСИЕ С КЛАУЗИТЕ НА ПРИЛОЖЕНИЯ ПРОЕКТ НА РАМКОВО
СПОРАЗУМЕНИЕ**

Долуподписаният:

(собствено, бащино, фамилно име)

с ЕГН: 1, притежаващ л.к. № 3, издадена на г.,
от МВР – гр. София, с постоянен адрес: гр София, ул. 8,
в качеството си на Управител,
(длъжност)

на участник Парафлоу Комуникейшънс ООД, ЕИК
(наименование на участника)

в процедура от Закона за обществени поръчки (ЗОП) с предмет: **“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА” за Обособена позиция 3 – Преносими компютри и планшети**

ДЕКЛАРИРАМ, ЧЕ:

Запознат съм с проекта на рамково споразумение за възлагане на обществената поръчка, приемам го без възражения и ако участникът, когото представлявам, бъде определен за изпълнител, ще сключа рамковото споразумение изцяло в съответствие с проекта, приложен към документацията за участие, в законоустановения срок.

Известна ми е отговорността по чл. 313 от Наказателния кодекс за посочване на неверни данни.

Дата: 12.03.2018 г.

Декларатор:
(подпис и печат)

000138

**Д Е К Л А Р А Ц И Я
ЗА СРОК НА ВАЛИДНОСТ НА ОФЕРТАТА**

Долуподписаният: *.....*

(собствено, бащино, фамилно име)

с ЕГН: *.....* 1, притежаващ л.к. № *.....* }, издадена *.....*,
от МВР – гр. София, с постоянен адрес: гр София, ул. Митрополит Вилински 8 ет. 8
в качеството си на Управител,

(длъжност)

на участник Парафлоу Комуникейшънс ООД, ЕИК 8 *.....*

(наименование на участника)

в процедура от Закона за обществени поръчки (ЗОП) с предмет: **“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА”** за Обособена позиция 3 – Преносими компютри и таблети

Д Е К Л А Р И Р А М, Ч Е:

С подаване на настоящата оферта декларираме, че сме съгласни валидността на нашата оферта да бъде 4 (четири) месеца от крайния срок за получаване на оферти, посочен в обявлението за процедурата

Известна ми е отговорността по чл. 313 от Наказателния кодекс за посочване на неверни данни.

Дата: 12.03.2018 г.

Декларатор: *.....*

/подпис и печат/

.....

ДО
Университет за национално и световно стопанство
Студентски град, ул. "8ми Декември"
София 1700

ЦЕНОВО ПРЕДЛОЖЕНИЕ

за участие в открита процедура за сключване на
рамково споразумение с предмет:

“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО-КОМПЮТЪРНА ТЕХНИКА”

За Обособена позиция 3 – Преносими компютри и таблети

от: ПАРАФЛОУ КОМУНИКЕЙШЪНС ООД
Адрес: София 1700, бул. "Никола Габровски" 79
Лице за контакт: Искра Берова
тел.: + 359 2 960 42 00, факс: + 359 2 960 42 18
e-mail: office@paraflow.bg
www.paraflow.bg

Искра Берова

ЦЕНОВО ПРЕДЛОЖЕНИЕ

от Парц: ,
 (наименование на участника)

и подписано от Ик
 (първите имена и ЕГН)

в качеството ѝ на Експерт обществени поръчки и упълномощено лице от управителя
 (на длъжност)

с ЕИК:

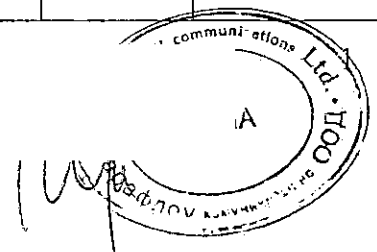
УВАЖАЕМИ ДАМИ И ГОСПОДА,

1. С настоящото, Ви представяме нашата ценова оферта за участие в обявената от Вас обществена поръчка с предмет: **“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА”** за обособена позиция № 3

Предлагаме да поемем, изпълним и завършим тази обществена поръчка, съобразно условията на документацията за участие, както следва:

№	Вид оборудване, марка, модел, елементи	Технически характеристики	мярка	Ед.цена без ДДС
1	ПРЕНОСИМИ КОМПЮТРИ Тип 1 HP ProBook 450 G5 Notebook PC	Intel® Core™ i3-7100U Processor 7th Generation 2.4 GHz, 2 cores/4threads, 3MB cache, 14 nm lithography HP 4GB (1x4GB) DDR4 2400, up to 16 512GB PCIe NVMe Solid State Drive (SSD)-(съгласно разясненията от 1.03.2018 г.) 15.6 inch HD (1366x768) Anti-Glare LED интегриран вградени външно, на USB Ethernet 10/100/1000 ; 802.11ac WiFi , Bluetooth 4.0 3 клетъчна, осигуряваща мин. 10 часа работа 2 xUSB 3.1, 1 x USB 2.0, 1x USB Type-C, 1x VGA, 1x HDMI, Media Card Slot, 1x RJ-45 Гравирана с English (US) и кирилица по БДС, backlit Fingerprint Reader, TPM модул Драйвери за Windows 10. Без операционна система. Моделът е сертифициран от Microsoft. (съгласно разясненията от 1.03.2018 г.) 3 години от производителя, включително на батерията ENERGY STAR®, CE, RoHS директива 2011/65/EC, WEEE директива 2002/96/EC 2,1 кг да	Бр.	1321.00
2	ПРЕНОСИМИ КОМПЮТРИ Тип 2 HP ProBook 650 G3 Notebook PC	Intel® Core™ i3-7100U Processor 7th Generation 2.4 GHz, 2 cores/4threads, 3MB cache, 14 nm lithography 15.6 inch HD (1366x768) Anti-Glare LED интегриран HP 4GB (1x4GB) DDR4 2133, up to 16 512GB PCIe NVMe Solid State Drive (SSD) (съгласно разясненията от 1.03.2018 г.)	Бр.	1386.00

000001



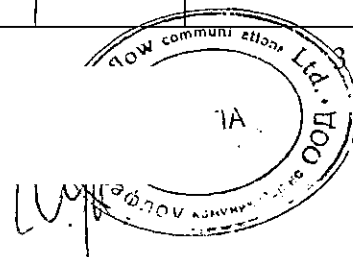
		<p>DVD±RW Ethernet 10/100/1000 ; 802.11ac Wi-Fi ; Bluetooth 4.0 Гравирана с English (US) и кирилица Според фирмената технология 1 xUSB Type-C™; 2 x USB 3.0 (1 charging); 1 xRJ-45; 1 x docking connector; 1 x headphone/microphone combo; 1 x power connector; 1 xDisplayPort™; 1 x serial port, 1xMedia Card Slot да, специализиран порт за връзка с докинг станция 3 клетъчна, осигуряваща мин. 10 часа работа ENERGY STAR®, CE, RoHS директива 2011/65/EC, WEEE директива 2002/96/EC 3 години от производителя, включително на батерията Драйвери за Windows 10.Без операционна система.Моделът е сертифициран от Microsoft. (съгласно разясненията от 1.03.2018 г.) . TPM модул, Fingerprint Reader, Smart Card Reader 2,31 кг да</p>		
3	<p>ПРЕНОСИМИ КОМПЮТРИ Тип 3 HP ProBook 640 G3 Notebook PC</p>	<p>Intel® Core™ i3-7100U Processor 7th Generation 2.4 GHz, 2 cores/4threads, 3MB cache, 14 nm lithography HP 4GB (1x4GB) DDR4 2133, up to 16 14 inch HD (1366x768) Anti-Glare интегриран 512GB PCIe NVMe Solid State Drive (SSD) (съгласно разясненията от 1.03.2018 г.) DVD±RW Ethernet 10/100/1000 ; 802.11ac WiFi , Bluetooth 4.0 English (US)/кирилица Според фирмената технология 1 xUSB Type-C™; 2 xUSB 3.0 (1 charging); 1 xRJ-45; 1 x docking connector; 1 x headphone/microphone combo; AC power connector; 1 xDisplayPort™; Media Card Slot, Docking connector да, специализиран порт за връзка с докинг станция 3 клетъчна, осигуряваща мин. 10 часа работа ENERGY STAR®, CE, RoHS директива 2011/65/EC, WEEE директива 2002/96/EC 3 години от производителя, включително на батерията Драйвери за Windows 10. Без операционна система.Моделът е сертифициран от Microsoft. (съгласно разясненията от 1.03.2018 г.) TPM модул, Fingerprint Reader, Smart Card Reader до 2,0 кг да</p>	Бр.	1377.00
4.	<p>ПРЕНОСИМИ КОМПЮТРИ Тип 4 HP EliteBook 820 G4 Notebook PC</p>	<p>Intel® Core™ i5-7200U Processor 7th Generation up to 3.1GHz, 2 cores/4threads, 3MB cache, 14 nm lithography HP 4GB (1x4GB) DDR4 2133, up to 16 256GB PCIe NVMe Solid State Drive 12.5 inch HD (1366x768) Anti-Glare интегриран вградени външно, на USB Ethernet 10/100/1000 ; 802.11ac WiFi , Bluetooth 4.0 3 клетъчна, осигуряваща мин. 10 часа работа 1 x USB 3.0, 1x USB Type-C, 1x VGA, 1x Display port, 1x Media Card Slot, 1x RJ-45, 1x Docking Connector Гравирана с English (US) и кирилица по БДС, backlit Fingerprint Reader, TPM модул, интегриран Smart Card Reader Драйвери за Windows 10. Без операционна система. Моделът е сертифициран от Microsoft. (съгласно разясненията от 1.03.2018 г.) да, специализиран порт за връзка с докинг станция 3 години от производителя, включително на батерията ENERGY STAR®, CE, RoHS директива 2011/65/EC, WEEE директива 2002/96/EC до 1,3 кг да</p>	Бр.	1515.00
5.	<p>ПРЕНОСИМИ КОМПЮТРИ Тип 5 HP EliteBook 850 G4 Notebook PC</p>	<p>Intel® Core™ i5-7200U Processor 7th Generation up to 3.1GHz, 2 cores/4threads, 3MB cache, 14 nm lithography 15.6 inch FHD (1920x1080) Anti-Glare HP 4GB (1x4GB) DDR4 2133 500GB 7200RPM SATA-3 и 128GB M2 SATA-3 Solid State Drive видео карта с 1GB собствена памет</p>	Бр.	1839.00

000002



		<p>външно, на USB Ethernet 10/100/100 ; 802.11ac Wi-Fi ; Bluetooth 4.0 уебкамера с вграден цифров микрофон Гравирана с English (US) и кирилица по БДС, backlit Според фирмената технология 2 x USB 3.0, 1x USB Type-C, 1xVGA, 1x Display port, 1x Media Card Slot, 1x RJ-45, 1x Docking Connector да, специализиран порт за връзка с докинг станция 3 клетъчна, осигуряваща мин. 10 часа работа ENERGY STAR®, CE, RoHS директива 2011/65/EC, WEEE директива 2002/96/EC Microsoft Windows 10 Compatible. Драйвери за Windows 10. Без операционна система. Моделът е сертифициран от Microsoft. (съгласно разясненията от 1.03.2018 г.). 3 години от производителя, включително на батерията Fingerprint Reader, TPM модул, интегриран Smart Card Reader до 2.1 кг да</p>		
6.	<p>ПРЕНОСИМИ КОМПЮТРИ Тип 6 HP ZBook 17 G4 Mobile Workstation</p>	<p>Intel® Core™ i7-7700HQ Processor 7th Generation 2.8 GHz, up to 3.8 GHz, 4 cores/8threads, 6MB cache, 14 nm lithography HP 8GB (1x8GB) DDR4 2400, up to 64 17.3 inch FHD (1920x1080) Anti-Glare 1TB 7200RPM SATA-3 и 256GB PCIe NVMe Solid State Drive NVIDIA Quadro M1200 4GB Graphics, собствена памет, GDDR5, 128-bit външно, на USB Ethernet 10/100/1000 ; 802.11ac WiFi Adapter, Bluetooth 4.0 Гравирана с English (US) и кирилица по БДС, backlit Според фирмената технология 4x USB 3.0, 1 x Media Card slot, 1 xVGA, 1 xHDMI, 1 xRJ-45, 2 xThunderbolt™ 3.1, 1 x power connector; 1 x headphone/microphone combo; 6 Cell 96 WHr Long Life, осигуряваща мин. 10 часа работа ENERGY STAR®, CE, RoHS директива 2011/65/EC, WEEE директива 2002/96/EC Microsoft Windows 10 Compatible. Драйвери за Windows 10. Без операционна система. Моделът е сертифициран от Microsoft. (съгласно разясненията от 1.03.2018 г.). 3 години от производителя Fingerprint Reader, TPM модул, интегриран Smart Card Reader до 3.2кг да</p>	Бр.	2946.00
7.	<p>ТАБЛЕТИ Тип 1 Acer Iconia A3-A40</p>	<p>MTK8163V/A Quad Core Cortex A53 1.5GHz 2GB DDR3L 10.1" IPS, 1920x1200 FHD resolution 32GB 802.11 a/b/g/n Bluetooth, Micro HDMI, Micro USB 2.0, вградени високоговорители, вграден микрофон MicroSD memory card up to 128GB Да Rechargeable Li-ion battery 0,530 кг Android 6.0 1 година да</p>	Бр.	405.00
8.	<p>ТАБЛЕТИ Тип 2 Acer One S1003</p>	<p>Intel Atom® x5-Z8350 Processor Quad Core 1.44GHz, 2 MB L2 cache 2GB DDR3L 10.1" IPS, 1280x800 HD resolution 32GB 802.11 b/g/n Bluetooth, Micro HDMI, Micro USB 2.0, вградени високоговорители, вграден микрофон MicroSD memory card up to 32GB Минимум Rechargeable Li-ion battery Да, USB 2.0 порт (интегриран в клавиатурата) Максимум 0,680 кг (таблет), Максимум 1.300 кг</p>	Бр.	494.00

000003



		(таблет + клавиатура) Microsoft Windows 10 Home 1 година да		
9.	ТАБЛЕТИ Тип 3 Apple 9.7-inch iPad Wi-Fi 128GB	9.7" (24.64 cm) 2048x1536 LED-backlit Multi-Touch display with IPS technology, Fingerprint-resistant oleophobic coating, Fully laminated display, Antireflective coating Triple Core 1.50 GHz Typhoon, A8X chip with 64-bit architecture, M8 motion coprocessor 2048 MB RAM 128 GB "Предна 12MP, f/2.2 aperture, 720p HD video recording, Backside illumination, Задна мин. 8.0MP, f/2.4 aperture, Autofocus, Burst mode, Tap to focus, Timer mode, Five-element lens, Backside illumination, Auto image stabilization, Face detection" Wi-Fi (802.11a/b/g/n/ac); dual band (2.4GHz and 5GHz); HT80 with MIMO, Bluetooth 4.0 no3G 27.3-watt-hour rechargeable lithium-polymer battery, Up to 10 hours of surfing the web on Wi-Fi, watching video, or listening to music iOS 10.0 0.450 кг. 12 месеца да	Бр.	999.00
10.	ТАБЛЕТИ Тип 4 Apple iPad mini 4 Wi-Fi 128GB	7.9" (20.07 cm) 2048x1536 LED-backlit Multi-Touch display, Fingerprint-resistant oleophobic coating, Fully laminated display, Antireflective coating Dual-core 1.5 GHz Typhoon, A8 chip with 64-bit architecture, M8 motion coprocessor 2048 MB 128 GB 8 MP, f/2.4, 32mm, autofocus, face detection Wi-Fi (802.11a/b/g/n/ac), Bluetooth 4.2 no3G Non-removable Li-Ion battery (19.1 Wh) iOS 9.0 300 г 12 месеца да	Бр.	975.00
Сбор на единичните цени				13 257.00

2. В предлаганата от нас цена също така сме включили и всички разходи, необходими за качествено и точно изпълнение на дейностите от обхвата на обществената поръчка.

3. Предложените цени са определени при пълно съответствие с условията от документацията и техническата спецификация по процедурата.

Дата: 12.03.2018 г.

ПОДПИС И ПЕЧАЛ :

Име Понева

[име и фамилия]

Упълномощено лице

[качество на представляващия участника]



ДО
Университет за национално и световно стопанство
Студентски град, ул. "8ми Декември"
София 1700

Димитровски Т

ТЕХНИЧЕСКО ПРЕДЛОЖЕНИЕ

за участие в открита процедура за сключване на
рамково споразумение с предмет:

**“ДОСТАВКА, ИНСТАЛИРАНЕ,
ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И
ГАРАНЦИОНЕН СЕРВИЗ НА
ИНФОРМАЦИОННО-КОМПЮТЪРНА
ТЕХНИКА”**

За Обособена позиция 4 - Монитори

от: ПАРАФЛОУ КОМУНИКЕЙШЪНС ООД
Адрес: София 1700, бул. "Никола Габровски" 79
Лице за контакт: Искра Берова
тел.: + 359 2 960 42 00, факс: + 359 2 960 42 18
e-mail: office@paraflow.bg
www.paraflow.bg

1
10
100

1
1
1

А

ТЕХНИЧЕСКО ПРЕДЛОЖЕНИЕ ЗА ИЗПЪЛНЕНИЕ НА ПОРЪЧКАТА

от Парафлоу Комуникейшънс ООД
(наименование на участника)

и подписано от Ис [име], ЕГН [ЕГН]
(трите имена и ЕГН)

в качеството ѝ на Експерт обществени поръчки и упълномощено лице
(на длъжност)

с **ЕИК:** [ЕИК];

УВАЖАЕМИ ДАМИ И ГОСПОДА,

1. След запознаване с всички документи и образци от документацията за участие в процедурата, получаването, на които потвърждаваме с настоящото, ние удостоверяваме и потвърждаваме, че представляваният от нас участник отговаря на изискванията и условията посочени в документацията за участие в процедура с предмет: **“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛУАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА”** за обособена позиция № 4

2. Декларираме, че сме получили посредством „Профила на купувача” документация за участие и сме запознати с указанията и условията за участие в обявената от Вас процедура. Съгласни сме с поставените от Вас условия и ги приемаме без възражения.

3. Декларираме, че сме запознати със всички условия за изпълнение на поръчката за обособената позиция

4. Декларираме, че ще изпълним дейностите по обществената поръчка в сроковете регламентирани от Възложителя в документацията за участие и Техническата спецификация, а именно:

Срок за изпълнение 12 месеца.

5. Декларираме, че предлаганата техника е нова, неупотребявана, нерициклирана и в производствената листа на производителя към момента на подаване на офертата, Линк, чрез който може да се провери истинността на горепосоченото

<https://www.acer.com/ac/bg/BG/content/home>

6. Декларираме, че имаме оторизация от производителя и/или от официалния представител на производителя с права да извършваме продажба и сервиз на предлаганото оборудване.

Stamp: "Paraflo Communications Ltd." and a signature.

Handwritten signature.

000001

Handwritten mark.

7. За изпълнение предмета на поръчката прилагаме:

7.1. документ за упълномощаване, когато лицето, което подава офертата, не законният представител на участника – **оригинал или нотариално заверено копие;**

7.2. предложение за изпълнение на поръчката в съответствие с технически спецификации и изискванията на възложителя за обособената позиция и да е съобразено с критериите за възлагане – свободна редакция;

7.3. оторизация от производителя с права за извършване продажба и сервиз на предлаганото оборудване;

7.4. декларация за сервизно обслужване и наличие на сервизна база, оторизирана от производителите и на предлаганата техника за осъществяване на сервизните услуги при условията на възложителя;

7.5. декларация за съгласие с клаузите на приложения проект на договор - попълва се **Образец № 4.2.**;

7.6. декларация за съгласие с клаузите на приложения проект на рамково споразумение - попълва се **Образец № 4.1.**;

7.7. декларация за срока на валидност на офертата - попълва се **Образец № 5.**

Дата: 12.03.2018 г.

ПОДПИС И ПЕЧАТ:

[име и фамилия]

Упълномощено лице

[качество на представляващия
участника]



ПЪЛНОМОЩНО

Долуподписаният Г

притежаващ лична карта No. 610000000, издадена на 15.01.2014 г. от МВР- гр. София, ЕГН 7011000000, с адрес в гр. София, ул. Митрополит Кирил Видински 9, ет. 9, представляващ, и в качеството си на Управител на "Парафлоу Комуникейшънс" ООД, регистрирано по ф.д. 0110/1995 г. по описа на СГС, БУЛСТАТ/ЕИК 691010775, с адрес по регистрация гр. София 1700, бул.

У П Ъ Л Н О М О Щ А В А М

Искри Димитрова Дорони, притежаваща лична карта номер 610000000, издадена на 03.01.2014 г. от МВР - гр. София, ЕГН: 7011000000, да представлява Парафлоу Комуникейшънс ООД пред всички възложители на обществени поръчки по смисъла на чл. 5, чл. 6, чл. 7, чл. 8 и чл. 9 от Закона за Обществени Поръчки (ЗОП) във връзка с провеждането на процедури за възлагане на обекти на обществените поръчки по смисъла на чл. 3, ч. 8 и чл. 9 от ЗОП, както и във всички тържни процедури, финансирани от фондовете на Европейския Съюз, международни тържни процедури, финансирани от Световната Банка, USAID, UNDP и други източници на финансиране, както и във фирмени конкурси и процедури, със следните права:

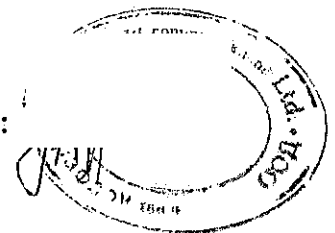
- Да води преговори от името на Парафлоу Комуникейшънс ООД с представители на Възложителите;
- Да получава, подава и подписва от името на Парафлоу Комуникейшънс ООД предложения, оферти, писма, молби, декларации, заявления, искания, копия на документи, и др. подобни документи от/към възложителите;
- Да представлява Парафлоу Комуникейшънс ООД пред Възложителите при предаване или получаване на предложения, оферти и допълнителни документи - писма, банкови гаранции, договори и т.н. в случай на поискването им от Възложителите;
- Да парафира и подписва от името на Парафлоу Комуникейшънс ООД, текстовете на договори и споразумения с Възложителите;
- Да представлява Парафлоу Комуникейшънс ООД пред Комисиите, като присъства при отваряне, разглеждане и оценяване на предложенията на Парафлоу Комуникейшънс ООД, да чете и взема становище по протоколите на Комисиите, както и да представя и подписва допълнителни документи или писма в случай на поискването им от Възложителите.

Настоящото Пълномощно е в сила до 30.8.2018 г.

гр. София, 03.01.2018 г.

УПЪЛНОМОЩИТЕЛ:

ИМОВ



000003

11 -01- 2018

11 -01- 2018

На
на Нотариал
А.И.К.
А.С.М.
.....
.....
с местожите
Рег.№/

г. №199

сена от

И.И.
И.И.

Нотариус:.....

Боян Петров
помощник-нотариус



(Handwritten mark)

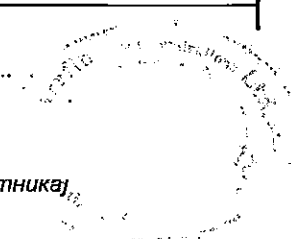
ТЕХНИЧЕСКО ПРЕДЛОЖЕНИЕ

Минимални технически параметри		Предложение на Парафлоу Комуникайшънс ООД
Обособена позиция №4 МОНИТОРИ		
МОНИТОРИ - Тип 1		Acer V206WQLbmd
Размер на екрана	TFT IPS LED 19.5"	TFT IPS LED 19.5"
Резолюция	min. 1440x900	1440x900
Време за реакция	max. 6 ms	6 ms
Яркост	min. 250 cd/m2	250 cd/m2
Контраст	min. 1000:1 (static)	1000:1 (static)
Ъгъл на видимост	min. 178/178 (H/V)	178/178 (H/V)
Стандарти	TCO 6.0, Energy Star 6.0	TCO 6.0, Energy Star 6.0
Други	вътрешно захранване, VESA, min. Tilt -5°~ 25°, 15 pin D-SUB, DVI/HDMI, интегрирани говорители	вътрешно захранване, VESA, min. Tilt -5°~ 25°, 15 pin D-SUB, DVI, интегрирани говорители
Гаранция	min. 3 години	3 години
МОНИТОРИ - Тип 2		Acer V246HYLbd
Размер на екрана	TFT IPS LED 23.6"	TFT IPS LED 23.6"
Резолюция	min. 1920 x 1080 FULL HD	1920 x 1080 FULL HD
Време за реакция	max. 6 ms	5 ms
Яркост	min. 250 cd/m2	250 cd/m2
Контраст	min. 1000:1 (static)	1000:1 (static)
Ъгъл на видимост	min. 178/178 (H/V)	178/178 (H/V)
Стандарти	TCO 6.0, Energy Star 6.0	TCO 6.0, Energy Star 6.0
Други	вътрешно захранване, VESA, min. Tilt -5°~ 25°, 15 pin D-SUB, DVI/HDMI	вътрешно захранване, VESA, min. Tilt -5°~ 25°, 15 pin D-SUB, DVI
Гаранция	min. 3 години	3 години
МОНИТОРИ - Тип 3		Acer KA270HBbid
Размер на екрана	TFT IPS LED 27"	TFT IPS LED 27"
Резолюция	min. 1920 x 1080 FULL HD	1920 x 1080 FULL HD
Време за реакция	max. 4 ms	4 ms
Яркост	min. 250 cd/m2	250 cd/m2
Контраст	min. 1000:1 (static)	1000:1 (static)
Ъгъл на видимост	min. 178/178 (H/V)	178/178 (H/V)
Стандарти	MPRII, Energy Star 6.0	MPRII, Energy Star 6.0
Други	вътрешно захранване, VESA, min. Tilt -5°~ 25°, 15 pin D-SUB, DVI, HDMI	вътрешно захранване, VESA, min. Tilt -5°~ 25°, 15 pin D-SUB, DVI, HDMI
Гаранция	min. 3 години	3 години

Дата: 12.03.2018 г

ПОЛПИС И ПЕЧАТ: _____
Ис.....а

(качество на представяващия участника)



00004

ACER
Monitors
Commercial

V206WQL bmd
 Bright colors, sustainable vision



V206WQL
V6 Series

Sub Model

Product line

General

Display Type	Flat screen/TFT
Dimensions (WxHxD mm)	454x386x192
Min. Profile Thickness mm	19.8
Net Weight (kg)	2.92
Gross Weight (kg)	4.24
Chassis colour and finish	Black Matt

Display

Panel Technology	IPS
Crystalbrite	No
Size cm	50
Size Inch	19.5
Format	16:10
Display dimensions (mm)	419x262
Pixel Pitch (mm)	0.291
Resolution	1440x900@60Hz
Frequency (H/V)	30-80KHz/55-75Hz
PPI	87
Rsp time (ms)	6
Dynamic Contrast ratio	100M:1
Brightness (cd/m ²)	250
H/V* CR 10:1	178/178
H/V* CR 5:1	178/178
Colors	16.7M
Bit	6Bit+HiFRC
Color Gamut	72% NTSC
Backlight type	LED
Screen coating hardness	3H
OS Compliance	Win8 compliant

Video Input

Input Signal	VGA + DVI (w/HDCP)
--------------	--------------------

Audio Input

Speaker	1Wx2
---------	------

Ergonomics

VESA Wall Mounting	100x100
Kensington Support	Yes
Tilt	-5°~25°
Swivel degrees	No
Hgt Adj (mm)	No
Pivot degrees	No

Power Supply

Power Supply	Internal
Energy Star Type	ES6.0
Off/Standby (W)	0.40
Sleep (W)	0.45
Min On (W)	15.0
Max (W)	-
EEL Class	-
Power On (W)	-
Annual Energy Consumption (kWh/year)	-
Mercury (mg)	0
Lead	Presence*

Manufacturer Guarantee

Warranty	EMEA Commercial (3yr)
Certificates	CE, TÜV GS, ISO9241-307 class II
Certification	TCO6.0
MTBF Hours @ 25°C	30000

Pallet and Container Loading

Pallet qty (pcs)	116
Pallet Size (WxD) cm	119.9x108.4x222.8
Container loading 20'/40"	1160/2320
Package Dimensions (cm)	49.9x39.4x11.3
Included cables	VGA

Special Features

Comfyview	Comfyview
-----------	-----------

WIFI/HASIA

878PH

000005

149

1/1



Acer Incorporated
 8F, 88, Sec. 1, Xintai 5th Rd., Xizhi
 New Taipei City 221, Taiwan

Declaration of Conformity

We,

Acer Incorporated

8F, 88, Sec. 1, Xintai 5th Rd., Xizhi, New Taipei City 221, Taiwan

Contact Person: Mr. RU Jan, e-mail: ru.jan@acer.com

And,

Acer Italy s.r.l

Via Lepetit, 40, 20020 Lainate (MI) Italy

Tel: +39-02-939-921 ,Fax: +39-02 9399-2913

www.acer.it

Declare under our own responsibility that the product:

Product:	LCD Monitor
Trade Name:	Acer
Model Number:	V206WQL
SKU Number:	V206WQLxxxxxx; ("x" = 0~9, a~z, A~Z, or blank)

To which this declaration refers conforms to the relevant standard or other standardizing documents:

- EN55022:2010 Class B; EN55024:2010
- EN 61000-3-2:2006+A1:2009+A2:2009, Class D
- EN61000-3-3:2008
- EN60950-1:2006/A11:2009/A1:2010+A12:2011
- Regulation (EC) No. 1275/ 2008; EN 50564:2011; IEC 62301:2011
- EN50581:2012

We hereby declare above product is in compliance with the essential requirements and other relevant provisions of EMC Directive 2004/108/EC, Low Voltage Directive 2006/95/EC, and RoHS Directive 2011/65/EU and Directive 2009/125/EC with regard to establishing a framework for the setting of ecodesign requirements for energy-related product.

Year to begin affixing CE marking 2014.

 RU Jan / Sr. Manager
 Regulation, Acer Inc.

Sep. 19, 2014
 Date

000006

This Certificate indicates that the Applicant has satisfied the Intertek requirements for the application of the EPA ENERGY STAR Mark to the model(s) described in the Product(s) Covered section of the referenced Compliance Report when made in accordance with the conditions set forth in the Energy Efficiency Certification Agreement, the Certification Report and the Program Manual. This certificate is issued subject to the Applicant attaining, and remaining in, compliance with any separate EPA ENERGY STAR Program requirements necessary for use of the ENERGY STAR Mark. This document is the property of Intertek Testing Services and is not transferable.

Company: Acer Incorporated
Address: 8TH FL 88 SEC 1 XINTAI 5TH RD XIZHI
 DISTRICT NEW TAIPEI 221
Country: Taiwan
Contact: Phoebe
Phone: 886-2-8691-3791
FAX: 886-2-86913120
Email: phoebe_cheng@acer.com.tw

OEM name: Acer Incorporated
Address: 8TH FL 88 SEC 1 XINTAI 5TH RD XIZHI
 DISTRICT NEW TAIPEI 221
Country: Taiwan
Contact: Phoebe
Phone: 886-2-8691-3791
FAX: 886-2-86913120
Email: phoebe_cheng@acer.com.tw

3rd-party Report Issuing Office: INTERTEK TESTING SERVICES SH LTD

Control Number: 4002645

Authorized by:

 tification Manager

This document supersedes all previous Certificate of Conformity for the noted Report Number.

This Certificate is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Certificate. Only the Client is authorized to copy or distribute this Certificate. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results referenced from this Certificate are relevant only to the sample tested.

Intertek Testing Services NA Inc.
 545 East Algonquin Road, Arlington Heights, IL 60005
 Telephone 800-345-3851 or 847-439-5667 Fax 312-283-1672
 www.intertek.com

Standard(s): ENERGY STAR® Program Requirements for Displays Version 6.0

Product: Display(LCD Monitor)

Models: B206WQL_v(B206WQL);V206WQL_v(V206WQL)



CERTIFICATE

TCO Certified Displays 6.0
No. D615030695


This certificate is awarded to Top Victory Electronics (Taiwan) Co., Ltd. to confirm that acer *20*WQL has successfully met all requirements in TCO Certified Displays 6.0. Criteria in TCO Certified are designed to ensure that the manufacturing, use and recycling of this product are carried out with consideration for environmental, social and economic responsibility

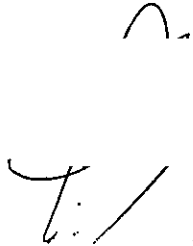
Company:	Top Victory Electronics (Taiwan) Co., Ltd. 10F., No.230. Liancheng Rd., Zhonghe Dist., New Taipei City 23553, TAIWAN
Brand Name:	acer
Type/Model Name:	*20*WQL
Product Category:	19.5" Display - Flat
Sales Name:	See appendix
Critical Component:	See appendix
Comments:	Class I LED backlight

This Certificate confirms that a sample of the Certified Product, as stated herein, has been tested and approved as to its compliance with the Criteria Document valid at the time of the Laboratory Test. The Certified Product may, subject to the use of the unique combination of Brand name, Type/Model Name and Sales Name as stated in this Certificate, be marketed and sold with the TCO Certified Label in accordance with the Agreement.

To verify this certificate please go to www.tcodevelopment.com/validate and enter validation code 5DB96.

Certification date: March 19, 2015
Issue date: March 19, 2015

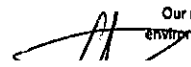

Stephen Fuller
Certification process,
TCO Development





TCO DEVELOPMENT

TCO Development has been an international driver in the field of Sustainable IT since 1992. Our mission is to ensure that the manufacture, use and recycling of IT products reflect environmental, social and economic responsibility. TCO Development is the company behind the TCO Certified third party sustainability certification for IT products.





000008



Appendix to certificate No. D615030695

Company: **Top Victory Electronics (Taiwan) Co., Ltd.**
 10F., No.230, Liancheng Rd., Zhonghe Dist., New Taipei City 23553, TAIWAN

Certified Product: **acer *20*WQL, 19.5" Display - Flat**

Sales Name: **B206WQL, B206WQL ymdh, V206WQL, V206WQL bd, V206WQL bmd**

Critical Component: **L&T LM195WX1(S2)(A1)**

1st * Key Description: 1st * can be B, V, P, K;

2nd * Key Description: 2nd * can be 2, 6, 9

Glossy Frame: Yes

Certification date: March 19, 2015
 Date of issue: March 19, 2015

Stephen Fuller
 Certification process.
 TCO Development



TCO Development has been an international driver in the field of Sustainable IT since 1992. ensure that the manufacture, use and recycling of IT products reflect if and economic responsibility. TCO Development is the company behind Certified third party sustainability certification for IT products.

Handwritten signature
 TOSHIBA
 BOSHIN

000009

Handwritten signature

acer
Monitors
Commercial

V246HYLbd
BRIGHT COLORS,
SUSTAINABLE VISION



IPS

V246HYL
V6 Series

Sub Model

Product line

General

Display Type	Flat screen/TFT
Dimensions (WxHxD mm)	554x452x207
Min. Profile Thickness mm	19.
Net Weight (kg)	4.25
Gross Weight (kg)	5.85
Chassis colour and finish	Black Matt

Display

Panel Technology	IPS
Crystalbrite	No
Size cm	60
Size Inch	23.8
Format	16:9
Display dimensions (mm)	527x296
Pixel Pitch (mm)	0.2745
Resolution	1920x1080@60HzHz
Frequency (H/V)	30-80kHz/55-75Hz
PPI	93
Rsp time (ms)	5
Dynamic Contrast ratio	100M:1
Brightness (cd/m2)	250
H/V° CR 10:1	178/178
H/V° CR 5:1	178/178
Colors	16.7M
Bit	6Bit+HI-FRC
Color Gamut	72% NTSC
Backlight type	LED
Screen coating hardness	3H
OS Compliance	Win10 compliant

Video Input

Input Signal	VGA + DVI (w/HDCP)
--------------	--------------------

Audio Input

Speaker	No
---------	----

Ergonomics

VESA Wall Mounting	100x100
Kensington Support	Yes
Tilt	-5°~25°
Swivel degrees	No
Hgt Adj (mm)	No
Pivot degrees	No

Power Supply

Power Supply	Internal
Energy Star Type	ES7.0
Off/Standby (W)	0.35
Sleep (W)	0.45
Min On (W)	21.9
Max (W)	-
EEL Class	-
Power On (W)	-
Annual Energy Consumption (kWh/year)	-
Mercury (mg)	0
Lead	Presence*

Manufacturer Guarantee

Warranty	EMEA Commercial (3yr)
Certificates	CE, TÜV GS, ISO9241-307 class II
Certification	TCO7.0
MTBF Hours @ 25°C	30000

Pallet and Container Loading

Pallet qty (pcs)	80
Pallet Size (WxHxD) cm	125x100x224
Container loading 20°/40°	800/1680
Package Dimensions (cm)	61.7x42x12.2
Included cables	VGA

Special Features

Comfyview

[Handwritten signature]

000010

ATA

[Handwritten signature]



Acer Incorporated
 8F, 88, Sec. 1, Xintai 5th Rd., Xizhi
 New Taipei City 221, Taiwan

Declaration of Conformity

We,

Acer Incorporated

8F, 88, Sec. 1, Xintai 5th Rd., Xizhi, New Taipei City 221, Taiwan.

Contact Person: Mr. RU Jan, e-mail: ru.jan@acer.com

And,

Acer Italy s.r.l

Via Lepetit, 40, 20020 Lainate (MI) Italy

Tel: +39-02-939-921 ,Fax: +39-02 9399-2913

www.acer.it

Declare under our own responsibility that the product:

Product: LCD Monitor
Trade Name: Accer
Model Number: V246HYL
SKU Number: V246HYL xxxxxx;
 ("x" = 0~9, a~z, A~Z, or blank)

To which this declaration refers conforms to the relevant standard or other standardizing documents:

- EN 55022:2006/A1:2007 Class B; EN 55024:2010
- N 61000-3-2:2006+A1:2009+A2:2009, Class D
- EN61000-3-3:2008
- EN 60950-1:2006/A11:2009/A1:2010 +A12:2011
- EN50581:2012

We hereby declare above product is in compliance with the essential requirements and other relevant provisions of EMC Directive 2004/108/EC, Low Voltage Directive 2006/95/EC, and RoHS Directive 2011/65/EU and Directive 2009/125/EC with regard to establishing a framework for the setting of ecodesign requirements for energy-related product.

Year to begin affixing CE marking 2013.

RU
Reg

anager
er Inc.

Jan.20, 2013

Date

000011

This Certificate indicates that the Applicant has satisfied the Intertek requirements for the application of the EPA ENERGY STAR Mark to the model(s) described in the Product(s) Covered section of the referenced Compliance Report when made in accordance with the conditions set forth in the Energy Efficiency Certification Agreement, the Certification Report and the Program Manual. This certificate is issued subject to the Applicant attaining, and remaining in, compliance with any separate EPA ENERGY STAR Program requirements necessary for use of the ENERGY STAR Mark. This document is the property of Intertek Testing Services and is not transferable.

Company: Acer Incorporated	OEM name: Acer Incorporated
Address: 8TH FL 88 SEC 1 XINTAI 5TH RD XIZHI DISTRICT NEW TAIPEI 221	Address: 8TH FL 88 SEC 1 XINTAI 5TH RD DISTRICT NEW TAIPEI 221
Country: Taiwan	Country: Taiwan
Contact: Phoebe	Contact: Phoebe
Phone: 886-2-8691-3791	Phone: 886-2-8691-3791
FAX: 886-2-8691-3120	FAX: 886-2-8691-3120
Email: phoebe_cheng@acer.com.tw	Email: phoebe_cheng@acer.com.tw

3rd-party Report Issuing Office: INTERTEK TESTING SERVICES SH LTD

Control Number: 4002645

Authorized by: _____

Thomas Pi

lager

This document supersedes all previous Certificate of Conformity for the noted Report Number.

This Certificate is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Certificate. Only the Client is authorized to copy or distribute this Certificate. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results referenced from this Certificate are relevant only to the sample tested.

Intertek Testing Services NA Inc.
165 Main Street, Cortland, NY 13045
Telephone 800-345-3851 or 607-753-6711 Fax 607-756-6699
www.intertek.com

Standard(s): ENERGY STAR® Program Requirements for Displays Version 6.0

Product: Display (LCD Monitor)

Models: B246HYL_v(B246HYL);V246HYL_v(V246HYL)



CERTIFICATE

TCO Certified Displays 7.0
No. D716070410

This certificate is awarded to Amtran Technology Co., Ltd to confirm that acer V246H YL has successfully met all requirements in TCO Certified Displays 7.0. Criteria in TCO Certified are designed to ensure that the manufacturing, use and recycling of this product are carried out with consideration for environmental, social and economic responsibility

Company:	Amtran Technology Co., Ltd 17F., No. 268, Lien Chung Road., Chung Ho City, Taipei Hsien Taiwan
Brand Name:	acer
Type/Model Name:	V246HYL
Product Category:	23.8" Display - Flat
Sales Name:	See appendix
Critical Component:	See appendix
Energy Consumption:	See appendix
Recycled Plastic:	0 %
Weight of Product:	4.2 kg
Comments:	Non-pivot type

This certificate confirms that a sample of the certified product, as stated herein, has been tested and approved as to its compliance with the criteria document valid at the time of the laboratory test. The certified product may, subject to the use of the unique combination of brand name, type/model name and sales name as stated in this certificate, be marketed and sold with the TCO Certified label in accordance with the agreement.

To verify the validity, go to www.tcodevelopment.com/validate and enter verification code: 95263

Certification date: July 21, 2016
I 2016

TCO DEVELOPMENT

TCO Development has been an international driver in the field of Sustainable IT since 1992. Its mission is to ensure that the manufacture, use and recycling of IT products reflect environmental, social and economic responsibility. TCO Development is the company behind the TCO Certified third party sustainability certification for IT products.


000013



Appendix to certificate No. D716070410

Company:	Amtran Technology Co., Ltd 17F., No. 268, Lien Chung Road., Chung Ho City, Taipei Hsien Taiwan	→
Certified Product:	acer V246HYL, 23.8" Display - Flat	
Sales Name:	V246HYL, V246HYL bd, V246HYL bmd	↘
Critical Component:	Suzhou Lehui Display Co., Ltd. LM238WF1 (RS)(AC1)	
Energy Consumption:	On Mode: 12.18 Watt Sleep Mode: 0.48 Watt Off Mode: 0.39 Watt	

Certification date: July 21, 2016
Date of issue: July 21, 2016


Viktor W
Certificati
TCO Développement

TCO DEVELOPMENT

TCO Development has been an international driver in the field of Sustainable IT since 1992. Its mission is to ensure that the manufacture, use and recycling of IT products reflect mental, social and economic responsibility. TCO Development is the company behind the TCO Certified third party sustainability certification for IT products.

000014

acer
Monitors
Prosumer

KA270Hbbid
COMFORT AND DELIGHTED



KA270HB
KAO Series

Sub Model
Product line
General

Display Type	Flat screen/TFT
Dimensions (WxHxD mm)	622x471x200
Min. Profile Thickness mm	23.5
Net Weight (kg)	5.7
Gross Weight (kg)	8.2
Chassis colour and finish	Glossy Black
Display	
Panel Technology	IPS
Crystalbrite	No
Size cm	69
Size Inch	27
Format	16:9
Display dimensions (mm)	598x336
Pixel Pitch (mm)	0.3113
Resolution	1920x1080@60Hz
Frequency (H/V)	30-80kHz/55-75Hz
PPI	82
Rsp time (ms)	4ms
Dynamic Contrast ratio	100M:1
Brightness (cd/m2)	250
H/V* CR 10:1	178/178
H/V* CR 5:1	178/178
Colors	16.7M
Bit	6Bit+Hi-FRC
Color Gamut	72% NTSC
Backlight type	LED
Screen coating hardness	3H
OS Compliance	Win10 compliant
Video Input	
Input Signal	VGA + DVI (w/HDCP) + HDMI(1.4)
Audio Input	
Speaker	No
Ergonomics	
VESA Wall Mounting	100x100
Kensington Support	Yes
Tilt	-5°-15°
Swivel degrees	No
Hgt Adj (mm)	No
Pivot degrees	No
Power Supply	
Power Supply	Internal
Off/Standby (W)	0.36
Sleep (W)	0.45
Min On (W)	19.69
Max (W)	-
EEL Class	A
Power On (W)	25
Annual Energy Consumption (kWh/year)	37
Mercury (mg)	0
Lead	Presence*
Manufacturer Guarantee	
Warranty	EMEA Commercial (3yr)
Certificates	CE, TÜV GS, ISO9241-307 class II
Certification	MPRII
MTBF Hours @ 25°C	30000
Pallet and Container Loading	
Pallet qty (pcs)	62
Pallet Size (WxHxD) cm	129x114x224
Container loading 20"/40"	496/1116
Package Dimensions (cm)	69x45x14.7
Included cables	VGA
Special Features	
Wide Viewing Angle	Wide Viewing Angle
Flicker-Less	Flicker-Less
Blue Light Filter	Blue Light Filter
Low Dimming	Low Dimming
ComfyView	ComfyView
ZeroFrame	ZeroFrame

ASIA

SPHIO 11/11



Acer Incorporated
8F, 88, Sec. 1, Xintai 5th Rd., Xizhi
New Taipei City 221, Taiwan

Declaration of Conformity

We, **Acer Incorporated**
8F, 88, Sec. 1, Xintai 5th Rd., Xizhi, New Taipei City 221, Taiwan

And, **Acer Italy s.r.l.**
Via Lepetit, 40, 20020 Lainate (MI) Italy
Tel: +39-02-939-921, Fax: +39-02 9399-2913
www.acer.it

Product: LCD Monitor
Trade Name: ACER
Model Number: KA270H
SKU Number: KA270H xxxxxx
(*x = 0~9, a~z, A~Z, or blank)

We, Acer Incorporated, hereby declare under our sole responsibility that the product described above is in conformity with the relevant Union harmonization legislations as below Directive and following harmonized standards and/or other relevant standards have been applied:

<input checked="" type="checkbox"/> EMC Directive: 2014/30/EU	
<input checked="" type="checkbox"/> EN55032:2012/AC:2013 Class B	<input checked="" type="checkbox"/> EN 55024:2010
<input checked="" type="checkbox"/> EN61000-3-2:2014 Class D	<input checked="" type="checkbox"/> EN61000-3-3:2013
<input checked="" type="checkbox"/> LVD Directive: 2014/35/EU	
<input checked="" type="checkbox"/> EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013	
<input checked="" type="checkbox"/> RoHS Directive: 2011/65/EU	
<input checked="" type="checkbox"/> EN 50581:2012	
<input checked="" type="checkbox"/> ErP Directive: 2009/125/EC	
<input checked="" type="checkbox"/> Regulation (EC) No. 1275/ 2008; EN 50564:2011	

Year to begin affixing CE marking: 2017.

