HPE ProLiant WS460c Gen9 Graphics Server Blade - Product Information Reference

Part Number:
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Abstract

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Revision history

Part number	Publication date	Edition	Summary of changes

Table of contents

Overview

- Summary 6
  - Product description 6
  - What's New 6
- Standard Models 7
  - New RoHS compliant part numbers 7
  - Standard Models 7
- Product features 8

Specifications

- Physical Specifications 21
- Environmental Specifications 22
- HPE Smart Array P244br Controller 24
- HPE Smart HBA H244br Controller 25
- HPE Dynamic Smart Array B140i Controller 26
- HPE FlexFabric 10Gb 2-port 536FLB FlexibleLOM 27
- HPE FlexFabric 20Gb 2-port 650FLB FlexibleLOM 28
- HPE MultiGPU Carrier Card (single, carrier only) 29
- NVIDIA quadro M3000SE Graphics Adapter 30
- NVIDIA Tesla M6 Graphics Adapter 31
- AMD FirePro S4000X Graphics Adapter 32
- NVIDIA quadroM5000 Graphics Adapter 32
- NVIDIA quadroM6000 Graphics Adapter 33
- NVIDIA Tesla M60 GPU Adapter 34

Compatibility/Supportability

- Spare Parts 35
  - New model specific parts lists 35
  - Server Blade Components 35
  - Expansion Blade Components 48
- Option Parts 50
  - New model specific parts lists 51
  - Processors 51
  - Memory 56
  - Hard Drives 57
  - Networking 61

Fibre Channel 62
Hard Drive 62
Graphics Adapters 68
Insight Software 69
iLO Advanced License 70
Converged Infrastructure Management Software 71
High Performance Clusters 72
Security 73
Storage Controllers 73
Flash media kits for USB drives 74
Care Pack Services 75
Software Compatibility 75
OS Compatibility 76
Useful Links 77

Summary

Subtopics

Product description
What's New

Product description



The HPE ProLiant WS460c Gen9 Graphics Server Blade now delivers even more performance with new Intel Xeon Processor E5-2600 v3 processors and 2,133 MHz DDR4 memory. It is the industry's first bladed technology to support up to six MXM form factor GPUs per blade, lowering the cost per user while enabling remote users to easily complete large model visualizations.

What's New

- New Graphics options, including the NVIDIA Tesla M60 and Quadro M3000SE

- Non-Volatile Memory express (NVMe) Small Form Factor (SFF) Solid State Disk support.
- Support for 2400 MT/s DDR4 memory.
- Support for the Intel E5-2600 v3 or v4 product family.

Standard Models

Subtopics

New RoHS compliant part numbers
Standard Models

New RoHS compliant part numbers

To find the latest RoHS compliance information, please use the HPE PartSurfer (**Click here to visit the HPE PartSurfer website**) and click on one of the linked model numbers. When locating RoHS information in PartSurfer, you can use the Options part number for the components, the sales order number for a system that the component is used in, or the Spare part number for a specific part.

Standard Models

Description	Model Number
HPE ProLiant WS460c Gen9 E5-v4 Configure-to-order Expansion Blade	836738-B21 **Click here to obtain parts list for this model**.

Product features

Feature	Description
Processor [1](One of the following depending on selection)	**E5-2600 v3 series Processors** • HPE BL460c Gen9 Intel Xeon E5-2690v3 (2.6 GHz/12-core/30MB/135 W) • HPE BL460c Gen9 Intel Xeon E5-2680v3 (2.5 GHz/12-core/30MB/120 W) • HPE BL460c Gen9 Intel Xeon E5-2670v3 (2.3 GHz/12-core/30MB/120 W) • HPE BL460c Gen9 Intel Xeon E5-2660v3 (2.6 GHz/10-core/25MB/105 W) • HPE BL460c Gen9 Intel Xeon E5-2650v3 (2.3 GHz/10-core/25MB/105 W) • HPE BL460c Gen9 Intel Xeon E5-2640v3 (2.6 GHz/8-core/20MB/90 W) • HPE BL460c Gen9 Intel Xeon E5-2683v3 (2 GHz/14-core/35MB/120 W) • HPE BL460c Gen9 Intel Xeon E5-2630v3 (2.4 GHz/8-core/20MB/85 W) • HPE BL460c Gen9 Intel Xeon E5-2620v3 (2.4 GHz/6-core/15MB/85 W) • HPE BL460c Gen9 Intel Xeon E5-2623v3 (3 GHz/4-core/10MB/105 W) • HPE BL460c Gen9 Intel Xeon E5-2609v3 (1.9 GHz/6-core/15MB/85 W) • HPE BL460c Gen9 Intel Xeon E5-2603v3 (1.6 GHz/6-core/15MB/85 W) • HPE BL460c Gen9 Intel Xeon E5-2650Lv3 (1.8 GHz/12-core/30MB/65 W) • HPE BL460c Gen9 Intel Xeon E5-2698v3 (2.3 GHz/16-core/40MB/135 W)

Feature	Description
	• HPE BL460c Gen9 Intel Xeon E5-2630Lv3 (1.8 GHz/8-core/20MB/55 W) • HPE BL460c Gen9 Intel Xeon E5-2695v3 (2.3 GHz/14-core/35MB/120 W) • HPE BL460c Gen9 Intel Xeon E5-2637v3 (3.5 GHz/4-core/15MB/135 W) • HPE BL460c Gen9 Intel Xeon E5-2697v3 (2.6 GHz/14-core/35MB/145 W) • HPE BL460c Gen9 Intel Xeon E5-2667v3 (3.2 GHz/8-core/20MB/135 W) • HPE BL460c Gen9 Intel Xeon E5-2643v3 (3.4 GHz/6-core/20MB/135 W) • HPE BL460c Gen9 Intel Xeon E5-2699v3 (2.3 GHz/18-core/45MB/145 W) **E5-2600 v4 series processors** • HPE BL460c Gen9 Intel Xeon E5-2690v4 (2.6 GHz/14-core/35MB/135 W) • HPE BL460c Gen9 Intel Xeon E5-2683v4 (2.1 GHz/16-core/40MB/120 W) • HPE BL460c Gen9 Intel Xeon E5-2680v4 (2.4 GHz/14-core/35MB/120 W) • HPE BL460c Gen9 Intel Xeon E5-2660v4 (2.0 GHz/14-core/35MB/105 W) • HPE BL460c Gen9 Intel Xeon E5-2650v4 (2.2 GHz/12-core/30MB/105 W) • HPE BL460c Gen9 Intel Xeon E5-2650Lv4 (1.7 GHz/14-core/35MB/65 W) • HPE BL460c Gen9 Intel Xeon E5-2640v4 (2.4 GHz/10-core/25MB/90 W) • HPE BL460c Gen9 Intel Xeon E5-2630v4 (2.2 GHz/10-core/20MB/85 W) • HPE BL460c Gen9 Intel Xeon E5-2630Lv4 (1.8 GHz/10-core/25MB/55 W)

Feature	Description
	• HPE BL460c Gen9 Intel Xeon E5-2623v4 (2.6 GHz/4-core/10MB/85 W) • HPE BL460c Gen9 Intel Xeon E5-2620v4 (2.1 GHz/8-core/20MB/85 W) • HPE BL460c Gen9 Intel Xeon E5-2609v4 (1.7 GHz/8-core/20MB/85 W) • HPE BL460c Gen9 Intel Xeon E5-2603v4 (1.7 GHz/6-core/15MB/85 W) • HPE BL460c Gen9 Intel Xeon E5-2699v4 (2.2 GHz/22-core/55MB/145 W) • HPE BL460c Gen9 Intel Xeon E5-2698v4 (2.2 GHz/20-core/50MB/135 W) • HPE BL460c Gen9 Intel Xeon E5-2697v4 (2.3 GHz/18-core/45MB/145 W) • HPE BL460c Gen9 Intel Xeon E5-2697Av4 (2.6 GHz/16-core/40MB/145 W) • HPE BL460c Gen9 Intel Xeon E5-2695v4 (2.1 GHz/18-core/45MB/120 W) • HPE BL460c Gen9 Intel Xeon E5-2667v4 (3.2 GHz/8-core/25MB/135 W) • HPE BL460c Gen9 Intel Xeon E5-2643v4 (3.4 GHz/6-core/20MB/135 W) • HPE BL460c Gen9 Intel Xeon E5-2637v4 (3.5 GHz/4-core/15MB/135 W)
Cache memory(One of the following depending on processor)	• 55MB (1 x 55MB) L3 cache (For twenty two-core processors) • 50MB (1 x 50MB) L3 cache (For twenty-core processors) • 45MB (1 x 45MB) L3 cache (For eighteen-core processors) • 40MB (1 x 40MB) L3 cache (For sixteen-core processors)

Feature	Description
	• 35MB (1 x 35MB) L3 cache (For fourteen-core processors) • 30MB (1 x 30MB) L3 cache (For twelve-core processors) • 25MB (1 x 25MB) L3 cache (For ten-core processors) • 20MB (1 x 20MB) L3 cache (For six or eight-core processors) • 15MB (1 x 15MB) L3 cache (For quad or six-core processors) • 10MB (1 x 10MB) L3 cache (For quad-core processors)
Chipset	• Intel C610 series chipset • Intel E5-2600 v3 or v4 processor family
Upgradeability	Upgradeable to two (2) processors
On system management chipset	HPE Integrated Lights Out (iLO) (Firmware HPE iLO 4 2.0), 4GB NAND with 1GB USB user space configurable via Unified Extensible Firmware Interface (UEFI) and accessible via iLO
Memory protection	• Advanced ECC • Memory Online Spare Mode (Rank Spare Mode)
Memory [2](One of the following depending on selection)	**Type** — **HPE SmartMemory,DDR4 Load-Reduced Dual In-Line Memory Module (LRDIMM), or Registered Dual In-line Memory Module (RDIMM)** Maximum (LRDIMM) — 1TB (16 x 64GB) up to 2400 MT/s at 1.2 V

Feature	Description	
	Type	**HPE SmartMemory,DDR 4 Load-Reduced Dual In -Line Memory Module (L RDIMM), or Registered D ual In-line Memory Mod ule (RDIMM)**
	Maximum (RDIMM)	512GB (16 x 32GB) up to 2133 MT/s at 1.2 V
Network controller(One of the following depending on selection)	• One (1) 20Gb 2-port FlexFabric FLB, 10Gb 2-po rt HPE FlexFabric FLB, or 10Gb 2-port ethernet FLB [3] • One (1) HPE FlexFabric 10Gb 2-port 536FLB Fl exibleLOM [4] • One (1) HPE FlexFabric 10Gb 2-port 560FLB Fl exibleLOM [4] • One (1) HPE FlexFabric 20Gb 2-port 630FLB Fl exibleLOM [4] • One (1) HPE FlexFabric 20Gb 2-port 650FLB Fl exibleLOM [4] • Standard iLO Network Controller: ◦ One (1) 10/100 Mb/s port for the HPE iLO 4 to Onboard Administrator link. The Onbo ard Administrator (with 10/100/1000 Mb/s) to BladeSystem link is 1 Gb/s	
Maximum internal storage [5](One of the following depending on Model)	**Hot-plug SFF Serial Attach ed SCSI (SAS)** **4.0TB**	**2 x 2.0TB**
	Hot-plug SFF Serial Advanc ed Technolog y Attachment (SATA) 4.0TB	2 x 2.0TB

Feature	Description		
	Hot-plug SFF Serial Attached SCSI (SAS)	**4.0TB**	**2 x 2.0TB**
	Hot-plug SFF SAS Solid State Drive (SSD)	7.68TB	2 x 3.84TB
	Hot-plug SFF SATA SSD	7.68TB	2 x 3.84GB
	Hot-plug SFF NVMe SSD	4.0TB	2 x 2.0TB
Interfaces [6]	**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		
Graphics	• Integrated Matrox G200eh video controller ◦ 1600 x 1200 (32 bp) ◦ 1920 x 1200 (16 bp) • HPE iLO Management On System Management Memory ◦ 16MB flash video memory ◦ 256MB DDR 3 with ECC (112MB after ECC and video)		
Form factor	HPE ProLiant WS460c Gen9 and WS460c Gen8 Graphics Expansion Blade are both half-height server blade that plugs into the HPE BladeSystem c3000 and c7000 enclosures		
Embedded Management	• HPE iLO • UEFI • HPE RESTful API • Intelligent Provisioning		
Server Utilities	• HPE Smart Update		

Feature	Description
	• HPE Systems Insight Manager (HPE SIM) • Scripting Tool Kit and Windows PowerShell • HPE RESTful Interface Tool • HPE iLO Mobile Application • HPE Insight Online
Security	• Power-on password • Administrator's password • Keyboard password (QuickLock) • HPE iLO Management On System Management Chipset with: ◦ SSL encryption ◦ Secure Shell version 2 ◦ Advanced Encryption Standard (AES) and Tr iple Data Encryption Standard (3DES) on b rowser, CLP and XML scripting interface ◦ AES and RC4 encryption of video • External USB port enable/disable • Network server mode • Serial interface control • Trusted Platform Module (TPM) 1.2 option • AES • Intel Advanced Encryption Standard-New Instru ctions (AES-NI) • FIPS 140-2 Level-2 certification pending
Industry standard compliance	• ACPI 2.0 • Microsoft logo certifications • USB 3.0 support • IPMI 2.0 • Secure digital 2.0

