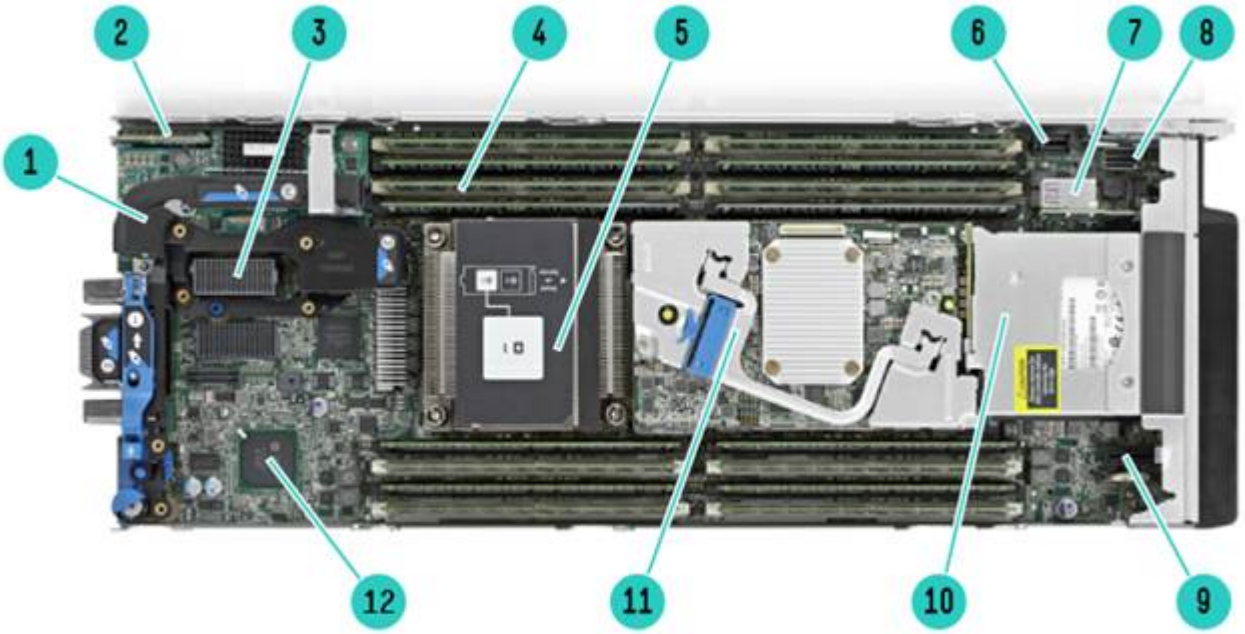
Overview

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)
4. Sixteen (16) DDR4 DIMM slots (8 per processor)
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 Controller Options
12. iLO Management Engine

What's New

- Some drives have changed

Standard Features

NOTE: This document covers the HPE ProLiant BL460c Gen9 server blade only. For information on HPE BladeSys
HPE BladeSystem c-Class Interconnect and Mezzanine Components, please see the following:
HPE BladeSystem c-Class Enclosures QuickSpecs:

- HPE BladeSystem c3000 Enclosure QuickSpecs at **https://www.hpe.com/h20195/v2/GetPDF.aspx/c041283**
  NOTE: The c3000 HPE c-Class enclosures have full backwards and forwards compatibility, existing server bla
  enclosures and any future server blades will be supported in the existing enclosures.
- HPE BladeSystem c7000 Enclosure QuickSpecs at **https://www.hpe.com/h20195/v2/GetPDF.aspx/c041283**
  NOTE: The c7000 HPE c-Class enclosures have full backwards and forwards compatibility, existing server bla
  enclosures and any future server blades will be supported in the existing enclosures.
- HPE BladeSystem c-Class Interconnect and Mezzanine Components at
  https://www.hpe.com/us/en/integrated-systems/bladesystem.html#portfolio
  https://www.hpe.com/us/en/integrated-systems/bladesystem.html#portfolio

NOTE: For optimal cooling and system performance the BL460c Gen9 Server Blade requires the c7000 enclosure t
and the c3000 enclosure to be configured with 6 fans.
NOTE: For proper BladeSystem operation, the minimum required versions of HPE Onboard Administrator and HPE
and available via the HPE Service Pack for ProLiant, please see
http://h17007.www1.hpe.com/us/en/enterprise/servers/products/service_pack/spp/index.aspx

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NOTE: For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Informa
Models" section.