RU.
Acer

tager
d (Taipei, Taiwan)

Mar. 05, 2017
Date

111
1441
02:2017
PIVADA

11 >
000016

This Certificate indicates that the Applicant has satisfied the Intertek requirements for the application of the EPA ENERGY STAR Mark to the model(s) described in the Product(s) Covered section of the referenced Compliance Report when made in accordance with the conditions set forth in the Energy Efficiency Certification Agreement, the Certification Report and the Program Manual. This certificate is issued subject to the Applicant attaining, and remaining in, compliance with any separate EPA ENERGY STAR Program requirements necessary for use of the ENERGY STAR Mark. This document is the property of Intertek Testing Services and is not transferable.

Company: Acer Incorporated**OEM name:** Acer Incorporated**Address:** 8TH FL 88 SEC 1 XINTAI 5TH RD
XIZHI DISTRICT NEW TAIPEI 221**Address:** 8TH FL 88 SEC 1 XINTAI 5TH RD XIZHI
DISTRICT NEW TAIPEI 221**Country:** Taiwan**Country:** Taiwan**Contact:** Phoebe**Contact:** Phoebe**Phone:** 886-2-8691-3791**Phone:** 886-2-8691-3791**FAX:** 886-2-8691-3120**FAX:** 886-2-8691-3120**Email:** phoebe_cheng@acer.com.tw**Email:** phoebe_cheng@acer.com.tw**3rd-party Report Issuing Office:** Intertek Testing Services Shanghai**Control Number:** 4002645**Authorized by:** _____

for Dean Davidson, Certification Manager

This document supersedes all previous Certificate of Conformity for the noted Report Number.

This Certificate is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Certificate. Only the Client is authorized to copy or distribute this Certificate. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results referenced from this Certificate are relevant only to the sample tested.

Intertek Testing Services NA Inc.
545 East Algonquin Road, Arlington Heights, IL 60005
Telephone 800-345-3851 or 847-439-5667 Fax 312-283-1672
www.intertek.com

Standard(s): ENERGY STAR® Program Requirements for Displays Version 7.0**Product:** Display (LCD Monitor)**Models:** KA270H_v(KA270H);CB271H_v(CB271H)



Acer Sales International SA Representation in Bulgaria
3A, Nikolay Haitov Street, 1113 Sofia, Bulgaria
acer_bulgaria@acer-euro.com · www.acer.bg

До: Университет за национално и световно стопанство

Относно: Открита процедура по ЗОП за сключване на рамково споразумение с предмет:
„Доставка, инсталиране, въвеждане в експлоатация и гаранционен сервиз на информационно –
компютърна техника”.

ОТОРИЗАЦИОННО ПИСМО ОТ ПРОИЗВОДИТЕЛЯ

С настоящето писмо № 803071/07.03.2018, Acer Computer, с адрес на представителство в България,
гр. София, ул. „Николай Хайтов” № 3А

Оторизира:

**Парафлоу Комуникейшънс ООД, бул. Н 79, Бизнес
център „Алфа”, София, 1700, България**

да участва в гореспоменатата открита процедура и в последствие да преговаря и да подпише Договор
с Вас за доставка, инсталиране и сервизна гаранционна и следгаранционна поддръжка на монитори и
мултимедийни таблети, произведени от Acer Group, за количествата, спецификациите и графика на
доставка изисквани от възложителя на тази процедура.

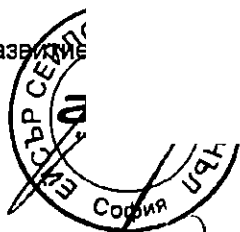
Ние декларираме, че мониторите и мултимедийните таблети с марка Acer, носещи нашето име и лого
са в съответствие с директивите и стандартите на ЕС за този вид продукти, както и че предложените от
Парафлоу Комуникейшънс ООД продукти са нови, неупотребявани и фигурират в текущата ни
производствена листа към момента на подаване на офертата по тази процедура.

С настоящето удостоверяваме също, че Парафлоу Комуникейшънс ООД разполага с квалифициран
персонал, сертифициран да осъществява всички гаранционни и следгаранционни услуги и сервизни
процедури, свързани с гореизброените продукти, чрез оторизираните сервизни центрове на Парафлоу
Комуникейшънс ООД на Република България.

София, 07 март 2018 г.

С уважение:

Дат: в
Ме: знес развитие
Асе: ЛЕА



ВЯ

АЛФА

000018

ДЕКЛАРАЦИЯ

Долуподписаната _____, ЕГН _____, с л.к. № _____, изд. на _____ от МВР – гр. София, в качеството си на Експерт обществени поръчки и редовно упълномощена от Управителя на “Парафлоу Комуникейшънс” ООД, със седалище и адрес на управление: София 1700, бул. Никола Габровски 79, ЕИК _____, участник в процедура от Закона за обществени поръчки (ЗОП) с предмет: “ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА” за Обособена позиция 4 – Монитори

ДЕКЛАРИРАМ:

Задължаваме се да осигурим в рамките на предложението в техническото ни предложение гаранционен срок на техниката по обособена позиция 4, необходимите гаранционни ремонти при следните условия:

- Срокът за реакция (регистрация на повредата) след уведомяване от страна на Възложителя е до 2 часа в работно време;
- Срокът за отстраняване на повредата е до 14 работни дни;
- При невъзможност в рамките на посочения срок за отстраняване на проблема в дефектирало оборудване, същото ще се заменя с работоспособно от същия или по-висок клас в срок до 5 работни дни.

Поемаме гаранция за качеството на стоката и за годността и за употреба за сроковете посочени в офертата ни и се задължаваме:

- да осигурим гаранционно обслужване и сервиз;
- да извършваме качествено сервизно техническо поддържане и ремонт на доставената компютърна техника в съответствие с действащите стандарти;
- да отстраняваме възникналите при нормалната експлоатация повреди;
- да отстраним безвъзмездно всички повреди и отклонения от изискванията за качество, които са възникнали в рамките на посочения гаранционен срок;

По време на гаранционния срок, се задължаваме при установяване на еднороден дефект на компоненти и това е установено на не по - малко от 20% от техниката от един вид, да подменяме дефектния компонент и на другата техника от същия вид, които не са проявили дефекта.

Гаранционното сервизно обслужване ще се извършва на мястото на използване на стоките, а ако това е невъзможно се извършва в наша сервизна база, оторизирана от производителите на предлаганата техника за осъществяване на сервизната услуга при условията посочени по-горе посочения в офертата ни.

Адресът на базата е следният:

Гр. София 1700, Район студентски, бул. Никола Габровски 79.

За заявяване на услуга за обслужването Оборудване/ Системи, клиентът ни уведомява по един от следните начини:

- чрез регистриране на заявка в Сервизна информационна система „Paraflow Service Desk”, достъпна на адрес: support.paraflow.bg;
- по електронна поща на адреси hotline@paraflow.bg и service@paraflow.bg чрез попълнен формуляр на Потребителска заявка;
- на факс 02 960 4218 с попълнена сервизна заявка чрез попълнен формуляр на Потребителска заявка;
- по телефона за контакт с ИЗПЪЛНИТЕЛЯ 0700 10 887, 02 960 4222

гр. София, 12.03.2018 г.

/дата на подписване/

Декларатор:

Експерт обществени поръчки

Парафлоу Комуникейшънс ООД

**ДЕКЛАРАЦИЯ
ЗА СЪГЛАСИЕ С КЛАУЗИТЕ НА ПРИЛОЖЕНИЯ ПРОЕКТ НА ДОГОВОР**

Долуподписаният: Н

(собствено, бащино, фамилно име)

с ЕГН: 5412310241, притежаващ л.к. № 1111111111, издадена на 22.03.2018 г.,
от МВР – гр. София, с постоянен адрес: гр София, ул. Митрополит Видински 8, ет. 8,
в качеството си на Управител,

(длъжност)

на участник Парафлоу Комуникейшънс ООД, ЕИК 681010777

(наименование на участника)

в процедура от Закона за обществени поръчки (ЗОП) с предмет: "ДОСТАВКА,
ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ
НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА" за Обособена позиция 4 –
Монитори

ДЕКЛАРИРАМ, ЧЕ:

Запознат съм с проекта на договора за възлагане на обществената поръчка за Обособена
позиция 4 – Монитори, приемам го без възражения и ако участникът, когото представлявам,
бъде определен за изпълнител, ще сключа договора изцяло в съответствие с проекта,
приложен към документацията за участие, в законоустановения срок.

Известна ми е отговорността по чл. 313 от Наказателния кодекс за посочване на
неверни данни.

Дата: 12.03.2018 г.

Декларатор:

В
/подпис и печат/

✓
[Handwritten signature]

000020

Д Е К Л А Р А Ц И Я
ЗА СЪГЛАСИЕ С КЛАУЗИТЕ НА ПРИЛОЖЕНИЯ ПРОЕКТ НА РАМКОВО
СПОРАЗУМЕНИЕ

Долуподписаният: I

ЮВ

(собствено, бащино, фамилно име)

с ЕГН: 5. I, притежаващ л.к. № 616507542, издадена на
от МВР – гр. София, с постоянен адрес: гр София, ул. Митрополит Вилински 8. ет. 8.
в качеството си на Управител,
(длъжност)

на участник Парафлоу Комуникейшънс ООД, ЕИК 601913113
(наименование на участника)

в процедура от Закона за обществени поръчки (ЗОП) с предмет: “ДОСТАВКА,
ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ
НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА” за Обособена позиция 4 –
Монитори

Д Е К Л А Р И Р А М, ЧЕ:

Запознат съм с проекта на рамково споразумение за възлагане на обществената поръчка,
приемам го без възражения и ако участникът, когото представлявам, бъде определен за
изпълнител, ще сключа рамковото споразумение изцяло в съответствие с проекта, приложен
към документацията за участие, в законоустановения срок.

Известна ми е отговорността по чл. 313 от Наказателния кодекс за посочване на
неверни данни.

Дата: 12.03.2018 г.

Декларатор:

ЮВ.
.....
ЮВ
/подпис и печат/

**Д Е К Л А Р А Ц И Я
ЗА СРОК НА ВАЛИДНОСТ НА ОФЕРТАТА**

Долуподписаният

(собствено, бащино, фамилно име)

с ЕГН: _____ притежаващ л.к. № _____, издадена на _____ г.,
от МВР – гр. София, с постоянен адрес: гр София, ул. _____ № _____,
в качеството си на Управител,
(длъжност)

8, 

на участник Парафлоу Комуникейшънс ООД, ЕИК :

(наименование на участник.....)

в процедура от Закона за обществени поръчки (ЗОП) с предмет: "ДОСТАВКА,
ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ
НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА" за Обособена позиция 4 –
Монитори

Д Е К Л А Р И Р А М, Ч Е:

С подаване на настоящата оферта декларираме, че сме съгласни валидността на нашата оферта да бъде 4 (четири) месеца от крайния срок за получаване на оферти, посочен в обявлението за процедурата

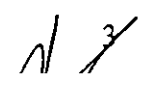
Известна ми е отговорността по чл. 313 от Наказателния кодекс за посочване на неверни данни.

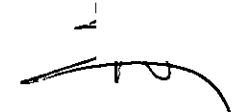
Дата: 12.03.2018 г.

Деклар



/подпис и печат/





ДО
Университет за национално и световно стопанство
Студентски град, ул. "8ми Декември"
София 1700

ЦЕНОВО ПРЕДЛОЖЕНИЕ

**за участие в открита процедура за сключване на
рамково споразумение с предмет:**

“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО-КОМПЮТЪРНА ТЕХНИКА”

За Обособена позиция 4 - Монитори

от: ПАРАФЛОУ КОМУНИКЕЙШЪНС ООД
Адрес: София 1700, бул. "Никола Габровски" 79
Лице за контакт: *И* *ева*
тел.: + 359 2 960 42 00, факс: + 359 2 960 42 18
e-mail: office@paraflow.bg
www.paraflow.bg

ЦЕНОВО ПРЕДЛОЖЕНИЕ

от Парафоу Комуникайшънс ООД
(наименование на участника)

и подписано от Искра Чипковска Бачева
(трите имена и ЕГН)

в качеството ѝ на Експерт обществени поръчки и упълномощено лице от управителя
(на длъжност)

с ЕИК: 8:

УВАЖАЕМИ ДАМИ И ГОСПОДА,

1. С настоящото, Ви представяме нашата ценова оферта за участие в обявената от Вас обществена поръчка с предмет: **“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА”** за обособена позиция № 4

Предлагаме да поемем, изпълним и завършим тази обществена поръчка, съобразно условията на документацията за участие, както следва:

№	Вид оборудване, марка, модел, елементи	Технически характеристики	марка	Ед.цена без ДДС
1	МОНИТОРИ - Тип 1 Acer V206WQLbmd	TFT IPS LED 19.5" 1440x900 6 ms 250 cd/m2 1000:1 (static) 178/178 (H/V) TCO 6.0, Energy Star 6.0 вътрешно захранване, VESA, min. Tilt -5°~ 25°, 15 pin D-SUB, DVI, интегрирани говорители 3 години	Бр.	217.00
2	МОНИТОРИ - Тип 2 Acer V246HUYLbd	TFT IPS LED 23.6" 1920 x 1080 FULL HD 5 ms 250 cd/m2 1000:1 (static) 178/178 (H/V) TCO 6.0, Energy Star 6.0 вътрешно захранване, VESA, min. Tilt -5°~ 25°, 15 pin D-SUB, DVI 3 години	Бр.	235.00
3	МОНИТОРИ - Тип 3 Acer KA270NBbid	TFT IPS LED 27" 1920 x 1080 FULL HD 4 ms 250 cd/m2 1000:1 (static) 178/178 (H/V) MPRII, Energy Star 6.0 вътрешно захранване, VESA, min. Tilt -5°~ 25°, 15 pin D-SUB, DVI, HDMI 3 години	Бр.	315.00
Сбор на единичните цени				767.00



000001

ДО
Университет за национално и световно стопанство
Студентски град, ул. "8ми Декември"
София 1700

ТЕХНИЧЕСКО ПРЕДЛОЖЕНИЕ

за участие в открита процедура за сключване на
рамково споразумение с предмет:

“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО-КОМПЮТЪРНА ТЕХНИКА”

За Обособена позиция 5 - Принтери, скенери и многофункционални устройства

от: ПАРАФЛОУ КОМУНИКЕЙШЪНС ООД

Адрес: София 1700, бул. "Никола Габровски" 79

Лице за контакт: Искра Берова

тел.: + 359 2 960 42 00, факс: + 359 2 960 42 18

e-mail: office@paraflow.bg

www.paraflow.bg

ОБРАЗ

ТЕХНИЧЕСКО ПРЕДЛОЖЕНИЕ ЗА ИЗПЪЛНЕНИЕ НА ПОРЪЧКАТА

от Парафлоу Комуникейшънс ООД
(наименование на участника)

и подписано от

ЕГН 70112000070
(трите имена и ЕГН)

в качеството ѝ на Експерт обществени поръчки и упълномощено лице
(на длъжност)

с ЕИК: 3.

УВАЖАЕМИ ДАМИ И ГОСПОДА,

1. След запознаване с всички документи и образци от документацията за участие в процедурата, получаването, на които потвърждаваме с настоящото, ние удостоверяваме и потвърждаваме, че представляваният от нас участник отговаря на изискванията и условията посочени в документацията за участие в процедура с предмет: **“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА”** за обособена позиция № 5

2. Декларираме, че сме получили посредством „Профила на купувача” документация за участие и сме запознати с указанията и условията за участие в обявената от Вас процедура. Съгласни сме с поставените от Вас условия и ги приемаме без възражения.

3. Декларираме, че сме запознати със всички условия за изпълнение на поръчката за обособената позиция

4. Декларираме, че ще изпълним дейностите по обществената поръчка в сроковете регламентирани от Възложителя в документацията за участие и Техническата спецификация, а именно:

Срок за изпълнение 12 месеца.

5. Декларираме, че предлаганата техника е нова, неупотребявана, нерициклирана и в производствената листа на производителя към момента на подаване на офертата, Линк, чрез който може да се провери истинността на горепосоченото

<http://www8.hp.com/bg/bg/home.html>

<http://www.fujitsu.com/bg/products/computing/peripheral/>

6. Декларираме, че имаме оторизация от производителя и/или от официалния

А.

000001

представител на производителя с права да извършваме продажба и сервиз на предла-
оборудване.

7. За изпълнение предмета на поръчката прилагаме:

7.1. документ за упълномощаване, когато лицето, което подава офертата, не е
законният представител на участника – оригинал или нотариално заверено копие;

7.2. предложение за изпълнение на поръчката в съответствие с техническите
спецификации и изискванията на възложителя за обособената позиция и да е съобразено с
критериите за възлагане – свободна редакция;

7.3. оторизация от производителя с права за извършване продажба и сервиз на
предлаганото оборудване;

7.4. декларация за сервизно обслужване и наличие на сервизна база, оторизирана от
производителите и на предлаганата техника за осъществяване на сервизните услуги при
условията на възложителя;

7.5. декларация за съгласие с клаузите на приложения проект на договор - попълва се
Образец № 4.2.;

7.6. декларация за съгласие с клаузите на приложения проект на рамково
споразумение - попълва се Образец № 4.1.;

7.7. декларация за срока на валидност на офертата - попълва се Образец № 5.

Дата: 12.03.2018 г.

ПОДПИС И ПЕЧАТ:

[име и фа

Упълно

[качество

я]

цено лице

[представяващия участника]



ПЪЛНОМОЩНО

Долуподписаният

притежаващ лична карта No. _____, издадена на 2 _____ г. от МВР- гр. София, ЕГН _____ адрес в гр. София, ул. Митрополит Кирил Видински 8, ет. 8, представляващ, и в качеството си на Управител на "Парафлоу Комуникейшънс" ООД, регистрирано по ф.д. 0778/1005 - по описа на СГС, БУЛСТАТ/ЕГН 001713115, с адрес по регистрация гр. София 1700, бул. "Никола Габровски" 79

У П Ъ Л Н О М О Щ А В А М

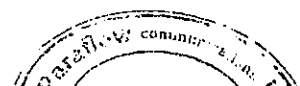
г. _____, притежаваща лична карта номер _____ издадена на _____ г. от МВР - гр. София, ЕГН: _____ да представлява **Парафлоу**

Комуникейшънс ООД пред всички възложители на обществени поръчки по смисъла на чл. 5, чл. 6, чл. 7, чл. 8 и чл. 9 от Закона за Обществени Поръчки (ЗОП) във връзка с провеждането на процедури за възлагане на обекти на обществените поръчки по смисъла на чл. 3, ч. 8 и чл. 9 от ЗОП, както и във всички тържни процедури, финансирани от фондовете на Европейския Съюз, международни тържни процедури, финансирани от Световната Банка, USAID, UNDP и други източници на финансиране, както и във фирмени конкурси и процедури, със следните права:

- Да води преговори от името на Парафлоу Комуникейшънс ООД с представители на Възложителите;
- Да получава, подава и подписва от името на Парафлоу Комуникейшънс ООД предложения, оферти, писма, молби, декларации, заявления, искания, копия на документи, и др. подобни документи от/към възложителите;
- Да представлява Парафлоу Комуникейшънс ООД пред Възложителите при предаване или получаване на предложения, оферти и допълнителни документи - писма, банкови гаранции, договори и т.н. в случай на поискването им от Възложителите;
- Да парафира и подписва от името на Парафлоу Комуникейшънс ООД, текстовете на договори и споразумения с Възложителите;
- Да представлява Парафлоу Комуникейшънс ООД пред Комисиите, като присъства при отваряне, разглеждане и оценяване на предложенията на Парафлоу Комуникейшънс ООД, да чете и взема становище по протоколите на Комисиите, както и да представя и подписва допълнителни документи или писма в случай на поискването им от Възложителите.

Настоящото Пълномощно е в сила до 30.8.2018 г.

гр. София, 03.01.2018 г.



УПЪЛНОМОЩ

15

000003

11 -01- 2018

11 -01

На
на Нотариална
Никола
11.01.18
.....
.....
с местожителс
Reg. №
.....

отариус в район Р.С.СОФИЯ рег.№199

свие в този документ положени от

22.01.2018

Никола Николов

.....

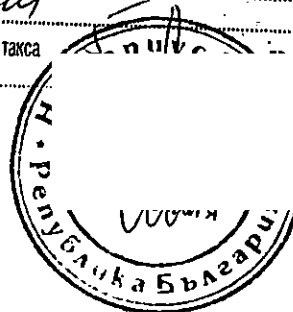
.....

.....

сърана такса

Нотариус:.....

ров
арцус



ТЕХНИЧЕСКО ПРЕДЛОЖЕНИЕ

Минимални технически параметри		Предложение на Парафлоу Комуникайшънс ООД
Обособена позиция № 5: ПРИНТЕРИ, СКЕНЕРИ И МНОГОФУНКЦИОНАЛНИ УСТРОЙСТВА		
ЛАЗЕРЕН ПРИНТЕР А4 - 1		HP LaserJet Pro M203dw
Технология на печат	Лазерна черно бяла	Лазерна черно бяла
Формат	A4	A4
Резолюция на печат	Мин. 1200x1200 dpi	1200x1200 dpi
Скорост на печат А4 в нормален режим	мин. 27 стр./мин. за формат А4	28 стр./мин. за формат А4
Време за отпечатване на първа страница	макс. 7сек	6,6 сек
Входящ капацитет	мин. 250 листа	250 листа
Поддържа хартия с тегло :	от 60 до 160 g/m ²	от 60 до 163 g/m ²
Автоматичен двустранен печат	Да	Да
Допустимо макс. месечно натоварване	мин. 28 000 стр. А4	30 000 стр. А4
Интерфейс	мин. USB 2.0, Gigabit Ethernet 100 TX ; 802.11b/g/n Wireless;	Hi-Speed USB 2.0, Gigabit Ethernet 100 TX ; 802.11b/g/n Wireless;
Процесор	мин. 760 MHz	800 MHz
Интерфейс	Мин. 1 Hi-Speed USB 2.0; 1 Ethernet 10/100 network; Wireless	1 xHi-Speed USB 2.0; 1 Ethernet 10/100 network; Wireless
Стартов тонер	мин. 980 стр. по ISO/IEC 19752 от производителя на устройството	1000 стр. по ISO/IEC 19752 от производителя на устройството
Допълнителен консуматив	мин. 1500 стр. по ISO/IEC 19752, произведен от производителя на устройството	1600 стр. по ISO/IEC 19752, произведен от производителя на устройството
Други	Да бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7	Ще бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7
Гаранция	1 година	1 година
ЛАЗЕРЕН ПРИНТЕР А4 - 2		HP LaserJet Pro M402dw Printer
Технология на печат	Лазерна черно бяла	Лазерна черно бяла
Формат	A4	A4
Резолюция на печат	Мин. 1200 dpi	1200 dpi
Скорост на печат А4 в нормален режим	мин. 35 стр./мин. за формат А4; двустранно принтиране мин. 28 ipm	38 стр./мин. за формат А4; двустранно принтиране 28 ipm
Време за отпечатване на първа страница	макс. 6,2 сек	6,2 сек
Входящ капацитет	мин. 220 листа	250 листа
Тава за ръчно подаване на хартия	Да, за мин. 90 листа	Да, за 100 листа
Поддържа хартия с тегло :	от 60 до 170 g/m ²	от 60 до 175 g/m ²
Автоматичен двустранен печат	Да	Да
Допустимо макс. месечно натоварване	мин. 75 000 стр. А4	80 000 стр. А4
Интерфейс	мин. USB 2.0, Gigabit Ethernet 1000 TX ; 802.11b/g/n Wireless;	USB 2.0, Gigabit Ethernet 1000 TX ; 802.11b/g/n Wireless;
Процесор	мин. 960 MHz	1200 MHz
Стартов тонер	мин. 3000 стр. по ISO/IEC 19752 от производителя на устройството	3100 стр. по ISO/IEC 19752 от производителя на устройството
Допълнителен консуматив	мин. 8600 стр. по ISO/IEC 19752, произведен от производителя на устройството	9000 стр. по ISO/IEC 19752, произведен от производителя на устройството
Други	Да бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7	Ще бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7
Гаранция	3 години	3 години
ЦВЕТЕН ЛАЗЕРЕН ПРИНТЕР А4		HP Color LaserJet Pro M452dn Printer
Технология на печат	Лазерна цветна	Лазерна цветна
Формат	A4	A4
Резолюция на печат	Мин. 600x600 dpi	600x600 dpi
Скорост на печат А4 в нормален режим	мин. 25 стр./мин. за формат А4; двустранно принтиране мин. 24 ipm	27 стр./мин. за формат А4; двустранно принтиране 24 ipm

00004

50000

Време за отпечатване на първа страница	макс. 10 сек	9.9 сек
Входящ капацитет	мин. 300 листа	300 листа
Тава за ръчно подаване на хартия	Да, за мин. 50 листа	Да, за 50 листа
Поддържа хартия с тегло :	от 60 до 175 g/m ²	от 60 до 176 g/m ²
Автоматичен двустранен печат	Да	Да
Допустимо макс. месечно натоварване	мин. 47 000 стр. А4	50 000 стр. А4
Памет	мин. 128 MB	128 MB
Процесор	мин. 960 MHz	1 200 MHz
Интерфейс	Мин. USB 2.0, Gigabit Ethernet 1000 TX	USB 2.0, Gigabit Ethernet 1000 TX
Стартов комплект тонери	мин. 1100 стр. по ISO/IEC 19752 и ISO/IEC 19798 от производителя на устройството	1200 стр. по ISO/IEC 19752 и ISO/IEC 19798 от производителя на устройството
Допълнителен консуматив	мин. 4500 стр. по ISO/IEC 19752 и ISO/IEC 19798, произведен от производителя на устройството	5000 стр. по ISO/IEC 19752 и ISO/IEC 19798, произведен от производителя на устройството
Други	Да бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7	Ще бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7
Гаранция	3 години	3 години
ЛАЗЕРНО МНОГОФУНКЦИОНАЛНО УСТРОЙСТВО А4		HP LaserJet Pro MFP M426dw Printer
Функции	Копир, принтер, скенер	Копир, принтер, скенер
Технология на печат	Лазерна	Лазерна
Формат	A4	A4
Резолюция на печат	Мин. 600x600 dpi	600x600 dpi
Скорост на печат А4 в нормален режим	мин. 35 стр./мин. за формат А4; двустранно принтиране мин. 30 ipm	38 стр./мин. за формат А4; двустранно принтиране 30 ipm
Време за отпечатване на първа страница	макс.7 сек	5.6 сек
Входящ капацитет	мин. 380 листа	380 листа
Автоматично листоподаващо у-во	мин. за 50 листа	50 листа
Тава за ръчно подаване на хартия	Да, за мин. 100 листа	Да, за 100 листа
Скорост на копиране А4 в нормален режим	мин. 35 срт	38 срт
скорост на сканиране	мин. 20 ppm/24 ipm	21 ppm/26 ipm
Автоматичен двустранен печат	Да	Да
Допустимо макс. месечно натоварване	мин. 75 000 стр. А4	80 000 стр. А4
Процесор	мин. 980 MHz	1200MHz
Интерфейс	USB 2.0, Gigabit Ethernet 1000 TX, Wireless 802.11b/g/n	USB 2.0, Gigabit Ethernet 1000 TX, Wireless 802.11b/g/n
Език за управление/емулация	Мин. PCL 6, PCL 5, Postscript 3	PCL 6, PCL 5, Postscript 3
Стартов тонер	мин. 3 000 стр. по ISO/IEC 19752 от производителя на устройството	3 100 стр. по ISO/IEC 19752 от производителя на устройството
Допълнителен консуматив	мин. 8 500 стр. по ISO/IEC 19752, произведен от производителя на устройството	9000 стр. по ISO/IEC 19752, произведен от производителя на устройството
Други	Да бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7	Ще бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7
Гаранция	3 години	3 години
ЦВЕТНО ЛАЗЕРНО МНОГОФУНКЦИОНАЛНО УСТРОЙСТВО А4 - 1		HP Color LaserJet Pro MFP M181fw
Функции	Копир, принтер, скенер, факс	Копир, принтер, скенер, факс
Технология	Лазерна	Лазерна
Формат	A4	A4
Резолюция на печат, черно-бяло и цветно	Мин. 600x600 dpi	600x600 dpi
Скорост на печат, черно-бяло и цветно	мин. 15 стр./мин. за формат А4	16 стр./мин. Черно-бяло и цветно за формат А4
Скорост на копиране , черно-бяло и цветно	мин. 15 срт. за А4	16 срт. за А4

Време за отпечатване на първа страница	макс. 14 сек. цветно	13.5 сек. Цветно
Процесор	мин. 760 MHz	800 MHz
Увеличение/Намаление	25-400%	25-400%
Капацитет на автоматичното листоподаващо устройство за документи (ADF)	мин.30 листа	35 листа
Входящ капацитет	мин.150 листа	150 листа
Скорост на сканиране , черно-бяло и цветно	мин. 14 ppm	14 ppm
Максимално месечно натоварване (стр.)	мин. 28 000 стр.	30 000 стр.
Интерфейс	Мин. Hi-Speed USB 2.0 ; Built-in Fast Ethernet 10/100 Base-TX , 802.11n 2.4/5GHz wireless;	Hi-Speed USB 2.0 ; Built-in Fast Ethernet 10/100 Base-TX , 802.11n 2.4/5GHz wireless;
Език за управление/емулация	Мин. PCL 6, PCL 5, Postscript 3	PCL 6, PCL 5, Postscript 3
Стартов тонер	мин. 680 стр. по ISO/IEC 19752 и ISO/IEC 19798 от производителя на устройството	700 стр. по ISO/IEC 19752 и ISO/IEC 19798 от производителя на устройството
Допълнителен черно-бял консуматив	мин. 1000 стр. по ISO/IEC 19752 от производителя на устройството	1100 стр. по ISO/IEC 19752 от производителя на устройството
Допълнителни цветни консумативи	мин. 850 стр. по ISO/IEC 19798, произведен от производителя на устройството	900 стр. по ISO/IEC 19798, произведен от производителя на устройството
Други	Да бъде доставен с всички необходими интерфейсни и хранващи кабели; драйвери Windows 10, 8/8.1, 7	Ще бъде доставен с всички необходими интерфейсни и хранващи кабели; драйвери Windows 10, 8/8.1, 7
Гаранция	3 години	3 години
ЦВЕТНО ЛАЗЕРНО МНОГОФУНКЦИОНАЛНО УСТРОЙСТВО A4 - 2		HP Color LaserJet Pro MFP M477fdn
Функции	Копир, принтер, скенер, факс, е-маил	Копир, принтер, скенер, факс, е-маил
Технология	Лазерна	Лазерна
Формат	A4	A4
Резолюция на печат, черно-бяло и цветно	Мин. 600x600 dpi	600x600 dpi
Скорост на печат, черно-бяло и цветно	мин. 25 стр./мин. за формат A4; двустранно принтиране мин. 22 ipm	27стр./мин. за формат A4; двустранно принтиране24 ipm
Скорост на копиране , черно-бяло и цветно	мин. 25 стр. за A4	27 стр. за A4
Време за отпечатване на първа страница	макс. 10,2 сек. цветно	9.9 сек. цветно
Процесор	мин. 980 MHz	1200 MHz
Увеличение/Намаление	25-400%	25-400%
Капацитет на автоматичното листоподаващо устройство за документи (ADF)	мин.45 листа	50 листа
Входящ капацитет	мин. 350 листа	350 листа
Скорост на сканиране , черно-бяло и цветно	мин. 20 ppm/30 ipm	26 ppm/47 ipm черно-бяло, 21 ppm/30 ipm цветно
Максимално месечно натоварване (стр.)	мин. 47 000 стр.	50 000 стр.
Интерфейс	Мин.USB 2.0 ,Ethernet 10/100Base-TX;	USB 2.0 ,Ethernet 10/100Base-TX;
Език за управление/емулация	Мин. PCL 6, PCL 5, Postscript 3	PCL 6, PCL 5, Postscript 3
Стартов тонер	мин. 1100 стр. по ISO/IEC 19752 и ISO/IEC 19798 от производителя на устройството	1200 стр. по ISO/IEC 19752 и ISO/IEC 19798 от производителя на устройството
Допълнителен черно-бял консуматив	мин. 5500 стр. по ISO/IEC 19752 от производителя на устройството	6500 стр. по ISO/IEC 19752 от производителя на устройството
Допълнителни цветни консумативи	мин. 4500 стр. по ISO/IEC 19798, произведен от производителя на устройството	5000 стр. по ISO/IEC 19798, произведен от производителя на устройството

900000

Други	Да бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7	Ще бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7
Гаранция	3 години	3 години
ЛАЗЕРНО МНОГОФУНКЦИОНАЛНО УСТРОЙСТВО А3		HP LaserJet MFP E72525dn
Функции	Копир, принтер, дигитализиране на документи	Копир, принтер, дигитализиране на документи
Функции за дигитализиране на документи	Самостоятелно (без зависимост от PC) създаване и изпращане на	Самостоятелно (без зависимост от PC) създаване и изпращане на PDF
Технология	Лазерна черно-бяла	Лазерна черно-бяла
Формат	A3	A3
Резолуция на печат	Мин. 1200x1200 dpi	1200x1200 dpi
Скорост на копиране/печат	мин. 25 стр./мин. за формат A4; двустранно принтиране мин. 17 ipm	25стр./мин. за формат A4; двустранно принтиране мин. 17 ipm
Време за отпечатване на първа страница	макс. 10 сек.	8,9 сек.
Памет	Мин. 512 MB	7 GB
Вграден HDD или SSD	мин. 250 GB	320 GB
Процесор	мин. 980 MHz	мин. 1200 MHz
Входящ капацитет	Да, за мин. 800 листа	1320 листа
Тава за ръчно подаване на хартия	Да	Да
Автоматичен двустранен печат	Да	Да
Скенер	Цветен	Цветен
Оптична/хардуерна резолюция на сканиране	Мин. 600 dpi	600 dpi
Скорост на сканиране	мин 60 ppm	80 ppm
Капацитет на автоматичното листоподаващо устройство за документи (ADF)	мин. 250 листа	250 листа
Максимално месечно натоварване (стр.)	мин. 200 000 стр.	300 000 стр.
Интерфейс	Мин. USB 2.0, Ethernet 10/100 TX	USB 2.0, Ethernet 10/100 TX
Стартов тонер	мин. 35000 стр. по ISO/IEC 19752 от производителя на устройството	48000 стр. по ISO/IEC 19752 от производителя на устройството
Други	Да бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7	Ще бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7
Гаранция	1 година	1 година
НАСТОЛЕН СКЕНЕР А4		HP ScanJet Pro 2500 f1 Flatbed scanner
Технология	плосък (Flatbed) Flatbed, ADF, CIS (Contact Image Sensor)	плосък (Flatbed) Flatbed, ADF, CIS (Contact Image Sensor)
Сканираща област	A4	A4
Оптична/Хардуерна резолюция	1200x1200 dpi	1200x1200 dpi
Скорост на сканиране	мин 20 ppm/ 38ipm	20 ppm/40 ipm
Дълбочина на цвят	48 bit	48 bit
Интерфейс	USB 2.0	USB 2.0
Драйвери и софтуер	TWAIN драйвери, разпознаване на текст на български (OCR)	TWAIN драйвери, разпознаване на текст на български (OCR)
Автоматично листоподаващо у-во	мин. за 50 листа	за 50 листа
Автоматично двустранно сканиране от листоподаващото у-во	ДА	ДА
Бутони за управление	scan, single/duplex button	scan, single/duplex button
Други	Да бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7	Ще бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7
Гаранция	1 година	1 година
ЦВЕТЕН ДОКУМЕНТЕН СКЕНЕР А3		FUJITSU Image Scanner fi-7460
Технология	автоматично листоподаващо устройство за документи (ADF), сканиращ елемент Charge Coupled Device (CCD)	автоматично листоподаващо устройство за документи (ADF), сканиращ елемент Charge Coupled Device (CCD)
Размер на документа	A8 - A3	A8 - A3
Оптична резолюция	Мин. 600 dpi	600 dpi

000007

Скорост на сканиране монохромно и цветно (200 dpi)	мин. 55 стр./мин. А4 едностранно, мин. 115 стр./мин. двустранно	60 стр./мин. А4 едностранно, мин. 120 стр./мин. двустранно
Система за разпознаване на два захванати листа	ultrasonic double sheet detection	ultrasonic double sheet detection
Автоматично свустранно сканиране	Да	Да
Капацитет на ADF	мин. 100 листа	100 листа
Интерфейс	USB 3.0 (USB 2.0)	USB 3.0 (USB 2.0)
Драйвери и софтуер	включени TWAIN и ISIS драйвери	включени TWAIN и ISIS драйвери
Други	Да бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7	Ще бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7
Гаранция	1 година	1 година

Дата: 12.03.2018 г

ПОДПИС И ПЕЧАТ:

Искра Берова

[име и фамилия]

Упълномощено лице

[качество на представляващия участника]

v v v /

800000

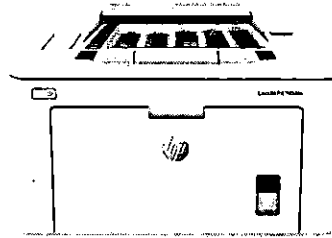
Data sheet

HP LaserJet Pro M203 Printer series

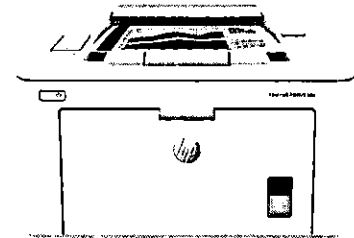


Stay a step ahead

Get more pages, performance, and protection from a wireless HP LaserJet Pro powered by JetIntelligence Toner cartridges. Set a faster pace for your business: print two-sided documents right away, and easily manage to help maximise efficiency.



HP LaserJet Pro M203dn Printer



HP LaserJet Pro M203dw Printer

Highlights

- Automatic two-sided printing standard
- Fast print speed (28 ppm A4)
- Fast FPOT from sleep (Auto-Off) mode
- Wireless connectivity (M203dw)
- HP ePrint, Apple AirPrint
- Wi-Fi Direct printing (M203dw)
- HP Auto-On/Auto-Off for low energy consumption
- JetIntelligence

Fast printing, low energy use

- Print at the pace of business – this printer is equipped with fast two-sided printing.
- Grab the documents you need and go. Print first pages in as fast as 7 seconds.²
- Help save energy with HP Auto-On/Auto-Off Technology.³

Mobile printing made simple

- Print from iPhone® and iPad® with AirPrint®, which automatically scales jobs to the correct paper size.⁴
- Print directly from your mobile device to your Wi-Fi Direct® printer – without accessing the company network.⁵
- Print with the ease of sending an email, right from a smartphone, tablet, or notebook, using HP ePrint.⁶
- Send jobs from your smartphone, tablet, or PC to any company printer, using Google Cloud Print™ 2.0.⁷

Manage company-wide printing with confidence

- Centralise control of your printing environment with HP Web Jetadmin – and help build business efficiency.⁸
- Identify new devices and gain insight into printing with HP Web Jetadmin remote discovery and monitoring.⁹
- Employ policy-based, fleet-wide protection features, using optional HP JetAdvantage Security Manager.⁹

HP quality – print after print

- Produce sharp text, bold blacks, and crisp graphics with precision black toner.
- Don't be fooled by alternatives that mimic Original HP. Help ensure you're getting the quality you paid for.
- Print over 2x more pages than standard cartridges, using optional Original HP high-yield toner cartridges.¹⁰
- Get more pages than ever before,¹¹ and track remaining pages to help ensure you get what you paid for.¹¹



2-sided printing



Wireless direct



High Yield Toner Cartridge



Precision black toner



Lower performance



Auto On/Off Technology



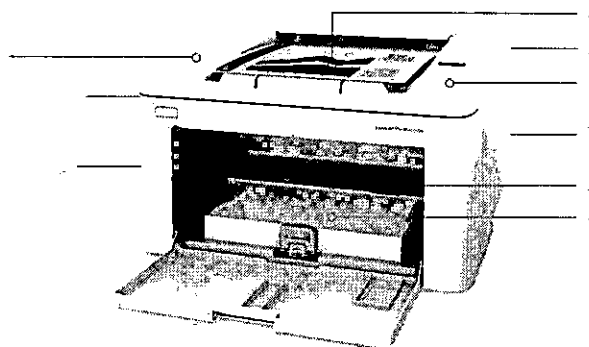
Auto-wireless connect

HP
BIPRO G OPWIWHATA

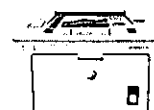
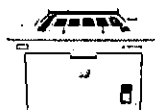
Product walkaround

HP LaserJet Pro M203dw Printer shown

1. LED control panel
2. Automatic two-sided printing
3. Hi-Speed USB 2.0 port. Fast Ethernet network port, access port for optional lock
4. 100-sheet output bin
5. Wi-Fi Direct printing
6. Top cover access to toner cartridges
7. Built-in wireless networking (802.11 b/g/n)
8. 10-sheet priority input tray
9. 250-sheet input tray (shown open)



Series at a glance



Model	HP LaserJet Pro M203dn Printer	HP LaserJet Pro M203dw Printer
Product number	G3Q46A	G3Q47A
Function	Print	Print
Print speed	Up to 28 ppm, duplex: up to 18 ipm	Up to 28 ppm, duplex: up to 18 ipm
Automatic two-sided printing	Yes	Yes
Connectivity	1 Hi-Speed USB 2.0; 1 Ethernet 10/100 network	1 Hi-Speed USB 2.0; 1 Ethernet 10/100 network; Wireless 802.11 b/g/n
Mobile printing capability	HP ePrint; AirPrint 1.5 with media presence sensor; Google Cloud Print™ 2.0	HP ePrint; Wi-Fi Direct Printing; AirPrint 1.5 with media presence sensor; Google Cloud Print™ 2.0

Accessories, Supplies and Support

Supplies	CF230A HP 30A Black Original LaserJet Toner Cartridge 1,600 pages
	CF230X HP 30X High Yield Black Original LaserJet Toner Cartridge 3,500 pages
	CF232A HP 32A Original LaserJet Imaging Drum 23,000 pages
Service and support	UG206E HP 3 year Care Pack with Standard Exchange for LaserJet Printers
	UG086E HP 3 year Care Pack with Next Day Exchange for LaserJet Printers
	UG289E HP 3 year Care Pack with Return to Depot Support for LaserJet Printers
	(UG206E: all EMEA countries, except ME, Africa, South Africa, Israel, Turkey, UG086E: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, UK, Czech, Greece, Hungary, Poland, Slovakia, UG289E: ME, Africa, South Africa, Israel, Turkey)

Technical specifications

Model	HP LaserJet Pro M203dn Printer	HP LaserJet Pro M203dw Printer
Product number	G3Q46A	G3Q47A
Function	Print	
Control panel	Button LED; 3 light-emitting diode (LED) indicator lights (Ready, Attention, Toner); 2 button (Resume, Cancel)	Button LED; 4 light-emitting diode (LED) indicator lights (Wireless, Ready, Attention, Toner); 3 buttons (Resume, Cancel, Wireless)
Print		
Print technology	Laser	
Print speed ¹⁰	Black (A4, normal): Up to 28 ppm; Black (A4, duplex): Up to 18 ipm	
First page out ¹²	Black (A4, ready): As fast as 6.7 sec; Black (A4, sleep): As fast as 7.6 sec	Black (A4, ready): As fast as 6.7 sec; Black (A4, sleep): As fast as 7.6 sec
Print resolution	Black (best): Up to 1200 x 1200 dpi; Technology: HP FastRes 1200, HP ProRes 1200	
Monthly duty cycle ¹¹	Up to 20,000 pages (A4); Recommended monthly page volume ¹⁴ : 250 to 2,500	
Printer smart software features	AirPrint 1.5 with media presence sensor, Instant-on Technology, HP Auto-On/Auto-Off Technology, JetIntelligence cartridges, Duplex Printing	AirPrint 1.5 with media presence sensor, Instant-on Technology, HP Auto-On/Auto-Off Technology, JetIntelligence cartridges, Mopria-certified, Wi-Fi Direct Printing, Duplex Printing
Standard print languages	PCL5c, PCL6, PS, PCLm, PDF, URF, PWG	
Fonts and typefaces	84 scalable TrueType fonts	
Print area	Print margins: Top: 4 mm, Bottom: 4 mm, Left: 4 mm, Right: 4 mm	
Duplex printing	Automatic (standard)	
Processor speed	800 MHz	
Connectivity		
Standard	1 Hi-Speed USB 2.0; 1 Ethernet 10/100 network	
Wireless	No	Yes, built-in Wi-Fi 802.11b/g/n
Mobile printing capability	HP ePrint; AirPrint 1.5 with media presence sensor; Google Cloud Print™ 2.0	HP ePrint; Wi-Fi Direct Printing; AirPrint 1.5 with media presence sensor; Google Cloud Print™ 2.0
Memory	Standard: 256 MB; Maximum: 256 MB	
Paper handling		
Number of paper trays	Standard: 1 main tray plus, 10-sheet priority slot; Maximum: 1 main tray plus, 10-sheet priority slot	
Media types	Paper (laser, plain, photo, rough, vellum), envelopes, labels, cardstock, postcards	
Media size	Custom (metric): 76 x 127 to 216 x 356 mm Supported (metric): A4; A5; A6; B5 (JIS)	
Media handling	Standard input: 250-sheet input tray, 10-sheet priority tray Standard output: 150-sheet output tray Optional input: No	
Media weight	60 to 163 g/m ² ; ADF: 60 to 163 g/m ²	
Input capacity	Tray 1: Sheets: 10; Envelopes: 10 Maximum: Up to 260 sheets	
Output capacity	Standard: Up to 150 sheets Envelopes: Up to 10 envelopes Maximum: Up to 150 sheets	
Compatible operating systems	Windows: 10, 8.1, 8, 7: 32-bit/64-bit, 2 GB available hard disk space, CD-ROM/DVD drive or Internet connection, USB port, Internet Explorer; Windows Vista: 32-bit only, 2 GB available hard disk space, CD-ROM/DVD drive or Internet connection, USB port, Internet Explorer 8; Apple OS X El Capitan (v10.11), OS X Yosemite (v10.10), OS X Mavericks (v10.9), 1 GB available hard disk space, Internet required, USB; Linux (for more information, see http://hplipopensource.com/hplip-web/index.html); Unix (for more information, see http://www.hp.com/go/unixmodelscripts)	
Compatible network operating systems	Windows: 10, 8.1, 8, 7: 32-bit/64-bit, 2 GB available hard disk space, CD-ROM/DVD drive or Internet connection, USB port, Internet Explorer; Windows Vista: 32-bit only, 2 GB available hard disk space, CD-ROM/DVD drive or Internet connection, USB port, Internet Explorer 8; Apple OS X El Capitan (v10.11), OS X Yosemite (v10.10), OS X Mavericks (v10.9), 1 GB available hard disk space, Internet required, USB; Linux (for more information, see http://hplipopensource.com/hplip-web/index.html); Unix (for more information, see http://www.hp.com/go/unixmodelscripts)	
Minimum system requirements	Windows: Windows: 10, 8.1, 8, 7: 32-bit/64-bit, 2 GB available hard disk space, CD-ROM/DVD drive or Internet connection, USB port, Internet Explorer; Windows Vista: 32-bit only, 2 GB available hard disk space, CD-ROM/DVD drive or Internet connection, USB port, Internet Explorer 8; Mac: Apple OS X El Capitan (v10.11), OS X Yosemite (v10.10), OS X Mavericks (v10.9), 1 GB available hard disk space, Internet required, USB	
Software included	For Windows OS: HP Software Installer, HP Software Uninstaller (exclude Windows 8+), HP PCL6 Printer Driver, HP Device Experience (DXP), HP Web Services Assist (HP Connected), Device Setup & Software, HP Printer Assistant, HP Product Improvement Study, Online user manuals; For Mac OS: Welcome Screen (directs users to http://www.hp.com or OS App Source for LaserJet Software)	
Security management	Password-protected network embedded Web server; Enable/Disable Network ports; SNMPv1 community password change	Password-protected network embedded Web server; Enable/Disable Network ports; SNMPv1 community password change
Printer management	HP Printer Assistant (UDC); HP Utility (Mac); HP Device Toolbox; HP JetAdvantage Security Manager	
Dimensions and Weight		
Printer dimensions (W x D x H) ²	Minimum: 370.5 x 407.4 x 223.9 mm; Maximum: 370.5 x 624.4 x 359.5 mm	
Package dimensions (W x D x H)	438 x 278 x 466 mm	
Printer weight	6.9 kg	
Package weight	9.2 kg	
Hard disk	None	None

Model	HP LaserJet Pro M203dn Printer	HP LaserJet Pro M203dw Printer
Product number	G3Q46A	G3Q47A
Operating environment	Temperature: 15 to 32.5°C; Humidity: 30 to 70% RH	
Storage	Temperature: -20 to 60°C; Humidity: 10 to 90% RH	
Acoustics	Acoustic power emissions: 6.6 B(A); Acoustic pressure emissions: 53 dB(A)	
Power	Requirements: Input voltage: 220 to 240 VAC (+/- 10%), 50/60 Hz, 3.1 A; Consumption: 480 watts (active printing), 1.9 watts (ready), 0.5 watts (sleep), 0.8 watts (Auto Off/Wake on USB, enabled at shipment), 0.05 watts (Auto-off/Manual-on), 0.05 watts (Manual Off); Typical Electricity Consumption (TEC): Blue Angel: 0.826 kWh/Week; Energy Star: 0.810 kWh/Week; Power supply type: Built-in power supply	
Energy savings feature technology	HP Auto-on/Auto-off Technology	
Certifications	CISPR 22:2008/EN 55022:2010 (Class B); EN 61000-3-2:2006 +A1:2009 +A2:2009; EN 61000-3-3:2013; EN 55024:2010	
What's in the box ¹	HP LaserJet Pro M203dn Printer; HP Black LaserJet Toner Starter Cartridge (1,000 pages); HP LaserJet Imaging Drum (23,000 pages); HiG; Setup poster; Support flyer; Warranty guide; Flyer; Printer documentation and software on CD-ROM; Software drivers and documentation on CD-ROMs; CDs containing software and electronic documentation; Power cord	HP LaserJet Pro M203dw Printer; HP Black LaserJet Toner Starter Cartridge (1,000 pages); HP LaserJet Imaging Drum (23,000 pages); HiG; Setup poster; Support flyer; Warranty guide; Flyer; Printer documentation and software on CD-ROM; Software drivers and documentation on CD-ROMs; CDs containing software and electronic documentation; Power cord; USB cable
Warranty	One-year unit exchange warranty. Warranty and support options vary by product, country and local legal requirements. Go to http://www.hp.com/support to learn about HP award winning service and support options in your region.	