Feature	Description
	• TPM 1.2 support • IEEE (specific IEEE standards depending on Ethernet adapter card(s) installed) • AES • 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 • FIPS 140-2 Level-2 certification pending
Expansion Slots	Two (2) I/O expansion mezzanine slots: (One occupied and second not available when 2nd slot enablement kit is installed with expansion blade) • x16 PCIe 3.0 Type A (supports Type A mezzanine cards) (expansion slot 1). • x16 PCIe 3.0 Type B (supports Type A and Type B mezzanine cards (expansion slot 2). • x16 PCIe 3.0 full-size, full-length PCIe card expansion slot **Mezzanine card options include:** • Dual-port 20Gb FlexFabric, Dual-port 10Gb FlexFabric, 10 GbE options for additional network ports. • Dual-port 16Gb Fibre Channel Host Bus Adapter (HBA) for SAN connectivity. • QDR and FDR InfiniBand for low latency and high bandwidth server interconnectivity.
HPE Server Read Only Memory (ROM)	HPE ROM is now digitally signed using the HPE Corporate Signing Service. This signature is verified before the flash process starts, reducing accidental p

Feature	Description
	rogramming and preventing malicious efforts to corr upt system ROM. HPE ROM performs very early configuration of the v ideo controller, to allow monitoring of initialization p rogress via an attached monitor. If configuration or h ardware errors are discovered during this early phas e of hardware initialization, suitable messages are no w displayed on the connected monitor. Additionally, t hese configuration or hardware errors are logged to t he Integrated Management Log (IML) to assist in dia gnosis **The HPE ProLiant ROM is used to configure the fo llowing:** • Processor and chipset status registers • System memory, memory map, and memory initi alization • System hardware configuration (integrated PCI d evices and optional PCIe cards). • Customer-specific BIOS configuration using the HPE ROM-Based Setup Utility (RBSU).
HPE Server UEFI /Legacy ROM	UEFI is an industry standard that provides better m anageability and more secured configuration while in teracting with your server at boot time. HPE ProLian t Gen9 platform defaults to UEFI and can be factory or field configured for Legacy BIOS Boot Mode. **UEFI enables numerous new capabilities specific to HPE ProLiant servers such as:** • Secure Boot • Operating system specific functionality • Support for > 2.2TB (using GPT) boot drives • USB 3.0 Stack • Embedded UEFI Shell • Mass Configuration Deployment Tool using HPE RESTful API • Preboot eXecution Environment (PXE) boot sup port for IPv6 networks • Boot support for option cards that only support a UEFI option ROM
Enclosures	Hewlett Packard Enterprise offers two different c-Cla ss server blade enclosures to meet your individual ne eds:

Feature	Description
	• The HPE BladeSystem c7000 rack enclosure is 10U high and holds up to sixteen (16) ProLiant WS460c Gen9 servers plugged vertically or (8) HPE ProLiant WS460c Gen9 Blades paired with (8) HPE WS460c Gen9 Graphics Expansion modules plugged vertically. • The HPE BladeSystem c3000 rack enclosure is 6U high and holds up to eight (8) HPE ProLiant WS460c Gen9 servers plugged horizontally or (4) HPE ProLiant WS460c Gen9 Blades paired with (4) HPE WS460c Gen9 Graphics Expansion modules plugged horizontally.
Graphics Adapter	**Mezzanine Graphics Adapters for single-width model:** • NVIDIA Quadro M3000SE MXM server graphics • NVIDIA Tesla M6 graphics **Full-size PCI Express Graphics Adapters for double-width model (Expansion Blade):** • NVIDIA Tesla M60 GPU adapter • NVIDIA Quadro P6000 (double-width PCIe x16 in PCIe Expansion Module) • HPE MultiGPU with two NVIDIA Tesla M6 • HPE MultiGPU with three NVIDIA Quadro M3000SE
Fibre Channel Support	One optional Fibre Channel mezzanine HBA is supported on the HPE ProLiant WS460c Gen9 where vacant mezzanine slot is available.
Compatible SAN	HPE ProLiant BL460c/WS460c Gen9 server blades are optimized for HPE MSA, EVA, 3PAR and XP.
HPE Virtual Connect	• 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-10 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.

Feature	Description
	• Virtual Connect FlexFabric modules extend thos e capabilities to allocate one function per port to storage connections Fibre Channel over Ethernet (FCoE)
Embedded Management	**iLO Advanced for BladeSystem:** • HPE iLO Advanced for BladeSystem licenses offe r smart remote functionality without compromis e, for all HPE ProLiant servers. • The license includes the full integrated remote c onsole, virtual keyboard, video, and mouse (KVM), multi-user collaboration, console record and re play, and GUI-based and scripted virtual media a nd virtual folders.
Server Management	• HPE Insight Control • HPE OneView
High Performance Clusters	• HPE Cluster Platforms • HPE HPC Interconnects
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 stora ge software. Our storage software helps you reduce c osts, simplify storage infrastructure, protect vital ass ets and respond faster to business opportunities. **Storage software that gets the job done:** • Data Protection and Recovery Software • Data Archive and Migration Software • Storage Resource Management Software (SRM) • Data Replication Software • Storage Device Management Software • HPE StoreVirtual VSA
HPE Insight Online	• HPE Insight Online is part of the HPE Support C enter for one stop, secure access to product and HPE support information personalized to users I T environment.

Feature	Description
	• Insight Online can automatically display devices remotely monitored by HPE Remote Support too ls.
Availability	**Memory** • Advanced ECC uses Single Device Data Correcti on (SDDC) to detect and correct single and all m ulti-bit error that occurs within a single DRAM c hip. Both x4 and x8 SDDC are supported (x8 req uires lockstep mode) • Memory online spare mode (also known as rank spare mode) detects a rank that is degrading an d switches operation to the spare rank • Memory demand and patrol scrubbing to preven t accumulation of correctable errors and reducin g the likelihood of unplanned downtime • Failed Dual In-line Memory Module (DIMM) isol ation improves the service time thus improving t he overall system availability. • Address parity protection available on RDIMMs and LRDIMMs detects address bit errors to imp rove service time and overall system availability.
	Mezzanine options and I/O • Support for one (1) FlexibleLOM, providing two (2) (i.e. redundant) Ethernet ports • Multiple mezzanine I/O expansion slots that sup port a wide variety of mezzanine cards each sup porting multiple data paths routed to redundant interconnect modules. • Network Adapter Teaming (bonding) provides n etwork fault tolerance, transmit load balancing, a nd switch-assisted load balancing
	Storage • Two (2) SFF hot-plug SAS/SATA Hard Disk Drive (HDD)/SSD of NVMe SSD drive bays. • Choice of the HPE Smart Array P244br Controlle r with 1GB Flash Backed Write Cache (FBWC)/H PE, Smart HBA H244br, or the HPE B140i (chips

Feature	Description
	et SATA). RAID 0 and 1 support for all three sto rage controller offerings. • Optional dual-port Fibre Channel mezzanine ca rd(s) for redundant SAN connections.
	Processor/Chipset
	• Processor internal sensors & thermal control p rotection against over-temperature conditions. • Cache parity/ECC protects cache data from accid ental data corruption. • Machine Check Architecture (MCA) detects and captures hardware errors such as system bus, m emory ECC, parity, and cache, and improves servi ce time. • Intel QuickPath Interconnect (QPI) Protocol Protection allows detection of data errors usin g a checksum of 8-bits. • Core Disable for Fault Resilient Boot (FRB) allow s a system to power-on despite a failing core-pa ir. It uses Built-In Self Test (BIST) results to dete ct a failure and disables the target core-pair upo n subsequent boot.
	Server Blade Enclosure Infrastructure
	• Pooled power for true N+N power redundancy t hrough up to six (6) hot-plug, high-efficiency, co mmon slot enclosure-based power supplies (conf iguration dependent). • Up to ten (10) enclosure-based hot-plug HPE Active Cool fans that scale to meet future deman ds, optimize airflow, reduce power draw, and imp rove acoustic performance. • Dual grid power providing redundant rack enclos ure power feeds to the server blade enclosure. • HPE Dynamic Power Saver Mode monitors the total enclosure power consumption in real time a nd automatically adjusts with change in demand for improved efficiency and reliability. HPE Dyna mic Power Capping safely limits power usage wi thout impacting performance by capping peak u sage instead of average power usage, removes r

Feature	Description
	isk to electrical infrastructure with a fast-acting, hardware- based capping algorithm, and reclaim s more power by dynamically controlling power li mits based on workload demand. • Up to eight interconnect modules per server bla de enclosure providing four simultaneous redun dant fabrics for FlexFabric, Virtual Connect Ethe rnet, Fibre Channel, InfiniBand, Pass Thru Ethern et, etc. • Enclosure crosslinks between adjacent enclosu res to provide interconnect module-to-module c onnections or as Virtual Connect module stackin g links. • Optional enclosure redundant Onboard Administ rator system management module.

Physical Specifications

Specification	Description
Dimensions (H x W x D) (with bezel)	• **Single-width model** 18.07 x 5.54 x 51.76 cm (7.11 x 2.18 x 20.37 i n) • **Double-width model** 18.07 x 11.08 x 51.76 cm (7.11 x 4.46 x 20.37 in)
Weight (approximate)	**Single-width type** **Maximum**: All processo rs, 16 DIMMs, hard dri ves, mezzanine cards, an d two flash cache batteri es installed) 6.33 kg (14.00 lb)

Specification	Description	
	Single-width type	
	Minimum: One processor and 2 DIMMs installed	4.75 kg (10.50 lb)
	Double-width type	
	Maximum: All processors, 16 DIMMs, hard drives, mezzanine cards, and two flash cache batteries installed), dual MultiGPU Carrier with eight Q1000M	10.09 kg (22.25 lb)
	Minimum: One processor and 2 DIMMs installed, expansion blade slot 1,2 enabled, both slots vacant	7.12 kg (15.69 lb)

Environmental Specifications

Specification	Description
System inlet temperature (Single-width model)	
Operating temperature	• 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 1,000 ft) above sea level to a maximum of 3,050 m (10,000 ft), no direct sustained sunlight • Maximum rate of change is 10°C/hr (18°F/hr) • The upper limit may be limited by the type and number of options installed • System performance may be reduced if operating with a fan fault or above 30°C (86°F)

Specification	Description
	• If ambient temperature over 30°C (86°F), and GPU power load is consistently and significantly high, GPU frequency will throttle down, and in extreme cases,system may initiate a protection shutdown sequence • **NOTE** Use of GPU options is limited to a 30°Coperating environment when using NVMe on the WS460c Gen9
Non-operating temperature	• -30° to 60°C (-22° to 140°F) • Maximum rate of change is 20°C/hr (36°F/hr)
System inlet temperature (Double-width model)	
Operating temperature	• 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 1,000 ft) above sea level to a maximum of 3,050 m (10,000 ft), no direct sustained sunlight • Maximum rate of change is 10°C/hr (18°F/hr) • The upper limit may be limited by the type and number of options installed • System performance may be reduced if operating with a fan fault or above 30°C (86°F) • If ambient temperature over 30°C (86°F), and GPU power load is consistently and significantly high, GPU frequency will throttle down, and in extreme cases, system may initiate a protection shutdown sequence
Non-operating temperature	• -30° to 60°C (-22° to 140°F) • Maximum rate of change is 20°C/hr (36°F/hr)
Extended ambient operating support	• For approved hardware configurations, the supported system inlet range is extended to be:

Specification	Description
	◦ 5° to 10°C (41° to 50°F) and 35° to 40°C (95° to 104°F) at sea level with an altitude de rating 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)
Relative humidity(non-condensing)	
Operating relative humidity	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing
Non-operating relative humidity	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing
Altitude	
Operating altitude	3,050 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 (1,500 ft/min)
Non-operating altitude	9144 m (30,000 ft) Maximum allowable altitude change rate is 457 m/min (1500 ft/min)
Acoustic Noise	For acoustic noise specifications, please see the HPE BladeSystem c-Class Enclosures QuickSpecs located at: **Click here to access "HPE BladeSystem c3000 Enclosure QuickSpecs" for more info".**

HPE Smart Array P244br Controller

Specification	Description
Disk drive interface	• 12 Gb/s SAS

Specification	Description
	• 6 Gb/s SATA
Server interface	x8 5G PCIe 3.0 provides 8 GB/s maximum bandwidth
Cache memory	1GB FBWC cache standard
Logical drives supported	64 (with included 1GB cache)
Host memory addressing	64-bit, supporting servers memory space greater than 4GB
RAID support	RAID 1 (Mirroring), RAID 0 (striping), RAID 10
Other	• Upgradeable firmware with recovery ROM • Online drive flash (with SAS drives)

HPE Smart HBA H244br Controller

Specification	Description
Disk drive interface	• 12 Gb/s SAS • 6 Gb/s SATA
Server interface	x8 5G PCIe 3.0 provides 8 GB/s maximum bandwidth
Cache memory	None
Logical drives supported	64
Host memory addressing	64-bit, supporting servers memory space greater than 4GB
RAID support	• RAID 1 (Mirroring) • RAID 0 (Striping)

Specification	Description
Other	• Upgradeable firmware with recovery ROM • Online drive flash (with SAS drives)

HPE Dynamic Smart Array B140i Controller

Specification	Description
Disk drive interface	6 Gb/s SATA
Server interface	Embedded x4 PCIe 2.0
SAS connectors	2 internal SATA ports
Cache memory	None
SAS speed	6 Gb/s SATA links
Logical drives supported	Up to 10 logical volumes (2 physical drives)
Host memory addressing	64-bit, supporting greater than 4GB server memory space
Hot plug support	Yes
RAID support	• RAID 1 (Mirroring) • RAID 0 (Striping)
Other	Upgradeable firmware with recovery ROM

HPE FlexFabric 10Gb 2-port 536FLB FlexibleLOM

Specification	Description
Type	Integrated dual-port KR 10Gb FlexibleLOM with Flex Fabric (Flex-10, FCoE, hardware-based iSCSI, iSCSI boot, TCP/IP offload engine, and autosensing 1 GbE/ 10 GbE capability)
Network processor	QLogic 57840S with integrated MAC/PHY
Data transfer method	x8 PCI express 3.0
Network transfer rate [1]	Two ports, each at 20 Gb/s full duplex; 40 Gb/s aggre gate full duplex theoretical bandwidth
IEEE compliance	802.1p, 802.1q, 802.1qau, 802.3ad, 802.3ae, 802. 3ap (10GBase-KX4) and 802.3x
Standard features	• Full hardware offload of iSCSI and FCoE storage protocol processing for highest performance co nverged ethernet data and storage networks • Dual-port 10 GbE Flex-10 FlexibleLOM network adapter that provides the flexibility to choose th e type of LOM to meet growing infrastructure ne eds • Industry-leading throughput and latency perfor mance • Supports HPE's Flex-10 blade interconnect tech nology • User configurable bandwidth settings when com bined with the 10Gb Flex-10 virtual connect m odule. From 100 Mb/s to 10 Gb/s on up to four P hysical Function NICs per port, in increments of 100 Mb/s for NIC. The combined bandwidth of N ICs cannot exceed port bandwidth i.e. 10Gb • Up to 40 Gb/s bi-directional near line rate throug hput • Hardware acceleration and offloads for stateless TCP/IP, TCP Offload Engine (TOE) • Improved small packet performance • Support for PXE • Integrated PHY and MAC

Specification	Description
	• Supports for SR-IOV • Support for Network Partitioning (NPAR)

NOTE

1. Each port is autosensing 1Gb/10Gb, and can interoperate with 1Gb or 10Gb HPE Blade System c-Class interconnect components. Both ports will operate at the same speed. Each port on the 554FLB adapter transmits from the server at 20 Gb/s (theoretical) full duplex.