Processor
One of the following depending on Model

E5-2600 v4 series Processors

HPE BL460c Gen9 Intel® Xeon® E5-2690v4 (2.6GHz/14-core/35MB/135W)
HPE BL460c Gen9 Intel® Xeon® E5-2683v4 (2.1GHz/16-core/40MB/120W)
HPE BL460c Gen9 Intel® Xeon® E5-2680v4 (2.4GHz/14-core/35MB/120W)
HPE BL460c Gen9 Intel® Xeon® E5-2660v4 (2.0GHz/14-core/35MB/105W)
HPE BL460c Gen9 Intel® Xeon® E5-2650v4 (2.2GHz/12-core/30MB/105W)
HPE BL460c Gen9 Intel® Xeon® E5-2650Lv4 (1.7GHz/14-core/35MB/65W)
HPE BL460c Gen9 Intel® Xeon® E5-2640v4 (2.4GHz/10-core/25MB/90W)
HPE BL460c Gen9 Intel® Xeon® E5-2630v4 (2.2GHz/10-core/20MB/85W)
HPE BL460c Gen9 Intel® Xeon® E5-2623v4 (2.6GHz/4-core/10MB/85W)
HPE BL460c Gen9 Intel® Xeon® E5-2620v4 (2.1GHz/8-core/20MB/85W)
HPE BL460c Gen9 Intel® Xeon® E5-2699v4 (2.2GHz/22-core/55MB/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® E5-2697Av4 (2.6GHz/16-core/40MB/145W)
HPE BL460c Gen9 Intel® Xeon® E5-2695v4 (2.1GHz/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)

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, E5-2697A 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 configuration, there are twelve (12) total available DIMM slots.
NOTE: For the maximum supported memory speeds for each processor listed above, please re by Processor Model' table in the Memory section of the QuickSpecs.
NOTE: All processors support Intel® Hyper-Threading and Intel® Turbo Boost Technologies exc

Standard Features

2603 v4, E5-2603 v3 and E5-2609 v3.
NOTE: DDR4 speed is the maximum memory speed of the processor. Actual memory speed m
and type of DIMMs installed.
NOTE: Supports 1 or 2 processors. Mixing different processor models is not supported.
NOTE: For the Intel® C610 Chipset E5-2600 v3 and v4 Series, the letter preceding the model nu
Line (E3, E5, E7); 2600x, 2 = number of CPUs in a Node, 6 is socket/segment designation, 00 =
for low power SKUs.
NOTE: The BL460c Gen9 includes two I/O mezzanine expansion slots. A processor must be in
access to the first mezzanine expansion slot (expansion slot 1). A processor must be installed i
to the second mezzanine expansion slot (expansion slot 2).
NOTE: The letter "L" following the model number indicates denotes lower wattage.

Cache Memory
One of the following depending on Model

55MB (1x55MB) L3 cache
NOTE: For Twenty two-core processors.
50MB (1x50MB) L3 cache
NOTE: For Twenty-core processors.
45MB (1x45MB) L3 cache
NOTE: For Eighteen-core processors.
40MB (1x40MB) L3 cache
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

Upgradeability

Upgradeable to two (2) processors

Standard Features

On System Management Chipset

HPE iLO (Firmware HPE iLO4 2.0), 4GB NAND with 1GB USB user space configurable via UEF
Read and learn more in the **iLO QuickSpecs**.

NOTE: For more information, visit: **https://www.hpe.com/us/en/servers/integrated-lights-ou**

Memory Protection

Advanced ECC
Memory Mirroring
Memory Online Spare Mode (Rank Spare Mode)

Memory
One of the following depending on Model

Type	HPE SmartMemory DDR4 Load Reduced (LRDIMM), or Registered (RDIMM)
Standard (Pre-configured Models)	256GB (8 x 32GB) DDR4 2400MT/s LDIMMs at 1.2V 128GB (4x 32GB) DDR4 2400MT/s LDIMMs 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
Maximum (LRDIMM)	2TB (16 x 128GB) up to 2400MT/s at 1.2V
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 serve
required to realize the memory performance improvements and enhanced functionality listed in t
additional information, please see the HPE SmartMemory QuickSpecs at:
https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111535
NOTE: LRDIMM and RDIMM are distinct memory technologies and cannot be mixed within a se
NOTE: Depending on the memory configuration and processor model, the memory speed may
1866MT/s, or 1600MT/s. Please see the Online Memory Configuration Tool at:
https://memoryconfigurator.hpe.com/DDR4memoryconfig/Home/SelectServer

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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
NOTE: Supports FCoE, TCP/IP offload engine, hardware-based accelerated iSCSI, iSCSI boot,
Ethernet.
NOTE: Each port is autosensing the speed, and can interoperate with 1Gb HPE BladeSystem c
components. Both ports will operate at the same speed.
NOTE: FlexFabric capabilities require the use of an HPE Virtual Connect FlexFabric or Flex10/1
Fibre Channel 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 FlexibleLOM
One (1) HPE Ethernet 10Gb 2-port 560FLB FlexibleLOM
One (1) HPE FlexFabric 20Gb 2-port 650FLB FlexibleLOM
NOTE: FlexibleLOMs 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 Admini
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 inter

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-p
  to interconnect module bay 5 and the other to bay 6. For quad-port cards, one port is route
  5, one to bay 6, one to bay 7, and one to bay 8.
  NOTE: A second processor must be installed (in processor slot 2) to have access to the s
  (expansion slot 2).