Footnotes

- ¹ Based on ISO/IEC 19752 cartridge yields for HP 30A Black Original LaserJet Toner Cartridges compared with HP 83A Black Original LaserJet Toner Cartridges, and HP 30X High Yield Black Original LaserJet Toner Cartridges compared with HP 83X High Yield Black Original LaserJet Toner Cartridges. Learn more at <http://www.hp.com/go/learnaboutsupplies>.
- ² Measured using ISO/IEC 17629. Exact speed varies depending on the system configuration, software application, driver, and document complexity. Learn more at <http://www.hp.com/go/printerclaims>.
- ³ HP Auto-On/Auto-Off Technology capabilities are subject to printer and settings.
- ⁴ Mobile device must have iOS v7.0 or higher. Learn more at <http://www.hp.com/go/mobileprinting>.
- ⁵ Feature is supported on selected printers. Mobile device needs to be connected directly to the signal of a Wi-Fi Direct® supported MFP or printer prior to printing. Depending on mobile device, an app or driver may also be required. For details, see <http://www.hp.com/go/mobileprinting>. Wi-Fi Direct is a registered trademark of Wi-Fi Alliance®.
- ⁶ Printer requires ePrint account registration. App or software may be required. Learn more at <http://www.hp.com/go/mobileprinting>.
- ⁷ Requires Google Cloud Print™ registration and Google account. Learn more at <http://www.hp.com/go/mobileprinting>.
- ⁸ Not all HP Web Jetadmin features are supported on the HP LaserJet Pro M203. HP Web Jetadmin is available for download at no additional charge at <http://www.hp.com/go/webjetadmin>.
- ⁹ Based on HP internal research on competitor offerings (Device Security Comparison 1/2015) and Solutions Report on HP JetAdvantage Security Manager 2.1 from Buyers Lab, 2/2015. Requires separate purchase. For details, see <http://www.hp.com/go/securitymanager>.
- ¹⁰ Comparison based on ISO 24711 cartridge yields for HP 30X High Yield Black Original LaserJet Toner Cartridges compared with HP 30A Black Original LaserJet Toner Cartridges. Learn more at <http://www.hp.com/go/learnaboutsupplies>.
- ¹¹ As compared with cartridge gauges for HP predecessor products.
- ¹² App or software and HP ePrint account registration may also be required. Some features require purchase of an optional accessory. Learn more at <http://www.hp.com/go/mobileprinting>.

Technical specifications disclaimers

- ¹ HP Introductory Black LaserJet Toner Cartridge (~1000 pages), HP Original LaserJet Imaging Drum (~23,000 pages). Actual yields vary considerably based on images printed and other factors. For details see <http://www.hp.com/go/learnaboutsupplies>
- ² Without trays and covers not extended
- ³ With print cartridges
- ⁴ Wi-Fi direct is only available on M203dw bundle
- ⁵ Power requirements are based on the country/region where the printer is sold. Do not convert operating voltages. This will damage the printer and void the product warranty. Power consumption values typically based on measurement of 115V device.



<http://www.hp.com/uk>

The product could differ from the images shown. © Copyright 2016 HP Development Company, L.P. The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Published in EMEA 4AA6-7489EEE, September 2016





ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ
в съответствие с ISO / IEC 17050-1 и EN 17050-1

DoC #: SHNGC-1502-01-R1Превод/bg

Наименование на производителя: **HP Inc.**
Производителя Адрес: HP Information Technology R&D (Shanghai) Co., Ltd. No. 2727 Jinke Road, Shanghai, China 201203
заявява, че продуктът

Име на продукта и модел:²⁾ HP LaserJet Pro M203dw
Нормативен номер на модела:¹⁾ SHNGC-1502-01
Опции на продукта: Виж приложение I

съответства на следните спецификации на продукта и регламенти:

Безопасност:

IEC 60950-1:2005 +A1:2009 +A2:2013
EN 60950-1:2006 +A11:2009 +A1:2010
+A12:2011 +A2:2013
EN 60825-1:2014
IEC 60825-1:2014
EN 62479:2010
IEC 62479:2010
EN 62311:2008
IEC 62311: 2007

EMC

CISPR 22:2008 Class B
CISPR 32:2012 Class B
EN 55032:2012 Class B
EN 55024:2010
EN 61000-3-2:2014
EN 61000-3-3:2013
FCC CFR 47 Part 15
ICES-003, Issue 6
EN 301 489-1 V2.1.1
EN 301 489-17 V3.1.1

Радиочестотният спектър

EN 300 328 V2.1.1
EN 301 893 V1.8.1
EN 301 893 V2.1.0

екодизайна

Регламент (EC) № 1275/2008
EN 50564:2011
IEC 62301:2011

RoHS

EN 50581:2012

Този апарат в съответствие с изискванията на Директивата RED 2014/53/EC, Директивата за екодизайна 2009/125/OT, Директивата RoHS 2011/65/EC и носи маркировката съответно **CE**.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Допълнителна информация:

- 1) Този продукт има нормативен номер на модела, който остава с регулаторните аспекти на дизайн. Номер на Нормативен модел е идентификатора основен продукт в нормативната документация и протоколи от изпитвания, този брой не трябва да се бърка с пазарното име или номера на продукта.
- 2) Нотифицираният орган **National Technical Systems- Silicon Valley** с номер **2155** е извършена оценка на съответствието (съгласно приложение III, поради липсващи хармонизирани стандарти) и издаде сертификата за ЕС изследване на типа: A104712
- 3) Този продукт е изпробван в типична HP среда във връзка с хост система HP.
- 4) Този продукт използва радио модул с нормативен номер на модела: 'SDGOB-1505', което отговаря на техническите и регулаторни изисквания за страните / регионите, където този продукт, ще бъдат продадени.

Shanghai, China
28-05-2017

проверка на подписа върху оригинала на декларацията,

приложена
Jia-Fu Chen, Manager
LES Product Regulations

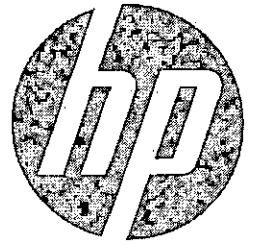
Local контакт за регулаторни теми само:

EU: HP Deutschland GmbH, HP HQ-TRE, 71025 Boeblingen, Germany
U.S.: HP Inc., 1501 Page Mill Road, Palo Alto 94304, U.S.A. 650-857-1501

www.hp.eu/certificates

НО С ОРИГИНАЛА

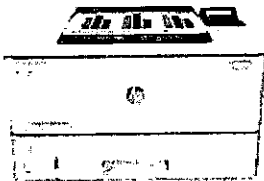
000014



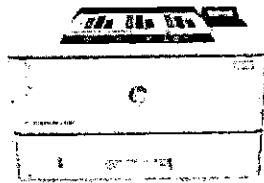
HP LaserJet Pro M402 Series

A quick, capable printer with robust security and innovative toner for more pages.²

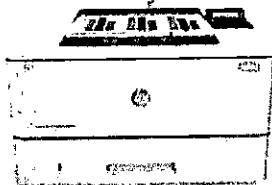
Printing performance and robust security built for how you work. This capable printer finishes jobs faster and delivers comprehensive security to guard against threats.¹ Original HP Toner cartridges with JetIntelligence give you more pages.²



HP LaserJet Pro M402n



HP LaserJet Pro M402dn



HP LaserJet Pro M402dw

Fast printing. Strong protection

- Grab pages and go—without waiting around. This printer wakes up and prints faster than the competition.¹
- Breeze through multipage documents with two-sided printing that's faster than the competition.¹
- Keep printing safe—from boot up to shutdown—with embedded features like LDAP authentication.

More pages, performance, and protection

- Get the most prints for your money—with Original HP High Yield Black Toner cartridges with JetIntelligence.²
- Count on consistent results at high speeds with precision black toner.
- Help ensure you're getting the authentic HP quality you paid for with innovative anti-fraud technology.
- Speed through print jobs right out of the box, using preinstalled toner cartridges. Replace them with optional high-yield cartridges.

Save energy and easily manage tasks

- Help save energy with HP Auto-On/Auto-Off Technology.³
- Print using less energy than competitors—enhanced by Original HP Toner cartridges with JetIntelligence.⁴
- Make the most of your office space, with a printer that conveniently fits right into your work style.
- Easily manage devices and settings using HP Web Jetadmin with a suite of essential management features.⁵

Stay connected with easy mobile printing options

- Easily print from a variety of smartphones and tablets—generally no setup or apps required.⁶
- Easily access, print, and share resources with Ethernet and wireless networking.⁷
- Count on wireless direct printing in the office—from mobile devices—without accessing the company network.⁸
- Help workers print with just a touch of their NFC-enabled mobile device to the printer—no network needed.⁹

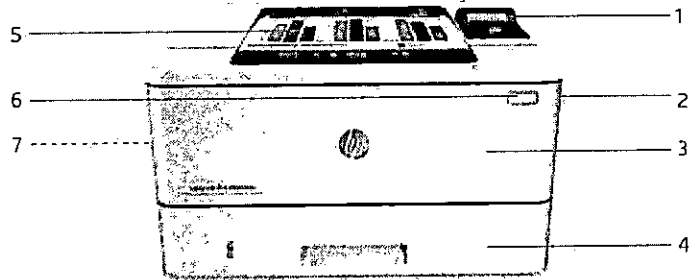
¹ Based on HP internal testing of top three leading competitors' first page out from sleep mode and duplex print speed completed 8/2015. Subject to device settings. Actual results may vary. For details see hp.com/go/Licclaims ² Based on cartridge yields for HP 80X compared with HP 26X Original HP LaserJet Toner Cartridges. For more information, see hp.com/go/learnaboutsupplies ³ HP Auto-On/Auto-Off Technology capabilities subject to printer and settings; May require a firmware upgrade. ⁴ Based on HP testing using the ENERGY STAR® program's Typical Electricity Consumption (TEC) method or as reported in energystar.gov of top three leading competitors as of 8/2015. Actual results may vary. For details see hp.com/go/Licclaims ⁵ HP Web Jetadmin is free and available for download at hp.com/go/webjetadmin ⁶ Wireless operations are compatible with 2.4 GHz operations only. App or software and HP ePrint account registration may also be required. Some features require purchase of an optional accessory. Learn more at hp.com/go/mobileprinting ⁷ Wireless performance is dependent on physical environment and distance from access point, and may be limited during active VPN connections. ⁸ Feature is supported on the HP LaserJet Pro M402dw only. ⁹ NFC is supported on the HP LaserJet Pro M402dw only. Requires a compatible NFC-printing-enabled mobile device. See hp.com/go/nfcprinting

000015

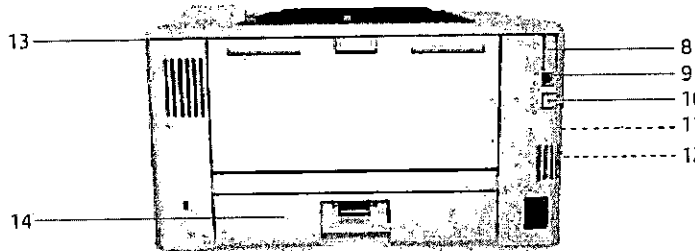
Product walkaround

- 1 2-line LCD control panel
- 2 Front door release button (access to HP JetIntelligence Toner cartridges)
- 3 100-sheet multipurpose tray 1
- 4 250-sheet input tray 2
- 5 150-sheet output bin
- 6 Power on/off button
- 7 Automatic two-sided printing¹
- 8 USB port for job storage with PIN printing²
- 9 Hi-Speed USB 2.0 printing port
- 10 Ethernet port
- 11 Built-in wireless networking³
- 12 Built-in wireless direct printing⁴ and NFC touch-to-print⁵
- 13 Rear door (access to print path)
- 14 Dust cover for tray 2—flips up when legal-size/A4 is loaded

HP LaserJet Pro M402dw shown

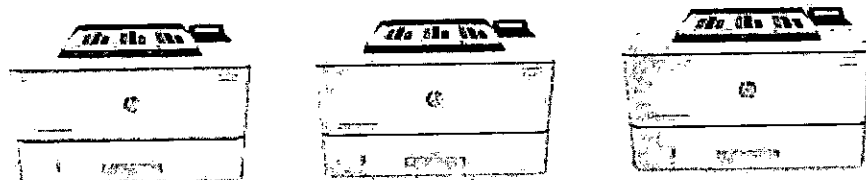


Front view



Rear view

Series at a glance



Model	HP LaserJet Pro M402n	HP LaserJet Pro M402dn	HP LaserJet Pro M402dw
Product number	CSF93A	CSF94A	CSF95A
100-sheet multipurpose tray 1, 250-sheet tray 2	✓	✓	✓
550-sheet tray 3	Optional	Optional	Optional
Print speed ⁶	Up to 40/38 pages per minute (ppm), letter/A4	Up to 40/38 ppm, letter/A4	Up to 40/38 ppm, letter/A4
Two-sided printing	Manual	Automatic: up to 32/30 images per minute (ipm), letter/A4	Automatic: up to 32/30 ipm, letter/A4
Networking	Built-in 10/100/1000 Base-TX Gigabit Ethernet	Built-in 10/100/1000 Base-TX Gigabit Ethernet	Built-in 10/100/1000 Base-TX Gigabit Ethernet, wireless 802.11b/g/n
Mobile printing	HP ePrint, Apple AirPrint, Mopria-certified Google Cloud Print™ 2.0	HP ePrint, Apple AirPrint, Mopria-certified, Google Cloud Print 2.0	Wireless direct printing, NFC touch-to-print, HP ePrint, Apple AirPrint, Mopria-certified, Google Cloud Print 2.0

¹ Automatic two-sided printing is available on the M402dn and M402dw models only. ² Requires purchase of separate USB flash drive with at least 16 GB capacity. Mobile device needs to be connected to a network. ³ Requires purchase of separate USB flash drive with at least 16 GB capacity. Mobile device needs to be connected to a network. ⁴ Requires purchase of separate USB flash drive with at least 16 GB capacity. Mobile device needs to be connected to a network. ⁵ Requires purchase of separate USB flash drive with at least 16 GB capacity. Mobile device needs to be connected to a network. ⁶ Exact speed varies depending on the print job and printer configuration, software applications, and print complexity.

Wireless direct printing is supported on the M402dw model only. Requires a compatible NFC-printing-enabled mobile device. For more information, see hp.com/go/nfcprinting.

000016

HP Services

Downtime can have serious consequences, so HP provides support beyond the standard warranty. You benefit from reduced risk, maximized uptime, predictable service delivery and no unbudgeted repair costs. Choose from:

Optimized Care (optimum performance and stability): 4 hour Onsite Support, Maintenance Kit Replacement Service, Installation with Network Configuration Service

Standard Care (high level of uptime): Next Business Day Onsite Support, Maintenance Kit Replacement Service, Installation with Network Configuration Service

Basic Care (minimum recommended support): Next Business Day Onsite Support

4 hr Onsite Support: Onsite support within four hours after a service call received within the coverage window

Next Business Day Onsite Support: Onsite service the next business day after the service call is received

Maintenance Kit Replacement Service: Onsite replacement of your printer's maintenance kit including parts, materials, and labor

Installation with Network Configuration Service: Assembly, network configuration, and basic administrator familiarization

For more information about HP Care Pack, HP Contractual, or HP Managed Print Services, visit hp.com/go/printservices



Windows 8



Care Pack Services

Top Features

Shift your office into high gear with a powerful printer that doesn't keep you waiting. Print your first page and two-sided prints faster than the competition,¹ and help keep your device, data, and documents safe—from boot up to shutdown.

Print more consistent, high-quality pages than ever before.² Specially designed Original HP Toner cartridges with JetIntelligence deliver better performance, higher energy efficiency, and authentic HP quality—which the competition can't match.²

Take control of printing—and save energy. Use a suite of essential features to help you easily manage this power-conserving printer. It's built to fit right into your office space and work style.

Keep business nimble when needs shift or opportunity strikes—in the office or on the go.³ Print wirelessly with or without accessing the network,^{4,5} and stay connected with Ethernet capabilities. Print with a touch from mobile devices.^{3,6}

Product

CSF93A	HP LaserJet Pro M402n
CSF94A	HP LaserJet Pro M402dn
CSF95A	HP LaserJet Pro M402dw

Accessories

D9P29A	HP LaserJet 550-sheet Feeder/Tray
P0R81AA	HP v222w 16GB Mini USB Drive

Supplies⁷

CF226A	HP 26A Black LaserJet Toner Cartridge (~3,100 pages)
CF226X	HP 26X Black LaserJet Toner Cartridge (~9,000 pages)

HP Care Packs

UBTM2E	HP 3-year Next Business Day LaserJet M402 Hardware Support
UBTM3E	HP 4-year Next Business Day LaserJet M402 Hardware Support
UBTM4E	HP 5-year Next Business Day LaserJet M402 Hardware Support
UBTM7PE	HP 1-year Post Warranty Next Business Day LaserJet M402 Hardware Support

Protect your investment with HP Care Pack. Let HP certified engineers resolve your technical issues. For more details on HP Care Pack, go to hp.com/go/cpc

Paper

Contact HP via phone: Asia: 65 6253 8500

Solutions

HP Web Jetadmin: hp.com/go/wja
 HP Universal Print Driver: hp.com/go/upd
 HP Imaging and Printing Security Center: hp.com/go/ipsc

¹ Based on HP internal testing of top three leading competitors' first page out from sleep mode and duplex print speed completed 8/2015. Subject to device settings. Actual results may vary. For details see hp.com/go/liclaims.
² Based on cartridge yields for HP 80X compared with HP 26X Original HP LaserJet Toner Cartridges. For more information, see hp.com/go/learnaboutsupplies.
³ Wirele App or software and HP ePrint account registration required. Some features require purchase of an optional accessory. Learn more at hp.com/go/mobilep.
⁴ Requires active VPN connections. ⁵ Feature is supported on the HP LaserJet Pro M402dw only. Mobile di g on mobile device, an app or driver may also be required. Learn more at hp.com/go/businessmol.
⁶ Requires a compatible NFC-printing-enabled mobile device. For a list of compatible NFC-printing-enabled mobile devices, see hp.com/go/nfcprinting.
⁷ Actual results may vary. For details see hp.com/go/liclaims.
 is dependent on physical and to the WiFi network on the HP LaserJet Pro

000017

HP LaserJet Pro M402 Series

Technical specifications	HP LaserJet Pro M402n (CF93A)	HP LaserJet Pro M402dn (CF94A)	HP LaserJet Pro M402dw (CF95A)
Functions	Print only		
Print	Automatic (standard)		
Duplex print options	Manual (driver support provided)		
Print speed ¹	Black (normal, A4): Up to 38 ppm; Black (normal, letter): Up to 40 ppm; Black Duplex (A4): Up to 30 ppm; Black Duplex (letter): Up to 32 ppm		
First page out ²	Black (A4, ready): As fast as 5.7 sec; As fast as 8.2 sec (100 V); Black (A4, sleep): As fast as 8.1 sec; As fast as 11.1 sec (100 V); Black (A4, ready): As fast as 6.2 sec; As fast as 9.0 sec (100 V); Black (A4, sleep): As fast as 9.8 sec; As fast as 12.3 sec (100 V)		
Print technology	Laser		
Print resolution	Black (best): HP FastRes 1200; Black (fine lines): Up to 1200 x 1200 dpi		
Print resolution technologies	HP FastRes 1200, HP ProfRes 1200, 600 dpi		
Print cartridges number	1 (black)		
Standard print languages	HP PCL 5, HP PCL 6, HP postscript level 3 emulation, direct PDF (v 1.7) printing, URF, PCLM, PWG		
Printer management	Printer Administrator Resource Kit (Driver Configuration Utility, Driver Deployment Utility, Managed Printing Administrator); HP Web JetAdmin Software; HP Proxy Agent Software; HP Imaging and Printing Security Center; HP Utility (Mac), HP Device Toolbox		
Printer smart software features	Manual duplex, N-up printing, collation, HP ePrint, Apple AirPrint™, Google Cloud Print, Mopria-certified, Instant-on Technology, HP Auto-On/Off technology, JetIntelligence Cartridge Technology, Job Storage with PIN printing	Auto-duplex printing, N-up printing, collation, HP ePrint, Apple AirPrint™, Google Cloud Print, Mopria-certified, Instant-on Technology, HP Auto-On/Off technology, JetIntelligence Cartridge Technology, Job Storage with PIN printing	Auto-duplex printing, N-up printing, collation, HP ePrint, Apple AirPrint™, Google Cloud Print, Mopria-certified, Wireless direct printing, HP Auto-Wireless Connect, NFC, Instant-on Technology, HP Auto-On/Off technology, JetIntelligence Cartridge Technology, Job Storage with PIN printing
Connectivity	Standard/Maximum: 128 MB		
Standard connectivity	1 Hi-Speed USB 2.0, 1 Host USB, 1 Gigabit Ethernet 10/100/100T network		
Mobile print capability ³	HP ePrint, Apple AirPrint™, Mopria-certified, Google Cloud Print 2.0, Mobile Apps		
Network ready	Standard (built-in Gigabit Ethernet)		
Network capabilities	Via built-in 10/100/1000Base-TX Ethernet, Gigabit; Auto-crossover Ethernet; Authentication via 802.1X		
Wireless Capability	No		
Memory	Standard/Maximum: 128 MB		
Duty cycle ⁴	Up to 80,000 pages; Recommended monthly page volume: ⁵ 750 to 4,000 pages		
Processor speed	1200 MHz		
Paper handling	100-sheet tray 1, 250-sheet input tray 2, Optional: third 550-sheet tray		
Input	150-sheet output bin		
Output	Paper (plain, EcoFFICIENT, light, heavy, bond, coloured, letterhead, preprinted, pre-punched, recycled, rough); envelopes; labels; transparencies		
Media type	Paper (plain, EcoFFICIENT, light, heavy, bond, coloured, letterhead, preprinted, pre-punched, recycled, rough); envelopes; labels; transparencies		
Media weight	Tray 1: 60 to 175 g/m ² ; Tray 2, optional 550-sheet tray 3: 60 to 120 g/m ²		
Media sizes custom	Tray 1: 76.2 x 127 to 215.9 x 355.6 mm; Tray 2, 3: 104.9 x 148.59 to 215.9 x 355.6 mm		
Dimensions (W x D x H)	381 x 357 x 216 mm (15 x 14.06 x 8.5 in)		
Weight	8.58 kg (18.92 lb)		
What's in the box	HP LaserJet Pro M402n, Preinstalled introductory HP 26A Black LaserJet Toner Cartridge (~1,500 pages), Getting Started Guide, Setup Poster, Support Flyer, Warranty Guide, Printer documentation and software on CD-ROM; Power cord, USB cable	HP LaserJet Pro M402dn, Preinstalled HP 26A Black LaserJet Toner Cartridge (~1,500 pages), Getting Started Guide, Setup Poster, Support Flyer, Warranty Guide, Printer documentation and software on CD-ROM; Power cord, USB cable	HP LaserJet Pro M402dw, Preinstalled HP 26A Black LaserJet Toner Cartridge (~1,500 pages), Getting Started Guide, Setup Poster, Support Flyer, Warranty Guide, Printer documentation and software on CD-ROM; Power cord, USB cable
Warranty features	One-year warranty, return to HP Authorized Service Provider		
Systems	Compatible operating systems		
Compatible operating systems	Windows OS compatible with In-Box Driver: Windows XP SP3 all 32-bit editions (XP Home, XP Pro, etc), Windows Vista all 32-bit editions (Home Basic, Premium, Professional, etc.), Windows 7 all 32 & 64-bit editions (Windows 7 Home Premium, Windows 7 Professional, Windows 7 Ultimate, Windows 7 Enterprise), Windows 8/8.1 all 32 & 64-bit editions (excluding RT OS for Tablets), Windows 10 all 32 & 64-bit editions (excluding RT OS for Tablets), Windows OS compatible with Universal Print Driver (From HP.com); Windows XP SP3 32 & 64-bit editions (XP Home, XP Pro, etc.), Windows Vista all 32 & 64-bit editions (Home Basic, Premium, Professional, etc), Windows 7 all 32 & 64-bit editions (Windows 7 Home Premium, Windows 7 Professional, Windows 7 Ultimate, Windows 7 Enterprise), Windows 8/8.1 all 32 & 64-bit editions (excluding RT OS for Tablets), Windows 10 all 32 & 64-bit editions (excluding RT OS for Tablets); Mac OS (HP Print Drivers available from HP.com and Apple Store): OS X 10.8 Mountain Lion, OS X 10.9 Mavericks, OS X 10.10 Yosemite, Mobile OS (In-OS drivers): iOS, Android, Windows 8/8.1/10 RT; Linux OS (in-OS HPLIP); Auto install: BOSS (3.0, 5.0), DEBIAN (6.0, 6.1, 6.02, 6.03, 6.04, 6.05, 6.06, 6.07, 6.08, 6.09, 6.10, 7.0, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6), FEDORA (17, 18, 19, 20), LINUX MINT (13, 14, 15, 16, 17), SUSE LINUX (12.2, 12.3, 13.1), UBUNTU (10.04, 11.10, 12.04, 12.10, 13.04, 13.10, 14.04, 14.10), Manual install: MANDRIVA LINUX (2010.0, 2011.0), MEPIS (6.0, 6.5, 7.0, 8.0), PCLINUXOS (2006.0, 2006, 2007.0, 2007, 2008.0, 2008, 2009.0, 2009), RED HAT (8.0, 9.0), RED HAT ENTERPRISE LINUX (5.0, 6.0, 7.0), SLACKWARE LINUX (9.0, 9.1, 10.0, 10.1, 10.2, 11, 12, 12.1), GOS (8.04.1), IGOS (1.0), LINPUX LINUX (9.4, 9.5), LINUX FROM SCRATCH (6); Other OS: UNIX		
Minimum system requirements	PC: Windows 10 (32-bit/64-bit), Windows 8.1 (32-bit/64-bit), Windows 8 (32-bit/64-bit), Windows 7 (32-bit/64-bit): 1 GHz processor, 1 GB RAM (32-bit) or 2 GB RAM (64-bit), 400 MB available hard disk space, CD/DVD-ROM or Internet, USB or Network port; Windows Vista (32-bit): 1 GHz 32-bit (x86) processor, 1 GB RAM (32-bit), 400 MB available hard disk space, CD/DVD-ROM or Internet, USB or Network port; Windows XP (32-bit) SP2: Pentium 233 MHz processor, 512 MB RAM 400 MB available hard disk space, CD/DVD-ROM or Internet, USB or Network port; Windows Server 2003 (32-bit) (SP1 or greater), Windows Server 2003 R2 (32-bit), Windows Server 2008 (32-bit) (SP1 or greater): 1 GHz 32-bit (x86) processor, 1 GB RAM (32-bit), 400 MB available hard disk space, CD/DVD-ROM or Internet, USB or Network port; Windows Server 2008 (64-bit) (SP1 or greater), Windows Server 2008 R2 (64-bit), Windows Server 2008 R2 (64-bit) (SP1): 1 GHz 64-bit (x64) processor, 2 GB RAM (64-bit), 400 MB available hard disk space, CD/DVD-ROM or Internet, USB or Network port; Mac: OS X 10.8 Mountain Lion; OS X 10.9 Mavericks; OS X 10.10 Yosemite, Internet; USB; 1 GB available hard disk space; OS compatible hardware (For OS hardware requirements see apple.com)		
Fonts and typefaces	84 scalable TrueType fonts		
Control panel	2-line backlit LCD graphic display; Buttons (OK, Menu, Cancel, Back), LED indicator lights (Attention, Ready)		
Power	2-line backlit LCD graphic display; Buttons (OK, Menu, Cancel, Back, Wi-Fi); LED indicator lights (Attention, Ready, Wi-Fi)		
Power	Power supply type: Internal (built-in) power supply; Power supply required: 110-volt input voltage: 110 to 127 VAC (+/- 10%), 50/60 Hz (+/- 2 Hz); 220-volt input voltage: 220 to 240 VAC (+/- 10%), 50/60 Hz (+/- 2 Hz) (Not dual voltage, power supply varies by Part number with option code identifier); Power consumption: ⁶ 591 watts (Active Printing), 6.1 watts (Ready), 2.8 watts (Sleep), 0.6 watts (Auto-On/Off, via USB connectivity), 0.1 watts (Shutdown or Off)		
Software Included	For Windows 7: HP Software Installer/Uninstaller, HP PCL 6 Printer Driver, HP Device Experience (DXP), HP Update, HP Device Toolbox, HP Printer Status and Alerts, HP Product Improvement Study, Reconfigure your HP Device, Warranty and Legal Guide, User Guide, For Windows 8: HP Software Installer/Uninstaller, HP PCL 6 Printer Driver, HP Device Experience (DXP), Warranty and Legal Guide, User Guide, Reconfigure your HP Device; For Windows XP, Windows Vista and associated servers: HP Software Installer/Uninstaller, HP PCL 6 Printer Driver, Warranty and Legal Guide, User Guide, For Mac OS: Welcome Screen (Directs users to HP.com or OS App Store for LaserJet Printing)		
Acoustic	Acoustic power emissions (ready): Inaudible; Acoustic pressure emissions bystander (active, printing): 54 dB(A); Acoustic pressure emissions bystander (ready): Inaudible		
Environmental ranges	Operating temperature range: 15 to 32°C (59 to 90°F); Recommended operating temperature: 17.5 to 25°C (63.5 to 77°F); Non-operating humidity range: 10 to 90% RH; Operating humidity range: 10 to 80% RH; Recommended operating humidity range: 30 to 70% RH; Storage Temperature Range: -20 to 40°C (-4 to 104°F)		
Security management	Embedded Web Server: password-protection, secure browsing via SSL/TLS; Network: enable/disable network ports and features, SNMPv1 & SNMPv2 community password change; HP ePrint: HTTPS with certificate validation, HTTP Basic Access Authentication, SASL authentication; Firewall and ACL; SNMPv3, 802.1X, Secure Boot	Embedded Web Server: password-protection, secure browsing via SSL/TLS; Network: enable/disable network ports and features, SNMPv1 & SNMPv2 community password change; HP ePrint: HTTPS with certificate validation, HTTP Basic Access Authentication, SASL authentication; Firewall and ACL; SNMPv3, 802.1X, Secure Boot, authentication via WEP/WPA/WPA2 Personal, WPA2 Enterprise, Encryption via AES or TKIP	Embedded Web Server: password-protection, secure browsing via SSL/TLS; Network: enable/disable network ports and features, SNMPv1 & SNMPv2 community password change; HP ePrint: HTTPS with certificate validation, HTTP Basic Access Authentication, SASL authentication; Firewall and ACL; SNMPv3, 802.1X, Secure Boot, authentication via WEP/WPA/WPA2 Personal, WPA2 Enterprise, Encryption via AES or TKIP
Safety approvals and requirements	IEC 60950-1:2005 +A1:2009+A2:2013/EN 60950-1:2006 +A11:2009+A12:2011+A2:2013; IEC 60825-1:2007/EN 60825-1:2007 (Class 1 Laser/LED Product); IEC 62479:2010/EN 62479:2010, GB4943-2011		
Supported network protocols	TCP/IP, IPv4, IPv6; Print: TCP/IP port, 9100 Direct Mode, LPD (raw queue support only), Web Services Printing, HP ePrint, Apple AirPrint™, Google Cloud Print 2.0, Mopria; FTP Print, iPP Print; Discovery: SLP, Bonjour, Web Services Discovery; IP Config: IPv4 (BootP, DHCP, AutoIP, Manual), IPv6 (Stateless Link-Local and via Router, Stateless via DHCPv6); SSL Security and Certificate management; management: SNMPv1, SNMPv2, SNMPv3, HTTP/HTTPS, Syslog, FTP, FW Download		

¹ Measured using ISO/IEC 24734 Feature Performance Test, excludes first set of test documents. For more information see hp.com/go/printerclaims. Exact speed varies depending on the system configuration, software application, driver, and document complexity. ² Measured using ISO/IEC 17629. For more information see hp.com/go/printerclaims. Exact speed varies depending on the system configuration, software application, driver, and document complexity. ³ Wireless operations are compatible with 2.4 GHz operations only. App or software and HP ePrint account registration may also be required. Some features require purchase of an optional accessory. Learn more at hp.com/go/mobileprinting. ⁴ Duty cycle is defined as the maximum number of pages per month of imaged output. This value provides a comparison of product robustness in relation to other HP LaserJet or HP Color LaserJet devices, and enables appropriate deployment of printers and MFPs to satisfy the demands of connected individuals or groups. ⁵ HP recommends that the number of pages per month of imaged output be within the stated range for optimum device performance, based on factors including supplies replacement intervals and device life over an extended warranty period. ⁶ Power requirements are based on the country/region where the printer is sold. Do not convert operating voltages. This will damage the printer and void the product warranty. ⁷ Acoustic values are subject to change. For current information see hp.com/support. Configuration tested: base model, simplex printing, A4 paper at an average of 38 ppm.

To learn more, visit hp.com

© Copyright 2015 HP Development Company, L.P. The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

ENERGY STAR and the ENERGY STAR logo are registered U.S. marks. Microsoft and Windows are registered trademarks of Microsoft Corporation. Airprint and the AirPrint are trademarks of Apple Inc., registered in the U.S. and other countries. Linux is a U.S. registered trademark of Linus Torvalds. UNIX is a registered trademark of The Open Group.



000018



ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ
в съответствие с ISO / IEC 17050-1 и EN 17050-1

DoC #: SHNGC-1400-01-R1Превод/bg

Наименование на производителя: **HP Inc.**
Производителя Адрес: HP Information Technology R&D (Shanghai) Co., Ltd. No. 2727 Jinke Road, Shanghai, China 201203
заявява, че продуктът

Име на продукта и модел:²⁾ HP LaserJet Pro M402dw
HP LaserJet Pro M403dw

Нормативен номер на модела:¹⁾ SHNGC-1400-01

Опции на продукта: Виж приложение I

съответства на следните спецификации на продукта и регламенти:

Безопасност:

IEC 60950-1:2005 +A1:2009 +A2:2013
EN 60950-1:2006 +A11:2009 +A1:2010
+A12:2011 +A2:2013
EN 60825-1:2014
IEC 60825-1:2014
EN 62479:2010
IEC 62479:2010
EN 62311:2008
IEC 62311:2007

EMC

CISPR 22:2008 Class B
CISPR 32:2012 Class B
EN 55032:2012 Class B
EN 55024:2010
EN 61000-3-2:2014
EN 61000-3-3:2013
FCC CFR 47 Part 15
ICES-003, Issue 5
EN 301 489-1 V2.1.1
EN 301 489-17 V3.1.1
EN 301 489-3 V1.6.1

Радиочестотният спектър

EN 300 328 V2.1.1
EN 300 330-2 V1.6.1

екодизайна

Регламент (EC) № 1275/2008
EN 50564:2011
IEC 62301:2011

RoHS

EN 50581:2012

Този апарат в съответствие с изискванията на Директивата RED 2014/53/EC, Директивата за екодизайна 2009/125/OT, Директивата RoHS 2011/65/EC и носи маркировката съответно **CE**.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Допълнителна информация:

- 1) Този продукт има нормативен номер на модела, който остава с регулаторните аспекти на дизайн. Номер на Нормативен модел е идентификатора основен продукт в нормативната документация и протоколи от изпитвания, този брой не трябва да се бърка с пазарното име или номера на продукта.
- 2) Този продукт е изпробван в типична HP среда във връзка с хост система HP.
- 3) Този продукт използва радио модул с нормативен номер на модела: 'SDGOB-1391', което отговаря на техническите и регулаторни изисквания за страните / регионите, където този продукт, ще бъдат продадени.

Shanghai, China
28-05-2017

проверка на подписа върху оригинала на декларацията,

приложена
Jia-Fu Chen, Manager
LES Product Regulations

Local контакт за регулаторни теми само:

EU: HP Deutschland GmbH, HP HQ-TRE, 71025 Boeblingen, Germany
U.S.: HP Inc., 1501 Page Mill Road, Palo Alto 94304, U.S.A. 650-857-1501

www.hp.eu/certificates

000019

ВЕРИТЕ С ОБИРНИЦАТА

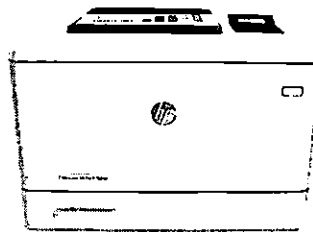
Data sheet

HP Color LaserJet Pro M452 series

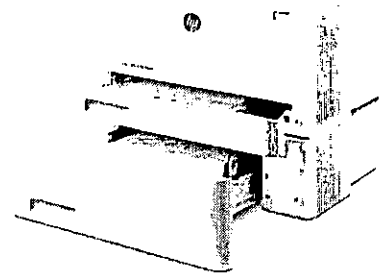


Stunning speed. Solid security.

Ideal printing performance and solid security for how you work. This capable colour printer finishes jobs faster and delivers comprehensive security to guard against threats.¹ Original HP Toner cartridges with JetIntelligence produce more pages.²



HP LaserJet Pro M452dn



HP LaserJet Pro M452dn with optional 550-sheet tray

Highlights

- 27 ppm black/ 27 ppm colour
- Colour first page out 9.9sec
- Leading duplex print speed of 24 ipm
- HP Auto-On/Auto-Off for low energy consumption
- Confidential PIN Printing
- HP ePrint, AirPrint, Google Cloud Print, Wi-Fi Direct, Mopria-certified, Mobile Apps
- Optional 550-sheet tray
- High-yield black/colour cartridges (6500/5000 pages)

Fast printing. Strong protection.

- Grab pages and go – without waiting around. This printer wakes up and prints faster than the competition.¹
- Breeze through multipage documents with two-sided printing that's faster than leading competitors.¹
- Protect information and control access to confidential print jobs with optional PIN printing.³
- Help keep printing safe from boot up to shutdown with security features that guard against complex threats.

More. Pages, Performance, and Protection.

- Get the most prints for your money – with Original HP High Yield Colour Toner cartridges with JetIntelligence.²
- Count on professional quality at high speeds with HP ColorSphere 3 toner.
- Help ensure you're getting the authentic HP quality you paid for with innovative anti-fraud technology.
- Print right away with preinstalled toner cartridges. Replace them with optional high-yield cartridges.

Easy management. Efficient printing.