HPE FlexFabric 20Gb 2-port 650FLB FlexibleLOM

Specification	Description
Type	Integrated dual-port KR2 20Gb FlexibleLOM with FlexFabric (Flex-20, FCoE, RDMA over Converged Ethernet (RoCE), tunnel offload with VXLAN/NVGRE, hardware-based iSCSI, iSCSI boot, TCP/IP offload engine, and autosensing ethernet speed capability
Network processor	Emulex XE-104
Data transfer method	x8 PCI express 3.0
Network transfer rate	Two ports, each at 40 Gb/s bi-directional; 80 Gb/s aggregate bi-directional theoretical bandwidth
IEEE compliance	802.3ae, 802.1Q, 802.3x, 802.1p, 802.3ad/LACP, 802.1AB(LLDP), 802.1Qbg, 802.1Qbb, 802.1Qaz, 802.3ap
Standard features	• Dual 20Gb ports provide up to 80Gb bi-directional per adapter • Multi-speed adapter operates at either 20 GbE or 10 GbE • Converges FCoE or RoCE with LAN traffic on a single ethernet wire • Tunnel offload support for VXLAN and NVGRE • RoCE for greater server efficiency and lower latency (6125XLG only)

Specification	Description
	• Advanced storage offload processing freeing up valuable CPU cycles • Supports UEFI and legacy boot options • Mixed storage – supports NIC + FCoE on one por t, and NIC + iSCSI on the other • Concurrent storage – concurrently supports NIC, FCoE, and iSCSI storage functions on the same port (NIC + FCoE + iSCSI) • Industry-leading throughput and latency perfor mance • Supports HPE's Flex-20 blade interconnect tech nology • Over eight million small packets/s, ideal for we b/mobile applications, mobile messaging, and s ocial media • User configurable bandwidth settings when com bined with the 20Gb Flex-20 virtual connect m odule • From 100 Mb/s to 10 Gb/s on up to four **Physica l Function** NICs per port, in increments of 100 M b/s for NIC • The combined bandwidth of NICs cannot exceed port bandwidth i.e. 20 Gb/s • Greater bandwidth with PCIe 3.0 • Jumbo frames support • Supports Wake On LAN (WOL) • Support for PXE • Support for Microsoft Windows SMB Direct • Optimized host virtualization density with SR-I OV support

HPE MultiGPU Carrier Card (single, carrier only)

Specification	Description
I/O interface	PCIe Gen3 x16

Specification	Description
Size	Full-size, full-length PCIe card
MXM connector	• Four MXM v.3.0 connectors (follows MXM specifications) • Accepts three (3) MXM-B or four (4) MXM-A cards
MXM interface	PCIe Gen3 x8
Supported MXM adapters	NVIDIA Quadro M3000SE (three per carrier card)
Weight	0.724 kg (1.60 lb) - Single, vacant with no MXM graphics

NVIDIA quadro M3000SE Graphics Adapter

Specification	Description
Memory size	4GB
Memory type	GDDR-5
Memory interface	256-bit
Card type	MXM-v.3.0
I/O interface	PCIe (x16) Gen3
Max power consumption	75 W (average)
API	DirectX 12, Shader Model 5.0; OpenGL 4.5; OpenCL 1.2; Compute Unified Device Architecture (CUDA) 5.2
Upgradeable firmware	For firmware and driver versions please see the Quick Start Guide
Operating Systems (OS)	• Microsoft Windows 7 SP1 Pro (64-bit), enterprise (64-bit)

Specification	Description
	• Microsoft Windows Server 2012 R2 (64-bit) sta ndard, enterprise and DataCenter editions (Citrix XenApp) • Citrix XenServer 6.5 or later (Pass-through GPU) • VMware vSphere6.0 or later Virtual Display Grap hics Accelerator (vDGA) • Red Hat Enterprise Linux (RHEL) 6.5 or later (6 4-bit only)

NVIDIA Tesla M6 Graphics Adapter

Specification	Description
Memory size	8GB
Memory type	GDDR-5
Memory interface	256-bit
Card type	MXM-v.3.0
I/O interface	PCIe (x16) Gen3
Max power consumption	100 W
API	DirectX 12, Shader Model 5.0; OpenGL4.5, CUDA, Di rectCompute, OpenCL
OS	• Microsoft Windows Server 2012 R2 (64-bit) Sta ndard, Enterprise and DataCenter editions (Citrix XenApp) • Citrix XenServer 6.5 or later (Pass-Through GPU) • VMware vSphere 5.5 or later vDGA

AMD FireProS4000X Graphics Adapter

Specification	Description
Memory size	2GB
Memory type	GDDR-5
Memory interface	128-bit
Card type	MXM-v.3.0, Type A
I/O interface	PCIe (x16) Gen3
Max powerconsumption	45 W
API	DirectX 11, shader model 5.0; OpenGL4.3; OpenCL 1.2, AMD Mantle
OS	Microsoft Windows 7 professional (64-bit)

NVIDIA quadroM5000 Graphics Adapter

Specification	Description
Memory size	8GB
Memory type	GDDR-5
Memory interface	256-bit
I/O interface	PCIe (x16) Gen3
Max power consumption	165 W
API	DirectX 12, shader model 5.0; OpenGL4.5, CUDA, Direct Compute, OpenCL

Specification	Description
OS	• Microsoft Windows 7 SP1 Pro (64-bit), enterprise (64-bit) • Microsoft Windows 8.1 Pro (64-bit), enterprise (64-bit) • Microsoft Windows Server 2012 R2 (64-bit) standard, enterprise and Data Center editions (Citrix XenApp) • Citrix XenServer 6.5 or later (Pass-through GPU) • VMware vSphere5.5 or later vDGA • RHEL 6.5 or later (64-bit only)

NVIDIA quadroM6000 Graphics Adapter

Specification	Description
Memory size	12GB
Memory type	GDDR-5
Memory interface	384-bit
I/O interface	PCIe (x16) Gen3
Max powerconsumption	250 W
API	DirectX 12, shader model 5.0; OpenGL4.5, CUDA, DirectCompute, OpenCL
OS	• Microsoft Windows 7 SP1 Pro (64-bit), enterprise (64-bit) • Microsoft Windows 8.1 Pro (64-bit), enterprise (64-bit)

Specification	Description
	• Microsoft Windows Server 2012 R2 (64-bit) standard, enterprise and Data Center editions (Citrix XenApp) • Citrix XenServer 6.5 or later (Pass-through GPU) • VMware vSphere5.5 or later vDGA • RHEL 6.5 or later (64-bit only)

NVIDIA Tesla M60 GPU Adapter

Specification	Description
Memory size	8.0GB per GPU (16GB total)
Number of GPU	2 High-end Kepler GPUs
Memory type	GDDR-5
I/O interface	PCIe (x16) Gen 3 (Gen 2 compatible)
Max power consumption	100 W
API	DirectX 11, Shader Model 5.0; OpenGL4.3 (Varies by virtualization mode)GRID virtual GPU support (Xen Server only)
OS	• Microsoft Windows 7 SP1 Pro (64-bit), Enterprise (64-bit) • Microsoft Windows 8.1 Pro (64-bit), Enterprise (64-bit) • Microsoft Windows Server 2012 R2 (64-bit) Standard, Enterprise and DataCenter editions (Hyper-V RemoteFX, XenApp) • Citrix XenServer 6.5 or later (Pass-Through GPU, vGPU)

Specification	Description
	• VMware vSphere 5.5 or later (vDGA, vSGA, vGPU)

Spare Parts

Subtopics

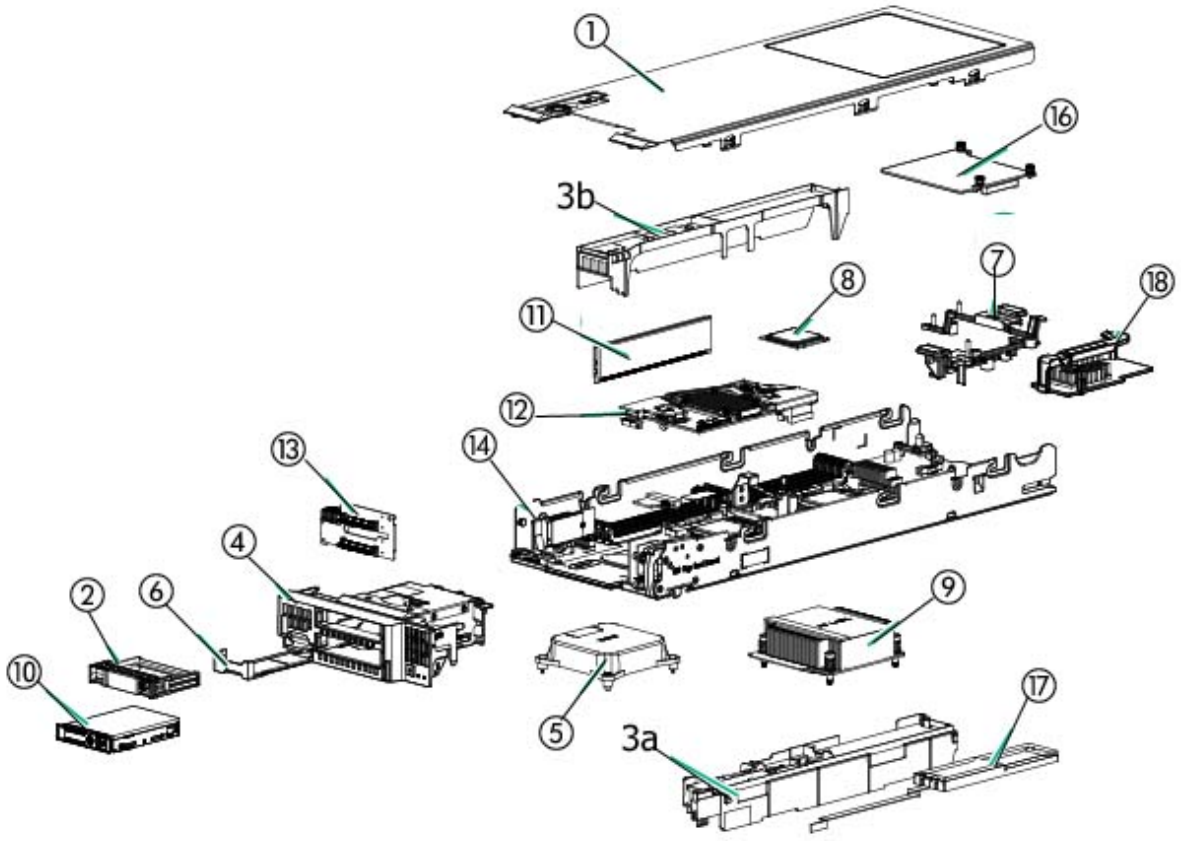
New model specific parts lists
Server Blade Components
Expansion Blade Components

New model specific parts lists

IMPORTANT: To obtain current part number information for a specific product model, use the Standard Models page for this product family.

- The product Standard Models page now links the model SKU numbers to the spare parts list for each model found on the HP PartSurfer web site. (To report missing or incorrect parts information in PartSurfer, please use the "Contact us" and "Missing or incorrect data" links within the PartSurfer web site utility).
- To look up RoHS-compliant information in PartSurfer, use the component's option part number or the sales order number for a system in which the component is used (available in the QuickSpecs or Standard Models page).