- Easily manage devices and settings using HP Web Jetadmin with a suite of essential management features.⁵
- Print using less energy than competitors – enhanced by Original HP Toner cartridges with JetIntelligence.⁴

Stay connected with easy mobile printing options

- Easily print from a variety of smartphones and tablets – generally no setup or apps required.³
- Count on wireless direct printing in the office – from mobile devices – without accessing the company network.⁶
- Easily access, print, and share resources with Ethernet and wireless networking.⁷



Wireless



Wireless direct



ePrint



Precision black toner



Auto on/off



Auto wireless connect



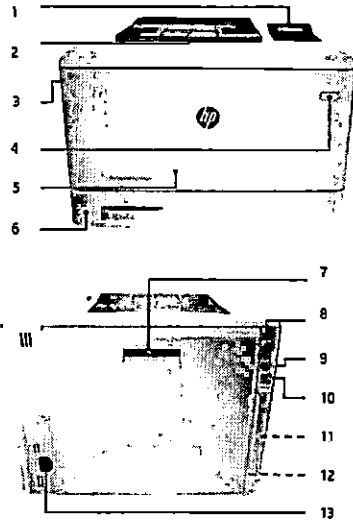
Instant-on technology

14 ORIGINAL

Product walkaround

HP Color LaserJet Pro M452dn shown

1. 2-line LCD control panel
2. 150-sheet output bin
3. Front door release button (access to HP JetIntelligence Toner cartridges)
4. Power on/off button
5. 50-sheet multipurpose tray 1
6. 250-sheet tray 2
7. Rear door (provides access to print path)
8. USB port for job storage and PIN printing
9. Hi-Speed USB 2.0 printing port
10. Ethernet port
11. Automatic two-sided printing
12. 1.2 GHz processor
13. Power connection



Series at a glance



Model	HP Color LaserJet Pro M452nw	HP Color LaserJet Pro M452dn
Product number	CF388A	CF389A
Colour print speed, A4	Up to 27 ppm	Up to 27 ppm
Duplex printing	Manual	Automatic
Control panel	2-line LCD	2-line LCD
Standard/maximum input	300/850 sheets	300/850 sheets
Networking	Gigabit Ethernet, wireless 802.11b/g/n	Gigabit Ethernet
Mobile printing capability	Wireless direct printing, HP ePrint, Apple AirPrint, Mopria-certified, Google Cloud Print™ 2.0	HP ePrint, Apple AirPrint, Mopria-certified, Google Cloud Print 2.0

Accessories, Supplies and Support

Supplies	CF252XM HP 410X 3-pack High Yield Cyan/Magenta/Yellow Original LaserJet Toner Cartridges Per cartridge: 5,000 pages
	CF410A HP 410A Black Original LaserJet Toner Cartridge 2,300 pages
	CF410X HP 410X High Yield Black Original LaserJet Toner Cartridge 6,500 pages
	CF410XD HP 410X 2-pack High Yield Black Original LaserJet Toner Cartridges Per cartridge: 6,500 pages
	CF411A HP 410A Cyan Original LaserJet Toner Cartridge 2,300 pages
	CF411X HP 410X High Yield Cyan Original LaserJet Toner Cartridge 5,000 pages
Accessories	CF404A HP LaserJet 550-sheet Feeder Tray
Connectivity	HPUNIVPRNTDRV HP Universal Print Driver
	HPWEBJETADMIN HP Web Jetadmin
Service and support	U8TR1E HP 3 year Next business day Color LaserJet M452 Hardware Support
	U8TN5E HP 3 year Return Color LaserJet M452 Service
	U8TN6PE HP 1 year Post Warranty Next business day Color LaserJet M452 Hardware Support
	U8TN8PE HP 1 year Post Warranty Return Color LaserJet M452 Service

Technical specifications

Model	HP Color LaserJet Pro M452nw	HP Color LaserJet Pro M452dn
Product number	CF388A	CF389A
Function	Print	
Control panel	2-line backlit LCD graphic display; 5 buttons (Cancel, Select, Reverse, Right/Left arrows); LED indicator lights (Attention, Ready)	2-line backlit LCD graphic display; 5 buttons (Cancel, Select, Reverse, Right/Left arrows); LED indicator lights (Attention, Ready)
Print		
Print technology	Laser	
Print speed¹	Black (A4, normal): Up to 27 ppm; Colour (A4, normal): Up to 27 ppm; Black (A4, duplex): Up to 24 ipm	
First page out²	Black (A4, ready): As fast as 9.0 sec; Colour (A4, ready): As fast as 9.9 sec; Black (A4, sleep): As fast as 11.4 sec; Colour (A4, sleep): As fast as 11.5 sec	
Print resolution	Black (best): 600 x 600 dpi, up to 38400 x 600 enhanced dpi; Colour (best): 600 x 600 dpi, up to 38400 x 600 enhanced dpi; Technology: HP ImageREt 3600, PANTONE® calibrated	
Monthly duty cycle³	Up to 50,000 pages (A4); Recommended monthly page volume ⁴ : 750 to 4000	
Printer smart software features⁵	N-up printing; Collation; HP ePrint; Apple AirPrint™; Mopria certified; Google Cloud Print; Wireless direct printing; HP Auto-On/Auto-Off Technology; Job Storage with PIN printing	N-up printing; Collation; HP ePrint, Apple AirPrint™; Mopria certified; Google Cloud Print; HP Auto-On/Auto-Off Technology; Job Storage with PIN printing
Standard print languages	HP PCL 6, HP PCL 5c, HP Postscript Level 3 emulation, PDF, URF, PCLm, native Office, PWG Raster	
Fonts and typefaces	84 scalable TrueType fonts	
Print area	Print margins: Top: 4.23 mm, Bottom: 4.23 mm, Left: 4.23 mm, Right: 4.23 mm	
Duplex printing	Automatic (standard)	Manual (driver support provided)
Processor speed	1200 MHz	
Connectivity		
Standard	Hi-Speed USB 2.0 port; Built-in Gigabit Ethernet 10/100/1000 Base-TX network port; Easy-access USB	
Wireless	Yes, built-in Wi-Fi; Authentication via WEP, WPA/WPA2, WPA Enterprise; Encryption via AES or TKIP; WPS; Wi-Fi Direct Printing	No
Mobile printing capability	HP ePrint; Apple AirPrint™; Mopria™-certified; NFC Touch-to-print; Wireless Direct Printing; Google Cloud Print 2.0; Mobile Apps	HP ePrint; Apple AirPrint™; Mopria™-certified; Google Cloud Print 2.0; Mobile Apps
Supported network protocols	TCP/IP, IPv4, IPv6; Print: TCP-IP port 9100 Direct Mode, LPD (raw queue support only), Web Services Printing, HP ePrint, Apple AirPrint™, Google Cloud Print 2.0, Mopria, FTP Print, IPP Print; Discovery: SLP, Bonjour, Web Services Discovery; IP Config: IPv4 (BootP, DHCP, AutoIP, Manual), IPv6 (Stateless Link-Local and via Router, Statefull via DHCPv6), SSL Security and Certificate management; Management: SNMPv1, SNMPv2, SNMPv3, HTTP/HTTPS, Syslog, FTP FW Download	
Network capabilities	Yes, via built-in 10/100/1000Base-TX Ethernet, Gigabit, Auto-crossover Ethernet; Authentication via 802.1X	
Memory	Standard: 256 MB NAND Flash, 128 MB DRAM; Maximum: 256 MB NAND Flash, 128 MB DRAM	Standard: 256 MB NAND Flash, 128 MB DRAM; Maximum: 256 MB NAND Flash, 128 MB DRAM
Media handling		
Number of paper trays	Standard: 2; Maximum: 3	
Media types	Paper (bond, brochure, coloured, glossy, letterhead, photo, plain, preprinted, prepunched, recycled, rough), postcards, labels, envelopes	
Media size	Custom (metric): Tray 1: 76 x 127 to 216 x 356 mm; Tray 2, optional Tray 3: 100 x 148 to 216 x 356 mm Supported (metric): Tray 1, Tray 2: A4, A5, A6, B5 (JIS), B6 (JIS), 16K (195 x 270 mm, 184 x 260 mm, 197 x 273 mm), 10 x 15 cm, Oficio (216 x 340 mm), postcards (JIS single, JIS double), envelopes (DL, C5, B5); Optional Tray 3: A4, A5, A6, B5 (JIS), B6 (JIS), 16K (195 x 270 mm, 184 x 260 mm, 197 x 273 mm), 10 x 15 cm, Oficio (216 x 340 mm), postcards (JIS single, JIS double); Automatic duplexer: A4, B5, 16K (195 x 270 mm, 184 x 260 mm, 197 x 273 mm), Oficio (216 x 340 mm) (HP LJ Pro M452dn only)	
Media handling	Standard input: 50-sheet multipurpose tray, 250-sheet input tray Standard output: 150-sheet output bin Optional input: Optional 550-sheet tray	
Media weight	Tray 1: 60 to 176 g/m ² (up to 200 g/m ² with postcards and HP Color Laser Glossy Photo Papers); Tray 2: 60 to 163 g/m ² (up to 176 g/m ² with postcards, up to 200 g/m ² HP Color Laser Glossy Photo Papers); Optional Tray 3: 60 to 163 g/m ² (up to 176 g/m ² with postcards, up to 150 g/m ² glossy media); Automatic duplexer: 60 to 163 g/m ² ; ADF: Tray 1: 60 to 176 g/m ² (up to 200 g/m ² with postcards and HP Color Laser Glossy Photo Papers); Tray 2: 60 to 163 g/m ² (up to 176 g/m ² with postcards, up to 200 g/m ² HP Color Laser Glossy Photo Papers); Optional Tray 3: 60 to 163 g/m ² (up to 176 g/m ² with postcards, up to 150 g/m ² glossy media); Automatic duplexer: 60 to 163 g/m ²	
Input capacity	Tray 1: Sheets: 50; Envelopes: 5 Maximum: Up to 850 sheets (with optional 550-sheet tray)	
Output capacity	Standard: Up to 150 sheets Envelopes: Up to 20 envelopes Maximum: Up to 150 sheets	
Compatible operating systems	Windows OS compatible with In-Box Driver: Windows 10 all 32 & 64-bit editions (excluding RT OS for tablets), Windows 8/8.1 all 32 & 64-bit editions (excluding RT OS for tablets), Windows 7 all 32 & 64-bit editions, Windows Vista all 32-bit editions (Home Basic, Premium, Professional, etc); Windows OS compatible with Universal Print Driver (from HP.com): Windows 10 all 32 & 64-bit editions (excluding RT OS for tablets), Windows 8/8.1 all 32 & 64-bit editions (excluding RT OS for tablets), Windows 7 all 32 & 64-bit editions, Windows Vista all 32 & 64-bit editions (Home Basic, Premium, Professional, etc); Mac OS (HP print drivers available from http://www.hp.com and Apple Store): OS X 10.7 Lion, OS X 10.8 Mountain Lion, OS X 10.9 Mavericks, OS X 10.10 Yosemite; Mobile OS (In-OS drivers): iOS, Android, Windows 8/8.1/10 RT; Linux OS (In-OS HPLIP): SUSE Linux (12.2, 12.3, 13.1), Fedora (17, 18, 19, 20), Linux Mint (13, 14, 15, 16, 17), Boss (3.0, 5.0), Ubuntu (10.04, 11.10, 12.04, 12.10, 13.04, 13.10, 14.04, 14.10), Debian (6.0.x, 7.x); Other OS: UNIX	

Model	HP Color LaserJet Pro M452nw	HP Color LaserJet Pro M452dn
Product number	CF388A	CF389A
Compatible network operating systems	Windows OS compatible with In-Box Driver: Windows Server 2008 R2 64-bit (SP1) Standard/Enterprise (+ Cluster & Terminal Services), Windows Server 2008 64-bit (SP2) Standard/Enterprise (+ Cluster & Terminal Services), Windows Server 2003/2003 R2 32-bit (SP1/SP2) Standard/Enterprise (+ Cluster & Terminal Services); Windows OS compatible with Universal Print Driver (UPD) or product-specific drivers from HP.com: Windows Server 2012/2012 R2 64-bit Standard/Foundation/Essentials/Datacenter (+ Cluster & Terminal Services), Windows Server 2008/2008 R2 32 & 64-bit (SP1/SP2) Standard/Enterprise/Datacenter (+ Cluster & Terminal Services); Citrix (on Windows Server 2003/2003 R2): Citrix MetaFrame Presentation Server 3.0, Citrix MetaFrame XP Presentation Server (Feature Release 1, 2 and 3), Citrix Presentation Server 4.0/4.5, Citrix XenApp 5.0 (Plus Feature Pack 2 & 3); Citrix (on Windows Server 2008/2008 R2): Citrix XenApp 5.0 (Plus Feature Pack 2 & 3), Citrix XenApp 6.0/6.5/7.5, Citrix XenDesktop 5.6/7.0/7.5; Citrix (on Windows Server 2012/2012 R2): Citrix XenApp 7.5, Citrix XenDesktop 7.0/7.5; Novell Servers (http://www.novell.com/iprint): Novell iPrint Appliance v1.0, Novell Open Enterprise Server 11/SP1, Novell Open Enterprise Server 2 for Linux; NetWare 6.5/SP8; Novell Clients (http://www.novell.com/iprint): Windows 8 (32 & 64-bit) recommend v5.86+, 8.1 recommend v5.94+, Windows 7 (32 & 64-bit) recommend v5.82+, Windows Vista (32 & 64-bit) recommend v5.82+, Windows XP/SP3 (32-bit only) recommend v5.82+	
Minimum system requirements	Windows: Windows Vista (32 & 64-bit) or newer, 233 MHz processor or higher, 512 MB RAM, 400 MB available hard disk space, CD-ROM or Internet, USB or network connection; Mac: Mac OS X v 10.7 or newer, Internet, USB or network connection, 1 GB available hard disk space	
Software included	For Windows OS: HP Software Installer/Uninstaller, HP PCL 6 Printer Driver, HP Device Experience (DXP), HP Update, Product Registration Assist, HP Web Services Assist (HP Connected), HP Device Toolbox, HP Product Improvement Study, Online user manuals (software varies by OS: Windows XP/Vista: driver only, Windows 7: full solution, Windows 8+ and newer: drivers only with more apps available in MS App store); For Mac OS: Welcome Screen (directs users to http://www.hp.com or OS App Source for LaserJet Software)	
Security management	Embedded Web Server: password-protection, secure browsing via SSL/TLS; Network: enable/disable network ports and features, SNMPv1 & SNMPv2 community password change; HP ePrint: HTTPS with certificate validation, HTTP Basic Access Authentication, SASL authentication; Firewall and ACL; SNMPv3, 802.1X, Secure Boot, authentication via WEP, WPA/WPA2 Personal, WPA2 Enterprise; Encryption via AES or TKIP	Embedded Web Server: password-protection, secure browsing via SSL/TLS; Network: enable/disable network ports and features, SNMPv1 & SNMPv2 community password change; HP ePrint: HTTPS with certificate validation, HTTP Basic Access Authentication, SASL authentication; Firewall and ACL; SNMPv3, 802.1X, Secure Boot
Printer management	Printer Administrator Resource Kit (Driver Configuration Utility, Driver Deployment Utility, Managed Printing Administrator); HP Web JetAdmin Software; HP Proxy Agent Software; HP Imaging and Printing Security Center; HP Utility (Mac); HP Device Toolbox (Win 7)	
Dimensions and Weight		
Printer dimensions (W x D x H)	Minimum: 412 x 469 x 295 mm; Maximum: 412 x 649 x 340 mm	Minimum: 412 x 453 x 295 mm; Maximum: 412 x 633 x 295 mm
Package dimensions (W x D x H)	497 x 379 x 583 mm	
Printer weight ⁶	18.9 kg	17.5 kg
Package weight	22.0 kg	20.7 kg
Operating environment	Temperature: 15 to 30°C; Humidity: 20 to 70% RH (non-condensing)	
Storage	Temperature: -20 to 40°C; Humidity: 10 to 95% RH (non-condensing)	
Acoustics ⁷	Acoustic power emissions: 6.3 B(A); Acoustic pressure emissions: 49 dB(A)	
Power ⁸	Requirements: Input voltage: 220 to 240 VAC (+/- 10%), 50/60 Hz (+/- 3 Hz); Consumption: 570 watts (printing), 17.6 watts (ready), 2.4 watts (sleep), 0.6 watts (Auto-On/Auto-Off, via USB connectivity), 0.05 watts (off); Power supply type: Built-in power supply	
Energy savings feature technology	HP Auto-On/Auto-Off Technology; Instant-on Technology	
Certifications	CISPR 22:2008 (Class B); EN 55022:2010 (Class B); EN 61000-3-2:2006 +A1:2009 +A2:2009; EN 61000-3-3:2008; EN 55024:2010; Other EMC approvals as required by individual countries	CISPR 22:2008 (Class B); EN 55022:2010 (Class B); EN 61000-3-2:2006 +A1:2009 +A2:2009; EN 61000-3-3:2008; EN 55024:2010; Other EMC approvals as required by individual countries ENERGY STAR [®] qualified; EPEAT [®] Silver; CECP; Blue Angel RAL-UZ 205
What's in the box ⁹	HP Color LaserJet Pro M452nw Printer; 4 preinstalled Introductory HP 410A LaserJet Toner cartridges (Black, Cyan, Magenta, Yellow: 1,200 pages); Getting Started Guide; Install poster; Software drivers and documentation on CD-ROM; Power cord; USB cable	HP Color LaserJet Pro M452dn Printer; 4 preinstalled Introductory HP 410A LaserJet Toner cartridges (Black, Cyan, Magenta, Yellow: 1,200 pages); Getting Started Guide; Install poster; Software drivers and documentation on CD-ROM; Power cord
Warranty	One-year warranty. Warranty and support options vary by product, country and local legal requirements. Go to http://www.hp.com/support to learn about HP award winning service and support options in your region.	

Footnotes

- ¹ Based on HP internal testing of top three leading competitors' first page out from sleep mode and duplex print speed completed 8/2015. Subject to device settings. Actual results may vary. For details see <http://www.hp.com/go/1claims>.
- ² Based on cartridge yields for HP 305X compared with HP 410X Original HP LaserJet Toner Cartridges. For more information, see <http://www.hp.com/go/learnaboutsupplies>.
- ³ HP Web Jetadmin is free and available for download at <http://www.hp.com/go/webjetadmin>.
- ⁴ Based on HP testing using the ENERGY STAR® program's Typical Electricity Consumption (TEC) method or as reported in energystar.gov of top three leading competitors as of 8/2015. Actual results may vary. For details see <http://www.hp.com/go/1claims>.
- ⁵ Wireless operations are compatible with 2.4 GHz operations only. App or software and HP ePrint account registration may also be required. Some features require purchase of an optional accessory. Learn more at <http://www.hp.com/go/mobileprinting>.
- ⁶ Feature is only supported by the HP Color LaserJet Pro M452nw. Mobile device needs to be connected directly to the Wi-Fi network of a wireless direct-capable MFP or printer prior to printing. Depending on mobile device, an app or driver may also be required. Learn more at <http://www.hp.com/go/businessmobileprinting>.
- ⁷ Feature is only supported by the HP Color LaserJet Pro M452nw. Wireless performance is dependent on physical environment and distance from access point, and may be limited during active VPN connections.

Technical specifications disclaimers

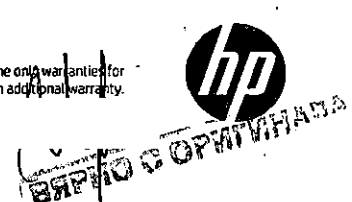
- ¹ Measured using ISO/IEC 24734, excludes first set of test documents. For more information, see <http://www.hp.com/go/printerclaims>. Exact speed varies depending on the system configuration, software application, driver, and document complexity.
- ² Measured using ISO/IEC 17629. For more information, see <http://www.hp.com/go/printerclaims>. Exact speed varies depending on the input voltage, system configuration, software application, driver, and document complexity.
- ³ Duty cycle is defined as the maximum number of pages per month of imaged output. This value provides a comparison of product robustness in relation to other HP LaserJet or HP Colour LaserJet devices, and enables appropriate deployment of printers and MFPs to satisfy the demands of connected individuals or groups.
- ⁴ HP recommends that the number of printed pages per month be within the stated range for optimum device performance, based on factors including supplies replacement intervals and device life over an extended warranty period.
- ⁵ Job Storage feature requires a purchase of separate USB flash drive with a minimum of 16 GB capacity.
- ⁶ With toner cartridges.
- ⁷ Acoustic values are subject to change. For current information, see <http://www.hp.com/support>. Configuration tested: base model, simplex printing, A4 paper at an average of 27 ppm.
- ⁸ Typical Electricity Consumption (TEC) rating represents the typical electricity consumed by a product during 1 week, measured in kilowatt-hours (kWh).
- ⁹ Declared cartridge yield value in accordance with ISO/IEC 19752. Actual yields vary considerably based on images printed and other factors. For more information, visit <http://www.hp.com/go/learnaboutsupplies>. HP Colour LaserJet Pro M452 in-box cartridge may have higher yield than stated for printer units manufactured before 2017.



<http://www.hp.com/uk>

The product could differ from the images shown. © Copyright 2017 HP Development Company, L.P. The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Published in EMEA 4AA6-0841EEE, December 2017



000024



ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ
в съответствие с ISO / IEC 17050-1 и EN 17050-1

Doc #: **BOISB-1407-00-R8**Превод/bg

Наименование на производителя: **HP Inc.**
Производителя Адрес: **11311 Chinden Boulevard, Boise, Idaho 83714-1021 USA**
заявява, че продуктът

Име на продукта и модел:²⁾ **HP Color LaserJet Pro M452dn**
Нормативен номер на модела:¹⁾ **BOISB-1407-00**
Опции на продукта: **Виж приложение I**

съответства на следните спецификации на продукта и регламенти:

Безопасност:

IEC 60950-1:2005 +A1:2009 +A2:2013
EN 60950-1:2006 + A11:2009 +A1:2010 +A12:2011
+A2:2013 /+AC:2011
IEC 60825-1:2014 / EN 60825-1:2014
IEC 62479:2010 / EN 62479:2010

EMC

CISPR 22:2008 Class B
CISPR 32:2012 Class B / EN 55032:2012 Class B
EN 55024:2010
EN 61000-3-2:2014
EN 61000-3-3:2013
FCC CFR 47 Part 15 Class B
ICES-003, Issue 6 Class B

RoHS

EN 50581:2012

Този апарат в съответствие с изискванията на Директивата за ниско напрежение 2014/35/EC, Директивата EMC 2014/30/EC, Директивата RoHS 2011/65/EC и носи маркировката съответно **CE**.

Допълнителна информация:

- 1) Този продукт има нормативен номер на модела, който остава с регулаторните аспекти на дизайн. Номер на Нормативен модел е идентификатора основен продукт в нормативната документация и протоколи от изпитвания, този брой не трябва да се бърка с пазарното име или номера на продукта.
- 2) Този продукт е изпробван в типична HP среда във връзка с хост система HP.

Boise, Idaho
20-06-2017

проверка на подписа върху оригинала на декларацията,

приложена
Rich Payne, Manager
LES Product Regulations

Local контакт за регулаторни теми само:

EU: **HP Deutschland GmbH, HP HQ-TRE, 71025 Boeblingen, Germany**
U.S.: **HP Inc., 1501 Page Mill Road, Palo Alto 94304, U.S.A. 650-857-1501**

www.hp.eu/certificat

ОРИГИНАЛА

000025

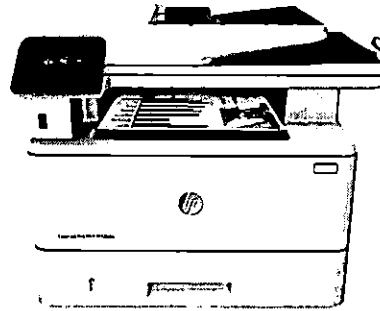
Data sheet

HP LaserJet Pro MFP M426dw

Impressive speed. Solid security.



Fast print, scan, and copy performance in such a small but robust package. This MFP finishes key tasks faster and guards against threats.¹ Original HP Toner cartridges with JetIntelligence give you more pages.²



Highlights

- 38 ppm A4 black
- First page out from sleep/Auto-Off in 8 sec
- 50-sheet simplex scanning ADF; scan speed up to 26 ppm
- Leading duplex print speed of 30 ipm
- HP Auto-On/Auto-Off for low energy consumption
- 7.5 cm colour touchscreen with gesturing and apps
- Scan-to-email, -folder, -cloud, -USB
- LDAP, Private Printing, PIN Printing
- HP ePrint, AirPrint, Google Cloud Print, Wi-Fi Direct, Mopria-certified, Mobile Apps

Speed through more tasks. Keep data protected.

- Scan digital files directly to email, USB, network folders, and the cloud with preloaded business apps.³
- Breeze through multipage documents with two-sided printing that's faster than the competition.¹
- Grab pages and go – without waiting around. This MFP wakes up and prints faster than the competition.⁴
- Control access to print jobs and help keep printing safe with security features like LDAP authentication.

Easy management. Efficient printing.

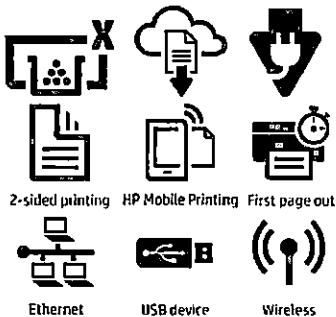
- Easily manage print jobs directly at the MFP – just tap and swipe the 7.6 cm (3-inch) touchscreen.⁴
- Easily print Microsoft® Word and PowerPoint® documents – now directly from your USB drive.⁵
- Easily manage devices and settings using HP Web Jetadmin with a suite of essential management features.⁶
- Print using less energy than competitors – enhanced by Original HP Toner cartridges with JetIntelligence.⁷

More. Pages. Performance, and Protection.

- Get the most prints for your money – with Original HP High Yield Black Toner cartridges with JetIntelligence.⁸
- Count on professional quality at high speeds with precision black toner.
- Help ensure you're getting the authentic HP quality you paid for with innovative anti-fraud technology.
- Print right away with preinstalled toner cartridges. Replace them with optional high-yield cartridges.

Stay connected with easy mobile printing options

- Easily print from a variety of smartphones and tablets – generally no setup or apps required.⁹
- Count on wireless direct printing in the office – from mobile devices – without accessing the company network.⁹
- Easily access, print, and share resources with Ethernet and wireless networking.¹⁰

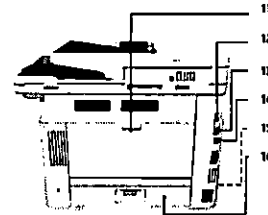
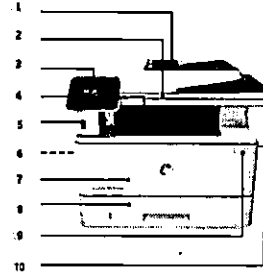


PREMIUM

Product walkaround

HP LaserJet Pro MFP M426dw shown

- 1. 50-sheet automatic document feeder (ADF)
- 2. Flatbed scanner: up to 216 x 297 mm paper
- 3. Intuitive 7.6 cm colour touchscreen (tilts up)
- 4. 150-sheet output bin
- 5. Easy-access USB port
- 6. Automatic two-sided printing
- 7. 100-sheet multipurpose tray 1
- 8. 250-sheet input tray 2
- 9. Power on/off button
- 10. Front door release button (access to HP JetIntelligence Toner cartridges)
- 11. Rear door (provides access to print path)
- 12. USB port for job storage and private printing
- 13. Hi-Speed USB 2.0 printing port
- 14. Ethernet network port
- 15. 1200 MHz processor
- 16. Dust cover for tray 2 — flips up when A4 is loaded



Accessories, Supplies and Support

Supplies	CF226A HP 26A Black Original LaserJet Toner Cartridge 3,100 pages
	CF226X HP 26X High Yield Black Original LaserJet Toner Cartridge 9,000 pages
Accessories	D9P29A HP LaserJet Pro 550-sheet Feeder Tray
Service and support	UBTQ9E HP 3 year Next business day LaserJet M426 MFP Hardware Support
	UBTR2E HP 3 year Next business day Exchange LaserJet M426 MFP SVC
	UBTR3E HP 3 year Return LaserJet M426 MFP Service
	UBTR4PE HP 1 year Post Warranty Next business day LaserJet M426 MFP Hardware Support
	UBTR5PE HP 1 year Post Warranty Next business day Exchange LaserJet M426 MFP SVC
	UBTR6PE HP 1 year Post Warranty Return LaserJet M426 MFP SVC

ВЕРЕТ
 С ОРИГИНАЛА

Technical specifications

Model	HP LaserJet Pro MFP M426dw
Product number	F6W13A
Functions	Print, copy, scan
Print	
Print speed	Up to 38 ppm black (A4); Up to 30 ipm black duplex (A4)
First page out from ready ¹	As fast as 5.6 sec black (A4, ready)
First page out from sleep ¹	As fast as 8.0 sec
Print resolution	600 x 600 dpi, up to 4800 x 600 enhanced dpi black; HP FastRes 1200, HP ProRes 1200, 600 dpi
Print technology	Laser
Print Area	Print margins: Top: 5 mm; Bottom: 5 mm; Left: 4 mm; Right: 4 mm; Maximum print area: 215.9 x 355.6 mm
Print languages	HP PCL5, HP PCL 6, HP Postscript Level 3 emulation, direct PDF (v1.7) printing, URF, PCLM, PWG, Native Office
Printer Smart Software Features	Auto-duplex printing; N-up printing; Collation; HP ePrint; Apple AirPrint™; Google Cloud Print; Wireless direct printing; Mopria-certified; HP Auto-On/Auto-Off; Intuitive 7.5 cm (3") touchscreen control panel; Print from Cloud using business apps on the control panel; HP JetAdvantage Private Print; Optional Job Storage with PIN printing (requires a purchase of separate USB flash drive); Print from USB; JetIntelligence Cartridge Technology
Monthly duty cycle	Up to 80,000 pages (A4); Recommended monthly page volume: 750 to 4,000 (print); 750 to 4,000 (scan)
Duplex printing	Automatic (standard)
Fonts and typefaces	84 scalable TrueType fonts
SureSupply supported	Yes
Processor speed	
Processor speed	1200 Mhz
Connectivity	
Standard	1 Hi-Speed USB 2.0; 1 Host USB; 1 Gigabit Ethernet 10/100/1000T network; 1 Wireless 802.11b/g/n; Easy-access USB
Supported network protocols	TCP/IP, IPv4, IPv6; Print: TCP-IP port 9100 Direct Mode, LPD (raw queue support only), Web Services Printing; HP ePrint, Apple AirPrint™, Google Cloud Print 2.0, Mopria, FTP Print, JPP Print; Discovery: SLIP, Bonjour, Web Services Discovery; IP Config; IPv4 (BootP, DHCP, AutoIP, Manual), IPv6 (Stateless Link-Local and via Router, Stateless via DHCPv6), SSL Security and Certificate management; Management: SNMPv1, SNMPv2, SNMPv3, HTTP/HTTPS, Syslog, FTP FW Download
Network ready	
Standard (built-in Ethernet, Wi-Fi) (operates as both an AP, with Wi-Fi Direct, and STA)	
Hard disk	
Hard disk	No
Memory	
Memory	Standard: 256 MB; Maximum: 256 MB
Copy	
Copy settings	Lighter/Darker; ID copy; Optimise; Maximum number of copies: Up to 99 copies; Copy resolution: 600 x 600 dpi Reduce/Enlarge: 25 to 400%
Copy speed	Up to 38 cpm black (A4)
Scan	
Scanner specifications	Scanner type: Flatbed, ADF; Scan technology: Contact Image Sensor (CIS); Scan input modes: For scan software (included in the box) support: Windows [JPG, RAW(BMP), PDF, TIFF, PNG, RTF] and Mac [JPG, JPEG-2000, TIFF, PNG, PDF, searchable PDF, RTF, TXT]; Twain version: Version 1.9 (legacy OS); Version 2.1 (Windows 7 or higher); Duplex ADF scanning; No; Scan size maximum (flatbed, ADF): 297 x 216 mm; Optical scan resolution: Up to 1200 x 1200 dpi
Scan file format	Flatbed, ADF
Scan speed ²	Up to 21 ppm/26 ipm (monochrome)
Scannable area	Flatbed: Minimum media size: 48.8 x 48.8 mm; Maximum media size: 297 x 216 mm Scannable area (ADF): Minimum media size: 102 x 152 mm; Maximum media size: 216 x 355.6 mm
Scanner Advanced Features	Scan-to-email; Scan-to-Cloud; Scan-to-USB; Scan-to-network folder; LDAP email lookup; Simplex scanning ADF (50-sheet)
Bit depth/ Grey scale levels	24-bit / 256
Digital sending	Standard: Scan-to-email; Scan-to-network folder; Scan-to-Cloud
Recommended monthly scan volume	750 to 4,000
Fax	
Fax	No
Telecom compliance	Wireless telecommunications: EU (R&TTE Directive 1999/5/EC); EN 301 489-1 V1.9.2; EN 301 489-17 V2.2.1; EN 300 328 V1.8.1; IEC 62311:2007; EN 62311-2008
Paper handling	
Media types	Paper (plain, EcoEFFICIENT, light, heavy, bond, coloured, letterhead, preprinted, prepunched, recycled, rough), envelopes, labels, transparencies
Paper size	Custom metric: Tray 1: 76.2 x 127 to 215.9 x 355.6 mm; Tray 2, 3: 104.9 x 148.59 to 215.9 x 355.6 mm Supported metric: Tray 1: A4, A5, A6, B5 (JIS), Envelope B5, Envelope C5, Envelope DL, custom size; Tray 2 & Tray 3: A4, A5, A6, B5 (JIS), custom size ADF: A4; 127 x 127 to 216 x 355.6 mm
Paper handling	Standard input: 100-sheet tray 1, 250-sheet input tray 2 Standard output: 150-sheet output bin Optional/Input: Optional third 550-sheet tray ADF: Standard, 50 sheets
Input capacity	Tray 1: Sheets: 100; Envelopes: 10 Tray 2: Sheets: 250 Tray 3: Sheets: 550 (optional) Maximum: Up to 900 sheets (with optional 550-sheet tray)
Output capacity	Standard: Up to 150 sheets; Up to 10 envelopes; Up to 75 sheets; Transparencies Maximum: Up to 150 sheets Envelopes: Up to 10 envelopes Transparencies: Up to 75 sheets
Paper weight	Tray 1: 60 to 175 g/m ² ; Tray 2, optional 550-sheet tray 3: 60 to 120 g/m ² ADF: 60 to 90 g/m ²
Compatible operating systems	
Windows OS compatible with In-Box Driver: Windows 10 all 32 & 64-bit editions (excluding RT OS for tablets), Windows 8/8.1 all 32 & 64-bit editions (excluding RT OS for tablets), Windows 7 all 32 & 64-bit editions (Home Basic, Premium, Professional, etc.); Windows OS compatible with Universal Print Driver (from http://www.hp.com): Windows 10 all 32 & 64-bit editions (excluding RT OS for tablets), Windows 8/8.1 all 32 & 64-bit editions (excluding RT OS for tablets), Windows 7 all 32 & 64-bit editions (Home Basic, Premium, Professional, etc.); Mac OS (HP print drivers available from http://www.hp.com and Apple Store): OS X 10.8 Mountain Lion, OS X 10.9 Mavericks, OS X 10.10 Yosemite; Mobile OS (in-OS drivers): iOS, Android, Windows 8/8.1/10 RT; Linux OS (in-OS HPLIP, auto install): BOSS (3.0, 5.0), DEBIAN (6.0, 6.0.1, 6.0.2, 6.0.3, 6.0.4, 6.0.5, 6.0.6, 6.0.7, 6.0.8, 6.0.9, 6.0.10, 7.0, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6), FEDORA (17, 18, 19, 20), LINUX MINT (13, 14, 15, 16, 17), SUSE LINUX (12.2, 12.3, 13.1), UBUNTU (10.04, 11.10, 12.04, 12.10, 13.04, 13.10, 14.04, 14.10); Linux OS (in-OS HPLIP, manual install): MANDRIVA LINUX (2010.0, 2011.0), MEPIS (6.0, 6.5, 7.0, 8.0), PCLINUXOS (2006.0, 2006, 2007.0, 2007, 2008.0, 2008, 2009.0, 2009), RED HAT (8.0, 9.0), RED HAT ENTERPRISE LINUX (5.0, 6.0, 7.0), SLACKWARE LINUX (9.0, 9.1, 10.0, 10.1, 10.2, 11, 12, 12.1), GOS (8.04.1), IGOS (1.0), LINPLUS LINUX (9.4, 9.5), LINUX FROM SCRATCH (6); Other OS: UNIX	

000028

БЕРНО С ОПРАГНАНА

Model	HP LaserJet Pro MFP M426dw
Product number	FGW13A
Compatible network operating systems	Windows OS compatible with In-Box Driver: Windows Server 2008 R2 64-bit (SP1) Standard/Enterprise (+ Cluster & Terminal Services), Windows Server 2008 32 & 64-bit (SP2) Standard/Enterprise (+ Cluster & Terminal Services), Windows Server 2003/2003 R2 32-bit (SP1/SP2) Standard/Enterprise (+ Cluster & Terminal Services); Windows OS compatible with Universal Print Driver (UPD) or product-specific drivers from http://www.hp.com : Windows Server 2012/2012 R2 64-bit Standard/Foundation/Essentials/Datacenter (+ Cluster & Terminal Services), Windows Server 2008/2008 R2 32 & 64-bit (SP1/SP2) Standard/Enterprise/Datacenter (+ Cluster & Terminal Services), Windows Server 2003/2003 R2 32 & 64-bit (SP1/SP2) Standard/Enterprise/Datacenter (+ Cluster & Terminal Services), MS Windows Server 2012 R2 Terminal Services, Citrix XenApp 7.5, Citrix XenDesktop 7.0, Citrix XenDesktop 7.5, MS Windows Server 2012 Terminal Services, Citrix XenApp 7.5, Citrix XenDesktop 7.0, Citrix XenDesktop 7.5, MS Windows Server 2008 R2 SP1 Terminal Services, Citrix XenApp 6.0, Citrix XenApp 6.5, Citrix XenApp 7.5, Citrix XenDesktop 5.6, Citrix XenDesktop 7.0, Citrix XenDesktop 7.5, MS Windows Server 2008 R2 Terminal Services, Citrix XenApp 6.0, Citrix XenApp 6.5; Citrix XenDesktop 5.6, MS Windows Server 2008 Terminal Services, Citrix XenApp 5.0, Citrix XenApp 5.0 Feature Pack 2 & 3, MS Windows Server 2003 Terminal Services, Citrix Presentation ServerTM 4.5, Citrix Presentation Server 4.0, MS Windows Server 2003 Terminal Services, Citrix Presentation Server 4.5, Citrix Presentation Server 4.0, Citrix MetaFrame® Presentation Server 3.0, Citrix MetaFrame XP Presentation Server (Feature Release 1, 2 and 3); Novell Servers (http://www.novell.com/print): Novell Open Enterprise Server 11/SP1/SP2, Novell Open Enterprise Server 2 for Linux, NetWare 6.5/SP8; Novell Clients (http://www.novell.com/print): Novell iPrint Client v5.4 for Vista, Win 7 & Win 8 (32 & 64-bit), Novell iPrint Client v5.4 for Win XP (32 & 64-bit)
Mobile printing capability	HP ePrint; Apple AirPrint™; Wireless direct printing; Mopria-certified; Google Cloud Print 2.0; Mobile apps
Minimum system requirements	Windows: Windows 10 (32 & 64-bit), Windows 8/8.1 (32 & 64-bit), Windows 7 (32 & 64-bit): 1 GHz processor; 1 GB RAM (32-bit) or 2 GB RAM (64-bit), 400 MB available hard disk space, CD/DVD-ROM or Internet, USB or network port; Windows Vista (32-bit): 1 GHz 32-bit (x86) processor; 1 GB RAM (32-bit), 400 MB available hard disk space, CD/DVD-ROM or Internet, USB or network port; Windows Server 2008 (64-bit) (SP1 or greater), Windows Server 2008 R2 (64-bit), Windows Server 2008 R2 (64-bit) (SP1): 1 GHz 64-bit (x64) processor; 2 GB RAM (64-bit), 400 MB available hard disk space, CD/DVD-ROM or Internet, USB or network port; Windows Server 2003 (32-bit) (SP1 or greater), Windows Server 2003 R2 (32-bit), Windows Server 2008 (32-bit) (SP1 or greater): 1 GHz 32-bit (x86) processor; 1 GB RAM (32-bit), 400 MB available hard disk space, CD/DVD-ROM or Internet, USB or network port Mac: OS X 10.8 Mountain Lion, OS X 10.9 Mavericks, OS X 10.10 Yosemite, Internet, USB, 1 GB available hard disk space, OS compatible hardware (for OS hardware requirements see http://www.apple.com)
Software included	Windows 7: HP Software Installer/Uninstaller, HP PCL 6 Printer Driver, HP Device Experience (DXP), HP Update, HP Device Toolbox, HP Printer Status and Alerts, HP Product Improvement Study, HP Scan App and Driver, Reconfigure your HP Device, Scan to Email Wizard, Scan to Network Folder Wizard, Warranty and Legal Guide, User Guide; Windows 8+: HP Software Installer/Uninstaller, HP PCL 6 Printer Driver, HP Device Experience (DXP), HP Scan App and Driver, Warranty and Legal Guide, User Guide, Reconfigure your HP Device; Windows Vista and associated servers: HP Software Installer/Uninstaller, HP PCL 6 Printer Driver, HP Scan App and Driver, Warranty and Legal Guide, User Guide; Mac OS: Welcome Screen (directs users to http://www.hp.com or OS App Source for LaserJet Software)
Security management	Embedded Web Server: password-protection, secure browsing via SSL/TLS; Network: enable/disable network ports and features, SNMPv1 & SNMPv2 community password change; HP ePrint: HTTPS with certificate validation, HTTP Basic Access Authentication, SASL authentication; LDAP authentication and authorization; Firewall and ACL; SNMPv3, 802.1X, Secure Boot, authentication via WEP, WPA/WPA2 Personal, WPA2 Enterprise; Encryption via AES or TKIP
Printer management	Printer Administrator Resource Kit (Driver Configuration Utility, Driver Deployment Utility, Managed Printing Administrator); HP Web JetAdmin Software; HP Proxy Agent Software; HP Imaging and Printing Security Center; HP Utility (Mac); HP Device Toolbox
Control panel	7.5 cm (3") touchscreen Colour Graphic Display (CGD)
Dimensions and Weight	
Printer dimensions (W x D x H)	Minimum: 420 x 390 x 323 mm Maximum: 430 x 634 x 325 mm
Package dimensions (W x D x H)	497 x 398 x 490 mm
Printer Weight	12.86 kg
Package weight	15.5 kg
Operating environment	Temperature: 15 to 32.5°C; Humidity: 30 to 70% RH
Storage	Temperature: -20 to 40°C; Humidity: 10 to 90% RH
Acoustics²	Acoustic power emissions: 6.8 dB(A) (printing at 38 ppm); Acoustic pressure emissions: 55 dB(A)
Power⁴	Requirements: Input voltage: 220 to 240 VAC (+/- 10%), 50/60 Hz (+/- 2 Hz) Consumption: 583 watts (print/copy), 9.1 watts (ready), 2.7 watts (sleep), 0.7 watts (Auto-On/Auto-Off, via USB connectivity), 0.1 watts (off) Typical Electricity Consumption (TEC): 1.660 kWh/Week (Blue Angel), 1.847 kWh/Week (Energy Star) Power supply type: Built-in power supply
Energy savings feature technology	Instant-on Technology; HP Auto-On/Auto-Off Technology
Certifications	CISPR 22:2008/EN 55022:2010 (Class B); EN 61000-3-2:2006 +A1:2009 +A2:2009, EN 61000-3-3:2008; EN 55024:2010 ENERGY STAR® certified; Blue Angel; EPEAT® Silver
Warranty	One-year warranty, return to HP Authorized Service Provider
What's in the box	HP LaserJet Pro MFP M426dw, Pres-installed HP 26A Black LaserJet Toner Cartridge (3,100 pages), Getting Started Guide; Setup poster; Support flyer; Warranty guide; Printer documentation and software on CD-ROM; Power cord; USB cable; Built-in duplex
Replacement cartridges⁵	HP 26A Black LaserJet Toner Cartridge (3,100 pages) CF226A; HP 26X Black LaserJet Toner Cartridge (9,000 pages) CF226X
Wireless	Yes, built-in Wi-Fi; Authentication via WEP, WPA/WPA2, WPA Enterprise; encryption via AES or TKIP; WPS; Wi-Fi Direct

ВЫПУСК ОФИЦИАЛЬНЫЙ

00029

Footnotes

¹ Based on HP internal testing of top three leading competitors' first page out from sleep mode and duplex print and copy speed completed 8/2015. Subject to device settings. Actual results may vary. For details see <http://www.hp.com/go/ljclaims>.² Based on cartridge yields for HP 80X compared with HP 26X Original HP LaserJet Toner Cartridges. For more information, see <http://www.hp.com/go/learnaboutsupplies>.³ Requires an Internet connection to the printer. Services may require registration. App availability varies by country, language, and agreements. For details, see <http://www.hpconnected.com>.⁴ Requires a wireless access point and an Internet connection to the printer. Services require registration. App availability varies by country, language, and agreements and requires a firmware upgrade. For details, visit <http://www.hpconnected.com>.⁵ Microsoft and PowerPoint are U.S. registered trademarks of the Microsoft group of companies. Feature works with Microsoft Word and PowerPoint 2003 and later. Only Latin language fonts are supported.⁶ HP Web Jetadmin is free and available for download at <http://www.hp.com/go/webjetadmin>.⁷ Based on HP testing using the ENERGY STAR® program's Typical Electricity Consumption (TEC) method or as reported in energystar.gov of top three leading competitors as of 8/2015. Actual results may vary. For details see <http://www.hp.com/go/ljclaims>.⁸ Wireless operations are compatible with 2.4 GHz operations only. App or software and HP ePrint account registration may also be required. Some features require purchase of an optional accessory. Learn more at <http://www.hp.com/go/mobileprinting>.⁹ Mobile device needs to be connected directly to the Wi-Fi network of a wireless direct-capable MFP or printer prior to printing. Depending on mobile device, an app or driver may also be required. Learn more at <http://www.hp.com/go/businessmobileprinting>.¹⁰ Wireless performance is dependent on physical environment and distance from access point, and may be limited during active VPN connections.

Technical specifications disclaimers

¹ Measured using ISO/IEC 17629, excludes first set of test documents. For more information, see <http://www.hp.com/go/printerclaims>. Exact speed varies depending on the input voltage, system configuration, software application, driver, and document complexity.² With 26A cartridge (F6W13A) or 26X cartridge (F6W16A).³ Configuration tested: base model, simplex printing, A4 paper at an average of 38 ppm, active scan at 26 ppm.⁴ Power requirements are based on the country/region where the printer is sold. Do not convert operating voltages. This will damage the printer and void the product warranty.⁵ Declared yield value in accordance with ISO/IEC 19752. Actual yields vary considerably based on images printed and other factors. For more information, visit <http://www.hp.com/go/learnaboutsupplies>.⁶ Measured using ISO/IEC 24734, excludes first set of test documents. For more information see <http://www.hp.com/go/printerclaims>. Exact speed varies depending on the system configuration, software application, driver, and document complexity.⁷ HP recommends that the number of pages per month of imaged output be within the stated range for optimum device performance, based on factors including supplies replacement intervals and device life over an extended warranty period.⁸ First Copy Out and Copy Speed measured using ISO/IEC 29183, excludes first set of test documents. For more information, see <http://www.hp.com/go/printerclaims>. Exact speed varies depending on the system configuration, software application, driver, and document complexity.⁹ Scan speeds measured from ADF. Actual processing speeds may vary depending on scan resolution, network conditions, computer performance, and application software.¹⁰ For scan software (included in the box) support: Windows [JPG, RAW(BMP), PDF, TIFF, PNG, RTF] and Mac [JPG, JPG-2000, TIFF, PNG, PDF, RTF, TXT].¹¹ Not all "Compatible Operating Systems" are supported with inbox software. Full solution software available only for Windows 7 and newer. Legacy Windows Operating Systems (XP, Vista, and equivalent servers) get print drivers only. Windows RT OS for tablets (32 & 64-bit) uses a simplified HP print driver built into the RT OS. UNIX modelscripts are available on HP.com (modelscripts are printer drivers for UNIX operating systems). Linux systems use in-OS HPLIP software. HP Software for Mac is no longer included on the CD, but can be downloaded from <http://www.hp.com> - the Mac driver and Mac Utility are installed for Mac operating systems.¹² HP SureSupply alerts you when your print cartridge is running low and helps you purchase online or locally through HP or a participating retailer. For more information, visit <http://www.hp.com/go/SureSupply>. Only available with Original HP supplies. Internet access required.¹³ With 26A cartridge.¹⁴ Best Typical Electricity Consumption (TEC) rating represents the typical electricity consumed by a product during 1 week, measured in kilowatt-hours (kWh). For Best TEC, the product configuration is Wi-Fi disabled, 1 minute sleep delay, and connected to LAN.



Windows 8



<http://www.hp.com/uk>

The product could differ from the images shown. © Copyright 2015 HP Development Company, L.P. The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Published in EMEA 09/15 4AA6-1256EEE



000030

12007

ОРГАНИЗАЦИЯ



ДЕКЛАРАЦИЯ ЗА СЪОТВЕТВИЕ
в съответствие с ISO / IEC 17050-1 и EN 17050-1

Doc #: SHNGC-1401-02-R1Превод/bg

Наименование на производителя: **HP Inc.**
Производителя Адрес: **HP Information Technology R&D (Shanghai) Co., Ltd. No. 2727 Jinke Road, Shanghai, China 201203**
заявява, че продуктът

Име на продукта и модел:²⁾ **HP LaserJet Pro MFP M426fdw**
HP LaserJet Pro MFP M427fdw

Нормативен номер на модела:¹⁾ **SHNGC-1401-02**

Опции на продукта: **Виж приложение I**

съответства на следните спецификации на продукта и регламенти:

Безопасност:

IEC 60950-1:2005 +A1:2009 +A2:2013
EN 60950-1:2006 +A11:2009 +A1:2010
+A12:2011 +A2:2013
EN 60825-1:2014
IEC 60825-1:2014
EN 62479:2010
IEC 62479:2010
EN 62311:2008
IEC 62311:2007
EN 62471-1:2008
IEC 62471-1:2006

EMC

CISPR 22:2008 Class B
CISPR 32:2012 Class B
EN 55032:2012 Class B
EN 55024:2010
EN 61000-3-2:2014
EN 61000-3-3:2013
FCC CFR 47 Part 15
ICES-003, Issue 5
EN 301 489-1 V2.1.1
EN 301 489-17 V3.1.1
EN 301 489-3 V1.6.1

Радиочестотният спектър

EN 300 328 V2.1.1
EN 300 330-2 V1.6.1

екодизайна

Регламент (ЕС) № 1275/2008
EN 50564:2011
IEC 62301:2011

RoHS

EN 50581:2012

Other

ES 203 201; FCC Rules and Regulations 47 CFR Part 68

Този апарат в съответствие с изискванията на Директивата RED 2014/53/ЕС, Директивата за екодизайна 2009/125/ОТ, Директивата RoHS 2011/65/ЕС и носи маркировката съответно **CE**.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Допълнителна информация:

- 1) Този продукт има нормативен номер на модела, който остава с регулаторните аспекти на дизайн. Номер на Нормативен модел е идентификатора основен продукт в нормативната документация и протоколи от изпитвания, този брой не трябва да се бърка с пазарното име или номера на продукта.
- 2) Този продукт е изпробван в типична HP среда във връзка с хост система HP.
- 3) Този продукт използва аналогов факс аксесоар с нормативен номер на модела: 'BOISB-1102-00, BOISB-1102-01, BOISB-1102-02', което отговаря на техническите нормативни изисквания за страни / региони, където този продукт, ще бъдат продадени.
- 4) Този продукт използва радио модул с нормативен номер на модела: 'SDG0B-1391', което отговаря на техническите и регулаторни изисквания за страните / регионите, където този продукт, ще бъдат продадени.
- 5) Одобрения и стандартите, съответстващи на целевите страни Телеком / региони са приложени към този продукт, в допълнение към тези, изброени по-горе.

Shanghai, China
28-05-2017

проверка на подписа върху оригинала на декларацията,

приложена
Jia-Fu Chen, Manager

000031

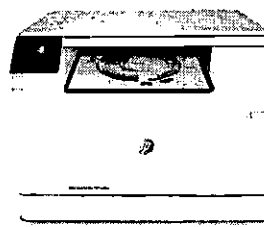
ОРИГИНАЛ



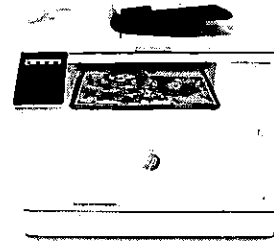
HP Color LaserJet Pro M180-M181 Multifunction Printer series

Get fast colour MFP versatility

Get vibrant colour, wireless versatility, easy mobile printing, and fast print speeds to drive efficiency – for a great value.^{1,2}



HP Color LaserJet Pro MFP M180n



HP Color LaserJet Pro MFP M181fw

Highlights

- Print, copy, scan, fax (M181fw)
- Up to 16 ppm A4 black & colour
- Fast First Page out from Sleep (Auto-Off) mode
- 35-page ADF (M181fw)
- Two-line LCD display with numeric keypad (MFP M181fw)
- HP Auto-On/Auto-Off
- Ethernet/wireless networking (MFP M181fw)
- HP ePrint, AirPrint, GoogleCloudPrint, Wi-FiDirect, Mopria-certified

Increase versatility with a colour MFP

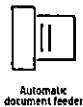
- Get fast print speeds and rapid first page out time (FPOT).
- Breeze through print, scan, copy, and fax tasks, using the automatic document feeder (fax and ADF available on M181fw only).
- Help save energy with HP Auto-On/Auto-Off Technology.³
- Get quick and easy printing directly at the control panel.

More. Performance, and Protection.

- Count on high-quality colour with Original HP Toner cartridges with JetIntelligence.⁴
- Get the Original HP quality you paid for with anti-fraud technology.
- Speed through print jobs right out of the box, using preinstalled Original HP Toner cartridges.

Easy mobile printing and scanning – HP Smart app

- Print and scan from your smartphone, and easily order toner, with the HP Smart app.⁵
- Have confidence in your connection with steady performance from dual band Wi-Fi®.⁶
- Connect your smartphone or tablet directly to your printer – and easily print without accessing a network.⁷
- Simply tap the print button on your smartphone or tablet to print.⁸



Automatic document feeder



Ethernet



Wireless direct



Wireless



Low energy



Auto on/off

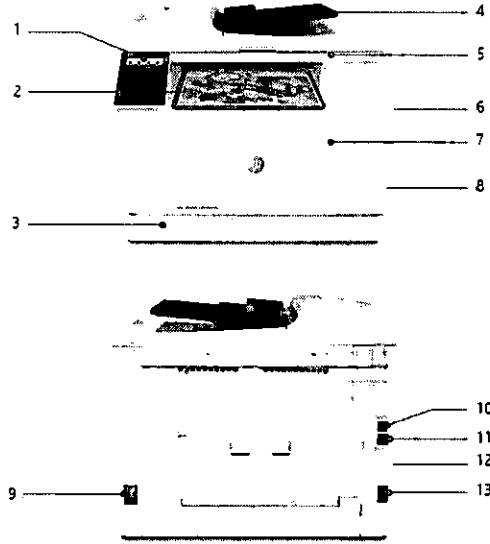


Mobile printing

Product walkaround

HP Color LaserJet Pro MFP M181fw shown

1. Intuitive 2-line LCD control panel with 26 buttons
2. 100-sheet output bin
3. 150-sheet input tray
4. 35-sheet ADF handles up to 21.6 x 35.6 cm paper
5. Flatbed scanner handles up to 21.6 x 29.7 cm paper
6. Wi-Fi Direct®
7. Front door (access to toner cartridges)
8. Easy mobile printing with the HP Smart App
9. Power connection
10. USB 2.0 port
11. Ethernet port
12. Dual Band wireless networking
13. Fax ports



Series at a glance



Model	HP Color LaserJet Pro MFP M180n	HP Color LaserJet Pro MFP M181fw
Product number	T6B70A	T6B71A
Functions	Print, copy, and scan	Print, copy, scan, and fax
Print speed (A4)	Up to 16/16 ppm (black/color)	Up to 16/16 ppm (black/color)
Control panel	LCD display with 6-button keypad	2-line LCD with 26-button keypad
Networking	Fast Ethernet	Fast Ethernet, 802.11 b/g/n
Automatic document feeder (ADF) capacity	Not available	35 sheets
Cartridge yield, black/colour (in pages)	In-box: ~800/700 A: ~1,100/900	In-box: ~800/700 A: ~1,100/900
Mobile printing capability	HP ePrint; Apple AirPrint™; Mopria™-certified	HP ePrint; Apple AirPrint™; Mopria™-certified; Wireless Direct Printing

Accessories, Supplies and Support

Supplies	CF530A HP 205A Black Original LaserJet Toner Cartridge 1,100 pages
	CF531A HP 205A Cyan Original LaserJet Toner Cartridge 900 pages
	CF532A HP 205A Yellow Original LaserJet Toner Cartridge 900 pages
	CF533A HP 205A Magenta Original LaserJet Toner Cartridge 900 pages
	CG964A HP Professional Glossy Laser Paper 120 gsm-250 sht/A4/210 x 297 mm
	CG965A HP Professional Glossy Laser Paper 150 gsm-150 sht/A4/210 x 297 mm
	CHP110 HP Office Paper-500 sht/A4/210 x 297 mm
CHP370 HP Color Laser Paper 90 gsm-500 sht/A4/210 x 297 mm	
Service and support	UH761E HP 3 year Care Pack with Standard Exchange for LaserJet Printers
	UH757E HP 3 year Care Pack with Next Day Exchange for LaserJet Printers
	UH764E HP 3 year Care Pack with Return to Depot Support for LaserJet Printers
	(UH761E - available in All EMEA countries Except ME, Africa, South Africa, Israel, Turkey, UH757E - available in Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, UK, Czech, Greece, Hungary, Poland, Slovakia, UH764E - available in ME, Africa, South Africa, Israel, Turkey)

ВЕРНО С ОРИГИНАЛА

Technical specifications

Model	HP Color LaserJet Pro MFP M180n	HP Color LaserJet Pro MFP M181fw
Product number	T6B70A	T6B71A
Functions	Print, Copy, Scan	Print, Copy, Scan, Fax
Control panel	7 segment iCON LCD with 6 buttons (Up, Down, Colour Copy, Monochrome Copy, Setting, Cancel) and 6 indicator light (Ready, Error, CMYK toner low)	2-line LCD with 26 buttons (0-9 digitals, Star, Pound, Left, Right, OK, Cancel, Back, Main Setup, Wireless, Colour Copy, Monochrome Copy, Copy Amount, Dark/Light, Copy Setup, Start Fax, Redial) and 3 indicator light (Ready, Error, Wireless)
Print		
Print technology	Laser	
Print speed ¹	Black (A4, normal): Up to 16 ppm; Colour (A4, normal): Up to 16 ppm	Black (A4, normal): Up to 16 ppm; Colour (A4, normal): Up to 16 ppm
First page out ²	Black (A4, ready): As fast as 11.8 sec; Colour (A4, ready): As fast as 13.7 sec; Black (A4, sleep): As fast as 12.9 sec; Colour (A4, sleep): As fast as 14.2 sec	Black (A4, ready): As fast as 11.8 sec; Colour (A4, ready): As fast as 13.5 sec; Black (A4, sleep): As fast as 12.9 sec; Colour (A4, sleep): As fast as 14.1 sec
Print resolution	Black (best): Up to 600 x 600 dpi; Colour (best): Up to 600 x 600 dpi; Technology: HP ImageREt 3600	
Monthly duty cycle	Up to 30,000 pages (A4); Recommended monthly page volume: 150 to 1,500	
Printer smart software features	Ethernet networking, HP ePrint, Apple AirPrint™, Mopria-certified, Google Cloud Print, HP Auto-On/Auto-Off technology, HP Smart App, HP JetAdvantage Secure Print	Wireless printing; Ethernet networking; Wireless direct printing; HP ePrint; Apple AirPrint™; Mopria-certified; Google Cloud Print; HP Auto-On/Auto-Off technology; HP Smart App; HP JetAdvantage Secure Print
Standard print languages	HP PCL 6, HP PCL 5c, HP postscript level 3 emulation, PCLm, PDF, URF	
Fonts and typefaces	84 scalable TrueType fonts. Additional Font Solutions available at http://www.hp.com/go/laserjetfonts	
Print area	Print margins: Top: 5 mm, Bottom: 5 mm, Left: 5 mm, Right: 5 mm; Maximum print area: 216 x 356 mm	
Duplex printing	Manual (driver support provided)	
Copy		
Copy speed	Black (A4): Up to 16 ppm; Colour (A4): Up to 16 ppm	
Copier specifications	Number of copies; Reduce/Enlarge; Lighter/Darker; Optimise; Paper Size; Paper Type; Draft Mode; Image Adjustment; Set as New Defaults; Restore Defaults Maximum number of copies: Up to 99 copies; Copy resolution: Up to 600 x 600 dpi; Reduce/Enlarge: 25 to 400%	Number of copies; Reduce/Enlarge; Lighter/Darker; Optimise; Paper; Multi-page copy; Collation; Draft Mode; Image Adjustment; Set as New Defaults; Restore Defaults Maximum number of copies: Up to 99 copies; Copy resolution: Up to 600 x 600 dpi; Reduce/Enlarge: 25 to 400%
Scan		
Scan speed ³	Normal (A4): Up to 14 ppm	Normal (A4): Up to 14 ppm
Scan file format	JPG, RAW (BMP), PNG, TIFF, PDF	
Scanner specifications	Scanner type: Flatbed Scan technology: Contact Image Sensor (CIS); Scan input modes: Copy; HP Scan software; User application via TWAIN or WIA; Twain version: Version 1.9 (Legacy OS); Version 2.1 (Windows 7 or higher); Duplex ADF scanning: No; Optical scan resolution: Up to 1200 dpi	Scanner type: Flatbed, ADF Scan technology: Contact Image Sensor (CIS); Scan input modes: Copy; HP Scan software; User application via TWAIN or WIA; Twain version: Version 1.9 (Legacy OS); Version 2.1 (Windows 7 or higher); Duplex ADF scanning: No; Scan size maximum (flatbed, ADF): 215.9 x 297 mm; Optical scan resolution: Up to 300 dpi (colour and monochrome, ADF); Up to 1200 dpi (colour and monochrome, flatbed)
Scannable area	Minimum media size (flatbed): 50 x 50 mm Maximum media size (flatbed): 215.9 x 297 mm	
Bit depth/ Grey scale levels	24-bits (colour); 8-bits (monochrome) / 256	
Fax		
Fax ⁴	No	Yes, 33.6 kbps
Fax specifications		Fax memory: Up to 1,300 pages Fax resolution: Standard: 203 x 98 dpi; Fine: 203 x 196 dpi; Superfine: 300 x 300 dpi; Quick dialing: Up to 120 numbers; Telecom compliance: Fax Telecom: ES 203 021; Other Telecom approvals as required by individual countries. Wireless Telecom: EU RED 2014/53/EU; EN 301 489-1 V2.1.1 / EN 301 489-17: V3.1.1; EN 300 328: V2.1.1 / EN301 893 V2.0.7; IEC 62311:2007 / EN62311:2008
Fax smart software features		Auto redialing, delayed sending, fax forwarding, TAM interface, distinctive ring detection, cover page wizard (software only), block fax, billing codes, poll receive, fax activity reports, dial prefix setting
Processor speed	800 MHz	
Connectivity		
Standard	Hi-Speed USB 2.0 port; Built-in Fast Ethernet 10/100 Base-TX network port	Hi-Speed USB 2.0 port; Built-in Fast Ethernet 10/100 Base-TX network port, 802.11n 2.4/5GHz wireless; Fax port
Wireless		Built-in 802.11 b/g/n; Authentication via WEP, WPA/WPA2, or 802.11x; Encryption via AES or TKIP; WPS; Wi-Fi Direct
Mobile printing capability	HP ePrint; Apple AirPrint™; Mopria™-certified	HP ePrint; Apple AirPrint™; Mopria™-certified; Wireless Direct Printing
Supported network protocols	TCP/IP, IPv4, IPv6; Print: TCP-IP port 9100 Direct Mode, LPD (raw queue support only), Web Services Printing; Discovery: SLP, Bonjour, Web Services Discovery; IP Config: IPv4 (BootP, DHCP, AutoIP, Manual), IPv6	
Network capabilities	Yes, via built-in 10/100 Base-TX Ethernet	Yes, via built-in 10/100 Base-TX Ethernet; Authentication via 802.11x
Memory	Standard: 256 MB DDR, 128 MB Flash; Maximum : 256 MB DDR, 128 MB Flash	

Model	HP Color LaserJet Pro MFP M180n	HP Color LaserJet Pro MFP M181fw
Product number	T6B70A	T6B71A
Media handling		
Number of paper trays	Standard: 1; Maximum: 1	
Media types	Paper (bond, brochure, coloured, glossy, heavy, letterhead, light, photo, plain, preprinted, prepunched, recycled, rough), transparencies, labels, envelopes, cardstock	
Media size	Custom (metric): 76 x 127 to 216 x 356 mm Supported (metric): Executive (184 x 267 mm); Oficio (216 x 330 mm); 102 x 152 mm; 127 x 203 mm; A4 (210 x 299 mm); A5 (148 x 210 mm); A6 (105x148 mm); B5(JIS) (182 x 257 mm); B6(JIS) (128 x 182 mm); 100 x 150 mm; Oficio (216 x 340 mm); 16K (195 x 270 mm); 16K (184 x 260 mm); 16K (197 x 273 mm); Postcard(JIS) (100 x 147 mm); Double Postcard(JIS) (147 x 200 mm); Envelope #10 (105 x 241 mm); Envelope Monarch (98 x 191 mm); Envelope B5 (176 x 250 mm); Envelope C5 (162 x 229 mm); Envelope DL (110 x 220 mm); A5-R (210 x 148 mm)	Custom (metric): 76 x 127 to 216 x 356 mm Supported (metric): Executive (184 x 267 mm); Oficio (216 x 330 mm); 102 x 152 mm; 127 x 203 mm; A4 (210 x 299 mm); A5 (148 x 210 mm); A6 (105x148 mm); B5(JIS) (182 x 257 mm); B6(JIS) (128 x 182 mm); 100 x 150 mm; Oficio (216 x 340 mm); 16K (195 x 270 mm); 16K (184 x 260 mm); 16K (197 x 273 mm); Postcard(JIS) (100 x 147 mm); Double Postcard(JIS) (147 x 200 mm); Envelope #10 (105 x 241 mm); Envelope Monarch (98 x 191 mm); Envelope B5 (176 x 250 mm); Envelope C5 (162 x 229 mm); Envelope DL (110 x 220 mm); A5-R (210 x 148 mm) ADF: A4; LTR; LGL
Media handling	Standard input: 150-sheet input tray Standard output: 100-sheet output bin	Standard input: 150-sheet input tray Standard output: 100-sheet output bin ADF: Standard, 35 sheets
Media weight	60 to 163 g/m ² (Uncoated/Matte, recommended), however up to 175 g/m ² Postcards and 200 g/m ² HP Matte is allowed in the driver; 60 to 163 g/m ² (Coated/Glossy, recommended), however up to 175 g/m ² Postcards and 220 g/m ² HP Glossy is allowed in the driver.; ADF: 60 to 163 g/m ² (Uncoated/Matte, recommended), however up to 175 g/m ² Postcards and 200 g/m ² HP Matte is allowed in the driver; 60 to 163 g/m ² (Coated/Glossy, recommended), however up to 175 g/m ² Postcards and 220 g/m ² HP Glossy is allowed in the driver.	
Input capacity	Tray 1: 15 mm stack height (75 g/m ² paper) Maximum: Up to 150 sheets (15 mm stack height) in Tray 1	Tray 1: 15 mm stack height (75 g/m ² paper) Maximum: Up to 150 sheets (15 mm stack height) in Tray 1 ADF: Standard, 35 sheets
Output capacity	Standard: Up to 100 sheets (10 mm stack height) Envelopes: 10 mm stack height Transparencies: 10 mm stack height Maximum: Up to 100 sheets (10 mm stack height)	
Compatible operating systems	Windows® 10, 8.1, 8, 7: 32/64-bit, 2 GB available hard disk space, CD-ROM/DVD drive or Internet connection, USB port, Internet Explorer. Windows Vista®: (32-bit only), 2 GB available hard disk space, CD-ROM/DVD drive or Internet connection, USB port, Internet Explorer 8. Windows® XP SP3 or higher (32-bit only): any Intel® Pentium® II, Celeron® or 233 MHz compatible processor, 850 MB available hard disk space, CD-ROM/DVD drive or Internet connection, USB port, Internet Explorer 8. Windows Server support is provided via the command line installer and supports Win Server 2008 R2 and higher. Apple® OS X El Sierra (v10.12), Capitan (v10.11), Yosemite (v10.10), 1.5 GB available hard disk space, Internet required, USB, Linux (For more information, see http://www.hp.com/go/unixmodelscripts)	
Compatible network operating systems	Windows® 10, 8.1, 8, 7: 32/64-bit, 2 GB available hard disk space, CD-ROM/DVD drive or Internet connection, USB port, Internet Explorer. Windows Vista®: (32-bit only), 2 GB available hard disk space, CD-ROM/DVD drive or Internet connection, USB port, Internet Explorer 8. Windows® XP SP3 or higher (32-bit only): any Intel® Pentium® II, Celeron® or 233 MHz compatible processor, 850 MB available hard disk space, CD-ROM/DVD drive or Internet connection, USB port, Internet Explorer 8. Windows Server support is provided via the command line installer and supports Win Server 2008 R2 and higher. Apple® OS X El Sierra (v10.12), Capitan (v10.11), Yosemite (v10.10), 1.5 GB available hard disk space, Internet required, USB, Linux (For more information, see http://www.hp.com/go/unixmodelscripts)	
Minimum system requirements	Windows: Windows® 10, 8.1, 8, 7: 32/64-bit, 2 GB available hard disk space, CD-ROM/DVD drive or Internet connection, USB port, Internet Explorer. Windows Vista®: (32-bit only), 2 GB available hard disk space, CD-ROM/DVD drive or Internet connection, USB port, Internet Explorer 8. Windows® XP SP3 or higher (32-bit only): any Intel® Pentium® II, Celeron® or 233 MHz compatible processor, 850 MB available hard disk space, CD-ROM/DVD drive or Internet connection, USB port, Internet Explorer 8. Windows Server support is provided via the command line installer and supports Win Server 2008 R2 and higher.; Mac: Apple® OS X Sierra (v10.12), El Capitan (v10.11), Yosemite (v10.10), 1.5 GB available hard disk space, Internet required, USB	
Software included	For Windows OS: HP Software Installer, HP Software Uninstaller, HP PCL6 Printer Driver, HP Device Experience (DXP), HP Web Services Assist (HP Connected), Device Setup & Software, HP Printer Assistant, HP Product Improvement Study, online user manuals, HP Scan Driver, HP Scan Application, HP Fax Driver, HP Fax Application; For Mac OS: Welcome Screen, directs users to http://www.hp.com or OS App Source for LaserJet Software	
Security management	Embedded Web Server: password-protection, secure browsing via SSL/TLS; Network: enable/disable network ports and features, SNMPv1 community password change; HP ePrint: HTTPS with certificate validation, HTTP Basic Access Authentication; Firewall and ACL; SNMPv3	
Printer management	HP Printer Assistant (UDC); HP Utility (Mac); HP Device Toolbox; HP JetAdvantage Security Manager	
Dimensions and Weight		
Printer dimensions (W x D x H)	Minimum: 420 x 380 x 292.6 mm; Maximum: 420 x 435 x 295 mm	Minimum: 420 x 380 x 341.2 mm; Maximum: 435 x 435 x 343 mm
Package dimensions (W x D x H)	497 x 379 x 466 mm	
Printer weight	15.7 kg	16.3 kg
Package weight	18.4 kg	19.5 kg
Operating environment	Temperature: 15 to 30°C; Humidity: 30 to 70% RH	
Storage	Temperature: -20 to 40°C; Humidity: 0 to 95% RH	
Acoustics	Acoustic power emissions: 6.2 B(A) (Monochrome); 6.3 B(A) (Colour) Acoustic pressure emissions: 48 dB(A)(Monochrome); 49 dB(A) (Colour)	
Power ⁵	Requirements: Input voltage: 220 to 240 VAC (+/- 10%), 50 Hz (+/- 3 Hz), 60 Hz (+/- 3 Hz) Consumption: 337 watts (Active Printing), 8.0 watts (Ready), 1.0 watts (Sleep), 0.1 watts (Manual-Off), 0.1 watts (Auto-Off/Manual-On), 1.0 watts (Auto-Off/Wake on LAN); Typical Electricity Consumption (TEC): Energy Star: 0.493 kWh/Week; Blue Angel: 0.531 kWh/Week; Power supply type: Internal (Built-in) power supply	Requirements: Input voltage: 220 to 240 VAC (+/- 10%), 50 Hz (+/- 3 Hz), 60 Hz (+/- 3 Hz) Consumption: 337 watts (Active Printing), 8.0 watts (Ready), 1.0 watts (Sleep), 0.1 watts (Manual-Off), 0.1 watts (Auto-Off/Manual-On), 1.0 watts (Auto-Off/Wake on LAN); Typical Electricity Consumption (TEC): Energy Star: 0.493 kWh/Week; Blue Angel: 0.523 kWh/Week; Power supply type: Internal (Built-in) power supply
Energy savings feature technology	HP Auto-On/Auto-Off Technology; Instant-on Technology	
Certifications	CISPR 22:2008, CISPR 32:2012/EN 55032:2012 - Class B; EN 61000-3-2:2014; EN 61000-3-3:2013; EN 55024:2010 ENERGY STAR®; EPEAT® Silver; Blue Angel RAL-UZ 205	CISPR 22:2008, CISPR 32:2012/EN 55032:2012 - Class B; EN 61000-3-2:2014; EN 61000-3-3:2013; EN 55024:2010 CECP
What's in the box ⁷	HP Colour LaserJet Pro MFP M180n; Introductory HP LaserJet Colour cartridges (700 pages colour composite (C/Y/M) and 800 page black); Installation guide; Printer documentation and software on CD-ROM; Power cord	HP Colour LaserJet Pro MFP M181fw; Introductory HP LaserJet Colour cartridges (700 pages colour composite (C/Y/M) and 800 pages black); Installation guide; Printer documentation and software on CD-ROM; Power cord; USB cable
Warranty	One-year unit exchange warranty. Warranty and support options vary by product, country and local legal requirements. Go to http://www.hp.com/support to learn about HP award winning service and support options in your region.	

000035

Footnotes

- ¹ For details on local printing requirements see <http://www.hp.com/go/mobileprinting>.
- ² Wireless operations are compatible with 2.4 GHz and 5.0 GHz operations only. Learn more at <http://www.hp.com/go/mobileprinting>. Wi-Fi is a registered trademark of Wi-Fi Alliance®.
- ³ HP Auto-On/Auto-Off Technology capabilities subject to printer and settings; may require a firmware upgrade.
- ⁴ Based on cartridge yields for HP 201A compared with HP 204A Original HP LaserJet Toner Cartridges. For more information, see <http://www.hp.com/go/learnaboutsupplies>.
- ⁵ Requires the HP Smart app download. Features controlled may vary by mobile device operating system. Full list of supported operating systems and details at <http://support.hp.com/us-en/document/c03561640>. For details on local printing requirements see <http://www.hp.com/go/mobileprinting>.
- ⁶ Mobile device needs to be connected to Wi-Fi Direct® signal of a Wi-Fi Direct-supported AIO or printer prior to printing. Details at <http://www.hp.com/go/mobileprinting>. Wi-Fi Direct® is a registered trademark of Wi-Fi Alliance®.

Technical specifications disclaimers

- ¹ Measured using ISO/IEC 24734, excludes first set of test documents. For more information see <http://www.hp.com/go/printerclaims>. Exact speed varies depending on the system configuration, software application, driver, and document complexity.
- ² Measured using ISO/IEC 17629. For more information see <http://www.hp.com/go/printerclaims>. Exact speed varies depending on the system configuration, software application, driver, and document complexity.
- ³ Scan speeds measured from ADF. Actual processing speeds may vary depending on scan resolution, network conditions, computer performance, and application software.
- ⁴ Based on standard ITU-T test image #1 at standard resolution. More complicated pages or higher resolution will take longer and use more memory.
- ⁵ Power requirements are based on the country/region where the printer is sold. Do not convert operating voltages. This will damage the printer and void the product warranty. Power consumption values typically based on measurement of 115V device.
- ⁶ Power requirements are based on the country/region where the printer is sold. Do not convert operating voltages. This will damage the printer and void the product warranty. Energy Star value typically based on measurement of 115V device.
- ⁷ Introductory cartridges included, 800 pages black and 700 pages colour composite (C/M/Y).



<http://www.hp.com/uk>

The product could differ from the images shown. © Copyright 2017 HP Development Company, L.P. The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Published in EMEA 4AA7-1144EEE, December 2017



HP logo



ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ
в съответствие с ISO / IEC 17050-1 и EN 17050-1

DoC #: SHNGC-1603-01-R2Превод/bg

Наименование на производителя: **HP Inc.**
Производителя Адрес: **HP Information Technology R&D (Shanghai) Co., Ltd. No. 2727 Jinke Road, Shanghai, China 201203**
заявява, че продуктът

Име на продукта и модел:²⁾ **HP Color LaserJet Pro MFP M181 fw**
Нормативен номер на модела:¹⁾ **SHNGC-1603-01**
Опции на продукта: **Виж приложение I**

съответства на следните спецификации на продукта и регламенти:

Безопасност:

IEC 60950-1:2005 +A1:2009 +A2:2013
EN 60950-1:2006 +A11:2009 +A1:2010
+A12:2011 +A2:2013
EN 60825-1:2014
IEC 60825-1:2014
EN 62479:2010
IEC 62479:2010
EN 62311:2008
IEC 62311:2007
EN 62471-1:2008
IEC 62471-1:2006

EMC

CISPR 22:2008 Class B
CISPR 32:2012 Class B
EN 55032:2012 Class B
EN 55024:2010
EN 61000-3-2:2014
EN 61000-3-3:2013
FCC CFR 47 Part 15
ICES-003, Issue 6
EN 301 489-1 V2.1.1
EN 301 489-17 V3.1.1

Радиочестотният спектър

EN 300 328 V2.1.1
EN 301 893 V1.8.1
EN 301 893 V2.1.0

екодизайна

Регламент (EC) № 1275/2008
EN 50564:2011
IEC 62301:2011

RoHS

EN 50581:2012

Other

ES 203 201; FCC Rules and Regulations 47 CFR Part 68

Този апарат в съответствие с изискванията на Директивата RED 2014/53/EC, Директивата за екодизайна 2009/125/OT, Директивата RoHS 2011/65/EC и носи маркировката съответно **CE**.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Допълнителна информация:

- 1) Този продукт има нормативен номер на модела, който остава с регулаторните аспекти на дизайн. Номер на Нормативен модел е идентификатора основен продукт в нормативната документация и протоколи от изпитвания, този брой не трябва да се бърка с пазарното име или номера на продукта.
- 2) Нотифицираният орган **National Technical Systems-Silicon Valley** с номер **2155** е извършена оценка на съответствието (съгласно приложение III, поради липсващи хармонизирани стандарти) и издаде сертификата за ЕС изследване на типа: A104712
- 3) Този продукт е изпробван в типична HP среда във връзка с хост система HP.
- 4) Този продукт използва аналогов факс аксесоар с нормативен номер на модела: 'BOISB-1500-00, BOISB-1500-01, BOISB-1500-02', което отговаря на техническите нормативни изисквания за страни / региони, където този продукт, ще бъдат продадени.
- 5) Този продукт използва радио модул с нормативен номер на модела: 'SDG0B-1505', което отговаря на техническите и регулаторни изисквания за страните / регионите, където този продукт, ще бъдат продадени.
- 6) Одобрения и стандартите, съответстващи на целевите страни Телеком / региони са приложени към този продукт, в допълнение към тези, изброени по-горе.

ОС ОРИГИНАЛА

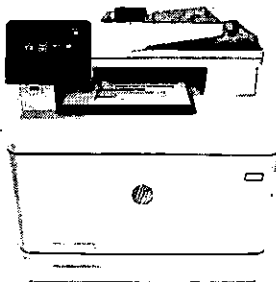
000037

HP Color LaserJet Pro MFP M477 series

Stunning speed. Solid security.



Extraordinary print, scan, copy, and fax performance plus robust, comprehensive security for how you work. This colour MFP finishes key tasks faster and guards against threats. Original HP Toner cartridges with JetIntelligence produce more pages.²



Highlights

- 27 ppm black/ 27 ppm color
- First page out in colour from sleep/Auto-Off in 9.9 sec
- Leading duplex print speed of 24 ipm
- 50-sheet ADF with single pass, two-sided scanning; scan speed up to 47 ipm
- HP Auto-On/Auto-Off for low energy consumption
- Large 10.9 cm colour touchscreen with gesturing and apps
- Scan-to-email, -folder, -cloud, -USB
- LDAP, Private Printing, PIN Printing
- HP ePrint, AirPrint, Google Cloud Print, Wi-Fi Direct/NFC, Mopria-certified, Mobile Apps



Color touchscreen



2-sided printing



High Yield Toner Cartridge



Low energy



HP Mobile Printing



Scan to email



Speed through tasks. Help keep data protected.

- Scan digital files directly to email, USB, network folders, and the cloud with preloaded business apps.³
- Grab pages and go – without waiting around. This MFP wakes up and prints fast.¹
- Breeze through multipage documents with two-sided printing that's the fastest in its HP class of devices.¹
- Control access to print jobs and help keep printing safe with security features like LDAP authentication, HP JetAdvantage Private Print or optional Job Storage with PIN printing.

Easy management. Efficient printing.

- Easily manage print jobs directly at the MFP – just tap and swipe the 10.9 cm touchscreen.⁴
- Easily print Microsoft® Word and PowerPoint® documents – now directly from your USB drive.⁵
- Easily manage devices and settings using HP Web Jetadmin with a suite of essential management features.⁶
- Print using less energy – enhanced by Original HP Toner cartridges with JetIntelligence.⁷

More. Pages, Performance, and Protection.

- Get the most prints for your money – with Original HP High Yield Colour Toner cartridges with JetIntelligence.²
- Count on consistent professional quality at high speeds with HP ColorSphere 3 toner.
- Help ensure you're getting the authentic HP quality you paid for with innovative anti-fraud technology.
- Print right away with preinstalled toner cartridges. Replace them with optional high-yield cartridges.

Stay connected with easy mobile printing options

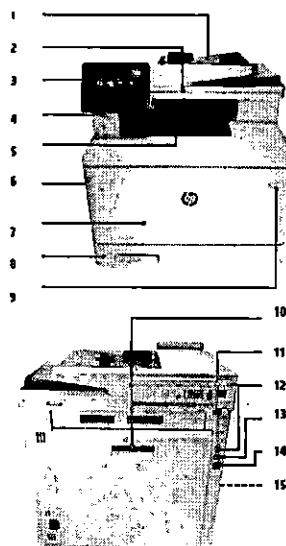
- Easily print from a variety of smartphones and tablets – generally no setup or apps required.⁸
- Count on wireless direct printing in the office – from mobile devices – without accessing the company network.⁹
- Help workers print with just a touch of their NFC-enabled mobile device to the printer – no network needed.¹⁰
- Easily access, print, and share resources with Ethernet and wireless networking.¹¹

ОРИГИНАЛ

Product walkaround

HP Color LaserJet Pro MFP M477 series shown

1. 50-sheet automatic document feeder (ADF)
2. Flatbed scanner: up to 216 x 356 mm paper
3. Intuitive 10.9 cm colour touchscreen (tilts up)
4. Easy-access USB port
5. 150-sheet output bin
6. Front door release button (access to HP JetIntelligence Toner cartridges)
7. 50-sheet multipurpose tray 1
8. 250-sheet input tray 2
9. Power on/off button
10. Rear door (provides access to print path)
11. Telephone "line out" port
12. Fax "line in" port
13. USB interface port for job storage and PIN printing
14. Hi-Speed USB 2.0 printing port
15. Ethernet network port



Series at a glance



Model	HP Color LaserJet Pro MFP M477fnw	HP Color LaserJet Pro MFP M477fdn	HP Color LaserJet Pro MFP M477fdw
Product number	CF377A	CF378A	CF379A
Functions	Print, copy, scan, fax, and email	Print, copy, scan, fax, and email	Print, copy, scan, fax, and email
Print speed (black and color)	27 ppm	27 ppm; 24 ipm duplex	27 ppm; 24 ipm duplex
Automatic duplex printing	Not available	Yes	Yes
Single-pass two-sided scanning 50-sheet ADF	Yes	Yes	Yes
Standard paper input	50-sheet multipurpose tray 1; 250-sheet tray 2	50-sheet multipurpose tray 1; 250-sheet tray 2	50-sheet multipurpose tray 1; 250-sheet tray 2
Optional paper input	550-sheet tray 3	550-sheet tray 3	550-sheet tray 3
Networking	Built-in 10/100/1000 Ethernet, wireless 802.11b/g/n	Built-in 10/100/1000 Ethernet	Built-in 10/100/1000 Ethernet, wireless 802.11b/g/n
Mobile printing capability	Wireless direct printing, HP ePrint, Apple AirPrint, Mopria-certified, Google Cloud Print™ 2.0	HP ePrint, Apple AirPrint, Mopria-certified, Google Cloud Print 2.0	Wireless direct printing, NFC touch-to-print, HP ePrint, Apple AirPrint, Mopria-certified, Google Cloud Print 2.0

Accessories, Supplies and Support

Supplies	CF410A HP 410A Black Original LaserJet Toner Cartridge 2,300 pages
	CF410X HP 410X High Yield Black Original LaserJet Toner Cartridge 6,500 pages
	CF411A HP 410A Cyan Original LaserJet Toner Cartridge 2,300 pages
	CF411X HP 410X High Yield Cyan Original LaserJet Toner Cartridge 5,000 pages
	CF412A HP 410A Yellow Original LaserJet Toner Cartridge 2,300 pages
	CF412X HP 410X High Yield Yellow Original LaserJet Toner Cartridge 5,000 pages
	CF413A HP 410A Magenta Original LaserJet Toner Cartridge 2,300 pages
	CF413X HP 410X High Yield Magenta Original LaserJet Toner Cartridge 5,000 pages
Accessories	CF404A HP LaserJet 550-sheet Feeder Tray
Service and support	UBTPOE HP 3 year Next business day Color LaserJet M477 MFP Hardware Support
	UBTP7PE HP 1 year Post Warranty Next business day Color LaserJet M477 MFP Hardware Support

Technical specifications

Model	HP Color LaserJet Pro MFP M477fnw	HP Color LaserJet Pro MFP M477fdn	HP Color LaserJet Pro MFP M477fdw
Product number	CF377A	CF378A	CF379A
Functions	Print, copy, scan, fax, email		
Control panel	10.9 cm (4.3") intuitive colour touchscreen; 3 buttons (Home, Help, Back)		
Print			
Print technology	Laser		
Print speed¹	Black (A4, normal): Up to 27 ppm; Colour (A4, normal): Up to 27 ppm; Black (A4, duplex): Up to 49 ppm; Black (A4, landscape, A5): Up to 7 ppm; Black (Portrait, A5): Up to 49 ppm; Colour (Landscape, A5): Up to 7 ppm; Colour (Portrait, A5): Up to 7 ppm	Black (A4, normal): Up to 27 ppm; Colour (A4, normal): Up to 27 ppm; Black (A4, duplex): Up to 24 ipm; Black (A4, landscape, A5): Up to 7 ppm; Black (Portrait, A5): Up to 49 ppm; Colour (Landscape, A5): Up to 7 ppm; Colour (Portrait, A5): Up to 7 ppm	Black (A4, normal): Up to 27 ppm; Colour (A4, normal): Up to 27 ppm; Black (A4, duplex): Up to 24 ipm; Black (A4, landscape, A5): Up to 7 ppm; Black (Portrait, A5): Up to 49 ppm; Colour (Landscape, A5): Up to 7 ppm; Colour (Portrait, A5): Up to 7 ppm
First page out²	Black (A4, ready): As fast as 9 sec; Colour (A4, ready): As fast as 9.9 sec; Black (A4, sleep): As fast as 11.4 sec; Colour (A4, sleep): As fast as 11.5 sec	Black (A4, ready): As fast as 9 sec; Colour (A4, ready): As fast as 9.9 sec; Black (A4, sleep): As fast as 11.4 sec; Colour (A4, sleep): As fast as 11.5 sec	Black (A4, ready): As fast as 9 sec; Colour (A4, ready): As fast as 9.9 sec; Black (A4, sleep): As fast as 11.4 sec; Colour (A4, sleep): As fast as 11.5 sec
Print resolution	Black (best): 600 x 600 dpi, up to 38400 x 600 enhanced dpi; Colour (best): 600 x 600 dpi, up to 38400 x 600 enhanced dpi; Technology: HP ImageREt 3600, PANTONE® calibrated		
Monthly duty cycle³	Up to 50,000 pages (A4); Recommended monthly page volume: 750 to 4,000		
Printer smart software features⁴	N-up printing; Collation; HP ePrint; Apple AirPrint™; Mopria certified; Google Cloud Print; Wireless Direct Printing; HP Auto-On/Auto-Off Technology; Intuitive 10.9 cm (4.3") touchscreen control panel; Print from Cloud using business apps on the control panel; HP JetAdvantage Private Print; Optional Job Storage with PIN printing (requires a purchase of separate USB flash drive); Print from USB	Auto-duplex printing; N-up printing; Collation; HP ePrint; Apple AirPrint™; Mopria certified; Google Cloud Print; HP Auto-On/Auto-Off Technology; Intuitive 10.9 cm (4.3") touchscreen control panel; Print from Cloud using business apps on the control panel; HP JetAdvantage Private Print; Optional Job Storage with PIN printing (requires a purchase of separate USB flash drive); Print from USB	Auto-duplex printing; N-up printing; Collation; HP ePrint; Apple AirPrint™; Mopria certified; Google Cloud Print; Wireless Direct Printing; HP Auto-On/Auto-Off Technology; Intuitive 10.9 cm (4.3") touchscreen control panel; Print from Cloud using business apps on the control panel; HP JetAdvantage Private Print; Optional Job Storage with PIN printing (requires a purchase of separate USB flash drive); Print from USB
Standard print languages	HP PCL 6, HP PCL 5c, HP Postscript Level 3 emulation, PCLm, PDF, URF, native Office		
Fonts and typefaces	84 scalable TrueType fonts		
Print area	Print margins: Top: 4.23 mm, Bottom: 4.23 mm, Left: 4.23 mm, Right: 4.23 mm; Maximum print area: 211.8 x 351.8 mm		
Duplex printing	Manual (driver support provided)	Automatic (standard)	Automatic (standard)
Copy			
Copy speed⁵	Black (A4): Up to 27 cpm; Colour (A4): Up to 27 cpm		
Copier specifications	Number of copies; Reduce/Enlarge; Lighter/Darker; Optimise; Paper; Multi-page copy; Collation; Tray Select; Two-sided; Draft Mode; Image Adjustment; Set as New Defaults; Restore Defaults; Maximum number of copies: Up to 99 copies; Copy resolution: 600 x 600 dpi; Reduce/Enlarge: 25 to 400%		