Server Blade Components



Item	Description	Spare PartNumber
1	Access panel, single-width blade	777681-001
2	Drive blank	777683-001
3	**DIMM baffles**	
	DIMM baffle, right	777685-001
	DIMM baffle, left	777684-001
4	Front panel/drive cage assembly	777682-001
5	Heatsink Blank for Gen9	862026-001
6	Heatsink blank	670027-001
7	Serial label pull tab	777690-001
8	Mezzanine assembly	784960-001
9	**Processors**	

Item	Description	Spare PartNumber
	E5-2600 v3 series Processors	
	Intel Xeon E5-2603 v3 Six-Core 64-bit processor - 1.60 GHz base frequency (Haswell-EP, 15MB Intel Smart Cache, Intel QPI speed 6.4 GT/s, 85 W Thermal Design Power (TDP), FCLGA 2011-3 socket)	762441-001
	Intel Xeon E5-2609 v3 Six-Core 64-bit processor - 1.90 GHz base frequency (Haswell-EP, 15MB Intel Smart Cache, Intel QPI speed 6.4 GT/s, 85 W TDP, FCLGA 2011-3 socket)	762443-001
	Intel Xeon E5-2620 v3 Six-Core 64-bit processor - 2.40 GHz base frequency (Haswell-EP, 15MB Intel Smart Cache, Intel QPI speed 8.0 GT/s, 85 W TDP, FCLGA 2011-3 socket)	762445-001
	Intel Xeon E5-2623 v3 Four-Core 64-bit processor - 3.0 GHz (Haswell-EP, 10MB Intel Smart Cache, Intel QPI speed 8.0 GT/s, 105 W TDP, FCLGA 2011-3 socket)	780762-001
	Intel Xeon E5-2630 v3 Eight-Core 64-bit processor - 2.40 GHz base frequency (Haswell-EP, 20MB Intel Smart Cache, Intel QPI speed 8.0 GT/s, 85 W TDP, FCLGA 2011-3 socket)	762446-001
	Intel Xeon E5-2630L v3 Eight-Core 64-bit processor - 1.80 GHz (Haswell-EP, 20MB Intel Smart Cache, Intel QPI speed 8.0 GT/s, 55 W TDP, FCLGA 2011-3 socket)	762459-001
	Intel Xeon E5-2637 v3 Four-Core 64-bit processor - 3.50 GHz (Haswell-EP, 15MB Intel Smart Cache, Intel QPI speed 9.6 GT/s, 135 W TDP, FCLGA 2011-3 socket)	762455-001
	Intel Xeon E5-2640 v3 Eight-Core 64-bit processor - 2.60 GHz (Haswell-EP, 20MB Intel Smart Cache, Intel QPI speed 8.0 GT/s, 90 W TDP, FCLGA 2011-3 socket)	762447-001
	Intel Xeon E5-2643 v3 Six-Core 64-bit processor - 3.40 GHz (Haswell-EP, 20M	762456-001

Item	Description	Spare PartNumber
	B Intel Smart Cache, Intel QPI speed 9.6 GT/s, 135 W TDP, FCLGA 2011-3 socket)	
	Intel Xeon E5-2650 v3 Ten-Core 64-bit processor - 2.30 GHz base frequency (Haswell-EP, 25MB Intel Smart Cache, Intel QPI speed 9.6 GT/s, 105 W TDP, FCLGA 2011-3 socket)	762448-001
	Intel Xeon E5-2650L v3 Twelve-Core 64-bit processor - 1.80 GHz (Haswell-EP, 30MB Intel Smart Cache, Intel QPI speed 9.6 GT/s, 65 W TDP, FCLGA 2011-3 socket)	762461-001
	Intel Xeon E5-2660 v3 Ten-Core 64-bit processor - 2.60 GHz (Haswell-EP, 25MB Intel Smart Cache, Intel QPI speed 9.6 GT/s, 105 W TDP, FCLGA 2011-3 socket)	762449-001
	Intel Xeon E5-2667 v3 Eight-Core 64-bit processor - 3.20 GHz (Haswell-EP, 20MB Intel Smart Cache, Intel QPI speed 9.6 GT/s, 135 W TDP, FCLGA 2011-3 socket)	762457-001
	Intel Xeon E5-2670 v3 Twelve-Core 64-bit processor - 2.30 GHz (Haswell-EP, 30MB Intel Smart Cache, Intel QPI speed 9.6 GT/s, 120 W TDP, FCLGA 2011-3 socket)	762450-001
	Intel Xeon E5-2680 v3 Twelve-Core 64-bit processor - 2.50 GHz (Haswell-EP, 30MB Intel Smart Cache, Intel QPI speed 9.6 GT/s, 120 W TDP, FCLGA 2011-3 socket)	762451-001
	Intel Xeon E5-2683 v3 Fourteen-Core 64-bit processor - 2.00 GHz (Haswell-EP, 35MB Intel Smart Cache, Intel QPI speed 9.6 GT/s, 120 W TDP, FCLGA 2011-3 socket)	762453-001
	Intel Xeon E5-2685 v3 Twelve-Core 64-bit processor - 2.60 GHz (Haswell-EP, 30MB Intel Smart Cache, Intel QPI speed 9.6 GT/s, 135 W TDP, FCLGA 2011-3 socket)	780759-001

Item	Description	Spare PartNumber
	Intel Xeon E5-2690 v3 Twelve-Core 64-bit processor - 2.60 GHz (Haswell-EP, 30 MB Intel Smart Cache, Intel QPI speed 9 .6 GT/s, 135 W TDP, FCLGA 2011-3 socket)	762452-001
	Intel Xeon E5-2695 v3 Fourteen-Core 64-bit processor - 2.30 GHz (Haswell-EP, 35MB Intel Smart Cache, Intel QPI speed 9 .6 GT/s, 120 W TDP, FCLGA 2011-3 socket)	762454-001
	Intel Xeon E5-2697 v3 Fourteen-Core 64-bit processor - 2.60 GHz (Haswell-EP, 35MB Intel Smart Cache, Intel QPI speed 9 .6 GT/s, 145 W TDP, FCLGA 2011-3 socket)	765154-001
	Intel Xeon E5-2698 v3 Sixteen-Core 64-bit processor - 2.30 GHz (Haswell-EP, 40MB Intel Smart Cache, Intel QPI speed 9 .6 GT/s, 135 W TDP, FCLGA 2011-3 socket)	780760-001
	Intel Xeon E5-2699 v3 Eighteen-Core 64-bit processor - 2.30 GHz (Haswell-EP, 45MB Intel Smart Cache, Intel QPI speed 9 .6 GT/s, 145 W TDP, FCLGA 2011-3 socket)	780761-001
	E5-2600 v4 series Processors	
	Intel Xeon E5-2690 v4 fourteen cores, processor - 2.60 GHz (35MB Level-3 cache, 135 W TDP, Socket 2011-3 / R3 / LGA 2011-3)	835607-001
	Intel Xeon E5-2683 v4 Sixteen-Core 64-bit processor - 2.1 GHz base frequency (Broadwell, 40MB Intel Smart Cache, Intel QPI speed 9.6 GT/s, 120 W TDP, FCLGA 2011-3 socket)	835614-001
	Intel Xeon E5-2660 v4 Fourteen-Core 64-bit processor - 2.0 GHz base frequency (Broadwell, 35MB Intel Smart Cache, Intel QPI speed 9.6 GT/s, 105 W TDP, FCLGA 2011-3 socket)	835605-001

Item	Description	Spare PartNumber
	Intel Xeon E5-2667 v4 Eight-Core 64-bit processor - 3.2 GHz base frequency (Broadwell, 25MB Intel Smart Cache, Intel QPI speed 9.6 GT/s, 135 W TDP, FCLGA 2011-3 socket)	835613-001
	Intel Xeon E5-2680 v4 Fourteen-Core 64-bit processor - 2.4 GHz base frequency (Broadwell), 35MB Intel Smart Cache, Intel QPI speed 9.6 GT/s, 120 W TDP, FCLGA 2011-3 socket	835606-001
	Intel Xeon E5-2650 v4 Ten-Core 64-bit processor - 2.2 GHz base frequency (Broadwell, 30MB Intel Smart Cache, Intel QPI speed 9.6 GT/s, 105 W TDP, FCLGA 2011-3 socket)	835604-001
	Intel Xeon E5-2650L v4 Fourteen-Core 64-bit low-power processor - 1.7 GHz base frequency (Broadwell, 35MB Intel Smart Cache, Intel QPI speed 9.6 GT/s, 65 W TDP, FCLGA 2011-3 socket)	835609-001
	Intel Xeon E5-2630 v4 Ten-Core 64-bit processor - 2.2 GHz base frequency (Broadwell, 25MB Intel Smart Cache, Intel QPI speed 8.0 GT/s, 85 W TDP, FCLGA 2011-3 socket)	835602-001
	Intel Xeon E5-2630L v4 Ten-Core 64-bit low-power processor - 1.8 GHz base frequency (Broadwell, 25MB Intel Smart Cache, Intel QPI speed 8.0 GT/s, 55 W TDP, FCLGA 2011-3 socket)	835608-001
	Intel Xeon E5-2637 v4 Four-Core 64-bit processor - 3.5 GHz base frequency (Broadwell, 15MB Intel Smart Cache, Intel QPI speed 9.6 GT/s, 135 W TDP, FCLGA 2011-3 socket)	835611-001
	Intel Xeon E5-2640 v4 Ten-Core 64-bit processor - 2.4 GHz base frequency (Broadwell, 25MB Intel Smart Cache, Intel QPI speed 8.0 GT/s, 90 W TDP, FCLGA 2011-3 socket)	835603-001
	Intel Xeon E5-2643 v4 Six-Core 64-bit processor - 3.4 GHz base frequency (Broadwell), 20MB Intel Smart Cache, Intel QPI	835612-001

Item	Description	Spare PartNumber
	speed 9.6 GT/s, 135 W TDP, FCLGA 2011 -3 socket	
	Intel Xeon E5-2623 v4 Four-Core 64-bit processor - 2.6 GHz base frequency (Bro adwell, 10MB Intel Smart Cache, Intel QP I speed 8.0 GT/s, 85 W TDP, FCLGA 2011 -3 socket)	835610-001
	Intel Xeon E5-2620 v4 Eight-Core 64-bit processor - 2.1 GHz base frequency (Bro adwell, 20MB Intel Smart Cache, Intel QP I speed 8.0 GT/s, 85 W TDP, FCLGA 2011 -3 socket)	835601-001
	Intel Xeon E5-2603 v4 Six-Core 64-bit p rocessor - 1.7 GHz base frequency (Broa dwell, 15MB Intel Smart Cache, Intel QPI speed 6.4 GT/s, 85 W TDP, FCLGA 2011 -3 socket)	835599-001
	Intel Xeon E5-2609 v4 Eight-Core 64-bit processor - 1.7 GHz base frequency (Bro adwell, 20MB Intel Smart Cache, Intel QP I speed 6.4 GT/s, 85 W TDP, FCLGA 2011 -3 socket)	835600-001
	Intel Xeon E5-2698 v4 Twenty-Core 64 -bit processor - 2.10 GHz (50MB Intel S mart Cache, 145 W TDP, 2011-3 / R3 / LGA2011-3)	835617-001
	Intel Xeon E5-2699 v4 Twenty-two-Core 64-bit processor - 2.2 GHz base frequen cy (Broadwell, 55MB Intel Smart Cache, I ntel QPI speed 9.6 GT/s, 145 W TDP, FC LGA 2011-3 socket)	835618-001
	Intel Xeon E5-2697 v4 Eighteen-Core 64 -bit processor - 2.3 GHz base frequency (Broadwell, 45MB Intel Smart Cache, Intel QPI speed 9.6 GT/s, 145 W TDP, FCLGA 2 011-3 socket)	835616-001
	Intel Xeon E5-2695 v4 Eighteen-Core 64 -bit processor - 2.1 GHz base frequency (Broadwell, 45MB Intel Smart Cache, Intel QPI speed 9.6 GT/s, 120 W TDP, FCLGA 2 011-3 socket)	835615-001

Item	Description	Spare PartNumber
10	**Heatsink**	
	Processor 1 heatsink, standard	777687-001
	Processor 2 heatsink, standard	777686-001
	Processor 1 heatsink, wide	777689-001
	Processor 2 heatsink, wide	777688-001
11	**Drives**	
	146GB hot-plug dual-port SAS hard disk drive - 15,000 RPM, 6 Gb/s transfer rate, 2.5 in SFF, Enterprise, SmartDrive Carrier (SC) - Not for use in MSA products	653950-001
	300GB hot-plug dual-port SAS hard disk drive - 10,000 RPM, 6 Gb/s transfer rate, 2.5 in SFF, Enterprise, SC - Not for use in MSA products	653955-001
	300GB hot-plug dual-port SAS hard disk drive - 6 Gb/s transfer rate, 15,000 RPM, 2.5-in SFF, Enterprise, SC - Not for use in MSA products - For use with Gen8/Gen9 or newer	653960-001
	450GB hot-plug dual-port SAS hard disk drive - 10,000 RPM, 6 Gb/s transfer rate, 2.5 in SFF, Enterprise, SC - Not for use in MSA products	653956-001
	500GB hot-plug dual-port SAS hard disk drive - 7,200 RPM, 6 Gb/s transfer rate, 2 .5 in SFF, Midline (MDL), SC - Not for use in MSA products	653953-001
	600GB hot-plug dual-port SAS hard disk drive - 10,000 RPM, 6 Gb/s transfer rate, 2.5 in SFF, Enterprise, SC - Not for use in MSA products	653957-001
	900GB hot-plug dual-port SAS hard disk drive - 10,000 RPM, 6 Gb/s transfer rate, 2.5 in SFF, Enterprise, SC	653971-001
	1TB hot-plug dual-port SAS hard disk dr ive - 7,200 RPM, 6 Gb/s transfer rate, 2.	653954-001

Item	Description	Spare PartNumber
	5 in SFF, MDL, SC - Not for use in MSA p roducts	
	1.2TB hot-plug dual-port SAS hard disk drive - 10,000 RPM, 6 Gb/s transfer rate, dual port, 2.5 in SFF, Enterprise, SC	718292-001
	1TB hot-plug SATA hard disk drive - 7,20 0 RPM, 6 Gb/s transfer rate, 2.5-in SFF, M DL, SC - Not for use in MSA products	656108-001
	500GB hot-plug SATA hard disk drive - 7, 200 RPM, 6 Gb/s transfer rate, 2.5-in SFF, MDL, SC	656107-001
	200GB hot-plug SSD - SAS interface, 12 Gb/s transfer rate, 2.5 in SFF, Mainstrea m Endurance (ME), Enterprise Mainstrea m (EM), SC - Supports Gen8 servers and beyond only	741224-001
	200GB hot-plug SSD - SAS interface, 12 Gb/s transfer rate, 2.5 in SFF, High Endu rance (HE), Enterprise Performance (EP), SC - Supports Gen8 servers and beyond only	741230-001
	400GB hot-plug SSD - SAS interface, 12 Gb/s transfer rate, 2.5 in SFF, ME, EM, SC - Supports Gen8 servers and beyond onl y	741226-001
	400GB hot-plug SSD - SAS interface, 12 Gb/s transfer rate, 2.5 in SFF, HE, EP, SC - Supports Gen8 servers and beyond only	741232-001
	800GB hot-plug SSD - SAS interface, 12 Gb/s transfer rate, 2.5 in SFF, VE, Enterpr ise Value (EV), SC - Supports Gen8 serve rs and beyond only	762749-001
	800GB hot-plug SSD - SAS interface, 12 Gb/s transfer rate, 2.5 in SFF, ME, EM, SC - Supports Gen8 servers and beyond onl y	741228-001
	800GB hot-plug SSD - SAS interface, 12 Gb/s transfer rate, 2.5 in SFF, HE, EP, SC - Supports Gen8 servers and beyond only	741234-001

Item	Description	Spare PartNumber
	1.6TB hot-plug SSD - SAS interface, 12 Gb/s transfer rate, 2.5 in SFF, Value Endurance (VE), EV, SC - Supports Gen8 servers and beyond only	762751-001
	DRV SSD 400GB 6G 2.5 SAS ME PLP SC	768257-001
	DRV SSD 800GB 2.5 SAS ME PLP SC	768258-001
	DRV SSD 1.6TB 2.5 SAS ME PLP SC	768259-001
	80GB hot-plug SSD - SATA interface, 6 Gb/s transfer rate, 2.5 in SFF, VE, Enterprise Boot (EB), SC - Supports Gen8 servers and beyond only	734562-001
	120GB hot-plug SSD- SATA interface, 6 Gb/s transfer rate, 2.5-in SFF, VE, EB, SC - Supports Gen8 servers and beyond only	718136-001
	240GB hot-plug SSD - SATA interface, 6 Gb/s transfer rate, 2.5-in SFF, VE, SC - For use with Gen8 servers and beyond	718137-001
	240GB hot-plug SSD - SATA interface, 6 Gb/s transfer rate, 2.5 in SFF, VE	757366-001
	480GB hot-plug SSD - SATA interface, 6 Gb/s transfer rate, 2.5-in SFF, VE, SC,supports PLP - For use with Gen8 servers and beyond	718138-001
	480GB SATA SSD - 6Gb per second transfer rate, 2.5-in SFF, SC, VE	735501-001
	400GB SAS SSD - 6 Gb/s transfer rate, 2.5 in SFF, hot-plug, PLP, smart carrier, Light Endurance (LE)	768268-001
	480GB hot-plug SSD - SATA interface, 6 Gb/s transfer rate, 2.5 in SFF, VE	757371-001
	800GB SSD - SAS 6 Gb/s transfer rate, 2.5 in SFF, hot-plug, PLP, smart carrier	768269-001
	1.6TB SSD - SAS 6 Gb/s transfer rate, 2.5 in SFF, hot-plug, PLP, smart carrier	768270-001
	800GB hot-plug SSD - SATA interface, 6 Gb/s transfer rate, 2.5 in SFF, VE, EV, SC	718139-001

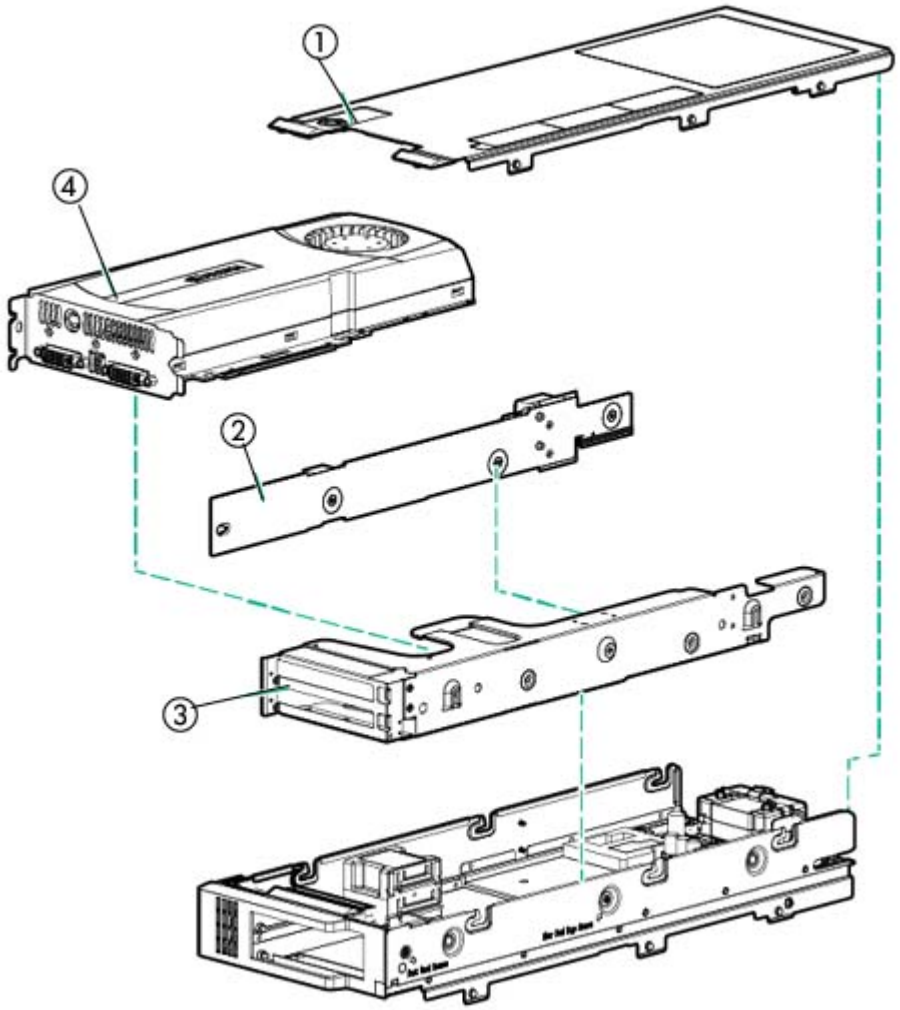
Item	Description	Spare PartNumber
	100GB hot-plug SSD - SATA interface, 6 Gb/s transfer rate, 2.5 in SFF, Multi-Level Cell (MLC), ME, EM, SC	692164-001
	120GB hot-plug SSD - SATA interface, 6 Gb/s transfer rate, 2.5 in SFF, VE	757361-001
	200GB hot-plug SSD - SATA interface, 6 Gb/s transfer rate, 2.5 in SFF, MLC, ME, E M, SC	692165-001
	300GB hot-plug SSD - SATA interface, 6 Gb/s transfer rate, 2.5 in SFF, VE, EV, SC	739954-001
	400GB hot-plug SSD - SATA interface, 6 Gb/s transfer rate, 2.5 in SFF, MLC, ME, E M, SC	692166-001
	600GB hot-plug SSD - SATA interface, 6 Gb/s transfer rate, 2.5 in SFF, VE, EV, SC	739959-001
	DRV SSD 960GB SATA SFF MU SC	757231-001
	800GB hot-plug SSD - SATA interface, 6 Gb/s transfer rate, 2.5 in SFF, MLC, ME, E M, SC	692167-001
12	**DIMMs**	
	8GB, 2133 MHz, PC4-2133P-R, DDR4, si ngle-rank x4, 1.20 V, CAS-15-15-15, RDI MM	774170-001
	16GB, 2133 MHz, PC4-2133P-R, DDR4, dual-rank x4, 1.20 V, CAS-15-15-15, RDI MM	774172-001
	32GB, 2133 MHz, PC4-2133P-L, DDR4, quad-rank x4, 1.20 V, CAS-15-15-15,LR DIMM	774174-001
13	**Storage controller**	
	H244br 12Gb 2-ports Smart HBA - Inclu des 4GB FBWC, cache not sold separately	749999-001

Item	Description	Spare PartNumber
	Smart Array PCIe P244br controller - 2 -port, 12Gb SAS RAID controller - Includ es 1GB FBWC, cache not sold separately	749800-001
	PCA board NVMe BL460c Gen9 pass-th rough DC	744408-001
14	SAS/SATA Hard drive backplane	744412-001
	PCA board NVMe BL460c Gen9 hard dis k drive backplane	744413-001
15	System board	744409-001
	System board with base pan	843305-001
16	TPM board	505836-001
17	**Mezzanine options**	
	HP FlexFabric 20Gb 2-port 630 M Ada pter	701528-001
	HP FlexFabric 20Gb 2-port 650 M Ada pter	701535-001
	HP FlexFabric 10Gb 2-port 534 M Ada pter	701530-001
	HP Ethernet 10Gb 2-port 560 M Adapter	669282-001
	HP Ethernet 10Gb 2-port 570M Adapter	730700-001
	HP Ethernet 1Gb 4-port 366 M Adapter	616010-001
	HP InfiniBand QDR/Ethernet 10Gb 2-por t 544+M Adapter	764734-001
	HP InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+M Adapter	764735-001
	HP InfiniBand FDR 2-port 545 M Adapte r	705086-001
	HP LPe1605 16Gb Fibre Channel HBA fo r BladeSystem c-Class	718577-001
	HP QMH2672 16Gb Fibre Channel HBA	711305-001

Item	Description	Spare PartNumber
	MXM3 Adapter Type-A PCIe3	792946-001
	MXM3 Adapter Type-B PCIe3	792947-001
	MXM3 adapter type-B PCIe3 mezzanine card	847623-001
	PCA NVidia Tesla M6 - NVidia GRID, M5100M MXM 8GB	808409-001
	AMD FirePro S4000X Server GPU Module, 2GB	797888-001
	NVIDIA Quadro K3100 M 4GB Graphics Card	797886-001
	AMD FirePro S7100X FIO mezzanine - 8 GB GDDR5, interface 256bit, ECC (error correcting code) memory	849147-001
	PCIe mezzanine pass through board	792948-001
18	MegaCell capacitor pack (battery) 12 W, 7.2 V - For use with HP Smart Array controllers with FBWC	750452-001
19	Battery module - Enhanced MegaCell 12 W Battery Backed Write Cache (BBWC) module	815984-001
20	**FlexibleLOM adapters**	
	HP FlexFabric 20Gb 2-port 630FLB Adapter	701527-001
	HP FlexFabric 20Gb 2-port 650FLB Adapter	701536-001
	HP FlexFabric 10Gb 2-port 536FLB Adapter	777692-001
	HP Ethernet 10Gb 2-port 560FLB Adapter	730701-001
	HP Ethernet 10Gb 2-port 570FLB Adapter	701528-001
21	**MXM graphics mezzanine heatsink**	
	MXM3 Type-A PCIe3 heatsink	797889-001

Item	Description	Spare PartNumber
	PCIe3 MXM3 adapter type-B mezzanine card	851462-001
	Multi-MXM octagonal module	851463-001
	MXM3 Type-B PCIe3 heatsink	797887-001
22	System battery	234556-001
23	Blade release lever - Includes server release lever assembly, server release lever bracket, and T-10 screws (2)	688895-001
24	**Mezzanine pass through brackets**	
	Single mezzanine pass through bracket, clear	801520-001
	Dual mezzanine pass through bracket, black	801810-001
25	**Cables**	
	HP c-Class blade SUV cable	416003-001
	Cable assembly SATA Gen9	784961-001

Expansion Blade Components



Item	Description	Spare PartNumber
1	Expansion blade access panel	777681-001
2	Expansion blade riser board	792949-001
3	Expansion blade PCIe card cage	-
4	**Graphics options**	
	NVIDIA Quadro K4000 graphics card, 3GB PCIe	736757-001
	NVIDIA Quadro K5000 graphics card, 4GB PCIe	736758-001
	NVIDIA Quadro K6000 Graphics Accelerator board - Requires two P	736859-001

Item	Description	Spare PartNumber
	CIe3 x16 slot - Has 12GB GDDR5 memory with 288 GB/s bandwidth , 2880 CUDA cores, and integrated fan - Has two DVI-D port and two DP 1.2 ports	
	NVIDIA GRID K1 PCIe GPU	736759-001
	NVIDIA GRID K2 PCIe GPU	732635-001
	NVidia Quadro M5000 GPU modul e - Active cooling, double slot, PCI e Gen3, 8GB GddR5 memory, adva nced quad-display capabilities, NV IDIA Maxwell-architecture	826220-001
	Nvidia Quadro M6000 GPU	813432-001
5	SPS-PCA GFX Exp Power Bd	792950-001
6	**Graphics expansion control cables**	
	Graphics expansion control cable, PCIe, short	715289-001
	Graphics expansion control cable, PCIe, long	715290-001
7	PCA Quadro K3100M mobile PCI express module (MXM - BWS) - 81 0 MHz processor speed, DDR3 SD RAM, 1-HDMI, 2-DVI	753112-001
8	PCIe multi MXM card	811100-001

Option Parts

Subtopics

New model specific parts lists
Processors
Memory
Hard Drives

Networking
Fibre Channel
Hard Drive
Graphics Adapters
Insight Software
iLO Advanced License
Converged Infrastructure Management Software
High Performance Clusters
Security
Storage Controllers
Flash media kits for USB drives
Care Pack Services

New model specific parts lists

IMPORTANT: To obtain current part number information for a specific product model, use the Standard Models page for this product family.