Model	HP Color LaserJet Pro MFP M477fnw	HP Color LaserJet Pro MFP M477fdn	HP Color LaserJet Pro MFP M477fdw
Product number	CF377A	CF378A	CF379A
Scan			
Scan speed ¹	Normal (A4): Up to 26 ppm/47 ipm (black & white), up to 21 ppm/30 ipm (colour); Duplex (A4): Up to 47 ipm (black & white), up to 30 ipm (colour)		
Scanner specifications	Scanner type: Flatbed, ADF; Scan technology: Contact Image Sensor (CIS); Scan input modes: Front-panel scan, copy, email, fax or file buttons; HP Scan software and user application via TWAIN or WIA; Twain version: 1.9; Duplex ADF scanning: Yes; Scan size maximum (flatbed, ADF): 216 x 297 mm; Optical scan resolution: Up to 1200 x 1200 dpi		
Scanner Advanced Features	Scan-to-email; Scan-to-cloud; Scan-to-USB; Scan-to-network folder; LDAP email lookup; Single-pass 2-sided scanning ADF		
Scannable area	Minimum media size (flatbed): 48.8 x 48.8 mm; Maximum media size (flatbed): 216 x 297 mm; Minimum media size (ADF): 102 x 152 mm; Maximum media size (ADF): 216 x 356 mm		
Bit depth/ Grey scale levels	30-bit / 256		
Digital sending	Standard: Scan to email; Scan to folder; Scan to USB drive		
Recommended monthly scan volume ²	750 to 4,000		
Fax			
Fax ³	Yes, 33.6 kbps		
Fax specifications	Fax resolution: Standard: 203 x 96 dpi; Fine: 203 x 192 dpi; Superfine: 300 x 300 dpi; Quick dialing: Up to 120 numbers; Telecom compliance: ES 203 201; EN 300 328 v1.8.1; EN 301 489-1 v1.9.2; EN 301 489-1 v2.2.1; EN 62311:2008; IEC 62311:2007; R&TTE Directive 1999/5/EC		
Fax smart software features	Permanent fax memory backup; Auto fax reduction; Auto redialing; Delayed sending; Fax forwarding; TAM interface; Polling; Junk barrier; Distinctive ring detection; Cover page wizard; Block fax; Billing codes; Save and load; Poll receive; Fax activity reports; Dial prefix setting; Print fax log		
Processor speed	1200 MHz		
Connectivity			
Standard	Hi-Speed USB 2.0 port; Built-in Gigabit Ethernet 10/100/1000 Base-TX network port; Easy-access USB		
Wireless	Yes, built-in Wi-Fi; Authentication via WEP, WPA/WPA2, WPA Enterprise; Encryption via AES or TKIP; WPS; Wireless direct printing	No	Yes, built-in Wi-Fi; Authentication via WEP, WPA/WPA2, WPA Enterprise; Encryption via AES or TKIP; WPS; Wireless direct printing; NFC touch-to-Print
Mobile printing capability	HP ePrint; Apple AirPrint™; Mopria™-certified; Wireless Direct Printing; Google Cloud Print 2.0; Mobile Apps	HP ePrint; Apple AirPrint™; Mopria™-certified; Google Cloud Print 2.0; Mobile Apps	HP ePrint; Apple AirPrint™; Mopria™-certified; NFC Touch-to-print; Wireless Direct Printing; Google Cloud Print 2.0; Mobile Apps
Supported network protocols	TCP/IP, IPv4, IPv6; Print: TCP-IP port 9100 Direct Mode, LPD (raw queue support only), Web Services Printing; Discovery: SLP, Bonjour, Web Services Discovery; IP Config: IPv4 (BootP, DHCP, AutoIP, Manual), IPv6 (Stateless Link-Local and via Router, Stateful via DHCPv6); Management: SNMPv1, SNMPv2, SNMPv3, HTTP		
Network capabilities	Yes, via built-in 10/100/1000Base-TX Ethernet, Gigabit; Auto-crossover Ethernet; Authentication via 802.1X		
Memory	Standard: 256 MB NAND Flash, 256 MB DRAM; Maximum: 256 MB NAND Flash, 256 MB DRAM		
Media handling			
Number of paper trays	Standard: 2; Maximum: 3		
Media types	Paper (bond, brochure, coloured, glossy, letterhead, photo, plain, preprinted, prepunched, recycled, rough), postcards, labels, envelopes		
Media size	Custom (metric): Tray 1: 76 x 127 to 216 x 356 mm; Tray 2, optional Tray 3: 100 x 148 to 216 x 356 mm Supported (metric): Tray 1, Tray 2: A4, A5, A6, B5 (JIS), B6 (JIS), 10 x 15 cm, postcards (JIS single, JIS double), envelopes (DL, C5, B5); Optional Tray 3: A4, A5, A6, B5 (JIS), B6 (JIS), 10 x 15 cm, postcards (JIS single, JIS double); Automatic duplexer: A4, B5 ADF: A4; Custom sizes: 102 x 152 mm to 216 x 356 mm		
Media handling	Standard input: 50-sheet multipurpose tray, 250-sheet input tray, 50-sheet Automatic Document Feeder (ADF) Standard output: 150-sheet output bin Optional input: Optional 550-sheet tray ADF: Standard, 50 sheets		
Media weight	Tray 1: 60 to 176 g/m ² (up to 200 g/m ² with postcards and HP Color Laser Glossy Photo Papers); Tray 2: 60 to 163 g/m ² (up to 176 g/m ² with postcards, up to 200 g/m ² HP Color Laser Glossy Photo Papers); Optional Tray 3: 60 to 163 g/m ² (up to 176 g/m ² with postcards, up to 150 g/m ² glossy media); Automatic duplexer: 60 to 163 g/m ² ; ADF: Tray 1: 60 to 176 g/m ² (up to 200 g/m ² with postcards and HP Color Laser Glossy Photo Papers); Tray 2: 60 to 163 g/m ² (up to 176 g/m ² with postcards, up to 200 g/m ² HP Color Laser Glossy Photo Papers); Optional Tray 3: 60 to 163 g/m ² (up to 176 g/m ² with postcards, up to 150 g/m ² glossy media); Automatic duplexer: 60 to 163 g/m ²		
Input capacity	Tray 1: Sheets: 50; Envelopes: 5 Tray 2: Sheets: 250; Envelopes: 10 Tray 3: Sheets: 550 Maximum: Up to 850 sheets (with Optional 550-sheet tray) ADF: Standard, 50 sheets		
Output capacity	Standard: Up to 150 sheets Envelopes: Up to 20 envelopes Maximum: Up to 150 sheets		

Model	HP Color LaserJet Pro MFP M477faw	HP Color LaserJet Pro MFP M477fdn	HP Color LaserJet Pro MFP M477fdw
Product number	CF377A	CF378A	CF379A
Compatible operating systems	Windows OS compatible with In-Box Driver: Windows 10 all 32 & 64-bit editions (excluding RT OS for tablets), Windows 8/8.1 all 32 & 64-bit editions (excluding RT OS for tablets), Windows 7 all 32 & 64-bit editions, Windows Vista all 32-bit editions (Home Basic, Premium, Professional, etc.); Windows OS compatible with Universal Print Driver (from http://www.hp.com): Windows 10 all 32 & 64-bit editions (excluding RT OS for tablets), Windows 8/8.1 all 32 & 64-bit editions (excluding RT OS for tablets), Windows 7 all 32 & 64-bit editions, Windows Vista all 32 & 64-bit editions (Home Basic, Premium Professional, etc.); Mac OS (HP Print Drivers available from HP.com and Apple Store): OS X 10.7 Lion, OS X 10.8 Mountain Lion, OS X 10.9 Mavericks, OS X 10.10 Yosemite; Mobile OS (In-OS drivers): iOS, Android, Windows 8/8.1/10 RT; Linux OS (In-OS HPLIP): SUSE Linux (12.2, 12.3, 13.1), Fedora (17, 18, 19, 20), Linux Mint (13, 14, 15, 16, 17), Boss (3.0, 5.0), Ubuntu (10.04, 11.10, 12.04, 12.10, 13.04, 13.10, 14.04, 14.10), Debian (6.0.x, 7.x); Other OS: UNIX		
Compatible network operating systems	Windows OS compatible with In-Box Driver: Windows Server 2008 R2 64-bit (SP1) Standard/Enterprise (+ Cluster & Terminal Services), Windows Server 2008 32 & 64-bit (SP2) Standard/Enterprise (+ Cluster & Terminal Services), Windows Server 2003/2003 R2 32-bit (SP1/SP2) Standard/Enterprise (+ Cluster & Terminal Services); Windows OS compatible with Universal Print Driver (UPD) or product-specific drivers from http://www.hp.com : Windows Server 2012/2012 R2 64-bit Standard/Foundation/Essentials/Datacenter (+ Cluster & Terminal Services), Windows Server 2008/2008 R2 32 & 64-bit (SP1/SP2) Standard/Enterprise/Datacenter (+ Cluster & Terminal Services), Windows Server 2003/2003 R2 32 & 64-bit (SP1/SP2) Standard/Enterprise/Datacenter (+ Cluster & Terminal Services); Citrix (on Windows Server 2003/2003 R2): Citrix MetaFrame Presentation Server, 3.0, Citrix MetaFrame XP Presentation Server (Feature Release 1, 2 and 3); Citrix Presentation Server 4.0/4.5, Citrix XenApp 5.0 (plus Feature Pack 2 & 3); Citrix (on Windows Server 2008/2008 R2): Citrix XenApp 5.0 (plus Feature Pack 2 & 3), Citrix XenApp 6.0/6.5/7.5, Citrix XenDesktop 5.6/7.0/7.5; Citrix (on Windows Server 2012/2012 R2): Citrix XenApp 7.5, Citrix XenDesktop 7.0/7.5; Novell Servers (www.novell.com/iprint): Novell iPrint Appliance v1.0, Novell Open Enterprise Server 11/SP1, Novell Open Enterprise Server 2 for Linux; NetWare 6.5/SP8; Novell Clients (www.novell.com/iprint): Windows 8 (32 & 64-bit) recommend v5.86+, Windows 8.1 recommend v5.94+, Windows 7 (32 & 64-bit) recommend v5.82+, Windows Vista (32 & 64-bit) recommend v5.82+		
Minimum system requirements	Windows: Windows Vista (32 & 64-bit) or newer, 233 MHz processor or higher, 512 MB RAM, 400 MB available hard disk space, CD-ROM or Internet, USB or network connection; Mac: OS X 10.7 or newer, Internet, USB or network connection, 1 GB available hard disk space		
Software included	For Windows OS: HP Software Installer/Uninstaller, HP PCL 6 Printer Driver, HP Device Experience (DXP), HP Send Fax, HP Device Toolbox, HP Fax Print Driver, HP Fax Setup Wizard, HP Product Improvement Study, HP Scan App and Drivers, Scan to Email Setup Wizard, Scan to Folder Setup Wizard, HP Update, Product Registration Assist, HP Web Services Assist (HP Connected), Online user manuals (software varies by OS: WinXP/Vista: driver only, Win 7: full solution, Win 8 and newer: drivers only with more apps available in MS App store); For Mac OS: Welcome Screen (directs users to HP.com or OS App Source for LaserJet software)		
Security management	Embedded Web Server: password-protection, secure browsing via SSL/TLS; Network: enable/disable network ports and features, SNMPv1 & SNMPv2 community password change; HP ePrint: HTTPS with certificate validation, HTTP Basic Access Authentication, SASL authentication; LDAP authentication and authorization; Firewall and ACL; SNMPv3, 802.1X, Secure Boot, authentication via WEP, WPA/WPA2 Personal, WPA2 Enterprise; Encryption via AES or TKIP		
Printer management	Printer Administrator Resource Kit (Driver Configuration Utility, Driver Deployment Utility, Managed Printing Administrator); HP Web JetAdmin Software; HP Proxy Agent Software; HP Imaging and Printing Security Center; HP Utility (Mac); HP Device Toolbox (Win 7)		
Dimensions and Weight			
Printer dimensions (W x D x H)	Minimum: 416 x 461 x 400 mm; Maximum: 426 x 641 x 414 mm	Minimum: 416 x 472 x 400 mm; Maximum: 426 x 652 x 414 mm	Minimum: 416 x 472 x 400 mm; Maximum: 426 x 652 x 414 mm
Package dimensions (W x D x H)	597 x 497 x 490 mm		
Printer weight ⁹	21.8 kg	23.2 kg	23.2 kg
Package weight	26.2 kg	26.7 kg	26.8 kg
Operating environment	Temperature: 15 to 30°C; Humidity: 20 to 70% RH (non-condensing)		
Storage	Temperature: -20 to 40°C; Humidity: 10 to 95% RH (non-condensing)		
Acoustics ¹⁰	Acoustic power emissions: 6.3 B(A); Acoustic pressure emissions: 49 dB(A)		
Power ¹¹	Requirements: Input voltage: 220 to 240 VAC (+/- 10%), 50/60 Hz (+/- 3 Hz); Consumption¹²: 570 watts (printing), 18.6 watts (ready), 2.5 watts (sleep), 0.6 watts (Auto-On/Auto-Off, via USB connectivity), 0.05 watts (off); Power supply type: Built-in power supply		
Energy savings feature technology	HP Auto-On/Auto-Off Technology; Instant-on Technology		
Certifications	CISPR 22:2008 (Class B); EN 55022:2010 (Class B); EN 61000-3-2:2006 +A1:2009 +A2:2009; EN 61000-3-3:2008; EN 55024:2010; Other EMC approvals as required by individual countries		
What's in the box ¹³	HP Color LaserJet Pro MFP M477faw; 4 preinstalled HP LaserJet Toner cartridges (Black: 2,300 pages, Introductory Cyan, Magenta, Yellow: 1,200 pages each cartridge); In-box documentation (Getting Started Guide, Install Poster); Software drivers and documentation on CD-ROM; Power cord; USB cable	HP Color LaserJet Pro MFP M477fdn; 4 preinstalled HP LaserJet Toner cartridges (Black: 2,300 pages, Introductory Cyan, Magenta, Yellow: 1,200 pages each cartridge); In-box documentation (Getting Started Guide, Install Poster); Software drivers and documentation on CD-ROM; Power cord; Built-in duplexer; Built-in fax	HP Color LaserJet Pro MFP M477fdw; 4 preinstalled HP LaserJet Toner cartridges (Black: 2,300 pages, Introductory Cyan, Magenta, Yellow: 1,200 pages each cartridge); In-box documentation (Getting Started Guide, Install Poster); Software drivers and documentation on CD-ROM; Power cord; USB cable; Built-in duplexer; Built-in fax
Warranty	One-year warranty. Warranty and support options vary by product, country and local legal requirements. Go to http://www.hp.com/support to learn about HP award winning service and support options in your region.		

Footnotes

- ¹ Based on HP Internal testing of first page out from sleep mode and duplex print and copy speed completed 8/2015. Subject to device settings. Actual results may vary.
- ² Based on cartridge yields for HP 305X compared with HP 410X Original HP LaserJet Toner Cartridges. For more information, see <http://www.hp.com/go/learnaboutsupplies>.
- ³ Requires an Internet connection to the printer. Services may require registration. App availability varies by country, language, and agreements. For details, see <http://www.hpconnected.com>.
- ⁴ Requires a wireless access point and an Internet connection to the printer. Services require registration. App availability varies by country, language, and agreements and requires a firmware upgrade. For details, visit <http://www.hpconnected.com>.
- ⁵ Microsoft and PowerPoint are U.S. registered trademarks of the Microsoft group of companies. Feature works with Microsoft Word and PowerPoint 2003 and later. Only Latin language fonts are supported.
- ⁶ HP Web Jetadmin is free and available for download at <http://www.hp.com/go/webjetadmin>.
- ⁷ Based on HP testing using the ENERGY STAR® programme's Typical Electricity Consumption (TEC) method. Actual results may vary.
- ⁸ Wireless operations are compatible with 2.4 GHz operations only. App or software and HP ePrint account registration may also be required. Some features require purchase of an optional accessory. Learn more at <http://www.hp.com/go/mobileprinting>.
- ⁹ Feature is only supported by the HP Color LaserJet Pro MFP M477fdw and M477fnw. Mobile device needs to be connected directly to the Wi-Fi network of a wireless direct-capable MFP or printer prior to printing. Depending on mobile device, an app or driver may also be required. Learn more at <http://www.hp.com/go/businessmobileprinting>.
- ¹⁰ Feature is supported by the HP Color LaserJet Pro MFP M477fdw. Requires a compatible NFC-printing-enabled mobile device. For a list of compatible NFC-printing-enabled mobile devices, see <http://www.hp.com/go/nfcprinting>.
- ¹¹ Feature is only supported by the HP Color LaserJet Pro MFP M477fdw and M477fnw. Wireless performance is dependent on physical environment and distance from access point, and may be limited during active VPN connections.

Technical specifications disclaimers

- ¹ Measured using ISO/IEC 24734, excludes first set of test documents. For more information see <http://www.hp.com/go/printerclaims>. Exact speed varies depending on the system configuration, software application, driver, and document complexity.
- ² Measured using ISO/IEC 17629. For more information see <http://www.hp.com/go/printerclaims>. Exact speed varies depending on the input voltage, system configuration, software application, driver, and document complexity.
- ³ Duty cycle is defined as the maximum number of pages per month of imaged output. This value provides a comparison of product robustness in relation to other HP LaserJet or HP Colour LaserJet devices, and enables appropriate deployment of printers and MFPs to satisfy the demands of connected individuals or groups.
- ⁴ Job Storage feature requires a purchase of separate USB flash drive with a minimum of 16 GB capacity.
- ⁵ First Copy Out and Copy Speed measured using ISO/IEC 29183, excludes first set of test documents. For more information see <http://www.hp.com/go/printerclaims>. Exact speed varies depending on the system configuration, software application, driver, and document complexity.
- ⁶ Scan speeds measured from ADF. Actual processing speeds may vary depending on scan resolution, network conditions, computer performance, and application software.
- ⁷ HP recommends that the number of scanned pages per month be within the stated range for optimum device performance.
- ⁸ Based on standard ITU-T test image at standard resolution. More complicated pages or higher resolution will take longer and use more memory.
- ⁹ With toner cartridges.
- ¹⁰ Configuration tested: base model, simplex printing, A4 paper at an average of 43 ppm.
- ¹¹ Power requirements are based on the country/region where the printer is sold. Do not convert operating voltages. This will damage the printer and void the product warranty.
- ¹² Typical Electricity Consumption (TEC) rating represents the typical electricity consumed by a product during 1 week, measured in kilowatt-hours (kWh).
- ¹³ Declared cartridge yield value in accordance with ISO/IEC 19752. Actual yields vary considerably based on images printed and other factors. For more information, visit <http://www.hp.com/go/learnaboutsupplies>. HP Colour LaserJet Pro MFP M477 in-box cartridge may have higher yield than stated for printer units manufactured before 2017.

u u



ColorSphere



Windows 8



<http://www.hp.com/uk>

The product could differ from the images shown. © Copyright 2017 HP Development Company, L.P. The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Published in EMEA 4AA7-1617EEE, November 2017



HP PART NUMBER

000043



ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ
в съответствие с ISO / IEC 17050-1 и EN 17050-1

DoC #: **BOISB-1407-02-R8**Превод/bg

Наименование на производителя: **HP Inc.**
Производителя Адрес: 11311 Chinden Boulevard, Boise, Idaho 83714-1021 USA
заявява, че продуктът

Име на продукта и модел:²⁾ HP Color LaserJet Pro MFP M477fdn
Нормативен номер на модела:¹⁾ BOISB-1407-02
Опции на продукта: Виж приложение I

съответства на следните спецификации на продукта и регламенти:

Безопасност:

IEC 60950-1:2005 +A1:2009 +A2:2013
EN 60950-1:2006 + A11:2009 +A1:2010 +A12:2011
+A2:2013 /+AC:2011
IEC 60825-1:2014 / EN 60825-1:2014
IEC 62479:2010 / EN 62479:2010

EMC

CISPR 22:2008 Class B
CISPR 32:2012 Class B / EN 55032:2012 Class B
EN 55024:2010
EN 61000-3-2:2014
EN 61000-3-3:2013
FCC CFR 47 Part 15 Class B
ICES-003, Issue 6 Class B

RoHS

EN 50581:2012

Telecom

ES 203 021-1 v2.1.1 / ES 203 021-2 v2.1.2 / ES 203 021-3 v2.1.2; FCC Rules and Regulations 47 CFR Part 68

Този апарат в съответствие с изискванията на Директивата за ниско напрежение 2014/35/EC, Директивата EMC 2014/30/EC, Директивата RoHS 2011/65/EC и носи маркировката съответно **CE**.

Допълнителна информация:

- 1) Този продукт има нормативен номер на модела, който остава с регулаторните аспекти на дизайн. Номер на Нормативен модел е идентификатора основен продукт в нормативната документация и протоколи от изпитвания, този брой не трябва да се бърка с пазарното име или номера на продукта.
- 2) Този продукт е изпробван в типична HP среда във връзка с хост система HP.
- 3) Този продукт използва аналогов факс аксесоар с нормативен номер на модела: 'BOISB-1102-00 (US), BOISB-1102-01 (EURO), BOISB-1102-02 (Brazil)', което отговаря на техническите нормативни изисквания за страни / региони, където този продукт, ще бъдат продадени.
- 4) Одобрения и стандартите, съответстващи на целевите страни Телеком / региони са приложени към този продукт, в допълнение към тези, изброени по-горе.

Boise, Idaho
20-06-2017

проверка на подписа върху оригинала на декларацията,

приложена
Rich Payne, Manager
LES Product Regulations

Local контакт за регулаторни теми само:

EU: HP Deutschland GmbH, HP HQ-TRE, 71025 Boeblingen, Germany
U.S.: HP Inc., 1501 Page Mill Road, Palo Alto 94304, U.S.A. 650-857-1501

www.hp.eu/certificates

000044

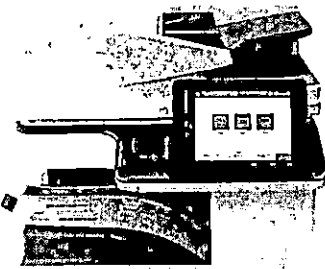
СЪОТВЕТНО С ОРИГИНАЛА

HP LaserJet Managed MFP E72525

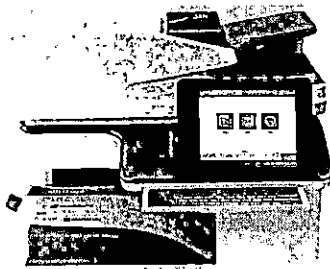


Premium quality, maximum uptime, and the strongest security from a smart, streamlined MFP.

Businesses that stay ahead don't slow down. It's why HP built the next generation of HP LaserJet MFPs—to power productivity with a streamlined design that delivers premium quality, maximum uptime, and the strongest security.



HP LaserJet Managed MFP
E72525dn



HP LaserJet Managed Flow MFP
E72525z

*Purchase of optional paper trays and output accessory availability varied by device

High quality, low cost

- Print premium, professional-quality documents with sharp text and crisp graphics for a low cost.
- Get consistent, professional quality and performance you count on with Original HP toner cartridges and drums.
- Choose from a range of modular accessories designed to adapt to the needs of workgroups of all sizes.

Minimal interruptions. Maximum uptime.

- Avoid interruptions with an HP LaserJet Managed MFP designed to be streamlined for maximum productivity.
- Tailor this MFP to the needs of your business with a wide range of paper-handling accessories.
- Scan files directly to Microsoft® Office 365 and SharePoint, plus email, USB, and network folders.²
- Grab pages and go, without waiting. This HP LaserJet wakes up quickly and prints fast—up to 25 ppm.³

The world's most secure printing⁴

- With HP Sure Start, each printer regularly checks its operating code and repairs itself from attempted hacks.
- Help protect information on your MFP and in transit over the network—store data on the encrypted hard disk.⁵
- Continually monitor to detect and stop attacks, then automatically reboot with run-time intrusion detection.
- Whitelisting checks firmware during startup to help ensure it's authentic, good code—digitally signed by HP.

Give workgroups the speed they need

- Help workgroups capture every page easily and detect potential errors or missed pages—every time.
- Enter data more quickly and accurately using the pull-out keyboard.
- Help ensure every scanned document is properly oriented, cropped to size, and grayscale-optimized.
- Load up to 250 pages into the automatic document feeder for fast, unattended scanning.(For Z models only)

HP LaserJet Managed MFP E72525

Model	HP LaserJet Managed MFP E72525d	HP LaserJet Managed Flow MFP E72525x
Product number	Z8Z06A	Z8Z07A
Functions	Print, Copy, Scan (fax and wireless optional)	
Print		
Duplex print options	Automatic (standard)	
Print speed ¹	Black (A4, normal): Up to 25 ppm; Black (letter, normal): Up to 25 ppm; Black (A3, normal): Up to 12 ppm; Black (tabloid, normal): Up to 25 ppm; Black (A4, duplex): Up to 18 ppm; Black (letter, duplex): Up to 18 ppm; Black (A3, duplex): Up to 9 ppm; Black (tabloid, duplex): Up to 9 ppm	
First page out ²	Black (A4, ready): As fast as 8.9 sec; Black (A4, sleep): As fast as 23 sec; Black (letter, ready): As fast as 9.0 sec; Black (letter, sleep): As fast as 23 sec	
Print technology	Laser	
Print resolution	Black (best): Up to 1200 x 1200 dpi reduced speed; Black (normal): Up to 600 x 600 dpi	
Print cartridges number	1 (1 black cartridge)	
Standard print languages	HP PCL 6, HP PCL 5c, HP Postscript level 3 emulation, PDF (v. 1.7), AirPrint™ compatible	
Printer management	Printer Administrator Resource Kit for HP Universal Print Driver (UPD) Active Directory Administrator Template, Add Print Model to Comments, Auto Upgrade/UPD, Driver Configuration Utility, Driver Deployment Utility, HP Managed Printing Administration, PRNCONSOLE, HPPRLOG, Migrate-Server-Tools, UpdateNow, Remove Plug and Play Drivers, HP Web Jetadmin Software, Resource Kit for HP Web Jetadmin (HP SNAProxy Agent, HP WS Pro Proxy Agent), HP JetAdvantage Security Manager	
Scan		
Scan technology	Type: Flatbed, ADF; Technology: Flatbed, ADF	
Scan speed ³	Normal, A4: Up to 80 ppm/160 cm (b8w), up to 90 ppm/160 cm (color)	Normal, A4: Up to 120 ppm/240 cm (b8w), up to 120 ppm/240 cm (color)
Scan resolution	Enhanced: Up to 600 x 600 dpi; Hardware: Up to 600 x 600 dpi	
Digital sending standard features	Scan to E-mail; Save-to-Network Folder; Save-to-USB drive; Send to SharePoint; Send to FTP; Send to SFTP; Send to LAN Fax; Send to Internet Fax; Local Address Book; SMTP over SSL; Blank Page Removal; Edge Erase; Auto Color Sense; Auto Crop to Content; Compact PDF; Auto Tonescale; Auto Orientation; Multi-Pick Detect; Auto Straighten; Auto Crop to Page	
Scan size	Flatbed: 297 x 432 mm; ADF scan size: 297 x 432 mm	
Scan input modes	Front panel applications: Copy; E-mail; Fax; Save to Network Folder; Save to USB; Save to Device Memory; Open Extensibility Platform (iOP) applications	
Scan file format	Digital Send; PDF; Hi-Compression PDF; JPEG; TIFF; MTIF; XPS; PDF/A; Scan to easy access USB: PDF, JPEG, TIFF, MTIF, XPS, PDF/A; Print from easy access USB: PDF, PS, Print Ready files (.prn, .pcl, .chf)	Digital Send; PDF; Hi-Compression PDF; JPEG; TIFF; MTIF; XPS; PDF/A; TEXT (OCR), Unicode TEXT (OCR), RTF (OCR), Searchable PDF (OCR), Searchable PDF/A (OCR), HTML (OCR), CSV (OCR); Scan to easy access USB: PDF, JPEG, TIFF, MTIF, XPS, PDF/A; Print from easy access USB: PDF, PS, Print Ready files (.prn, .pcl, .chf)
Copy		
Copy smart software features	Better remote diagnosis and repair; Higher first time fix rates; Full Toner; LLC utilization; Capture un-billed images from reconnected network devices; personal printers; On-site access to service training; A3 LaserJet are designed for fewer LLC replacements and faster repairs.	
Copy speed	Black (A4, normal): Up to 25 ppm; Black (letter, normal): Up to 25 ppm; Black Duplex (A4): Up to 18 ppm; Black (letter, duplex): Up to 18 ppm	
First copy out	Black (A4): As fast as 7.9 sec; Black (A4, sleep): As fast as 21.5 sec; Black (letter): As fast as 8.0 sec; Black (letter, sleep): As fast as 21.5 sec	
Copy resolution	Black (text and graphics): Up to 600 x 600 dpi	
Max. number of copies	Up to 999 copies	
Copy resize	25 to 400%	
Copy settings	Two-sided copying; scalability; image adjustments (darkness, contrast, background cleanup, sharpness); optimized text/picture (text, mixed, printed picture, photograph); N-Up; N or Z-ordering; content orientation; collation; booklet; ID Scan; job build; Job Storage; watermark; stamps; book mode scans; erase edges; automatically detect color/photo; image Preview	
Fax		
Fax speed	33.6 kbps	
Fax resolution	Up to 300 x 300 dpi (400 x 400 dpi for received faxes only)	
Fax features	Auto fax reduction supported: Yes; Auto-redialing: Yes; Fax delayed sending: No; Distinctive ring detection supported: No; Fax forwarding supported: Yes; Junk barrier supported: Yes; Maximum speed dialing numbers: Up to 1000 numbers (each with 210 destinations); PC Interface supported: Yes; Fax polling supported: Yes (poll to retrieve only)	
Fax memory	Fax memory (A4): Up to 500 pages; Fax memory (letter): Up to 500 pages	
Connectivity		
Standard connectivity	2 Hi-Speed USB 2.0 Host; 1 Hi-Speed USB 2.0 Device; 1 Gigabit Ethernet 10/100/1000 network; 1 Hardware Integration Pocket; 1 Fax modem port	
Mobile printing capability ⁴	Management security: SNMPv3, SSL/TLS, WPA2-Enterprise, 802.1X authentication (EAP-PEAP, EAP-TLS), IPP over TLS, IPsec/Firewall with Certificate, Pre-Shared Key Authentication, and Kerberos Authentication; Support for WPA-10 IPsec Configuration using IPsec Plug-in	
Network ready	Standard (built-in Gigabit 10/100/1000 Ethernet)	
Wireless capability	No wireless capabilities standard. There are optional accessories (common to all current Jet products) that support wireless. These are listed in the connectivity section above.	
Network capabilities	Standard (built-in Gigabit 10/100/1000 Ethernet)	
Memory	Standard: 6 GB; Maximum: 6 GB	Standard: 7 GB; Maximum: 7 GB
Hard Disk	One 320 GB Standard, embedded HP High-Performance Secure Hard Disk; AES 256 hardware encryption or greater; Secure erase capabilities (Secure File Erase-Temporary Job Files, Secure Erase-Job Data, Secure ATA Erase-Disk). Note: U.S. government SKU uses 500GB PIPS 140-2 validated hard disk instead.	Two 320 GB Standard, embedded HP High Performance Secure Hard Disk; total 640 GB, AES 256 hardware encryption or greater; Secure erase capabilities (Secure File Erase-Temporary Job Files, Secure Erase-Job Data, Secure ATA Erase-Disk). Note: U.S. government SKU uses 500GB PIPS 140-2 validated hard disk instead.
Processor speed	1.2 GHz	
Duty cycle (monthly)	Up to 300,000 pages; Recommended monthly page volume: Up to 50,000 pages	
Paper handling		
Input	100-sheet multi-purpose tray, 2 x 50-sheet input tray, 50-sheet input tray, 100 sheet ADF; Optional 2000 sheet tray	100-sheet multi-purpose tray, 2 x 50-sheet input tray, 50-sheet input tray, 250 sheet ADF; Optional 2000 sheet tray
Output	500-sheet face-down output bin	
Media type	Plain, HP EcoFriendly; HP Matte 90g, Light 60, 74g, Bond, Recycled, HP Matte 105g, HP Matte 120g, 14d Weight 96, 110g, Heavy 111-130g, HP Matte 150g, Extra Heavy 131-175g, HP Matte 200g, Cardstock 176-220g, Labels, Letterhead, Envelope, Preprinted, Prepunched, Colored	
Media weight	Tray 1: 60 to 175 g/m ² ; Tray 2, 3: 60 to 220 g/m ²	
Media sizes custom	Tray 1: 98 x 148 mm to 297 x 432 mm; Tray 2: 139.7 x 210 mm to 297 x 354 mm; Tray 3: 139.7 x 210 mm to 297 x 432 mm	
Dimensions (W x D x H)	556 x 724.3 x 829 mm	
Weight	68.13 kg	
What's in the box ⁵	Engine; Toner; Drums; Ass'y-Color; W/M Template and Label; Power Cords; Assembly-CD W/M; Hardware install and setup documentation; Support flyers (DOES NOT INCLUDE TONER)	
Warranty features	90 day parts only. Extended Warranty and support options vary by product, country and local legal requirements. Go to http://www.hp.com/support to learn about HP award winning service and support options in your region.	
Systems		
Compatible operating systems	Android, Linux Boss (5.0), Linux Debian (7.0, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9, 8.0, 8.1, 8.2, 8.3, 8.4, 8.5, 8.6), Linux Fedora (22, 23, 24), Linux Mint (17, 17.1, 17.2, 17.3, 18), Linux Red Hat Enterprise (6.0, 7.0), Linux SUSE (13.2, 42.1), Linux Ubuntu (12.04, 14.04, 15.10, 16.04, 16.10), OS macOS 10.12 Sierra, OS X 10.10 Yosemite, OS X 10.11 El Capitan, UNIX, Windows 10 all 32- & 64-bit editions (excluding RT OS for Tablets), Windows 7 all 32- & 64-bit editions, Windows 8/8.1 all 32- & 64-bit editions (excluding RT OS for Tablets), Windows Vista all 32-bit editions (Home Basic, Premium, Professional, etc.), Windows XP SP3 32-bit editions (XP Home, XP Pro, etc.)	
Minimum system requirements	PC: 2 GB available hard disk space; OS hardware requirements see microsoft.com Mac: 1.3 GB available hard drive space; Internet; OS hardware requirements see apple.com for more info	
Security management	Management security: SNMPv3, SSL/TLS, WPA2-Enterprise, 802.1X authentication (EAP-PEAP, EAP-TLS), IPP over TLS, IPsec/Firewall with Certificate, Pre-Shared Key Authentication, and Kerberos Authentication; Support for WPA-10 IPsec Configuration using IPsec Plug-in	
Fonts and Typefaces	84 scalable TrueType fonts	
Control panel	B0-in (20.3 cm) Color Graphics Display (CGD) with touchscreen, rotating (adjustable angle) display; Illuminated Home button (for quick return to the Home menu); USB High-speed 2.0 port; Hardware Integration Pocket	B0-in (20.3 cm) Color Graphics Display (CGD) with touchscreen, rotating (adjustable angle) display; Illuminated Home button (for quick return to the Home menu); USB High-speed 2.0 port; Hardware Integration Pocket; Extended Keyboard
Display	B0-in (20.3 cm) touchscreen, SVGA Color Graphic Display (CGD)	
Power	Power supply type: Internal (built-in) power supply; Power supply required: Input voltage: 110 to 127VAC (+/- 10%), 220 to 240VAC (+/- 10%); 50/60 Hz (+/- 3%)	
Software included	HP Connected; HP Device Experience (DXP); HP PCL 6 Printer Driver; HP Software Installer/Uninstaller; Mac OS Welcome Screen (Directs users to 123.hp.com or OS App Source for printer software); Online user manuals	
Acoustics	Acoustic power emissions: 6.5 BIA; printing mono simplex, A4 at 25 ppm; Acoustic power emissions (ready): Inaudible; Acoustic pressure emissions bystander (active, printing): 49 dB(A), printing mono simplex, A4 at 25 ppm; Acoustic pressure emissions bystander (ready): Inaudible	Acoustic power emissions: 6.5 BIA; printing mono simplex, A4 at 25 ppm; Acoustic power emissions (ready): Inaudible; Acoustic pressure emissions bystander (active, printing): 50 dB(A), printing mono simplex, A4 at 25 ppm; Acoustic pressure emissions bystander (ready): Inaudible
Environmental ranges	Operating temperature range: 15 to 30°C; Recommended operating temperature: 15 to 30°C; Non-operating humidity range: 10 to 80% RH; Operating humidity range: 20 to 80% RH; Recommended operating humidity range: 20 to 80% RH	
Safety approvals and requirements	IEC 60950-1:2005 +A1:2009 +A2:2013 (International); EN 60950-1:2006 +A1:2009 +A1:2010 +A12:2011 +A2:2013 (EU); EN 60825-1:2014 / IEC 60825-1:2014 (Class I Laser Product); EN 62479:2010 / IEC 62479:2010 EN 62471-1:2009 / IEC 62471-1:2006; Low Voltage Directive 2014/35/EU with CE Mark (Europe), GS Certificate (Germany, Europe), UL/cUL Listed and UL CoC (US/Canada), CAN/CSA C22.2 No. 60950-1-07 2nd Ed. 2011-12. Compliance with Laser safety standards 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser notice No. 50, Dated June 24, 2007. Other safety approvals as required by individual countries	
Supported network protocols	IPsec/VPN; Apple Bonjour Compatible (Mac OS 10.2.4 or higher), SHIMPL/Avicore, HTTP, HTTPS, FTP, SFTP, Port 9100, LPD, WS Discovery, IPP, Secure-IPP, IPsec/Firewall; IPv6; DHCPv6; MLDv1; ICMPv6; IPv4; Auto-IP; SLP; Telnet; IGMPv2; BOOTP/DHCP; WINS; IP Direct Mode; WS Print; Other: NetWare NDS, Bindery, MDPS, ePrint; Google Cloud Print 2.0	

000046

ИРИТНАНА

Footnotes

- ¹ Based on HP review of 2016 published security features of competitive in-class printers. Only HP offers a combination of security features that can monitor to detect and automatically stop an attack then self-validate software integrity in a reboot. For a list of printers, visit <http://www.hp.com/go/PrintersThatProtect>. For more information: <http://www.hp.com/go/printersecurityclaims>
- ² Requires an internet connection to the printer. Services may require registration. App availability varies by country, language, and agreements. For details, see <http://www.hpconnected.com>
- ³ Measured using ISO/IEC 24734, excludes first set of test documents. For more information, see <http://www.hp.com/go/printerclaims>. Exact speed varies depending on the system configuration, software application, driver, and document complexity.
- ⁴ Some features require additional purchase. A FutureSmart service pack update may be required to activate security features. Learn more at <http://www.hp.com/go/printsecurity>
- ⁵ Scan speed measured from ADF at default 300 dpi (black-and-white, grayscale, and color). Actual processing speeds may vary depending on scan resolution, network conditions, computer performance, and application software.

Product walkaround disclaimers

- ¹ The 250-sheet ADF is included on the Flow MFP E72525z only. The MFP E72525dn has a 100-sheet ADF.
- ² Solutions deployed through the Hardware Integration Pocket (HIP) may require additional purchase.
- ³ An administrator must enable the easy-access USB port before use.
- ⁴ Measured using ISO/IEC 24734, excludes first set of test documents. For more information, see [hp.com/go/printerclaims](http://www.hp.com/go/printerclaims). Exact speed varies depending on the system configuration, software application, driver, and document complexity.
- ⁵ Scan speed measured from ADF at default 300 dpi (black-and-white, grayscale, and color). Actual processing speeds may vary depending on scan resolution, network conditions, computer performance, and application software.

Technical specifications disclaimers

- ¹ No, please purchase USB cable separately (EMEA, Americas, AP) (Service Technician must install units)
- ² Based on standard ITU-T test image #1 at standard resolution and MMR encoding, the HP fax device can transmit at 3 sec/page for V.34 and 6 sec/page for V.17
- ³ Measured using ISO/IEC 17629. For more information see <http://www.hp.com/go/printerclaims>. Exact speed varies depending on the system configuration, software application, driver, and document complexity
- ⁴ Optional Wireless Direct and Wireless
- ⁵ Declared yield value in accordance with ISO/IEC 19752. Actual yields vary considerably based on images printed and other factors. For more information, visit <http://www.hp.com/go/learnaboutsupplies>. Actual yields vary considerably based on images printed and other factors. For details see <http://www.hp.com/go/learnaboutsupplies>
- ⁶ Power requirements are based on the country/region where the printer is sold. Do not convert operating voltages. This will damage the printer and void the product warranty.
- ⁷ Measured using ISO/IEC 24734, excludes first set of test documents. For more information see <http://www.hp.com/go/printerclaims>. Exact speed varies depending on the system configuration, software application, driver, and document complexity.
- ⁸ Average color composite black declared yields based on ISO/IEC 19798 and continuous printing. Actual yields vary considerably based on images printed and other factors. For details see <http://www.hp.com/go/learnaboutsupplies>
- ⁹ Scan speeds measured from ADF. Actual processing speeds may vary depending on scan resolution, network conditions, computer performance, and application software.

To learn more, visit hp.com

© Copyright 2017 HP Development Company, L.P. The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Published in APJ 4AAG-9675EEP Q3/17



HP00047

ИНФОРМАЦИЯ ОРИГИНАЛА



ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ
в съответствие с ISO / IEC 17050-1 и EN 17050-1

Doc #: BOISB-1602-00-R1Превод/bg

Наименование на производителя: **HP Inc.**
Производителя Адрес: 11311 Chinden Boulevard, Boise, Idaho 83714-1021 USA

заявява, че продуктът

Име на продукта и модел:²⁾ HP LaserJet Managed MFP
HP LaserJet Managed MFP E72525dn
HP LaserJet Managed MFP E72530dn
HP LaserJet Managed MFP E72535dn

Нормативен номер на модела:¹⁾ BOISB-1602-00

Опции на продукта: Виж приложение I

съответства на следните спецификации на продукта и регламенти:

Безопасност:

IEC 60950-1:2005 +A1:2009 +A2:2013

EN 60950-1:2006 + A11:2009 +A1:2010 +A12:2011

+A2:2013 /+AC:2011

IEC 60825-1:2014 / EN 60825-1:2014

IEC 62479:2010 / EN 62479:2010

GB4943.1-2011

EMC

CISPR 22:2008 Class A

CISPR 32:2012 Class A /EN 55032:2012 Class A

EN 61000-3-2:2014

EN 61000-3-3:2013

EN 55024:2010

FCC CFR 47 Part 15 Class A/ ICES-003, Issue 6 Class A

GB9254-2008, GB17625.1-2012

RoHS

EN 50581:2012

Този апарат в съответствие с изискванията на Директива за ниско напрежение 2006/95/EO (до 19.04.2016), директивата за ниско напрежение 2014/35/EC (от 20.04.2016) на Директива EMC 2004/108/EO (до 19.04.2016), Директивата за EMC 2014/30/EC (от 20.04.2016) на Директива 2011/65/EC RoHS и носи маркировката съответно **CE**.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Допълнителна информация:

- 1) Този продукт има нормативен номер на модела, който остава с регулаторните аспекти на дизайн. Номер на Нормативен модел е идентификатора основен продукт в нормативната документация и протоколи от изпитвания, този брой не трябва да се бърка с пазарното име или номера на продукта.
- 2) Този продукт е изпробван в типична HP среда във връзка с хост система HP..
- 3) Продуктът отговаря на изискванията на EN 55022 и CNS13483 Class A, като в този случай се прилага следното: Внимание - Това е клас А продукт. В домашна среда този продукт може да причини радиосмущения, в който случай може да се изисква от потребителя да предприеме адекватни мерки

Boise, Idaho
16-12-2016

проверка на подписа върху оригинала на декларацията,

приложена
Rich Payne, Manager
LES Product Regulations

Local контакт за регулаторни теми само:

EU: HP Deutschland GmbH, HP HQ-TRE, 71025 Boeblingen, Germany
U.S.: HP Inc., 1501 Page Mill Road, Palo Alto 94304, U.S.A. 650-857-1501

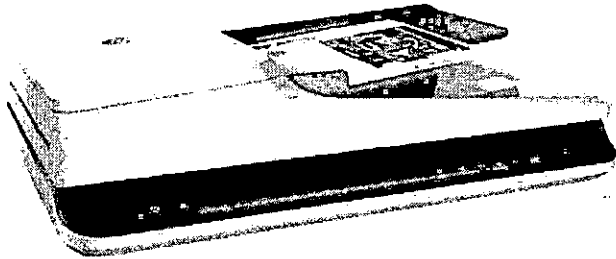
www.hp.eu/certificates

000048

ОРИГИНАЛА



- [многофункционални/ всичко-в-едно продукти/](#)



General Office Scanners

HP ScanJet Pro 2500 f1 Flatbed Scanner(L2747A)

[СТАНИ ПЕРИ HP ПАРТНЬОР](#)

Харесвам 0

[Научете повече >](#)

[ДЕМОНСТРАЦИЯ НА ПРОДУКТ](#)

HP ScanJet Pro 2500 f1 and 3500 f1 highlights

HP ScanJet Pro—automate routine tasks with fast, two-sided scanning, a 50-page ADF, and one-button shortcuts.

100% ИСТИНСКАТА

Режими за задействане на скенера:

Scan front-panel function: Save as PDF, Save as JPEG, Email as PDF and Send to Cloud; HP Scan in Windows OS, HP Easy Scan/ICA in Mac OS and third parties applications via TWAIN

Разширени характеристики на скенера:

One pass duplex scanning; One button scan; OCR; Configurable scan shortcuts

Контролен панел:

- 5 buttons (including Sleep/Power button)
- 7 LEDs (including Power, Error, Scan to which destination and Simplex/Duplex)

Спецификации на ADF**Спецификации на ADF**

Капацитет на автоматичното подаващо устройство за документи:
Standard, 50 sheets

Скорост на автоматичното подаващо устройство

Up to 20 ppm/40 ipm (black & white, grey and colour, 300 dpi) ²



Опции на сканиране (ADF):
Single-pass E-Duplex

Размер на сканиране (ADF), максимален:
216 x 3100 mm

Размер на сканиране (ADF) (минимално):
89 x 148 mm

Съвместими операционни системи**Съвместими операционни системи**

Съвместими операционни системи

Windows 10, 8/8.1, 7

Mac OS X v10.9 (Mavericks), OS X v10.10 (Yosemite)

Съвместим с Mac:

- Yes

**Свързване****Свързване**

Възможност за свързване, стандартно:

- Hi-Speed USB 2.0

Версия на TWAIN:

TWAIN Certified. Version 2.1

Захранване и експлоатационни изисквания**Захранване и експлоатационни изисквания**

Voltage:

Input Voltage: 90 to 264 VAC, 50/60 Hz

Консумация на енергия

4.73 watts (ready), 1.68 watts (sleep), 0.13 watts (auto-off), 0.14 watts (manual-off) ¹

Energy efficiency:




ENERGY STAR® certified; EPEAT® Silver; CECP

Температурен диапазон при работа:

10 to 35°C

изисквания като REACH (Наредба на ЕК No 1907/2006 на Европейския парламент и съвет). Отчет с информация за химическите вещества може да се намери на адрес: www.hp.com/go/reach.

Държава/Регион: България

За нас	Начини на закупуване	Поддръжка	Останете във връзка
Връзка с HP	Обаждане на представител на HP	Изтегляне на драйвери	  
Кариери	Търсене на партньор на HP	Поддръжка и отстраняване на неизправности	Абониране за новини и предложения
Връзки с инвеститорите		Forums	
Устойчивост		Регистрирайте продукта си	
Пресцентър		Проверка на статус на ремонт	
Гаражът		Обучение и сертификация	

Изтегляне | Рециклиране на продукти | Достъпност | Карта на сайта | Поверителност | Бисквитки и избори за реклами | Права за лични данни |
Условия за използване | Законова потребителска гаранция | Декларация за ограничена гаранция



© Copyright 2018 HP Development Company, L.P.



ВЕРНО / ОРИГИНАЛ



ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ
в съответствие с ISO / IEC 17050-1 и EN 17050-1

Doc #: SHNGD-1402-R4Превод/bg

Наименование на производителя: **HP Inc.**
Производителя Адрес: HP Information Technology R&D (Shanghai) Co., Ltd. No. 2727 Jinke Road, Shanghai, China 201203
заявява, че продуктът

Име на продукта и модел:²⁾ HP ScanJet Pro 2500 f1
Нормативен номер на модела:¹⁾ SHNGD-1402
Опции на продукта: Виж приложение I

съответства на следните спецификации на продукта и регламенти:

Безопасност:

EN 60950-1:2006 + A11:2009 +A1:2010 +A12:2011
+A2:2013 /+AC:2011
IEC 60950-1:2005 +A1:2009 +A2:2013
EN 62471:2008
EN 62479:2010

EMC

EN 55032:2012 Class B
EN 55024:2010
EN 61000-3-2:2014
EN 61000-3-3:2013
CISPR 22:2008 Class B
CISPR 32:2012 Class B
FCC CFR 47 Part 15
ICES-003, Issue 5
Choose an item.

Choose an item.

екодизайна

Регламент (EO) No 278/2009

Test Method for Calculating the Energy Efficiency of Single-Voltage External Ac-Dc and Ac-Ac Power Supplies (August 11, 2004")

Регламент (EC) № 1275/2008

EN 50564:2011

IEC 62301:2011

ENERGY STAR® Qualified Imaging Equipment Operational Mode (OM) Test Procedure

RoHS

EN 50581:2012

Този апарат в съответствие с изискванията на Директивата за ниско напрежение 2014/35/ЕС, Директивата EMC 2014/30/ЕС, Директивата за екодизайна 2009/125/ОТ, Директивата RoHS 2011/65/ЕС и носи маркировката съответно **CE**.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Допълнителна информация:

- 1) Този продукт има нормативен номер на модела, който остава с регулаторните аспекти на дизайн. Номер на Нормативен модел е идентификатора основен продукт в нормативната документация и протоколи от изпитвания, този брой не трябва да се бърка с пазарното име или номера на продукта.
- 2) Този продукт е изпробван в типична HP среда във връзка с хост система HP.

Shanghai, China
28-03-2017

проверка на подписа върху оригинала на декларацията,

приложена
Jia-Fu Chen, Manager
LES Product Regulations

Local контакт за регулаторни теми само:

EU: HP Deutschland GmbH, HP HQ-TRE, 71025 Boeblingen, Germany
U.S.: HP Inc., 1501 Page Mill Road, Palo Alto 94304, U.S.A. 650-857-1501

www.hp.eu/certificates

ВАЖНО СЪОБЩЕНИЕ

000052



FUJITSU Document Scanner

fi-7460

Color, Wide Format
Duplex Scanner

Excellent performance and superior
reliability in a compact size

- Fast 60 ppm / 120 ipm at 300 dpi color
- Double Letter and A3 Wide-Format Scanning
- Large Capacity 100 Page Feeder
- Mixed Batch Scanning with Plastic and Embossed cards
- 1D Barcode, 2D Barcode and Patch Code Separation
- Latest USB 3.0 Connectivity
- Eco-Friendly LED Scanning
- Backlit LCD Panel for Easy Viewing and Control
- Manual Feed Mode for Thick Documents
- Automatic Image Cleanup with PaperStream IP Drivers (TWAIN & ISIS)
- PaperStream Capture Software
- Scanner Central Admin Software for Fleet Management



FUJITSU
FUJITSU LIMITED
FUJITSU SYSTEMS (EUROPE) LTD

000053

fi-7460

Designed for professional workloads and engineered to last, the fi-7460 scanner offers wide-format scanning in a compact, best-in-class space. Robust feeding of mixed documents and automatic stacking technology reduces document handling time and total cost of scanning.

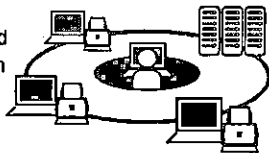
Scanning Performance

With duplex speeds of 120 images per minute at 300 dpi in Color, Grayscale, and Monochrome, the fi-7460 gives departmental performance in a desktop space.

- Rapid startup from sleep mode in less than a second
- Thick paper (27 to 413 g/m²) and embossed card scanning
- Manual Feed Mode for thick and difficult documents
- 100 page feeder (50 double letter)
- Skew resistance technology
- Automatic stacking speeds for improved organization
- Scan sticky notes, taped receipts, and labels while securing against multifeeds
- Long document support up to 18.3 feet in PaperStream IP
- Latest USB 3.0 for forward compatibility
- 32/64 Bit Driver for PaperStream IP (TWIN & ISIS)

Fleet Management

Bundled with the fi-7460, Scanner Central Admin provides IT departments an efficient way to manage medium to large scanner deployments. With remotely accessible fleet information, IT departments can monitor, update, and allocate resources effectively based on scan volume, consumable wear, depreciation schedules, and maintenance expiration.



Included with Scanner

Fujitsu fi-7460 scanners have everything needed to scan out of the box or to integrate with hundreds of software applications.

- PaperStream IP Image Cleanup (TWIN & ISIS)
- PaperStream Capture Batch scanning and PDF creation software
- 1D & 2D Barcode Support
- 3 Months On-Site Service

Accessories & Options

The following options are available for purchase:

- PaperStream Capture Pro Software for data extraction and indexing
- Training & Installation to get the most out of the equipment
- ScanAid Kit with consumables and cleaning supplies
- Post Imprinter for backside endorsing
- ScanCare, Basic, Advance Exchange, 4 hour and 24/7 Service

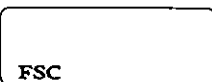
Consumables	
Pick roller	PA03670-0002
Brake roller	PA03710-0001
ScanAid kit	CG01000-288201

Genuine Fujitsu Consumables available at store.fcpa.fujitsu.com

For full details on the Limited Warranty and other service programs, please go to www.ImagingService.com or call (800) 626-4686.

This scanner is designed to digitize materials that can be reproduced lawfully, in accordance with applicable copyright regulations and other laws. This product is a green product and Fujitsu promotes recycling for the scanner. Users are solely responsible for how they use this scanner. It is imperative that users comply with all applicable local rules and laws, including, without limitation, copyright laws when using this scanner.

Fujitsu Computer Products of America, Inc. 1250 East Arques Avenue Sunnyvale, CA 94085-5401
Sales: (888) 425-8228, Tech Support: (800) 626-4686 • info@fcpa.fujitsu.com • <http://us.fujitsu.com/fcpa>



© 2010 Fujitsu Computer Products of America, Inc. All rights reserved. Fujitsu and the Fujitsu logo are registered trademarks of Fujitsu Limited. Microsoft, SharePoint, Windows and Vista are either registered trademarks or other countries. ISO is a registered trademark of International Organization for Standardization, a division of International Standards Organization. ABBYY, FineReader are trademarks of ABBYY Software House. As an ENERGY STAR® product, this scanner meets the ENERGY STAR® guidelines for energy efficiency. ENERGY STAR is a U.S. registered trademark. PaperStream is a registered trademark of FUJITSU LIMITED. All other trademarks are the property of their respective owners. This document is for informational purposes only and does not constitute any implied warranty of merchantability or fitness for a particular use. The right to modify at any time without prior notice these statements, our products, their performance specifications, availability, price and warranty, post-warranty and service programs. Printed in the U.S.A. IS



Technical Specifications		
Model	fi-7460	
Image Sensor Type	Color CCD (Charge-coupled device) x 2 (front x 1, back x 1)	
Output Resolution ¹	Color (24-bit)	
	Grayscale (8-bit)	50 to 600 dpi, 1200 dpi ^{9,10}
	Monochrome (1-bit)	
Halftone Patterns	4 Dither Patterns and error diffusion	
Grayscale	10-bit/1,024 level (internal), 8-bit/256 level (output)	
Color	24-bit single pass color	
Performance		
Scanning Speed ¹	(Landscape orientation, 200 or 300 dpi, Letter, Color, Grayscale and Monochrome) ²	
fi-7460	Simplex	120 ipm ² Color/Grayscale
	Duplex	120 ipm ² Color/Grayscale
Scanning Mode	Simplex and Duplex	
Document Feeding Mode	Automatic document feeder (ADF)	
ADF Capacity ⁴	100 Sheets (A4: 80 g/m ² or 20 lb.)	
Document Size	ADF minimum	51 mm x 69 mm or 2 in. x 2.72 in.
	ADF maximum	A3 Portrait (297 mm x 420 mm or 11.7 in. x 16.5 in.), Double letter (279.4 mm x 431.8 mm or 11 in. x 17 in.)
Interface	USB 3.0 (2.0 and 1.1 compatible)	
JPEG Compression	Hardware real time JPEG compression available	
Physical Specifications		
Power Requirements (auto-switching)	100 to 240 VAC, 50/60 Hz	
Power consumption (Operating)	36W or less	
Operating Environment	Temperature	5°C to 35°C (41°F to 95°F)
	Relative humidity	20% to 80% (non-condensing), Not operating: 8% to 95%
Dimensions (HxWxD) ⁴	380 mm x 209 mm x 168 mm (15.0 in. x 8.2 in. x 6.6 in.)	
Weight	7.6 kg (16.72 lbs)	
Inbox Contents	AC cable, USB cable, Setup DVD-ROM, 2D Barcode for PaperStream Setup CD-ROM	
Bundled Software	PaperStream IP (TWIN/ISIS) Driver, 2D Barcode for PaperStream, Software Operation Panel, Error Recovery Guide, PaperStream Capture, Scanner Central Admin Agent	
Environmental compatibility ⁷	ENERGY STAR 2.0®, RoHS, EPEAT Silver	
Options	Post Imprinter (Back-side)	
OS Support	Windows® 10 (32-bit/64-bit), Windows® 8 (32-bit/64-bit), Windows® 7 (32-bit/64-bit), Windows Vista® (32-bit/64-bit), Windows Server® 2012 (64-bit), Windows Server® 2012 R2 (64-bit), Windows Server® 2008 (32-bit/64-bit), Windows Server® 2008 R2 (64-bit)	
Features	Ultrasonic Intelligent MultiFeed Function Double Feed Detection (3x) and Long Document Scanning ⁸	

1. Actual scanning speeds are affected by data transmission and software processing times

2. JPEG compressed figures

3. Intel® Core™ i5 desktop processor 2.5 GHz or higher, 4 GB RAM is recommended

4. Maximum capacity varies, depending upon paper thickness

5. Maximum output resolutions may vary, depending upon the size of the area being scanned and whether the scanner is scanning in simplex or duplex

6. Excluding the ADF hopper

7. PFU Limited, a Fujitsu company, has determined that this product meets RoHS requirements (2005/95/EC)

8. Capable of scanning documents that exceed A4 sheets in length. However, the scanning of documents that exceed 863 mm (34 in.) in length will be limited to using 300 dpi or less

9. Software Interpolated

10. Scanning limitations brought about by scanning mode, document size and available memory may occur when scanning at high resolutions (600 dpi or higher)



PHOTO COPY PROHIBITED

000054



HP Europe B.V.
Amsterdam, Meyrin Branch
Route du Nant d'Avril 150
CH-1217 Meyrin/ Genève
Switzerland

Дата: 21.02.2018
Изходящ. №340

Оторизационна форма на производител

до:
Парафлоу Комуникейшънс ООД
България, София, п.к.1700, ул. Никола Габровски 79
+359 (2) 960 42 00

Уважаеми господа,

Ейч Пи Юрп Б.В., клон Мейрин, с адрес Route du Nant d'Avril 150, CH-1217 Meyrin/ Genève, Швейцария ("НРЕВУ") представлява производителя на HP продукти на територията на Европейския съюз, в т. ч. Р. България.

С настоящето потвърждавам от името на "НРЕВУ", че е наясно със следното:

- Парафлоу Комуникейшънс ООД, България, София, п.к.1700, ул. Никола Габровски 79 ("HP Оторизиран Партньор") възнамерява да подаде оферта за участие в търг Обществената поръчка с предмет: "ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА", 00062-2018-0008 за Университет за национално и световно стопанство, 1700 София, Студентски град "Хр. Ботев" ("Клиент") включващ следните HP Personal Computers, Notebooks, Printers продукти и свързаните с тях услуги на HP за пакетна поддръжка ("HP Продукти"), и
- в случай, че поръчката бъде възложена на HP Оторизирания Партньор, той в последствие ще преговаря и ще подпише договор, подчинен изключително на правилата и условията между Клиента и HP Оторизирания Партньор за доставка на продукти и услуги на Клиента, включително посочените по-горе продукти на HP.

Само HP има право да упълномощава трети лица ("HP Оторизиран Партньор"), за да продава продукти на HP в определени територии, основани на селективни критерии за дистрибуция (специфични технически и професионални стандарти, които са определени от HP).

НРЕВУ потвърждава, че към датата на това писмо HP Оторизирания Партньор не е изключително оторизиран от HP препродавач, за продажба на по-горе споменатите HP Продукти за територията на България.

Продуктите на HP са обхванати от стандартна гаранция, съгласно правилата и условията приложими в България. Услугите на HP за пакетна поддръжка представляват стандартни предплатени и пакетни HP-брандирани услуги. HP Оторизирания Партньор има разрешение да предава тази стандартна гаранция на клиенти-крайни потребители които закупуват и използват такива HP Продукти в България и HP ще спазва тези стандартни гаранции.

ВЯРНО СЪОРИГИНАЛА

000055

В рамките на горепосочената оферта за участие в търг и последващият потенциален договор, HP Оторизирания Партньор действа от свое име и за своя сметка и няма право, власт и не е опълномощен да създаде задължение или дълг, изричен или подразбиращ се от името на HPEBV.

HPEBV е единствено отговорен и задължен към Клиента съгласно стандартната HP продуктова гаранция и/или съгласно правилата и условията на HP за пакетна поддръжка. HP Оторизирания Партньор единствено се задължава относно удължаването и разширяването на тази гаранция и/или правила и условия.

Доставката на стандартната HP продуктова гаранция и на услугата на HP за пакетна поддръжка се предоставят или от местният офис на HP в България, или от оторизиран от HP доставчик по поддръжка.

С уважение,

—
—
Erik Chang
Manager Channel Sales Operations
EMEA – Europe, Middle-East & Africa

HP Europe B.V.
Amsterdam, Meyrin Branch
Route du Nant-d'Avril 150
1217 Meyrin, Switzerland

1

000056

ОПТИМИЗАЦИЯ

Приложение 1

HP Сервизни центрове за поддръжка на HP Consumer & Commercial продукти

Оторизирани сервизи на HP в България				Контакт: HP в HP Retail, HP Care, HP Store, HP Direct, HP Select Телефон: HP Care: 877, HP & HP Store	Има ли услуги и персонал за услуги: ремонт, бизнес услуги, персонализирани услуги, PPS услуги	Действа ли и функционира ли сервизен център
Град	Адрес	Телефон	E-mail			
Благоевград	бул. Св. Кирил и Методий 2	0 7001 7978	support@stemo.bg	•	•	•
Бургас	ул. Адам Мицкевич 5	0 7001 7978	support@stemo.bg	•	•	•
Бургас	ул. Александър Стамболийски 39, офис 2	0 7001 0887; 056/840 197	service@paraflow.bg	•	•	•
Бургас	ул. Транспортна, Бизнес център Кондоско, офис 12	0 7001 6036; 056/811 896	support_burgas@cnsys.bg	•	•	•
Бургас	ул. Христо Фотев 94	0 8002 0199; 056/811 902	support@irex.com	•	•	•
В.Търново	ул. Любен Карамелов 51	0 7001 6036; 062/602 404	support_velikotyrnovo@cnsys.bg	•	•	•
Варна	ул. Любен Карамелов 26	0 8002 0199; 052/681 881	support@irex.com	•	•	•
Варна	ул. Мир 3	0 7001 6036; 052/614 418	support_varna@cnsys.bg	•	•	•
Варна	бул. Отец Пансий 42	0 7001 7978	support@stemo.bg	•	•	•
Варна	ул. Тодор Боджаев 7	0 7001 0887; 052/321 997	service@paraflow.bg	•	•	•
Видин	ул. Цар Александър II 7	0 7001 6036; 094/600 410	support_vidin@cnsys.bg	•	•	•
Габрово	ул. Емилуил Мамолов 13	0 8002 0199; 066/804 662	support@irex.com	•	•	•
Габрово	ул. Николасежка 41	0 7001 7978	support@stemo.bg	•	•	•
Девня	Промислова зона	0 8002 0199; 0519/95 959	support@irex.com	•	•	•
Козлодуй	АЕЦ Козлодуй	0 7001 7978	support@stemo.bg	•	•	•
Козлодуй	ул. Васил Велевичевски 10, ет. 2	0 8002 0199; 0973/80 407	support@irex.com	•	•	•
Плевен	ул. Беласица 28	0 8002 0199; 02/959 1691	support@irex.com	•	•	•
Плевен	бул. Русе 6	0 7001 7978	support@stemo.bg	•	•	•
Пловдив	бул. България 108А	0 7001 7978	support@stemo.bg	•	•	•
Пловдив	ул. Тодор Бурмов 4	0 8002 0199; 032/622 618	support@irex.com	•	•	•
Пловдив	ул. Самара 7	0 7001 0887; 032/960 046	service@paraflow.bg	•	•	•
Пловдив	бул. България 109	032/637 663	support_plovdiv@cnsys.bg	•	•	•
Русе	бул. Цар Освободител 42А, блок Проектант	0 7001 7978	support@stemo.bg	•	•	•
Русе	ул. Хим Крун 6, вк. В, вл. 2	0 8002 0199; 082/877 092	support@irex.com	•	•	•
Русе	ул. Църковна на манастира 27	0 7001 6036; 082/823 256	support_ruse@cnsys.bg	•	•	•
София	ул. Перик 39	0 7001 6036	support@cnsys.bg	•	•	•
София	ж.к. Младост 3, бл. 302, вк. 4	0 8002 0199; 02/969 1660	support@irex.com	•	•	•
София	ул. Никола Габровски 79, Бизнес център ТУИНС	0 7001 0887; 02/960 4200	service@paraflow.bg	•	•	•
София	бул. Цариградско шосе 135, Бизнес сграда Офис Експрес	0 7001 7978	support@stemo.bg	•	•	•
Стара Загора	ул. Гергал Гурев 61	0 7001 7978	support@stemo.bg	•	•	•
Стара Загора	ул. Кольо Ганчев 52	0 8002 0199; 042/621 114	support@irex.com	•	•	•
Стара Загора	ул. Св. Отец Пансий 92	0 7001 6036; 042/623 216	support_starazagora@cnsys.bg	•	•	•
Стара Загора	бул. Христо Ботев 100, ет. 5, офис 116	0 7001 0887; 042/505 350	service@paraflow.bg	•	•	•

ОРИГИНАЛ

000057

Tech Print

FUJITSU

ТЕХ ПРИНТ ЕООД
гр. София, ул. Мюнхен 8
тел: 02-9799850
факс: 02-9798581
e-mail: sales@techprint-bg.com
e-shop: <http://www.tech-bg.com>

До: Университет за Национално и Световно Стопанство(УИСС)

гр. София, бул. 8-ми декември

Относно: ОТКРИТА ПРОЦЕДУРА ПО ЗОП ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ "ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО - КОМПЮТЪРНА ТЕХНИКА"

ОТОРИЗАЦИОННО ПИСМО

С настоящето, Тех Принт ЕООД, вписано в търговския регистър при Агенция по вписванията с ЕИК [] и със седалище и адрес на управление: гр.София - 1528, ул. Мюнхен, № 8 (Хай - Тех Бизнес Център), в качеството си на официален дистрибутор на офис - продуктите с марка FUJITSU, оторизира

Парафлоу Комуникейшънс ООД, вписано в търговския регистър при Агенция по вписванията с ЕИК [] и със седалище и адрес на управление: гр. София, ул. „Никола Габровски“ 79, представлявано от [], да участва в горепосочената процедура за доставка на продуктите, произведени от FUJITSU, за количествата, спецификациите и графика на доставка, изисквани от възложителя на тази процедура.

Ние декларираме, че внасяните от нас продукти носещи марката FUJITSU, са в съответствие с директивите и стандартите на ЕС за този вид продукти.

Ние удостоверяваме също, че Парафлоу Комуникейшънс ООД разполага с квалифициран персонал, сертифициран да осъществява всички гаранционни услуги и сервизни процедури, свързани с горепосочените продукти, чрез сервиза на Парафлоу Комуникейшънс ООД и оторизираните центрове на Fujitsu в България.

Гр. София, 08.03.2018г.






Тех Принт ЕООД



БЪЛГАРИЯ

000058

ДЕКЛАРАЦИЯ

Долуподписаната , ЕГН , с л.к. № , изд. на 
от МВР – 1. , в качеството си на Експерт обществени поръчки и
редовно упълномощена от Управителя на “Парафлоу Комуникейшънс” ООД,
със седалище и адрес на управление: София 1700, бул. Никола Габровски 79, ЕИК
участник в процедура от Закона за обществени поръчки (ЗОП) с предмет: “ДОСТАВКА,
ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА
ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА”
за Обособена позиция 5 - Принтери, скенери и многофункционални устройства
ДЕКЛАРИРАМ:

Задължаваме се да осигурим в рамките на предложението в техническото ни предложение гаранционен срок на техниката по обособена позиция 5, необходимите гаранционни ремонти при следните условия:

- Срокът за реакция (регистрация на повредата) след уведомяване от страна на Възложителя е до 2 часа в работно време;
- Срокът за отстраняване на повредата е до 14 работни дни;
- При невъзможност в рамките на посочения срок за отстраняване на проблема в дефектирало оборудване, същото ще се заменя с работоспособно от същия или по-висок клас в срок до 5 работни дни.

Посемаме гаранция за качеството на стоката и за годността и за употреба за сроковете посочени в офертата ни и се задължаваме:

- да осигурим гаранционно обслужване и сервиз;
- да извършваме качествено сервизно техническо поддържане и ремонт на доставената компютърна техника в съответствие с действащите стандарти;
- да отстраняваме възникналите при нормалната експлоатация повреди;
- да отстраним безвъзмездно всички повреди и отклонения от изискванията за качество, които са възникнали в рамките на посочения гаранционен срок;

По време на гаранционния срок, се задължаваме при установяване на еднороден дефект на компоненти и това е установено на не по - малко от 20% от техниката от един вид, да подменяме дефектния компонент и на другата техника от същия вид, които не са проявили дефекта.

Гаранционното сервизно обслужване ще се извършва на мястото на използване на стоките, а ако това е невъзможно се извършва в наша сервизна база, оторизирана от производителите на предлаганата техника за осъществяване на сервизната услуга при условията посочени по-горе.

Адресът на базата е следният:

Гр. София 1700, Район студентски, бул. Никола Габровски 79.

За заявяване на услуга за обслужването Оборудване/ Системи, клиентът ни уведомява по един от следните начини:

- чрез регистриране на заявка в Сервизна информационна система „Paraflow Service Desk”, достъпна на адрес: support.paraflow.bg;
- по електронна поща на адреси hotline@paraflow.bg и service@paraflow.bg чрез попълнен формуляр на Потребителска заявка;
- на факс 02 960 4218 с попълнена сервизна заявка чрез попълнен формуляр на Потребителска заявка;
- по телефона за контакт с ИЗПЪЛНИТЕЛЯ 0700 10 887, 02 960 4222

гр. София, 12.03.2018 г.

Декларатор:

/дата на подписване/

Експерт обществени поръчки

Парафлоу Комуникейшънс ООД

000059

Д Е К Л А Р А Ц И Я
ЗА СЪГЛАСИЕ С КЛАУЗИТЕ НА ПРИЛОЖЕНИЯ ПРОЕКТ НА ДОГОВОР

Долуподписаният: I

(собствено, бащино, фамилно име)

с ЕГН: _____, притежаваш л.к. № _____, издадена на _____ г.,
от МВР – _____, с постоянен адрес: _____,

в качеството си на Управител,
(длъжност)

на участник Парафлоу Комуникейшънс ООД, ЕИК 831913775
(наименование на участника)

в процедура от Закона за обществени поръчки (ЗОП) с предмет: **“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА”** за Обособена позиция 5 - **Принтери, скенери и многофункционални устройства**

Д Е К Л А Р И Р А М, Ч Е:

Запознат съм с проекта на договора за възлагане на обществената поръчка за Обособена позиция 5 - Принтери, скенери и многофункционални устройства, приемам го без възражения и ако участникът, когото представлявам, бъде определен за изпълнител, ще сключа договора изцяло в съответствие с проекта, приложен към документацията за участие, в законоустановения срок.

Известна ми е отговорността по чл. 313 от Наказателния кодекс за посочване на неверни данни.

Дата: 12.03.2018 г.

Декларатор:

/подпис и печат/

Д Е К Л А Р А Ц И Я
ЗА СЪГЛАСИЕ С КЛАУЗИТЕ НА ПРИЛОЖЕНИЯ ПРОЕКТ НА РАМКОВО
СПОРАЗУМЕНИЕ



Долуподписаният:

(собствено, бащино, фамилно име)

с ЕГН: _____, притежаващ л.к. № _____, издадена на _____,
 от МВР – _____, с постоянен адрес: _____,
 в качеството си на Управител,
(длъжност)

на участник Парафлоу Комуникейшънс ООД, ЕИК
(наименование на участника)

в процедура от Закона за обществени поръчки (ЗОП) с предмет: “ДОСТАВКА,
 ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ
 НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА” за Обособена позиция 5 -
 Принтери, скенери и многофункционални устройства

Д Е К Л А Р И Р А М, Ч Е:

Запознат съм с проекта на рамково споразумение за възлагане на обществената поръчка, приемам го без възражения и ако участникът, когото представлявам, бъде определен за изпълнител, ще сключа рамковото споразумение изцяло в съответствие с проекта, приложен към документацията за участие, в законоустановения срок.

Известна ми е отговорността по чл. 313 от Наказателния кодекс за посочване на неверни данни.

Дата: 12.03.2018 г.

Декларатор: _____

/подпис и печат/

**Д Е К Л А Р А Ц И Я
ЗА СРОК НА ВАЛИДНОСТ НА ОФЕРТАТА**

Долуподписаният:

с ЕГН: _____ притежаващ л.к. № _____ *(собствено, бащино, фамилно име)*
от МВР – _____ издадена на _____
с постоянен адрес: _____
в качеството си на Управител,
(длъжност)
на участник Парафлоу Комуникейшънс ООД, ЕИК 1
(наименование на участника)

в процедура от Закона за обществени поръчки (ЗОП) с предмет: **“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА”** за Обособена позиция 5 - Принтери, скенери и многофункционални устройства

Д Е К Л А Р И Р А М, Ч Е:

С подаване на настоящата оферта декларираме, че сме съгласни валидността на нашата оферта да бъде 4 (четири) месеца от крайния срок за получаване на оферти, посочен в обявлението за процедурата

Известна ми е отговорността по чл. 313 от Наказателния кодекс за посочване на неверни данни.

Дата: 12.03.2018 г.

Декларатор:

/подпис и печат/

ДО
Университет за национално и световно стопанство
Студентски град, ул. "8ми Декември"
София 1700

ЦЕНОВО ПРЕДЛОЖЕНИЕ

**за участие в открита процедура за сключване на
рамково споразумение с предмет:**

“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО-КОМПЮТЪРНА ТЕХНИКА”

За Обособена позиция 5 - Принтери, скенери и многофункционални устройства

от: ПАРАФЛОУ КОМУНИКЕЙШЪНС ООД
Адрес: София 1700, бул. "Никола Габровски" 79
Лице за контакт: Искра Берова
тел.: + 359 2 960 42 00, факс: + 359 2 960 42 18
e-mail: office@paraflow.bg
www.paraflow.bg



ЦЕНОВО ПРЕДЛОЖЕНИЕ

от Парафюу Комуникейшънс ООД
(наименование на участника)

и подписано от

(трите имена и ЕГН)

в качеството ѝ на Експерт обществени поръчки и упълномощено лице от управителя
(на длъжност)

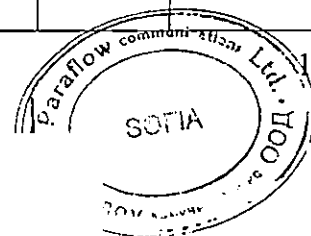
с ЕИК: ;

УВАЖАЕМИ ДАМИ И ГОСПОДА,

1. С настоящото, Ви представяме нашата ценова оферта за участие в обявената от Вас обществена поръчка с предмет: **“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА”** за обособена позиция № 5

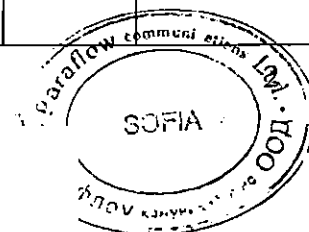
Предлагаме да поемем, изпълним и завършим тази обществена поръчка, съобразно условията на документацията за участие, както следва:

№	Вид оборудване, марка, модел, елементи	Технически характеристики	мярка	Ед.цена без ДДС
1	ЛАЗЕРЕН ПРИНТЕР А4-ТИП 1 HP LaserJet Pro M203dw	Лазерна черно бяла А4 1200x1200 dpi 28 стр./мин. за формат А4 6.6 сек 250 листа от 60 до 163 g/m ² Да 30 000 стр. А4 Hi-Speed USB 2.0, Gigabit Ethernet 100 TX ; 802.11b/g/n Wireless; 800 MHz 1 xHi-Speed USB 2.0; 1 Ethernet 10/100 network; Wireless 1000 стр. по ISO/IEC 19752 от производителя на устройството 1600 стр. по ISO/IEC 19752, произведен от производителя на устройството Ще бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7 1 година	Бр.	375.00
2	ЛАЗЕРЕН ПРИНТЕР А4 -ТИП 2 HP LaserJet Pro M402dw	Лазерна черно бяла А4 1200 dpi 38 стр./мин. за формат А4; двустранно принтиране 28 ipm 6,2 сек 250 листа Да, за 100 листа от 60 до 175 g/m ²	Бр.	588.00



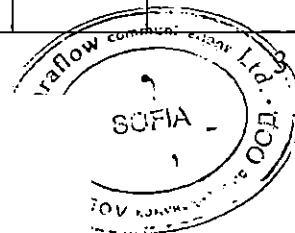
000001

		<p>Да 80 000 стр. A4 USB 2.0, Gigabit Ethernet 1000 TX ; 802.11b/g/n Wireless; 1200 MHz 3100 стр. по ISO/IEC 19752 от производителя на устройството 9000 стр. по ISO/IEC 19752, произведен от производителя на устройството Ще бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7 3 години</p>		
3	<p>ЦВЕТЕН ЛАЗЕРЕН ПРИНТЕР A4 HP Color LaserJet Pro M452dn</p>	<p>Лазерна цветна A4 600x600 dpi 27 стр./мин. за формат A4; двустранно принтиране 24 ipm 9.9 сек 300 листа Да, за 50 листа от 60 до 176 g/m² Да 50 000 стр. A4 128 MB 1 200 MHz USB 2.0, Gigabit Ethernet 1000 TX 1200 стр. по ISO/IEC 19752 и ISO/IEC 19798 от производителя на устройството 5000 стр. по ISO/IEC 19752 и ISO/IEC 19798, произведен от производителя на устройството Ще бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7 3 години</p>	Бр.	1369.00
4.	<p>ЛАЗЕРНО МНОГОФУНКЦИОНАЛНО УСТРОЙСТВО A4 HP LaserJet Pro MFP M426dw</p>	<p>Копир, принтер, скенер Лазерна A4 600x600 dpi 38 стр./мин. за формат A4; двустранно принтиране 30 ipm 5.6 сек 380 листа 50 листа Да, за 100 листа 38 cpm 21 ppm/26 ipm Да 80 000 стр. A4 1200MHz USB 2.0, Gigabit Ethernet 1000 TX, Wireless 802.11b/g/n PCL 6, PCL 5, Postscript 3 3 100 стр. по ISO/IEC 19752 от производителя на устройството 9000 стр. по ISO/IEC 19752, произведен от производителя на устройството Ще бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7 3 години</p>	Бр.	743.00
5.	<p>ЦВЕТНО ЛАЗЕРНО МНОГОФУНКЦИОНАЛНО УСТРОЙСТВО A4 - 1 HP Color LasersJet Pro MFP M181fw</p>	<p>Копир, принтер, скенер, факс Лазерна A4 600x600 dpi 16 стр./мин. Черно-бяло и цветно за формат A4 16 cpm. за A4 13.5 сек. Цветно 800 MHz 25-400% 35 листа 150 листа "14 ppm 30 000 стр. "Hi-Speed USB 2.0 ; Built-in Fast Ethernet 10/100 Base-TX, 802.11n 2.4/5GHz wireless;" PCL 6, PCL 5, Postscript 3 700 стр. по ISO/IEC 19752 и ISO/IEC 19798 от производителя на устройството</p>	Бр.	923.00



000002

		1100 стр. по ISO/IEC 19752 от производителя на устройството 900 стр. по ISO/IEC 19798, произведен от производителя на устройството Ще бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7 3 години		
6.	ЦВЕТНО ЛАЗЕРНО МНОГОФУНКЦИОНАЛНО УСТРОЙСТВО А4 – 2 HP Color LaserJet Pro MFP M477fdn	Копир, принтер, скенер, факс, е-майл Лазерна А4 600x600 dpi 27стр./мин. за формат А4; двустранно принтиране 27 ppm 27 стр. за А4 9.9 сек. цветно 1200 MHz 25-400% 50 листа 350 листа 26 ppm/47 ppm черно-бяло, 21 ppm/30 ppm цветно 50 000 стр. USB 2.0 ,Ethernet 10/100Base-TX; PCL 6, PCL 5, Postscript 3 1200 стр. по ISO/IEC 19752 и ISO/IEC 19798 от производителя на устройството 6500 стр. по ISO/IEC 19752 от производителя на устройството 5000 стр. по ISO/IEC 19798, произведен от производителя на устройството Ще бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7 3 години	Бр.	1561.00
7.	ЛАЗЕРНО МНОГОФУНКЦИОНАЛНО УСТРОЙСТВО А3 HP LaserJet MFP E72525dn	Копир, принтер, дигитализиране на документи Самостоятелно (без зависимост от PC) създаване и изпращане на PDF документи към e-mail Лазерна черно-бяла А3 1200x1200 dpi 25стр./мин. за формат А4; двустранно принтиране мин. 17 ppm 8,9 сек. 7 GB 320 GB мин. 1200 MHz 1320 листа Да Да Цветен 600 dpi 80 ppm 250 листа 300 000 стр. USB 2.0, Ethernet 10/100 TX 48000 стр. по ISO/IEC 19752 от производителя на устройството Ще бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7 1 година	Бр.	5990.00
8.	НАСТОЛЕН СКЕНЕР А4 HP ScanJet Pro 2500 f1 Flatbed	плосък (Flatbed) Flatbed, ADF, CIS (Contact Image Sensor) А4 1200x1200 dpi 20 ppm/40 ppm 48 bit USB 2.0 TWAIN драйвери, разпознаване на текст на български (OCR) за 50 листа ДА scan, single/duplex button Ще бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7 1 година	Бр.	611.00
9.	ЦВЕТЕН ДОКУМЕНТЕН СКЕНЕР А3	автоматично листоподаващо устройство за документи (ADF), сканиращ елемент Charge Coupled Device (CCD) А8 - А3	Бр.	4731.00



000003

	FUJITSU Image Scanner fi-7460	600 dpi 60 стр./мин. А4 едностранно, мин. 120 стр./мин. двустранно ultrasonic double sheet detection Да 100 листа USB 3.0 (USB 2.0) включени TWAIN и ISIS драйвери Ще бъде доставен с всички необходими интерфейсни и захранващи кабели; драйвери Windows 10, 8/8.1, 7 1 година		
Сбор на единичните цени				16 891.00

2. В предлаганата от нас цена също така сме включили и всички разходи, необходими за качествено и точно изпълнение на дейностите от обхвата на обществената поръчка.

3. Предложените цени са определени при пълно съответствие с условията от документацията и техническата спецификация по процедурата.

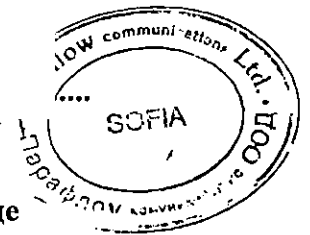
Дата: 12.03.2018 г.

ПОДПИС И ПЕЧАТ:

[име и фамилия]

Упълномощено лице

[качество на представляващия участника]



ДО
Университет за национално и световно стопанство
Студентски град, ул. "8ми Декември"
София 1700

ТЕХНИЧЕСКО ПРЕДЛОЖЕНИЕ

за участие в открита процедура за сключване на
рамково споразумение с предмет:

“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО-КОМПЮТЪРНА ТЕХНИКА”

За Обособена позиция 6 – Непрекъсваеми токозахранващи устройства

от: ПАРАФЛОУ КОМУНИКЕЙШЪНС ООД
Адрес: София 1700, бул. "Никола Габровски" 79
Лице за контакт: Искра Берова
тел.: + 359 2 960 42 00, факс: + 359 2 960 42 18
е-mail: office@paraflow.bg
www.paraflow.bg

ТЕХНИЧЕСКО ПРЕДЛОЖЕНИЕ ЗА ИЗПЪЛНЕНИЕ НА ПОРЪЧКАТА

от Парафлоу Комуникейшънс ООД
(наименование на участника)

и подписано от _____, ЕГН
(трите имена и ЕГН)

в качеството ѝ на Експерт обществени поръчк и упълномощено лице
(на длъжност)

с **ЕИК:**

УВАЖАЕМИ ДАМИ И ГОСПОДА,

1. След запознаване с всички документи и образци от документацията за участие в процедурата, получаването, на който потвърждаваме с настоящото, ние удостоверяваме и потвърждаваме, че представляваният от нас участник отговаря на изискванията и условията посочени в документацията за участие в процедура с предмет: **“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА”** за обособена позиция № 6

2. Декларираме, че сме получили посредством „Профила на купувача” документация за участие и сме запознати с указанията и условията за участие в обявената от Вас процедура. Съгласни сме с поставените от Вас условия и ги приемаме без възражения.

3. Декларираме, че сме запознати със всички условия за изпълнение на поръчката за обособената позиция

4. Декларираме, че ще изпълним дейностите по обществената поръчка в сроковете регламентирани от Възложителя в документацията за участие и Техническата спецификация, а именно:

Срок за изпълнение 12 месеца.

5. Декларираме, че предлаганата техника е нова, неупотребявана, нерициклирана и в производствената листа на производителя към момента на подаване на офертата, Линк, чрез който може да се провери истинността на горепосоченото <https://gtcc-power.eu>.

6. Декларираме, че имаме оторизация от производителя и/или от официалния представител на производителя с права да извършваме продажба и сервиз на предлаганото оборудване.

7. За изпълнение предмета на поръчката прилагаме:

7.1. документ за упълномощаване, когато лицето, което подава офертата, не е законният представител на участника – оригинал или нотариално заверено копие;

7.2. предложение за изпълнение на поръчката в съответствие с техническите спецификации и изискванията на възложителя за обособената позиция и да е съобразено с критериите за възлагане – свободна редакция;

7.3. оторизация от производителя с права за извършване продажба и сервиз на предлаганото оборудване;

7.4. декларация за сервизно обслужване и наличие на сервизна база, оторизирана от производителите и на предлаганата техника за осъществяване на сервизните услуги при условията на възложителя;

7.5. декларация за съгласие с клаузите на приложения проект на договор - попълва се Образец № 4.2.;

7.6. декларация за съгласие с клаузите на приложения проект на рамково споразумение - попълва се Образец № 4.1.;

7.7. декларация за срока на валидност на офертата - попълва се Образец № 5.;

Дата: 12.03.2018 г.

ПОДПИС И ПЕЧАТ:

.....
[име и фамилия]

Упълномощено лице

[качество на представляващия участника]



ПЪЛНОМОЩНО

Долуподписаният

притежаващ лична карта No. _____, издадена на _____ г. от МВР- _____, ЕГН _____, с адрес в гр. София, ул. _____, представляващ, и в качеството си на Управител на "Парафлоу Комуникейшънс" ООД, регистрирано по ф.д. 9778/1995 г. по описа на СГС, БУЛСТАТ/ЕИК _____ с адрес по регистрация гр. София 1700, бул. "Никола Габровски" 79

У П Ъ Л Н О М О Щ А В А М

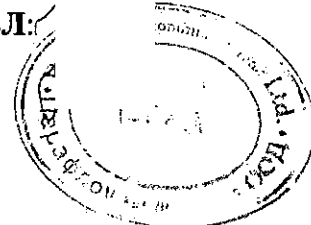
_____, притежаваща лична карта номер _____, издадена на _____ г. от МВР - _____, ЕГН: _____, да представлява **Парафлоу Комуникейшънс ООД** пред всички възложители на обществени поръчки по смисъла на чл. 5, чл. 6, чл. 7, чл. 8 и чл. 9 от Закона за Обществени Поръчки (ЗОП) във връзка с провеждането на процедури за възлагане на обекти на обществените поръчки по смисъла на чл. 3, ч. 8 и чл. 9 от ЗОП, както и във всички тръжни процедури, финансирани от фондовете на Европейския Съюз, международни тръжни процедури, финансирани от Световната Банка, USAID, UNDP и други източници на финансиране, както и във фирмени конкурси и процедури, със следните права:

- Да води преговори от името на Парафлоу Комуникейшънс ООД с представители на Възложителите;
- Да получава, подава и подписва от името на Парафлоу Комуникейшънс ООД предложения, оферти, писма, молби, декларации, заявления, искания, копия на документи, и др. подобни документи от/към възложителите;
- Да представлява Парафлоу Комуникейшънс ООД пред Възложителите при предаване или получаване на предложения, оферти и допълнителни документи - писма, банкови гаранции, договори и т.н. в случай на поискването им от Възложителите;
- Да парафира и подписва от името на Парафлоу Комуникейшънс ООД, текстовете на договори и споразумения с Възложителите;
- Да представлява Парафлоу Комуникейшънс ООД пред Комисиите, като присъства при отваряне, разглеждане и оценяване на предложенията на Парафлоу Комуникейшънс ООД, да чете и взема становище по протоколите на Комисиите, както и да представя и подписва допълнителни документи или писма в случай на поискването им от Възложителите.

Настоящото Пълномощно е в сила до 30.8.2018 г.

гр. София, 03.01.2018 г.

УПЪЛНОМОЩИТЕЛ:



000003

11 -01- 2018

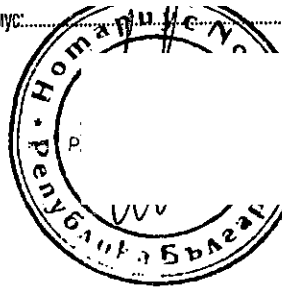
11 -01- 2018

На.
на |
.....
.....
с и
Per

199
А ОЕ
.....
.....
.....
ДВ.

Нотариус:.....