- The product Standard Models page now links the model SKU numbers to the spare parts list for each model found on the HPE PartSurfer web site. (To report missing or incorrect parts information in PartSurfer, please use the "Contact us" and "Missing or incorrect data" links within the PartSurfer web site utility).
- To look up RoHS-compliant information in PartSurfer, use the component's option part number or the sales order number for a system in which the component is used (Available in the QuickSpecs or Standard Models page).

Processors

Description	Option Part Number
E5-2600 v4 series processors	
HPE BL460c Gen9 Intel Xeon E5-2690v4 (2.6 GHz/ 14-core/35MB/135 W) FIO processor kit	819852-L21
HPE BL460c Gen9 Intel Xeon E5-2683v4 (2.1 GHz/ 16-core/40MB/120 W) FIO processor kit	819851-L21

Description	Option Part Number
HPE BL460c Gen9 Intel Xeon E5-2680v4 (2.4 GHz/ 14-core/35MB/120 W) FIO processor kit	819842-L21
HPE BL460c Gen9 Intel Xeon E5-2660v4 (2.0 GHz/ 14-core/35MB/105 W) FIO processor kit	819841-L21
HPE BL460c Gen9 Intel Xeon E5-2650v4 (2.2 GHz/ 12-core/30MB/105 W) FIO processor kit	819840-L21
HPE BL460c Gen9 Intel Xeon E5-2650Lv4 (1.7 GH z/14-core/35MB/65 W) FIO processor kit	819849-L21
HPE BL460c Gen9 Intel Xeon E5-2640v4 (2.4 GHz/ 10-core/25MB/90 W) FIO processor kit	819839-L21
HPE BL460c Gen9 Intel Xeon E5-2630v4 (2.2 GHz/ 8-core/25MB/85 W) FIO processor kit	819845-L21
HPE BL460c Gen9 Intel Xeon E5-2630Lv4 (1.8 GH z/10-core/25MB/55 W) FIO processor kit	819846-L21
HPE BL460c Gen9 Intel Xeon E5-2623v4 (2.6 GHz/ 4-core/10MB/85 W) FIO processor kit	819844-L21
HPE BL460c Gen9 Intel Xeon E5-2620v4 (2.1 GHz/ 8-core/20MB/85 W) FIO processor kit	819838-L21
HPE BL460c Gen9 Intel Xeon E5-2609v4 (1.7 GHz/ 8-core/20MB/85 W) FIO processor kit	819837-L21
HPE BL460c Gen9 Intel Xeon E5-2680v4 (2.4 GHz/ 14-core/35MB/120 W) FIO processor kit	819842-L21
HPE BL460c Gen9 Intel Xeon E5-2699v4 (2.2 GHz/ 22-core/55MB/145 W) FIO processor kit	819856-L21
HPE BL460c Gen9 Intel Xeon E5-2698v4 (2.2 GHz/ 20-core/50MB/135 W) FIO processor kit	819855-L21
HPE BL460c Gen9 Intel Xeon E5-2697v4 (2.3 GHz/ 18-core/45MB/145 W) FIO processor kit	819854-L21
HPE BL460c Gen9 Intel Xeon E5-2697Av4 (2.6 GH z/16-core/40MB/145 W) FIO processor kit	819857-L21
HPE BL460c Gen9 Intel Xeon E5-2695v4 (2.1 GHz/ 18-core/45MB/120 W) FIO processor kit	819853-L21

Description	Option Part Number
HPE BL460c Gen9 Intel Xeon E5-2667v4 (3.2 GHz/ 8-core/25MB/135 W) FIO processor kit	819850-L21
HPE BL460c Gen9 Intel Xeon E5-2643v4 (3.4 GHz/ 6-core/20MB/135 W) FIO processor kit	819848-L21
HPE BL460c Gen9 Intel Xeon E5-2637v4 (3.5 GHz/ 4-core/15MB/135 W) FIO processor kit	819847-L21
HPE BL460c Gen9 Intel Xeon E5-2690v4 (2.6 GHz/ 14-core/35MB/135 W) processor kit	819852-B21
HPE BL460c Gen9 Intel Xeon E5-2683v4 (2.1 GHz/ 16-core/40MB/120 W) processor kit	819851-B21
HPE BL460c Gen9 Intel Xeon E5-2680v4 (2.4 GHz/ 14-core/35MB/120 W) processor kit	819842-B21
HPE BL460c Gen9 Intel Xeon E5-2650v4 (2.2 GHz/ 12-core/30MB/105 W) processor kit	819840-B21
HPE BL460c Gen9 Intel Xeon E5-2640v4 (2.4 GHz/ 10-core/25MB/90 W) Processor Kit	819839-B21
HPE BL460c Gen9 Intel Xeon E5-2620v4 (2.1 GHz/ 8-core/20MB/85 W) processor kit	819838-B21
HPE BL460c Gen9 Intel Xeon E5-2698v4 (2.2 GHz/ 20-core/50MB/135 W) processor kit	819855-B21
HPE BL460c Gen9 Intel Xeon E5-2697v4 (2.3 GHz/ 18-core/45MB/145 W) processor kit	819854-B21
HPE BL460c Gen9 Intel Xeon E5-2697Av4 (2.6 GH z/16-core/40MB/145 W) processor kit	819857-B21
HPE BL460c Gen9 Intel Xeon E5-2630v4 (2.2 GHz/ 10-core/25MB/85 W) Processor Kit	819845-B21
HPE BL460c Gen9 Intel Xeon E5-2695v4 (2.1 GHz/ 18-core/45MB/120 W) processor kit	819853-B21
HPE BL460c Gen9 Intel Xeon E5-2667v4 (3.2 GHz/ 8-core/25MB/135 W) processor kit	819850-B21

E5-2600 v3 series processors

Description	Option Part Number
HP BL460c Gen9 Intel Xeon E5-2690v3 (2.6 GHz/12-core/30MB/135 W) FIO processor kit	726987-L21
HP BL460c Gen9 Intel Xeon E5-2680v3 (2.5 GHz/12-core/30MB/120 W) FIO processor kit	726988-L21
HP BL460c Gen9 Intel Xeon E5-2670v3 (2.3 GHz/12-core/30MB/120 W) FIO processor kit	726989-L21
HP BL460c Gen9 Intel Xeon E5-2660v3 (2.6 GHz/10-core/25MB/105 W) FIO processor kit	726990-L21
HP BL460c Gen9 Intel Xeon E5-2650v3 (2.3 GHz/10-core/25MB/105 W) FIO processor kit	726991-L21
HP BL460c Gen9 Intel Xeon E5-2640v3 (2.6 GHz/8-core/20MB/90 W) FIO processor kit	726992-L21
HP BL460c Gen9 Intel Xeon E5-2683v3 (2 GHz/14-core/35MB/120 W) FIO processor kit	726993-L21
HP BL460c Gen9 Intel Xeon E5-2630v3 (2.4 GHz/8-core/20MB/85 W) FIO processor kit	726994-L21
HP BL460c Gen9 Intel Xeon E5-2620v3 (2.4 GHz/6-core/15MB/85 W) FIO processor kit	726995-L21
HP BL460c Gen9 Intel Xeon E5-2623v3 (3 GHz/4-core/10MB/105 W) FIO processor kit	726996-L21
HP BL460c Gen9 Intel Xeon E5-2609v3 (1.9 GHz/6-core/15MB/85 W) FIO processor kit	726997-L21
HP BL460c Gen9 Intel Xeon E5-2603v3 (1.6 GHz/6-core/15MB/85 W) FIO processor kit	726999-L21
HP BL460c Gen9 Intel Xeon E5-2650Lv3 (1.8 GHz/12-core/30MB/65 W) FIO processor kit	727000-L21
HP BL460c Gen9 Intel Xeon E5-2698v3 (2.3 GHz/16-core/40MB/135 W) FIO processor kit	727001-L21
HP BL460c Gen9 Intel Xeon E5-2630Lv3 (1.8 GHz/8-core/20MB/55 W) FIO processor kit	727002-L21
HP BL460c Gen9 Intel Xeon E5-2695v3 (2.3 GHz/14-core/35MB/120 W) FIO processor kit	727003-L21

Description	Option Part Number
HP BL460c Gen9 Intel Xeon E5-2637v3 (3.5 GHz/4-core/15MB/135 W) FIO processor kit	765268-L21
HP BL460c Gen9 Intel Xeon E5-2697v3 (2.6 GHz/14-core/35MB/145 W) FIO processor kit	767049-L21
HP BL460c Gen9 Intel Xeon E5-2667v3 (3.2 GHz/8-core/20MB/135 W) FIO processor kit	773123-L21
HP BL460c Gen9 Intel Xeon E5-2643v3 (3.4 GHz/6-core/20MB/135 W) FIO processor kit	773124-L21
HP BL460c Gen9 Intel Xeon E5-2699v3 (2.3 GHz/18-core/45MB/145 W) FIO processor kit	779795-L21
HPE BL460c Gen9 Intel Xeon E5-2660v4 (2.0 GHz/14-core/35MB/105 W) processor kit	819841-B21
HPE BL460c Gen9 Intel Xeon E5-2623v4 (2.6 GHz/4-core/10MB/85 W) processor kit	819849-B21
HPE BL460c Gen9 Intel Xeon E5-2623v4 (2.6 GHz/4-core/10MB/85 W) Processor Kit	819844-B21
HPE BL460c Gen9 Intel Xeon E5-2699v4 (2.2 GHz/22-core/55MB/145 W) processor kit	819856-B21
HPE BL460c Gen9 Intel Xeon E5-2643v4 (3.4 GHz/6-core/20MB/135 W) processor kit	819848-B21
HPE BL460c Gen9 Intel Xeon E5-2637v4 (3.5 GHz/4-core/15MB/135 W) processor kit	819847-B2

NOTE

- All processors within the server must be identical.
- DIMM slots 4 and 5 are not accessible when the E5-2699 v4, E5-2697 v4, E5-2697A v4, E5-2667 v4, E5-2643 v4, E5-2637 v4, E5-2699 v3, the E5-2697 v3, the E5-2643 v3, the E5-2637 v3 or the E5-2667 v3 is used. In a 2 processor configuration, there are twelve (12) total available DIMM slots.
- All processors support Intel hyper-threading and Intel turbo boost technologies except the E5-2609 v4, E5-2603 v4, E5-2603 v3 and E5-2609 v3.
- DDR4 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.
- Supports 1 or 2 processors. Mixing different processor models is not supported.

Description	Option Part Number

- For the Intel C610 chipset E5-2600 v3 and v4 series, the letter preceding the model nu mber indicates the product line (E3, E5, E7); 2600x, 2 = number of CPUs in anode, 6 is socket/segment designation, 00 = processor SKU, and x = L for low power SKUs.
- The BL460c Gen9 includes two I/O mezzanine expansion slots. A process or must be in stalled in processor slot 1 for access to the first mezzanine expansion slot (Expansion sl ot 1). A processor must be installed in processor slot 2 for access to the second mezzan ine expansion slot (Expansion slot 2).
- The letter **L** following the model number indicates denotes lower wattage.