помощник-нотариус



ТЕХНИЧЕСКО ПРЕДЛОЖЕНИЕ

Минимални технически параметри		Предложение на Парафлуо Комуникейшънс ООД
Обособена позиция №6 НЕПРЕКЪСВАЕМИ ТОКОЗАХРАНВАЩИ УСТРОЙСТВА		
TOWER UPS 1		GTEC PC615N-1500
Изходяща мощност	Мин. 1500VA/900W	1500VA/900W
Входящо напрежение	162 – 290 VAC	162 – 290 VAC
Време на работа без захранване в/у товар 120W	Мин. 30 min at 120W load	30 min at 120W load
Входяща честота	50/60Hz +/-5Hz	50/60Hz +/-5Hz
Брой изводи	Мин. 6 IEC 320 C3	6 IEC 320 C3
Интерфейс портове	USB	USB
Време за зареждане	Мин. 8h	8h
TOWER UPS 2		GTEC PC615N-2000
Изходяща мощност	Мин. 2000VA/1200W	2000VA/1200W
Входящо напрежение	Мин. 162V-290V	162V-290V
Време на работа без захранване в/у товар 120W	Мин. 35 min at 120W load	35 min at 120W load
Входяща честота	50/60Hz +/-5Hz	50/60Hz +/-5Hz
Брой изводи	Мин. 6 IEC 320 C3	6 IEC 320 C3
Интерфейс портове	USB	USB
Време за зареждане	8h	8h
TOWER UPS 3		GTEC PC615N-650
Изходяща мощност	500VA/300W	500VA/300W
Входящо напрежение	184 V - 264 V	162V-290V
Входяща честота	50/60Hz	50/60Hz
Брой изводи	3 IEC 320 C3	3 IEC 320 C3
Време за зареждане	4h	4h
Гаранция	2 години	2 години
RACK-MOUNT UPS 4		GTEC AP160N-3000
Изходяща мощност	Мин. 3000VA/2700W	3000VA/2700W
Технология	VFI – Double conversion	VFI – Double conversion
Енергоспестяващ режим	ECO MODE	ECO MODE
Интелигентен дисплей	LCD	LCD
Входни нлинейни изкривявания THDI	Мин. <5% at full load	<5% at full load
Входен фактор на мощността	>0,99	>0,99
Входящо напрежение	120-276VAC	120-276VAC
Време на работа без захранване	Мин. 6 min	6 min
Входяща честота	45-55Hz/54-66Hz	45-55Hz/54-66Hz
Брой изводи	Мин. 8 IEC 320 C13, 1 IEC 320 C19	8 IEC 320 C13, 1 IEC 320 C19
Интерфейс портове	RS232, USB, SNMP	RS232, USB, SNMP
Функция „Аварийно изключване“	EPO (Emergency Power Off)	EPO (Emergency Power Off)
Време за зареждане	3h	3h

Дата: 12.03.2018 г

ПОДПИС И ПЕЧАТ:

Искра Борова

[име и фамилия]

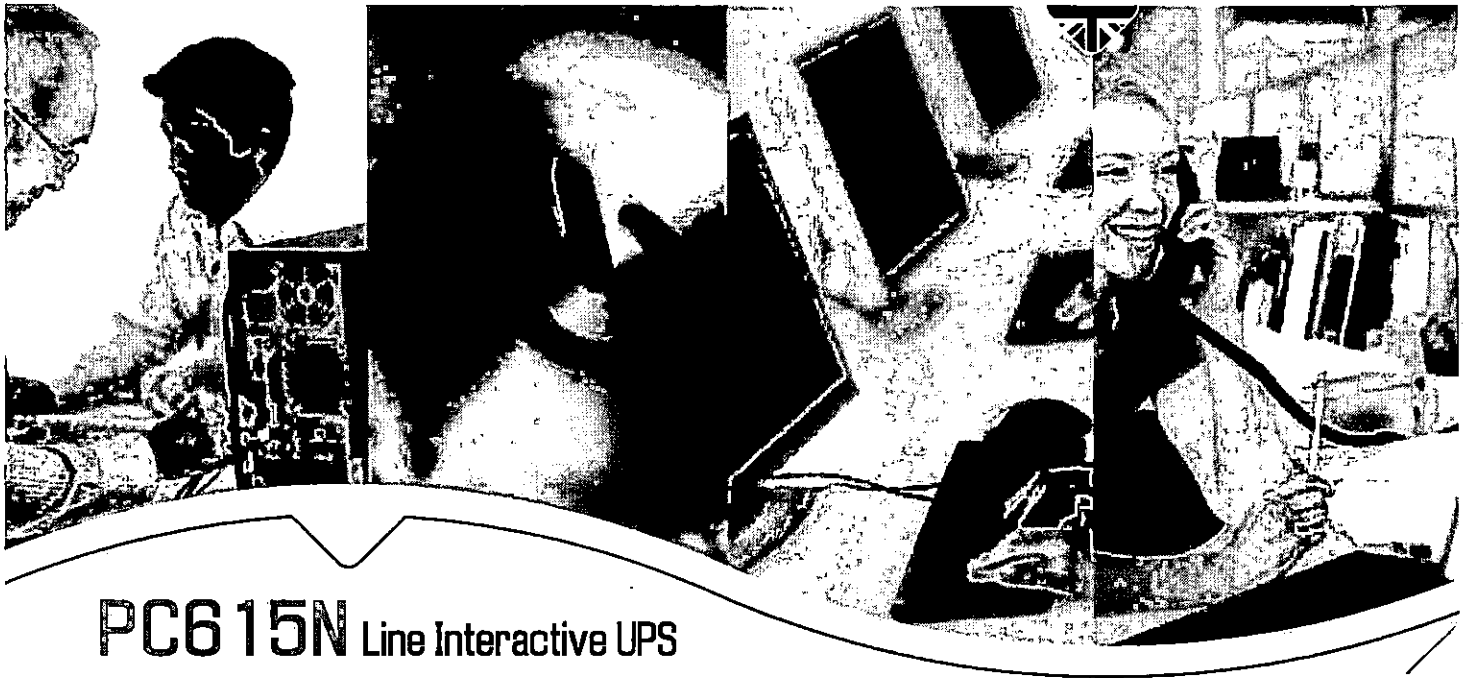
Упълномощено лице

[качество на представляващия участника]

10

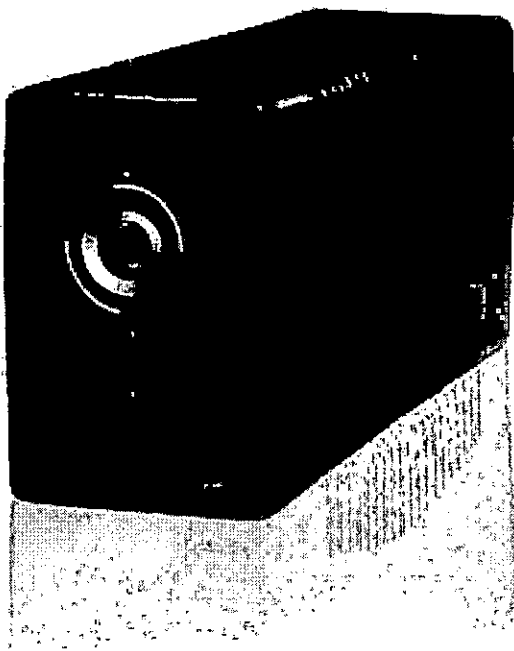
000004

10



PC615N Line Interactive UPS

650 - 2000 VA single-phase



- HIGH RELIABILITY MICROPROCESSOR CONTROL
- AVR VOLTAGE STABILIZATION
- AUTO RESTART WHILE AC IS RECOVERING
- SIMULATED SINE WAVE
- OFF-MODE CHARGING
- GOLD START FUNCTION
- USB / RS-232 (OPTIONAL) COMMUNICATION PORT

GTEC
Quality Energy Provider

ВЪРНО С ОПРИГНАТА

mart Energy
Solutions

000000

Rev. 08/02/2017

MODEL	PC615N-650	PC615N-850	PC615N-1000	PC615N-1500	PC615N-2000
INPUT					
Power	650VA / 360 W	850VA / 480W	1000VA / 600W	1500VA / 900W	2000VA / 1200W
Voltage	220/230/240 VAC or 110/120 VAC*				
Voltage range	81-145 VAC / 162-290 VAC				
Frequency Range	60/50 Hz (auto sensing) (±5Hz)				
OUTPUT					
AC Voltage Regulation (Batt. Mode)	±10%				
Frequency Range (Batt. Mode)	60 Hz or 50 Hz ±1 Hz				
Transfer Time	Typical 2-6 ms				
Waveform (Batt. Mode)	Simulated Sine Wave				
BATTERY					
Type	12 V / 7AH	12 V / 9 AH	12 V / 7 AH	12 V / 8 AH	12 V / 9 AH
Numbers of batteries	1	1	2	2	2
Backup time (at 50% rated load)	5 minutes	3 minutes	6 minutes 30 seconds	6 minutes 30 seconds	5 minutes
Recharge Time	8 hours recover to 90% capacity				
INDICATORS					
AC Mode	Green lighting	The 1st green LED lighting & the 2nd to 5th green LEDs gradually lighting indicating load level			
Battery mode	Yellow flashing	The 1st green LED flashing & the 2nd to 5th green gradually lighting indicating battery capacity			
Fault	N/A	Red lighting	Red LED lighting		
PROTECTION					
Full Protection	Overload, discharge, and overcharge protection				
ALARM					
Battery Mode	Sounding every 10 seconds				
Low Battery	Sounding every second				
Overload	Sounding every 0.5 second				
Battery Replacement Alarm	Sounding every 2 seconds				
Fault	Continuously sounding				
PHYSICAL					
Output Receptacles	IEC or Schuko				
Dimension, DXWXH (mm)	275 x 100 x 140		350 x 146 x 160		397 x 146 x 205
Net Weight (kg)	4,4	4,8	8,9	8,7	9,8
OPERATING ENVIRONMENT					
Operating Humidity	0-90% RH at 0- 40°C (non-condensing)				
Noise Level	Less than 40dB at 1m				
MANAGEMENT					
Ports USB / RS-232*	Supports Windows 2000/2003/XP/Vista/2008, Windows 7, Linux, Unix and Mac.				

*on request

Note: product specifications are subject to change without further notice



www.gtec-power.eu



G-Tec Europe srl
 Strada Marosticana, 81/13
 36031 Povolara (VI), Italia
 Tel. +39 0444.361321 - Fax +39 0444.365191
 info@gtec-power.eu

G-Tec France

ВРРН

ИНАТА

000006



PC615N Uninterruptible power supply
Conformity Declaration

CE
2014

Certification number: CE_APN000_1401

In accordance with the Low Voltage Directives:

2006/95/EC Low Voltage Directive
EMC Directive 2004/108/EC

The device, as described herewith, was tested pursuant to applicable test procedure and complies with the requirements of:

EN62040-1-1:2008 (Safety)
EN62040-2: 2006 (EMC)

Manufacturer's name:

G-TEC Europe srl
Strada Marosticana, 81/15
36031 Povolaro di Dueville (VI)
Italy

Products:

Single phase
Uninterruptible power supply
Line interactive topology
with or without internal batteries and optionals

Models:

PC615N

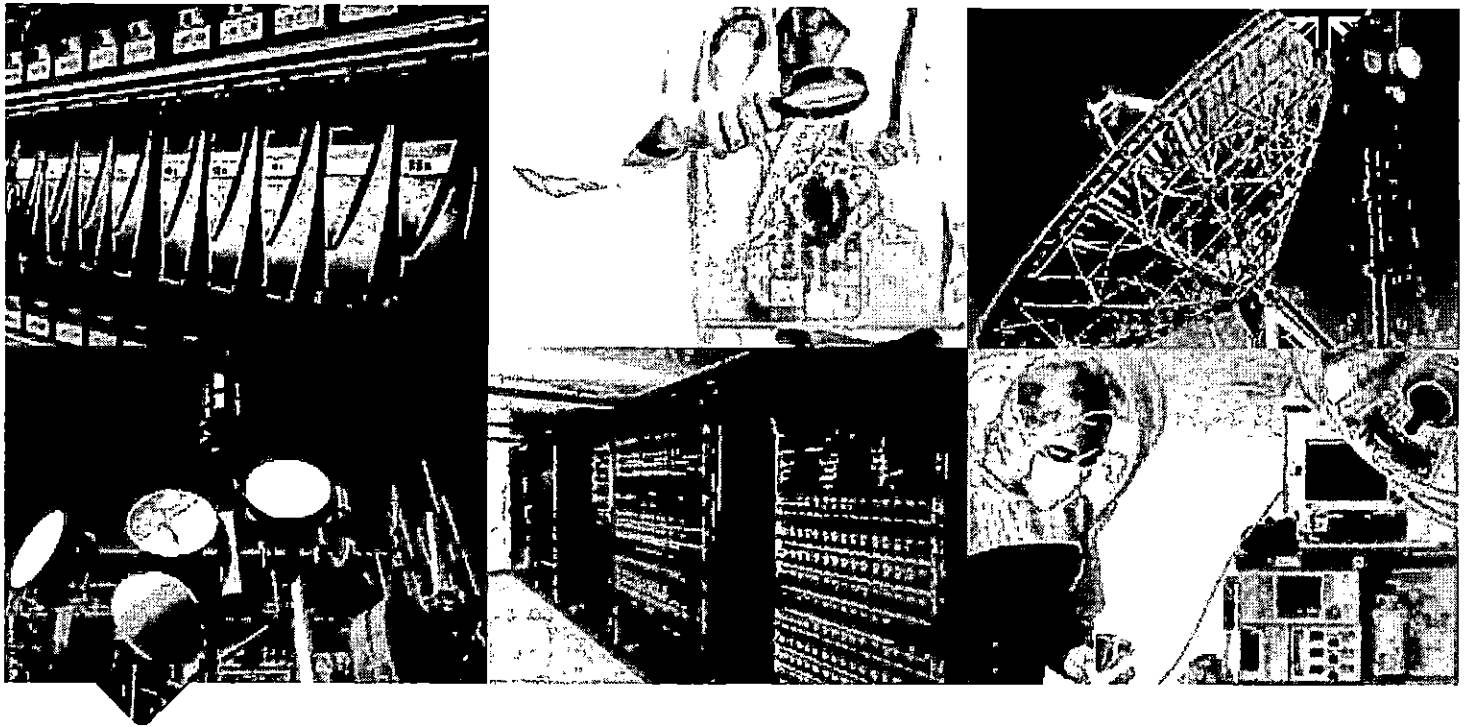
Sizes:

650 - 850 - 1000 - 1500 - 2000 VA

Signature of the Legal Representative

Ing. Orio Gabrielle

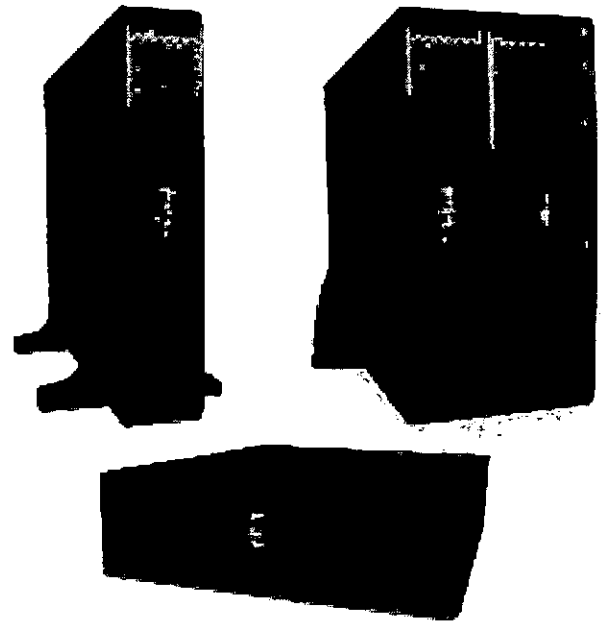
000007



AP 160N

Online UPS

- Local Area Networks (LAN)
- Servers
- Data centers
- Internet centers (ISP/ASP/POP)
- Industrial PLCs
- Emergency devices (light, alarm)
- Medical devices
- Telecommunication devices
- Industrial application



Rack-tower convertible 1-2-3-6-10 kVA



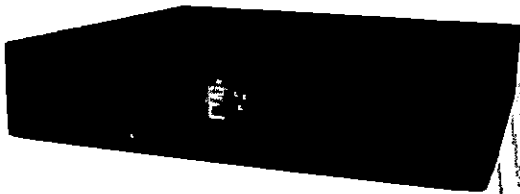
efficient ~~energy~~ ~~conversion~~ ~~with~~ ~~high~~ ~~efficiency~~
in power supply solutions

000008

my

AP160N Main Features

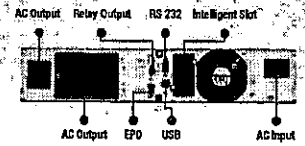
- COMPACT SOLUTION
- EXCELLENT RELIABILITY
- LOWER POWER AUTO-CONSUMPTION
- HIGH POWER DENSITY
- EXTENDABLE AUTONOMY
- FLEXIBLE SETTINGS



The high power density and the excellent reliability are the main features of the AP160N, the perfect solution for the critical loads, as servers and IT networks.

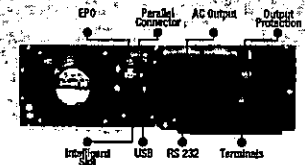
- EXCELLENT RELIABILITY**
 - DSP (Digital Signal Processor) microprocessor controlling
 - Rotary display with easy access
 - Self-status monitoring and faults diagnosis
- HIGH POWER DENSITY**
 - Wide input voltage range
 - 0.9 load PF increase the power availability
 - Input power factor correction for the lowest current distortion
- FLEXIBLE SETTINGS**
 - Selectable configuration via LCD
 - Online, Ecomode and frequency converter mode
 - EPO connector for emergency power off
- EXCELLENT RELIABILITY**
 - Higher power performance in slim shape for 19" rack space
 - Internal batteries easy replacement
 - Connector for additional battery packs connection
- COMPACT SOLUTION**
 - Higher power performance in slim shape for 19" rack space
 - Internal batteries easy replacement
 - Connector for additional battery packs connection
- LOWER POWER AUTO-CONSUMPTION**
 - High efficiency
 - Ecomode operation available for efficiency up to 97%
 - Low heating dissipation
- EXTENDABLE AUTONOMY**
 - Solutions available with super charger for extended autonomy
 - Dedicated battery packs for external batteries

- FLEXIBLE SETTINGS**
 - AC Output programmable management
 - Configurable dry contact, available as standard
- COMPACT SOLUTION**
 - 2U height with internal batteries up to 3kVA
- LOWER POWER AUTO-CONSUMPTION**
 - High efficiency up to 90%



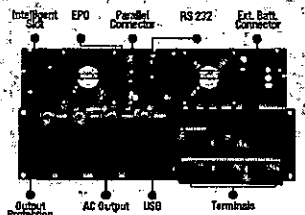
- MENU**
- UPS STATUS
 - BATTERY CAPACITY
 - LOAD LEVEL
 - INPUT/OUTPUT VOLTAGE
 - INPUT/OUTPUT FREQUENCY
 - FAULTS/WARNINGS
 - SETTING MODE

- FLEXIBLE SETTINGS**
 - Redundant parallel 1+1 configuration
 - Optional hot swappable PDU* with mechanical maintenance switch, that allows to remove the UPS without loads switch off
- COMPACT SOLUTION**
 - Just 3U height for 19" rack space with internal batteries
 - Dual input, with separated bypass
- LOWER POWER AUTO-CONSUMPTION**
 - High efficiency greater than 93%



- MENU**
- UPS STATUS
 - BATTERY CAPACITY
 - LOAD LEVEL
 - INPUT/OUTPUT VOLTAGE
 - INPUT/OUTPUT FREQUENCY
 - FAULTS/WARNINGS
 - SETTING MODE

- FLEXIBLE SETTINGS**
 - Redundant parallel 1+1 configuration
 - Optional hot swappable PDU* with mechanical maintenance switch, that allows to remove the UPS without loads switch off
- COMPACT SOLUTION**
 - Just 5U height for 19" rack space with internal batteries
 - Dual input, with separated bypass
- LOWER POWER AUTO-CONSUMPTION**
 - High efficiency greater than 93%



- MENU**
- UPS STATUS
 - BATTERY CAPACITY
 - LOAD LEVEL
 - INPUT/OUTPUT VOLTAGE
 - INPUT/OUTPUT FREQUENCY
 - FAULTS/WARNINGS
 - SETTING MODE

* Optional hot swappable PDU excludes Parallel feature

AP160N

ЗЯРНО С ОПРИГНАЛА

000009

Communications Solutions

Win Power CD comes together with [logo] which can also be downloaded in the Internet.

This software is able to:

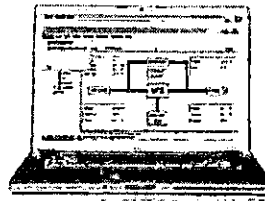
- Remotely monitor and control the UPS
- Send alarm signals to the mobile phone
- Perform automatic shutdown of PC / server
- Schedule UPS self-test programs

The software provides complete interface to your system through [logo] and [logo].

It can monitor the real-time status of the UPS and can be used to schedule the self-test programs. It can also be used to perform automatic shutdown of PC / server.

The software can be used to schedule the UPS self-test programs.

Interface Option



AS 400N CARD
RELAY CARD



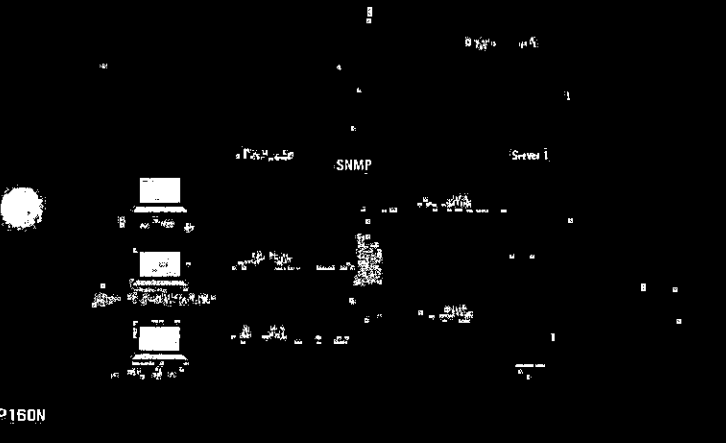
MODBUS INTERFACE



SNMP CARD

- Power flow display for UPS status monitoring
- Scheduled system shutdown/restart
- Scheduled UPS tests
- Warnings notification via Email/Pager
- Warnings notification via Broadcast
- Security password protection
- Remote Monitoring / Control via LAN
- Multi-language versions: English, German, French, Italian, Spanish, Portuguese and Chinese
- Selectable user interface
- UPS parameters setting
- Recorded logs analysis
- The SNMP card allows UPS management across LAN using the main TCP/IP network communication protocols

Direct connection with Ethernet Network

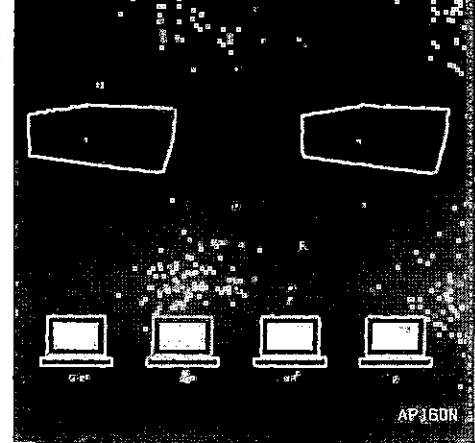


UPS AP160N 6kVA up to 10 kVA in the parallel configuration allows the system to be flexible to the power expansion, and the redundancy increases the safety of continuity.

The feature of the redundancy in parallel provides a cheap solution for the system growth.

Moreover the parallel configuration splits equally the load to provide a higher level of continuity to your application.

Power Management



ALCANTARA ORIGINAL

000010

Benefits of the AP160N series

- The AP160N series represent the state of the art in technology on the mono-phase UPS category.
- Highest efficiency in its category even for reduced percentage of load due to the 3-level Inverter IGBT technology.
- Extremely flexible to use with convertible rack / tower design and Online mode of operation, Ecomode, voltage and/or frequency converter.
- Top power density in its category due to reduced dimensions and Output $\cos\phi$ 0,9.
- Zero impact on the mains thanks to the PFC input which ensures THDi <5%, PF> 0.99.
- Complete solution and immediate use in small size, the UPS standard configuration has already on board installed batteries ready for use.
- Internal battery box can be easily removed thanks to the frontal access panel.
- Possibility to have autonomy even for several hours with the series AP160N-KS, provided with reinforced charger.
- Possibility to have manual bypass and function of parallel mounted to devices from 6 to 10 kVA.
- Essential aesthetic features that comply with modern concepts of design.

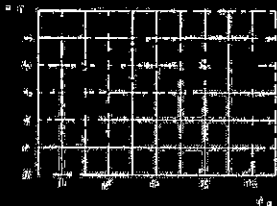
Technical Specifications

MODEL	AP160N	1K	1KS*	2K	2KS*	3K	3KS*	6K	6KS*	10K	10KS*
Power rating (kVA/W)		1000VA/600W	2000VA/1600W	3000VA/2700W	6000VA/5400W	10000VA/9000W					
INPUT											
RATED VOLTAGE	220Vac / 230Vac / 240Vac										
VOLTAGE TOLERANCE	120 - 276 Vac										
TRANSFER VOLTAGE RANGE	Based on load percentage 100% / 50%										
LINE LOW TRANSFER	170Vac ($\pm 3\%$) / 120Vac ($\pm 3\%$)										
LINE HIGH TRANSFER	276Vac ($\pm 3\%$)										
FREQUENCY RANGE	49Hz - 59Hz / 54Hz - 69Hz										
THD _{IN}	< 5% at full load										
POWER FACTOR	> 0.99 @ 220Vac: full PFC load										
OUTPUT											
RATED VOLTAGE	208Vac** / 220Vac / 230Vac / 240Vac										
VOLTAGE REGULATION	$\pm 1\%$										
RATED FREQUENCY AC MODE	60/60 $\pm 0.2\%$										
CREST FACTOR (LPEAK/VRMS)	3.1										
HARMONIC DISTORTION	$\pm 2\%$ THD (Linear Load)										
OUTPUT WAVEFORM	Pure Sinewave										
POWER FACTOR	0.9										
BATTERY											
TYPE	Sealed lead acid battery										
RATING	12V/7.5AH	36 Vdc	12V/9AH	48 Vdc	12V/9AH	72 Vdc	12V/9AH	180 vdc	12V/9AH	240 Vdc	
NUMBERS OF BATTERIES	3	depending on the capacity	4	depending on the capacity	6	depending on the capacity	15	depending on the capacity	20	depending on the capacity	
BACKUP TIME (TYPICAL LOAD)	7 minutes of external batteries		7 minutes of external batteries		7 minutes of external batteries		5 minutes of external batteries		7 minutes of external batteries		
RECHARGE TIME	3 hours to 90%		3 hours to 90%		3 hours to 90%		3 hours to 90%		3 hours to 90%		
CHARGING VOLTAGE	41.4Vdc $\pm 0.5V$		54.5Vdc $\pm 0.4V$		81.9Vdc $\pm 0.4V$		204.7Vdc $\pm 0.4V$		273.0Vdc $\pm 0.4V$		
GENERAL CHARACTERISTICS											
TRANSFER TIME (INVERTER TO BYPASS)	0ms										
DUAL INPUT TO BYPASS	N/A as standard					YES as standard					
PARALLEL CONFIGURATION	N/A					YES as optional					
EFFICIENCY (ONLINE MODE)	> 87%		> 87%		> 90%						
DIMENSIONS (WxDxH) mm	438x435x20		438x435x20		438x608x20		438x720x20		438x760x20		438x760x20
WEIGHT (kg)	15.3	0.1	30.5	12.3	33.2	13.5	48.5	18.0	82.5	32.5	
OPERATING TEMPERATURE	0-40°C										
HUMIDITY	0-95% (non-condensing)										
NOISE LEVEL (0.1m)	<45dB					<50dB					
INTERFACE STANDARD VIA SMART USB	WinPower Software supports: Windows (5/98/NT/2000/XP/ME, Linux, Sun Solaris, IBM AIX, Compaq Tru64, SGI IRIX, FreeBSD, HP-UX, and MAC										
INTERFACE FOR INTELLIGENT SLOT	SNMP/AS4000 Card / Modbus all optional										
COMPLIANCE	IEC 61000-4, IEC 62040-1, IEC 62040-2, IEC 62040-3, IEC 60950-1, IEC 62040-1, ETS 300019-2-2										

Green Technology

ENERGY SAVING

The AP160N series represents the state of the art in technology on the mono-phase UPS category. It is characterized by its high efficiency, even at low load, due to the 3-level Inverter IGBT technology.



The AP160N series represents the state of the art in technology on the mono-phase UPS category. It is characterized by its high efficiency, even at low load, due to the 3-level Inverter IGBT technology.

AP 160N

AP160N

* KS means UPS with battery extra-charger and without internal batteries
 ** relate to 90% with 208Vac output voltage
 *** It is recommended to refer to the product manual and regulations for installation on the site
 **** Including Front Panel of 35 mm
 Note: product specifications are subject to change without further notice

ВАРНО С ОПРИГНАЛА

000011



G-Tec Service

G-Tec Service provides reliable support and after-sales service for all UPS systems.

CALL CENTRE 24 hours a day, 7 days a week, to the G-TEC Service Organisation. G-TEC Service personnel are always available and ready to provide advice and assistance regarding UPS installation, maintenance, fault finding and repair.

G-TEC Service can provide assistance during commissioning and startup of the UPS equipment on-site, with additional training during handover to site personnel.

MAINTENANCE CONTRACTS can be provided by G-TEC Service to minimise respon-

sibility and reduce downtime. From periodic inspections to complete cover including labour and materials.

FAST & READY: a fast repair on site is guaranteed through the use of state-of-the-art UPS technology, the professionalism of the UPS service personnel and Authorised Assistance Centres. UPS service guarantees that failed parts are replaced with original ones, tested and updated in order to maintain the safety, reliability and operating characteristics of the UPS.

www.gtec-power.eu

G-Tec Europe srl

Strada Marosticana, 81/13
36031 Povolara (VI), Italia
Tel. +39 0444.361321 - Fax +39 0444.365191
info@gtec-power.eu

G-Tec France

12 Quai du Commerce
69009 LYON
Tel.: +33 (0) 4 82 81 01 99
france@gtec-power.eu

GTEC
Quality Energy Provider

ВЯРНО С ОРГИНАЛА

ICE

000012

Rev. 10/01/2017



AP160N Uninterruptible power supply

Conformity Declaration

**CE
2014**

Certification number: CE_AP160N_1401

In accordance with the Low Voltage Directives:

**2006/95/EC Low Voltage Directive
EMC Directive 2004/108/EC**

The device, as described herewith, was tested pursuant to applicable test procedure and complies with the requirements of:

**EN62040-1-1:2008 (Safety)
EN62040-2: 2006 (EMC)**

Manufacturer's name:

G-TEC Europe S.r.l.
Strada Marosticana, 81/13
36031 Povolaro di Dueville (VI)
Italy

Products:

Uninterruptible power supply
Single phase input
Single phase output
With or without internal battery and additional
charger (ks version) and optional.

Models:

AP160N

Sizes:

1000-3000- 6000-10000VA

Signature of the Legal Representative

Ing. Orio Gabrielle

ВЯРНО С ОПРИГНАЛА

000013



Registered office:

Corso Palladio,147 , 36100 Vicenza
Mailing Office/H Q/
Strada Marosticana 81/13
36031 Povolano Di Dueville(VI)

Tel.+39-0444591420 or 592463 - Fax.+39-0444365191 ~ E-mail: <luca.vivian@gtec-power.eu>

TO: University of National and World Economy

Our sign:

Your sign:

Date: 22.02.2018

**SUBJECT: Manufacturer's authorization for supply, installation, putting in exploitation and warranty service maintenance of information and computers equipment
Separate item 6: Uninterruptible Power Supply Equipment**

WHEREAS

We, "G-TEC Europe" S.r.l. who are official manufacturers of uninterruptible power supply equipment, having factories at Strada Marosticana 81/15 • 36031 Povolano (VI) – Italy, do hereby authorize the company "PARAFLOW Communications" Ltd., located at Business Center "TWINS", "Nikola Gabrovski" Blvd., to submit a bid the purpose of which is to provide UPS equipment of the products range by the name of "PC615N" and "AP160N" manufactured by us and to subsequently negotiate and sign a Contract.

We hereby extend our full guarantee and warranty with respect to the Goods offered by the above company and duly authorize the Bidder to act on our behalf in fulfilling all warranty obligations with respect to the above-listed products, offered for resale by the Bidder in relation to this Invitation for Bids.

We also certify that the Bidder has his own organization and is qualified by us to provide the service maintenance at the territory of Bulgaria, technical or help desk support, new version upgrade and/or other services related to the above-listed Products.

We declare, that every type of equipment configured for this bidding procedure is from the same Original Equipment Manufacturer.

Signed: *Eng. Luca Vivian - East Europe Area Manager*

G-Tec Europe srl
Strada Marosticana, 81/13
36031 Povolano di Dueville (VI)
Tel. 0444 361321 - Fax 0444 365191

G-TEC Europe S.r.l - Strada Marosticana 81/15 • 36031 Povolano (VI) ITALIA

Tel. +39 0444 591420 / +39 0444 592463 - Fax +39 0444 365191

<http://www.gtec-power.eu>

P. IVA 03185600248.

ВЯРНО С ОРИГИНАЛА

000014

G-TEC

Превод от английски език

Регистриран офис:
Corsi Palladio, 147, 36100 Vicenza
Mailing office /HQ/
Strada Marosticana 81/13
36031 Povolario Di Dueville (VI)

Тел./ +39-0444591420 или 592463 – Факс. +39-0444365191 – e-mail: luca.vivian@gtec-power.eu

До: Унверситета за национално и световно стопанство

Дата: 22.02.2018

ОТНОСНО: Оторизация от производител за доставка, инсталация, пускане в експлоатация и гаранционно обслужване на информационна и компютърна техника.
Обособена позиция 6: непрекъсваеми токозахранващи устройства

Ние, "G-TEC Европа" S.r.l. , като официални производители на непрекъсваемо електрически захранвания, с фабрики в Strada Marosticana 81/15 · 36031 Povolario (VI) - Италия, с настоящото оторизираме Парафлоу Комюникейшънс "ООД, България, Бизнес център Туинс, бул. Никола Габровски да подаде оферта, чиято цел е да предостави UPS техника от продуктовата гама РС615N и AP160N, произведена от нас и впоследствие да подпише договор.

Ние предоставяме пълна гаранция по отношение на стоките, предлагани от гореспоментата компанията и съответно я оторизираме да действа от наше име при изпълнението на всички гаранционни задължения по отношение на изброените по-горе продукти, които се предлагат за продажба от участника в търга. Ние също така да удостоверяваме, че Оферента има своя собствена организация за предоставяне на услугата поддръжка на територията на България, а същою така Help Desk система, поддръжка на нови версии и / или други услуги, свързани с изброените по-горе продукти.

Ние заявяваме, че всеки вид оборудване, конфигурирано за тази тръжна процедура е оригинално.

Подпис: не се чете
Eng. Luka Vivian East Europe Area Manager

G-TEC Europe S.r.l. – Strada Marosticana 81/15. 36031 Povolario (VI) ITALIA
Тел./ +39-0444591420 или 592463 – Факс. +39-0444365191 –
P.IVA 03185600248

000015

ДЕКЛАРАЦИЯ

Долуподписаната _____, ЕГН _____, с л.к. № _____, изд. на _____ от МВР - _____ в качеството си на Експерт обществени поръчки и редовно упълномощена от Управителя на "Парафлоу Комуникейшънс" ООД, със седалище и адрес на управление: София 1700, бул. Никола Габровски 79, ЕИК 831913775, участник в процедура от Закона за обществени поръчки (ЗОП) с предмет: "ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА" за Обособена позиция б – Непрекъсваеми токозахранващи устройства
ДЕКЛАРИРАМ:

Задължаваме се да осигурим в рамките на предложението в техническото ни предложение гаранционен срок на техниката по обособена позиция б, необходимите гаранционни ремонти при следните условия:

- Срокът за реакция (регистрация на повредата) след уведомяване от страна на Възложителя е до 2 часа в работно време;
- Срокът за отстраняване на повредата е до 14 работни дни;
- При невъзможност в рамките на посочения срок за отстраняване на проблема в дефектирало оборудване, същото ще се заменя с работоспособно от същия или по-висок клас в срок до 5 работни дни.

Поемаме гаранция за качеството на стоката и за годността и за употреба за сроковете посочени в офертата ни и се задължаваме:

- да осигурим гаранционно обслужване и сервиз;
- да извършваме качествено сервизно техническо поддържане и ремонт на доставената компютърна техника в съответствие с действащите стандарти;
- да отстраняваме възникналите при нормалната експлоатация повреди;
- да отстраним безвъзмездно всички повреди и отклонения от изискванията за качество, които са възникнали в рамките на посочения гаранционен срок;

По време на гаранционния срок, се задължаваме при установяване на еднороден дефект на компоненти и това е установено на не по - малко от 20% от техниката от един вид, да подменяме дефектния компонент и на другата техника от същия вид, които не са проявили дефекта.

Гаранционното сервизно обслужване ще се извършва на мястото на използване на стоките, а ако това е невъзможно се извършва в наша сервизна база, оторизирана от производителите на предлаганата техника за осъществяване на сервизната услуга при условията посочени по-горе посочения в офертата ни.

Адресът на базата е следният:

Гр. София 1700, Район студентски, бул. Никола Габровски 79.

За заявяване на услуга за обслужването Оборудване/ Системи, клиентът ни уведомява по един от следните начини:

- чрез регистриране на заявка в Сервизна информационна система „Paraflow Service Desk”, достъпна на адрес: support.paraflow.bg;
- по електронна поща на адреси hotline@paraflow.bg и service@paraflow.bg чрез попълнен формуляр на Потребителска заявка;
- на факс 02 960 4218 с попълнена сервизна заявка чрез попълнен формуляр на Потребителска заявка;
- по телефона за контакт с ИЗПЪЛНИТЕЛЯ 0700 10 887, 02 960 4222

гр. София, 12.03.2018 г.

Декларатор:

/дата на подписване/

Експерт: _____ поръчки
Парафлоу Комуникейшънс ООД

000016

**ДЕКЛАРАЦИЯ
ЗА СЪГЛАСИЕ С КЛАУЗИТЕ НА ПРИЛОЖЕНИЯ ПРОЕКТ НА ДОГОВОР**

Долуподписаният:

(собствено, бащино, фамилно име)

с ЕГН: _____ притежаващ л.к. № _____, издадена на _____,
от МВР – _____, с постоянен адрес:
в качеството си на Управител,
(длъжност)

на участник Парафлоу Комуникейшънс ООД, ЕИК 831913775
(наименование на участника)

в процедура от Закона за обществени поръчки (ЗОП) с предмет: "ДОСТАВКА,
ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ
НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА" за Обособена позиция 6 –
Непрекъсваеми токозахранващи устройства

ДЕКЛАРИРАМ, ЧЕ:

Запознат съм с проекта на договора за възлагане на обществената поръчка за Обособена позиция 6 – Непрекъсваеми токозахранващи устройства, приемам го без възражения и ако участникът, когото представлявам, бъде определен за изпълнител, ще сключа договора изцяло в съответствие с проекта, приложен към документацията за участие, в законоустановения срок.

Известна ми е отговорността по чл. 313 от Наказателния кодекс за посочване на неверни данни.

Дата: 12.03.2018 г.

Декларатор: _____

/подпис и печат/

Д Е К Л А Р А Ц И Я
ЗА СЪГЛАСИЕ С КЛАУЗИТЕ НА ПРИЛОЖЕНИЯ ПРОЕКТ НА РАМКОВО
СПОРАЗУМЕНИЕ

Долуподписаният:

с ЕГН: _____, притежаващ л.к. № _____, издадена на _____
 от МВР – _____, с постоянен адрес: _____
 в качеството си на Управител,
 (длъжност)

на участник Парафлоу Комуникейшънс ООД, ЕИК _____
 (наименование на участника)

в процедура от Закона за обществени поръчки (ЗОП) с предмет: **“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА”** за Обособена позиция 6 – **Непрекъсваеми токозахранващи устройства**

Д Е К Л А Р И Р А М, Ч Е:

Запознат съм с проекта на рамково споразумение за възлагане на обществената поръчка, приемам го без възражения и ако участникът, когото представлявам, бъде определен за изпълнител, ще сключа рамковото споразумение изцяло в съответствие с проекта, приложен към документацията за участие, в законоустановения срок.

Известна ми е отговорността по чл. 313 от Наказателния кодекс за посочване на неверни данни.

Дата: 12.03.2018 г.

Декларатор:

.....
 /подпис и печат/

**Д Е К Л А Р А Ц И Я
ЗА СРОК НА ВАЛИДНОСТ НА ОФЕРТАТА**

Долуподписаният: ~~Андрей Георгиев Георгиев~~

(собствено, бащино, фамилно име)

с ЕГН: _____, притежаващ л.к. № _____, издадена на

от МВР – _____ постоянен адрес: _____

в качеството си на Управител,

(длъжност)

на участник Парафлоу Комуникейшънс ООД, ЕИК

(наименование на участника)

в процедура от Закона за обществени поръчки (ЗОП) с предмет: "ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА" за Обособена позиция 6 – Непрекъсваеми токозахранващи устройства

Д Е К Л А Р И Р А М, Ч Е:

С подаване на настоящата оферта декларираме, че сме съгласни валидността на нашата оферта да бъде 4 (четири) месеца от крайния срок за получаване на оферти, посочен в обявлението за процедурата

Известна ми е отговорността по чл. 313 от Наказателния кодекс за посочване на неверни данни.

Дата: 12.03.2018 г.

Декларатор:/...../.....

/подпис и печат/

Приложение № 2

ДО
Университет за национално и световно стопанство
Студентски град, ул. "8ми Декември"
София 1700

ЦЕНОВО ПРЕДЛОЖЕНИЕ

за участие в открита процедура за сключване на
рамково споразумение с предмет:

“ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО-КОМПЮТЪРНА ТЕХНИКА”

За Обособена позиция 6 – Непрекъсваеми токозахранващи устройства

от: ПАРАФЛОУ КОМУНИКЕЙШЪНС ООД
Адрес: София 1700, бул. "Никола Габровски" 79
Лице за контакт: Искра Берова
тел.: + 359 2 960 42 00, факс: + 359 2 960 42 18
e-mail: office@paraflow.bg
www.paraflow.bg

ЦЕНОВО ПРЕДЛОЖЕНИЕ

от Парафоу Комуникейшънс ООД
(наименование на участника)

и подписано от

(трите имена и ЕГН)

в качеството ѝ на Експерт обществени поръчки и упълномощено лице от управителя
(на длъжност)

с ЕИК: ;

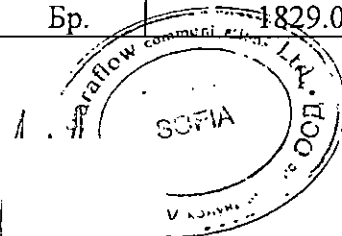
УВАЖАЕМИ ДАМИ И ГОСПОДА,

1. С настоящото, Ви представяме нашата ценова оферта за участие в обявената от Вас обществена поръчка с предмет: "ДОСТАВКА, ИНСТАЛИРАНЕ, ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ И ГАРАНЦИОНЕН СЕРВИЗ НА ИНФОРМАЦИОННО – КОМПЮТЪРНА ТЕХНИКА" за обособена позиция № 6

Предлагаме да поемем, изпълним и завършим тази обществена поръчка, съобразно условията на документацията за участие, както следва:

№	Вид оборудване, марка, модел, елементи	Технически характеристики	мярка	Ед.цена без ДДС
1	TOWER UPS 1 GTEC PC615N-1500	1500VA/900W 162 – 290 VAC 30 min at 120W load 50/60Hz +/-5Hz 6 IEC 320 C3 USB 8h	Бр.	299.00
2	TOWER UPS 2 GTEC PC615N-2000	2000VA/1200W 162V-290V 35 min at 120W load 50/60Hz +/-5Hz 6 IEC 320 C3 USB 8h	Бр.	364.00
3	TOWER UPS 3 GTEC PC615N-650	500VA/300W 162V-290V 50/60Hz 3 IEC 320 C3 4h 2 години	Бр.	122.00
4	RACK-MOUNT UPS 4	3000VA/2700W	Бр.	1829.00

000001



	GTEC AP160N-3000	VFI – Double conversion ECO MODE LCD <5% at full load >0,99 120-276VAC 6 min 45-55Hz/54-66Hz 8 IEC 320 C13, 1 IEC 320 C19 RS232, USB, SNMP EPO (Emergency Power Off) 3h		
Сбор на единичните цени				2 614.00

2. В предлаганата от нас цена също така сме включили и всички разходи, необходими за качествено и точно изпълнение на дейностите от обхвата на обществената поръчка.

3. Предложените цени са определени при пълно съответствие с условията от документацията и техническата спецификация по процедурата.

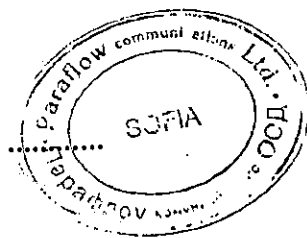
Дата: 12.03.2018 г.

ПОДПИС И ПЕЧАТ:

.....
[име и фамилия]

Упълномощено лице

[качество на представляващия участника]



3

. 6, . 1, . 5

. 4, . 1, .