Memory

Description	Option Part Number
HPE SmartMemory	
RDIMMs - E5-2600 v4 series processors	
HP 8GB (1 x 8GB) single rank x8 DDR4-2400 CAS-17-17-17 registered memory kit	805347-B21
HP 16GB (1 x 16GB) single rank x4 DDR4-2400 CAS-17-17-17 registered memory kit	805349-B21
HPE 16GB (1 x 16GB) dual rank x4 DDR4-2400 CAS-17-17-17 registered memory kit	836220-B21
HP 32GB (1 x 32GB) dual rank x4 DDR4-2400 CAS-17-17-17 registered memory kit	805351-B21
LRDIMMs - E5-2600 v4 series processors	
HPE 32GB (1 x 32GB) dual rank x4 DDR4-2400 CAS-17-17-17 load registered memory kit	805353-B21
HPE 64GB (1 x 64GB) quad rank x4 DDR4-2400 CAS-17-17-17 load registered memory kit	805358-B21
RDIMMs - E5-2600 v3 series processors	

Description	Option Part Number
HP 8GB (1 x 8GB) dual rank x8 DDR4-2133 CAS-15-15-15 registered memory kit	759934-B21
HP 8GB (1 x 8GB) single rank x4 DDR4-2133 CAS-15-15-15 registered memory kit	726718-B21
HP 16GB (1 x 16GB) dual rank x4 DDR4-2133 CAS-15-15-15 registered memory kit	726719-B21
HP 32GB (1 x 32GB) dual rank x4 DDR4-2133 CAS-15-15-15 registered memory kit	728629-B21
LRDIMMs - E5-2600 v3 series processors	
HP 32GB (1 x 32GB) quad rank x4 DDR4-2133 CAS-15-15-15 load reduced memory kit	726722-B21
HP 16GB (1 x 16GB) dual rank x4 DDR4-2133 CAS-15-15-15 load reduced memory kit	726720-B21
HP 48GB (1 x 16GB + 1 x 32GB) DDR4-2133 CAS-15-15-15 load reduced memory FIO kit	792278-B21
HP 64GB (1 x 64GB) quad rank x4 DDR4-2133 CAS-15-15-15 load reduced memory kit	726724-B21

Hard Drives

Description	Option Part Number
HPE NVMe PCIe Read Intensive (RI) SFF (2.5 in) SSDs	
HPE 1.92TB NVMe x4 lanes RI SFF (2.5 in) SCN 3 yr warranty Digitally Signed (DS) firmware SSD	875591-B21
HPE 960GB NVMe x4 lanes RI SFF (2.5 in) SCN 3 yr warranty DS firmware SSD	875589-B21
HPE 480GB NVMe x4 lanes RI SFF (2.5 in) SCN 3 yr warranty DS firmware SSD	875587-B21
HPE NVMe PCIe Mixed Use (MU) SFF (2.5 in) SSDs	

Description	Option Part Number
HPE 400GB NVMe x4 lanes MU SFF (2.5 in) SCN 3 yr warranty DS firmware SSD	875593-B21
HPE 800GB NVMe x4 lanes MU SFF (2.5 in) SCN 3 yr warranty DS firmware SSD	875595-B21
HPE 1.6TB NVMe x4 lanes MU SFF (2.5 in) SCN 3 y r warranty DS firmware SSD	875597-B21
12G SAS Hot-Plug SFF (2.5 in) SC HDD	
HPE 1TB SATA 6G MDL 7.2K SFF (2.5 in) SC 1 yr warranty DS firmware HDD	655710-B21
12G SAS Hot-Plug SFF (2.5 in) SC HDD	
HPE 2TB SAS 12G MDL 7.2K SFF (2.5 in) SC 1 yr warranty 512e HDD	765466-B21
HPE 1TB SAS 12G MDL 7.2K SFF (2.5 in) SC 1 yr warranty 512e DS firmware HDD	765464-B21
HPE 1TB SAS 12G MDL 7.2K SFF (2.5 in) SC 1 yr warranty DS firmware HDD	832514-B21
12G SAS MU SFF (2.5 in) SC DS SSD	
HPE 400GB SAS 12G MU SFF (2.5 in) SC 3 yr warra nty DS firmware SSD	872374-B21
HPE 800GB SAS 12G MU SFF (2.5 in) SC 3 yr warra nty DS firmware SSD	872376-B21
HPE 1.6TB SAS 12G MU SFF (2.5 in) SC 3 yr warran ty DS firmware SSD	872382-B21
12G SAS MU SFF (2.5 in) SC DS SSD	
HPE 3.2TB SAS 12G MU SFF (2.5 in) SC 3 yr warran ty DS firmware SSD	872386-B21
12G SAS RI SFF (2.5 in) SC DS SSD	
HPE 7.68TB SAS 12G RI SFF (2.5 in) SC 3 yr warran ty DS firmware SSD	870144-B21

Description	Option Part Number
HPE 960GB SAS 12G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	872390-B21
HPE 1.92TB SAS 12G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	872392-B21
HPE 3.84TB SAS 12G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	872394-B21
HPE 480GB SAS 12G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	875311-B21
HPE 960GB SAS 12G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	875313-B21
HPE 1.92TB SAS 12G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	875326-B21
HPE 3.84TB SAS 12G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	875330-B21
HPE 960GB SAS 12G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	P06584-B21
HPE 1.92TB SAS 12G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	P06586-B21
HPE 3.84TB SAS 12G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	P06588-B21
HPE 7.68TB SAS 12G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	P06590-B21
6G SATA Hot-Plug SFF (2.5 in) SC HDD	
HPE 2TB SATA 6G MDL 7.2K SFF (2.5 in) SC 1 yr warranty 512e DS firmware HDD	765455-B21
12G SATA 2.5 in MU SFF SC DS SSD	
HPE 480GB SATA 6G MU SFF (2.5 in) SC 3 yr warranty DS firmware SSD	875470-B21
HPE 960GB SATA 6G MU SFF (2.5 in) SC 3 yr warranty DS firmware SSD	875474-B21

Description	Option Part Number
HPE 1.92TB SATA 6G MU SFF (2.5 in) SC 3 yr warranty DS firmware SSD	875478-B21
HPE 240GB SATA 6G MU SFF (2.5 in) SC 3 yr warranty DS firmware SSD	875483-B21
HPE 480GB SATA 6G MU SFF (2.5 in) SC 3 yr warranty DS firmware SSD	P07922-B21
HPE 960GB SATA 6G MU SFF (2.5 in) SC 3 yr warranty DS firmware SSD	P07926-B21
HPE 1.92TB SATA 6G MU SFF (2.5 in) SC 3 yr warranty DS firmware SSD	P07930-B21
12G SATA 2.5 in RI SFF SC DS SSD	
HPE 240GB SATA 6G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	875503-B21
HPE 480GB SATA 6G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	875509-B21
HPE 960GB SATA 6G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	875511-B21
HPE 1.92TB SATA 6G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	875513-B21
HPE 240GB SATA 6G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	P04556-B21
HPE 480GB SATA 6G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	P04560-B21
HPE 960GB SATA 6G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	P04564-B21
HPE 1.92TB SATA 6G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	P04566-B21
HPE 3.84TB SATA 6G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	P04570-B21
HPE 480GB SATA 6G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	P04474-B21

Description	Option Part Number
HPE 960GB SATA 6G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	P04476-B21
HPE 1.92TB SATA 6G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	P04478-B21
HPE 3.84TB SATA 6G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	P04480-B21
HPE 7.68TB SATA 6G RI SFF (2.5 in) SC 3 yr warranty DS firmware SSD	P04482-B21

Networking

Description	Option Part Number
20Gb FlexibleLOM adapters	
HPE FlexFabric 20Gb 2-port 630FLB FIO adapter	700076-B21
HPE FlexFabric 20Gb 2-port 650FLB FIO adapter	700767-B21
10 Gigabit Ethernet mezzanine cards	
HP FlexFabric 10Gb 2-port 534M adapter	700748-B21
HP Ethernet 10Gb 2-port 560M adapter	665246-B21
1 Gigabit Ethernet mezzanine cards	
HP Ethernet 1Gb 4-port 366M adapter	615729-B21
FlexibleLOM adapters	
20Gb FlexibleLOM adapters	
HP FlexFabric 20Gb 2-port 630FLB adapter	700065-B21
HP FlexFabric 20Gb 2-port 650FLB adapter	700763-B21
10Gb FlexibleLOM adapters	

Description	Option Part Number
HP FlexFabric 10Gb 2-port 536FLB FIO adapter	766490-B21
HP Ethernet 10Gb 2-port 560FLB adapter	655639-B21
HPE InfiniBand mezzanine adapters	
HP InfiniBand QDR/Ethernet 10Gb 2-port 544+M adapter	764282-B21
HP InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+M adapter	764283-B21
HP InfiniBand FDR 2-port 545M adapter	702213-B21

Fibre Channel

Description	Option Part Number
HP LPe1605 16Gb FC HBA for BladeSystem c-Class	718203-B21
HP QMH2672 16Gb FC HBA	710608-B21

Hard Drive

Description	Option Part Number
HPE NVMe PCIe RI SFF (2.5 in) SSDs	
HP 2TB NVMe PCIe RI SFF 2.5 in SC2 3 yr warranty SSD	764908-B21
HP 1.2TB NVMe PCIe RI SFF 2.5 in SC2 3 yr warranty SSD	764906-B21
HP 400GB NVMe PCIe RI SFF 2.5 in SC2 3 yr warranty SSD	764904-B21

Description	Option Part Number
HPE NVMe PCIe MU SFF 2.5 in SSDs	
HP 2TB NVMe PCIe MU SFF 2.5 in SC2 3 yr warranty SSD	765044-B21
HP 1.6TB NVMe PCIe MU SFF 2.5 in SC2 3 yr warranty SSD	765038-B21
HP 800GB NVMe PCIe MU SFF 2.5 in SC2 3 yr warranty SSD	765036-B21
HP 400GB NVMe PCIe MU SFF 2.5 in SC2 3 yr warranty SSD	765034-B21
HPE NVMe PCIe Write Intensive (WI) SFF 2.5 in SSDs	
HP 1.6TB NVMe PCIe WI SFF 2.5 in SC2 3 yr warranty SSD	764892-B21
HP 800GB NVMe PCIe WI SFF 2.5 in SC2 3 yr warranty SSD	736939-B21
HP 400GB NVMe PCIe WI SFF 2.5 in SC2 3 yr warranty SSD	736936-B21
HPE Solid State M.2 SATA drives	
HP dual 64GB VE solid state M.2 enablement kit for ProLiant blades	775588-B21
HP 64GB VE solid state M.2 enablement kit for ProLiant blades	785233-B21
HPE dual 120GB RI-1 SSD M.2 kit for ProLiant blades	846497-B21
HPE 120GB RI-1 SSD M.2 kit for ProLiant blades	846495-B21
SAS Hot-Plug with SmartDrive SFF 2.5 in enterprise drives	
HP 1.2TB 6G SAS 10 k rpm SFF 2.5 in SC dual-port enterprise 3 yr warranty hard drive	718162-B21
HP 900GB 6G SAS 10 k rpm SFF 2.5 in SC enterprise 3 yr warranty hard drive	652589-B21

Description	Option Part Number
HP 600GB 6G SAS 10 k rpm SFF 2.5 in SC enterprise 3 yr warranty hard drive	652583-B21
HP 450GB 6G SAS 10 k rpm SFF 2.5 in SC enterprise 3 yr warranty hard drive	652572-B21
HP 300GB 6G SAS 10 k rpm SFF 2.5 in SC enterprise 3 yr warranty hard drive	652564-B21
HP 300GB 6G SAS 15 k rpm SFF 2.5 in SC enterprise 3 yr warranty hard drive	652611-B21
HP 146GB 6G SAS 15 k rpm SFF 2.5 in SC enterprise 3 yr warranty hard drive	652605-B21
SAS Hot-Plug SmartDrive SFF 2.5 in MDL drives	
HP 500GB 6G SAS 7.2 k rpm SFF 2.5 in SC MDL 1 yr warranty hard drive	652745-B21
6G SATA VE SFF (2.5 in) SC EV M1 SSDs	
HP 120GB 6G SATA VE SFF 2.5 in SC EV 3 yr warranty M1 SSD	764923-B21
HP 240GB 6G SATA VE SFF 2.5 in SC EV 3 yr warranty M1 SSD	764925-B21
HP 480GB 6G SATA VE SFF 2.5 in SC EV 3 yr warranty M1 SSD	764927-B21
HP 800GB 6G SATA VE SFF 2.5 in SC EV 3 yr warranty M1 SSD	764929-B21
12G SAS ME SFF (2.5 in) SC EM H2 SSDs	
HP 1.6TB 12G SAS ME SFF 2.5 in EM SC 3 yr warranty H2 SSD	779176-B21
HP 200GB 12G SAS ME SFF 2.5 in EM SC 3 yr warranty H2 SSD	779164-B21
HP 400GB 12G SAS ME SFF 2.5 in EM SC 3 yr warranty H2 SSD	779168-B21
HP 800GB 12G SAS ME SFF 2.5 in EM SC 3 yr warranty H2 SSD	779172-B21

Description	Option Part Number
6G SATA 2.5 in WI-PLP SC SSD	
HP 120GB 6G SATA RI-1 SFF 2.5 in SC 3 yr warranty SSD	838404-B21
HP 240GB 6G SATA RI-1 SFF 2.5 in SC 3 yr warranty SSD	838406-B21
HP 480GB 6G SATA RI-1 SFF 2.5 in SC 3 yr warranty SSD	838408-B21
HP 960GB 6G SATA RI-1 SFF 2.5 in SC 3 yr warranty SSD	838410-B21
HP 1.92TB 6G SATA RI-1 SFF 2.5 in SC 3 yr warranty SSD	838412-B21
HP 3.84TB 6G SATA RI-3 SFF 2.5 in SC 3 yr warranty SSD	816929-B21
6G SATA 2.5 in SFF MU-3 SC SSD	
HP 1.92TB 6G SATA MU-3 SFF 2.5 in SC 3 yr warranty SSD	817011-B21
HP 960GB 6G SATA MU-3 SFF 2.5 in SC 3 yr warranty SSD	816995-B21
HP 480GB 6G SATA MU-3 SFF 2.5 in SC 3 yr warranty SSD	816985-B21
12G SAS VE SFF (2.5 in) SC EV SSDs	
HP 1.6TB 12G SAS VE SFF 2.5 in SC EV 3 yr warranty SSD	762263-B21
HP 800GB 12G SAS VE SFF 2.5 in SC EV 3 yr warranty SSD	762261-B21
12G SAS (2.5 in) 512e SC HDD	
HP 600GB 12G SAS 15K rpm SFF 2.5 in SC 512e enterprise 3 yr Warranty hard drive	748387-B21
HP 1.8TB 12G SAS 10K rpm SFF 2.5 in SC enterprise 512e 3 yr Warranty hard drive	791034-B21

Description	Option Part Number
SAS Hot-Plug with SmartDrive SFF 2.5 in enterprise drives	
HP 300GB 12G SAS 15 k rpm SFF 2.5 in SC enterprise 3 yr warranty hard drive	759208-B21
HP 450GB 12G SAS 15 k rpm SFF 2.5 in SC enterprise 3 yr warranty hard drive	759210-B21
HP 600GB 12G SAS 15 k rpm SFF 2.5 in SC enterprise 3 yr warranty hard drive	759212-B21
12G SAS Hot-Plug SFF 2.5 in SC HDD	
HP 1.2TB 12G SAS 10 k rpm SFF 2.5 in SC enterprise 3 yr warranty hard drive	781518-B21
HP 900GB 12G SAS 10 k rpm SFF 2.5 in SC enterprise 3 yr warranty hard drive	785069-B21
HP 600GB 12G SAS 10 k rpm SFF 2.5 in SC enterprise 3 yr warranty hard drive	781516-B21
HP 300GB 12G SAS 10 k rpm SFF 2.5 in SC enterprise 3 yr warranty hard drive	785067-B21
12G SAS Hot-Plug SFF 2.5 in RI SC SSD	
HP 1.92TB 12G SAS RI SFF 2.5 in SC 3 yr warranty SSD	802891-B21
HP 800GB 12G SAS WI SFF 2.5 in SC 3 yr warranty SSD	802586-B21
HP 400GB 12G SAS WI SFF 2.5 in SC 3 yr warranty SSD	802582-B21
HP 200GB 12G SAS WI SFF 2.5 in SC 3 yr warranty SSD	802578-B21
HPE 800GB 12G SAS WI-1 SFF 2.5 in SC 3 yr warranty SSD	846430-B21
HPE 1.6TB 12G SAS WI-1 SFF 2.5 in SC 3 yr warranty SSD	846432-B21
6G SATA Hot-Plug SFF 2.5 in SC HDD	

Description	Option Part Number
HP 2TB 6G SATA 7.2 k rpm SFF 2.5 in SC 512e 1 yr warranty hard drive	804671-B21
HP 1TB 6G SATA 7.2 k rpm SFF 2.5 in SC 512e 1 yr warranty hard drive	765453-B21
6G SATA 2.5 in WI-PLP SC SSD	
HPE 1.2TB SATA 6G WI SFF 2.5 in SC 3 yr warranty SSD	804677-B21
HPE 400GB SATA 6G WI SFF 2.5 in SC 3 yr warranty SSD	804665-B21
HPE 200GB SATA 6G WI SFF 2.5 in SC 3 yr warranty SSD	804639-B21
6G SATA 2.5 in MU-PLP SC SSD	
HPE 1.6TB SATA 6G MU SFF 2.5 in SC 3 yr warranty SSD	804631-B21
HPE 800GB SATA 6G MU SFF 2.5 in SC 3 yr warrant y SSD	804625-B21
HPE 480GB SATA 6G MU SFF 2.5 in SC 3 yr warrant y SSD	832414-B21
HPE 200GB SATA 6G MU SFF 2.5 in SC 3 yr warrant y SSD	804613-B21
6G SATA 2.5 in RI-PLP SC SSD	
HPE 1.6TB SATA 6G RI SFF 2.5 in SC 3 yr warranty SSD	804605-B21
HPE 800GB SATA 6G RI SFF 2.5 in SC 3 yr warranty SSD	804599-B21
HPE 480GB SATA 6G RI SFF 2.5 in SC 3 yr warranty SSD	804593-B21
HPE 240GB SATA 6G RI SFF 2.5 in SC 3 yr warranty SSD	804587-B21
HPE 120GB SATA 6G RI SFF 2.5 in SC 3 yr warranty SSD	804581-B21

Description	Option Part Number
HPE 80GB SATA 6G RI SFF 2.5 in SC 3 yr warranty SSD	804575-B21
12G SAS SFF 2.5 in RI-3 SC SSD	
HPE 3.84TB 12G SAS RI-3 SFF 2.5 in SC 3 yr warranty SSD	816576-B21
12G SAS MU SFF 2.5 in SC SSD	
HPE 3.2TB 12G SAS MU-3 SFF 2.5 in SC 3 yr warranty SSD	822567-B21
HPE 400GB 12G SAS MU-3 SFF 2.5 in SC 3 yr warranty SSD	822555-B21
HPE 800GB 12G SAS MU-1 SFF (2.5 in) SC 3 yr warranty SSD	846434-B21
HPE 1.6TB 12G SAS MU-1 SFF (2.5 in) SC 3 yr warranty SSD	846436-B21

NOTE

The ProLiant WS460c Gen9 server blade includes the HPE Hot-Plug SFF SC for enhanced management and reduced maintenance errors. HPE drives from generation G7 servers and before are not compatible with the WS460c Gen9 drive bays.

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.

Graphics Adapters

Description	Option Part Number
HPE AMD FirePro S7100X Mezzanine FIO graphics kit	845803-B21
HPE NV Quadro M3000SE Mezzanine FIO graphics kit	867583-B21

Description	Option Part Number
HPE NVIDIA Quadro P6000 graphics accelerator	Q0V76A
HP NVIDIA Tesla M6 Mezzanine graphics FIO adapto r	805132-B21
AMD FirePro S4000X PCIe3 Mezzanine graphics FIO kit	785918-B21
NVIDIA GRID K1 PCIe GPU FIO adapter	730876-B21
HPE WS460c NVIDIA Tesla M60 enablement kit	872629-B21
HP NVIDIA Quadro M5000 graphics accelerator	M9R60A
HP NVIDIA Quadro M6000 graphics accelerator	J0G92A
NVIDIA Quadro K6000 PCI-E graphics adapter	730874-B21
HPE Gen9 Multi GPU carrier with 3 NVIDIA K3100M FIO graphics kit	810907-B21
HP Multi GPU carrier with 2 NVIDIA Tesla M6 GPU F IO adapter	805133-B21
HPE Multi GPU carrier with 2 AMD S7100X FIO grap hics kit	845804-B21
HPE WS460c Gen9 expansion Blade Slot2 enableme nt FIO kit	775168-B21
HP WS460c Gen8 GPU enablement kit	734206-B21
HPE Multi-GPU carrier with 3 NVIDIA M3000SE FIO graphics kit	867584-B21

Insight Software

Description	Option Part Number
HPE insight control	

Description	Option Part Number
HPE insight control including 1 yr 24x7 technical su pport and updates single server license	C6N27A
HPE insight control including 1 yr 24 x 7 technical s upport and updates electronic license	C6N28ABE
HPE insight control including 1 yr 24 x 7 support ProLiant ML/DL/BL-bundle FIO electronic license	C6N36ABE
HPE insight management media kit	C6N31A
HPE Insight control including 1 yr 24x7 support Pro Liant ML/DL/BL-bundle single server FIO LTU	C6N36A

NOTE

- HPE insight management media kit contains DVDs without licenses. Contains HPE SIM , HPE insight control, HPE matrix operating environment and virtual connect Enterprise manager software. Uses an integrated installer to perform quick and accurate software i nstallation and updates.
- Electronic and flexible-quantity licenses can be used to purchase multiple licenses with a single activation key.
- User 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 yr of 24 x 7 HPE softwa re technical support service.

iLO Advanced License

Description	Option Part Number
HPE iLO advanced for ProLiant BladeSystem remote management	
HPE iLO advanced for BladeSystem including 3 yr 2 4x7 technical support and updates E-LTU	E6U63ABE
HPE iLO advanced blade 1 server license with 3 yr 2 4x7 technical support and updates	BD502A

Description	Option Part Number
HPE iLO advanced for BladeSystem including 1 yr 2 4x7 technical support and updates E-LTU	E6U60ABE
HPE iLO advanced for BladeSystem including 1 yr 2 4x7 support single server license	512488-B21

NOTE

User 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 yrs of 24 x 7 HPE soft ware technical support service. User will receive a license entitlement certificate, which mu st be redeemed online or via fax in order to obtain the license activation key(s). Includes on e or three yr of 24 x 7 HPE software technical support service.

Converged Infrastructure Management Software

Description	Option Part Number
HPE OneView	
HPE OneView with iLO advanced	
HPE OneView incl 3 yr 24x7 support physical 1 ser ver license	E5Y34A
HPE OneView incl 3 yr 24x7 support flexible quantit y E-LTU	E5Y35AAE
HPE OneView media kit physical no license	E5Y37A
HPE OneView for blade server incl 3 yr 24x7 suppor t FIO bundle physical 1 server licence	F6Q89A
HPE Storage controllers	
HPE Smart Array P246br/1GB FBWC 12Gb 4-ports i nternal SAS controller	726793-B21
HPE OneView without iLO advanced	

Description	Option Part Number
HPE OneView without iLO including 3 yr 24x7 support 1 server LTU	P8B24A
HPE OneView without iLO including 3 yr 24x7 support flexible quantity E-LTU	P8B26AAE
HPE OneView without iLO including 3 yr 24x7 support FIO 1 server LTU	P8B31A

High Performance Clusters

Description	Option Part Number
HPE cluster management utility	
HPE insight cluster management utility 1 yr 24x7 flexible license [1]	QL803B
HPE insight cluster management utility 3 yr 24x7 flexible license [1]	BD476A
HPE insight cluster management utility media	BD477A

NOTE

1. 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). User 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. User also will receive a support agreement.

Security

Description	Option Part Number
HPE TPM option	488069-B21

NOTE

The TPM is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Wi ndows BitLocker - Drive encryption (BitLocker) is a data protection feature available in Win dows Server 2008 R2. BitLocker leverages the enhanced security capabilities of a TPM vers ion 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 R2 has not been tampered with while the system was offline.

ProLiant OS pre installed units will come with the partition required for TPM deployment.

The TPM key is unique to every TPM deployed server and must be retained. Misplacing or l osing the key could result in data loss.

Storage Controllers

Description	Option Part Number
HP Smart array P244br/1GB FBWC 12Gb 2-ports in ternal SAS controller	749680-B21
HP H244br 12Gb 2-ports internal smart HBA	726809-B21
HPE Smart array P246br/1GB FBWC 12Gb 4-ports i nternal FIO SAS controller	749975-B21
HPE Gen9 Broadwell NVMe FIO setting	825555-B21
HPE Smart array P244br/1GB FBWC 12Gb 2-ports i nternal FIO SAS controller	761871-B21
HPE H244br 12Gb 2-ports Int FIO smart HBA	761878-B21
HPE FIO enable smart array B140i setting	784308-B21

Description	Option Part Number

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 P246br or HPE Smart HBA H244br. HPE recommends the use of a dual M.2 SSD kit for boot when using this option.
- Use of GPU options is limited to a 30°C operating environment when using NVMe on the WS460c Gen9.
- The HPE Smart array B140i controller (Chipset SATA) comes standard with the HPE WS460c Gen9 10Gb/20Gb FLB CTO blade (727021-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 FIO B140i RAID enable kit - BIOS setting**(784308-B21).

Flash media kits for USB drives

Description	Option Part Number
HPE flash media kits for USB drives	
HPE EM flash media kits for memory cards	
HPE dual 8GB microSD EM flash media kit	741279-B21
HPE 8GB USB EM flash media drive key kit	737953-B21
HPE 8GB microSD EM flash media kit	726116-B21
HPE 32GB microSD EM flash media kit	700139-B21

Care Pack Services

Description	Option Part Number
Proactive care services	
HPE 3 yr 24 x 7 WS460c Gen9 ProCare SVC	U8BF0E
HPE 3 yr 24 x 7 with DMR WS460c Gen9 ProCare SVC	U8BF1E
HPE 3 yr 24 x 7 WS460c Gen9 PCA SVC	U8BF3E
HPE 3 yr 24 x 7 with DMR WS460c Gen9 PCA SVC	U8BF4E
HPE 3 yr 24 x 7 BL4xxc Gen9 proactive care service	U7BN8E
HPE 3 yr 24 x 7 with defective media retention BL4x xc Gen9 proactive care service	U7BN9E
HPE 3 yr 24 x 7 BL4xxc Gen9 proactive care advanc ed service	U7BT6E
HPE 3 yr 24 x 7 with defective media retention BL4x xc Gen9 proactive care advanced service	U7CF8E
Installation services	
HPE install c-Class server blade service	UE493E
HPE Installation WS460c Workstation blade service	UR362E

Software Compatibility

Subtopics

OS Compatibility

OS Compatibility

Feature	Description
OS and virtualization software support for ProLiant servers	**Client OS**: • Microsoft Windows 7 Professional (64-bit), Enterprise (64-bit) [1] • Microsoft Windows 8.1 Professional (64-bit), Enterprise (64-bit) • Microsoft Windows 10 Professional (64-bit, Enterprise (64-bit) • RHEL Desktop 6.5 or later (64-bit only) **Server OS**: • Microsoft Windows Server 2016 (64-bit) Standard and DataCenter editions (Citrix XenApp) • Microsoft Windows Server 2012 R2 (64-bit) Standard, Enterprise and DataCenter editions (Citrix XenApp) • RHEL 6.5 or later (64-bit only) • VMware Horizon View 6 or later, vSphere 5.5 or later • Citrix XenDesktop 7 or later, XenServer 6.5 or later [2]

NOTE

1. Windows 7 is supported only with Legacy BIOS mode.

2. Citrix XenServer supported only with Legacy BIOS mode.

Useful Links

Descriptions	Direct Links
QuickSpecs	**Click here to access "QuickSpecs of HPE ProLiant WS460c Gen9 Graphics Server Blade".**
Maintenance and Service Guide	**Click here to access "Maintenance and Service Guide of HPE ProLiant WS460c Gen9 Graphics Server Blade".**