Mezzanine card options include:

- Dual-port 20Gb FlexFabric, Dual-port 10Gb FlexFabric, 10GbE options, and quad-port 1Gb
  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.
before the flash process starts, reducing accidental programming and preventing malicious effo

HPE ROM provides for essential initialization and validation of hardware components before con
customer-installed operating system. The ROM also provides the capability of booting from vario
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 initializ
attached monitor. If configuration or hardware errors are discovered during this early phase of ha
messages are now displayed on the connected monitor. Additionally, these configuration or hard
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 gu
http://h20628.www2.hpe.com/km-ext/kmcsdirect/emr_na-c00191707-19.pdf

HPE Server UEFI /Legacy ROM

Unified Extensible Firmware Interface (UEFI) is an industry standard that provides better manage
configuration while interacting with your server at boot time. HPE ProLiant Gen9 platform default
or field configured for Legacy BIOS Boot Mode.
NOTE: The UEFI System Utilities function is analogous to the HPE ROM-Based Setup Utility (R
more information, please visit
https://www.hpe.com/us/en/product-catalog/detail/pip.6935826.html

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 HPE RESTful API
- PXE boot support for IPv6 networks
- Boot support for option cards that only support a UEFI option ROM

NOTE: For UEFI Boot Mode, boot environment and OS image installations should be configured
NOTE: HPE UEFI FIO Setting (758959-B22) can be selected to configure the system in Legacy

Standard Features

Storage Controller	**All BTO Models**	One (1) HPE Smart Array P244br Controller with 1GB Flash-Backed Write RAID 0 and RAID 1, or HPE H244br Smart HBA. **NOTE:** The HPE Smart Array P244br, the HPE H244br Smart HBA, and the Support two (2) small form factor (SFF) hot plug drive bays. **NOTE:** For NVMe support, please select the NVMe FIO setting (825555-B2 only.	
Maximum Internal Storage One of the following depending on Model	Hot Plug SFF SAS	4.0TB	2 x 2.0TB
	Hot Plug SFF SATA	4.0TB	2 x 2.0TB
	Hot Plug SFF SAS SSD	7.68TB	2 x 3.84TB
	Hot Plug SFF SATA SSD	7.68TB	2 x 3.84TB
	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) Sr enhanced management and reduced maintenance errors. HPE drives from previous generation not compatible with the ProLiant BL460c Gen9 drive bays.		
Interfaces	Micro SDHC Slot	One (1) internal Micro Secure Digital High Capacity (Micro SDHC) card sl	
	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 (SMAS Active Directory v1.0 PCIe 3.0 ASHRAE A3 FIPS 140-2 Level-1 certification Energy Star **NOTE:** Energy Star Family level certification covering all BL460c Gen9 E5-2600 v3 configuration Intel Xeon E5-2699v3 processor. For more information, visit **https://www.hpe.com/us/en/abou labels.html**		
Operating	**Microsoft Windows Server**		

Standard Features

Systems and Virtualization Software Support for ProLiant Servers

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 V latest listing of software drivers available for your server, please visit our Support Matrix at: **https://www.hpe.com/us/en/servers/server-operating-systems.html** and our driver downloa **https://www.hpe.com/us/en/product-catalog/servers/proliant-servers/pip.hpe-proliant-bl balde.7271227.html**

Enclosures

Hewlett Packard Enterprise offers two different c-Class server blade enclosures to meet your inc

- The HPE BladeSystem c7000 rack enclosure is 10U high and holds up to sixteen (16) ProL plugged vertically.
- The HPE BladeSystem c3000 rack enclosure is 6U high and holds up to eight (8) HPE Pro plugged horizontally.

Server blades, interconnect modules, power supplies, fans, and redundant Onboard Administrat to fit into the c3000 and c7000 enclosures.
NOTE: For additional enclosure information, please see: **https://www.hpe.com/us/en/integrat systems/bladesystem.html#portfolio**

Graphics

Integrated Matrox 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 c

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Embedded Management	**HPE Integrated Lights Out**	Monitor your servers for ongoing management, service alerting, reporting with iLO. Learn more at **https://www.hpe.com/us/en/servers/integrated**
	UEFI	Configure and boot your servers securely with industry standard Unified E (UEFI). Learn more at **https://www.hpe.com/us/en/product-catalog/det**
	HPE RESTful API	RESTful API is an application programming interface. RESTful Web Servi server. **https://www.hpe.com/us/en/servers/restful-api.html**.
	Intelligent Provisioning	Provision servers by discovering and deploying 1 to few servers with Intell more at **https://www.hpe.com/us/en/product-catalog/detail/pip.521998**
Server Utilities	**HPE Smart Update**	Optimize firmware and driver updates with HPE Smart Update solutions. **http://h17007.www1.hpe.com/us/en/enterprise/servers/products/serv**

Standard Features

HPE Systems Insight Manager (HPE SIM)

HPE SIM allows you to monitor the health of your HPE ProLiant Servers a and also provides you with basic support for non-Hewlett Packard Enterpr integrates with HPE SUM to provide quick and seemless firmware update **https://www.hpe.com/us/en/product-catalog/detail/pip.489496.html**

Scripting Tool Kit and Windows PowerShell

Provision 1 to many servers using your own scripts to discover and deplo Tool Kit for Windows and Linux or HPE Scripting Tools for Windows Powe

HPE RESTful Interface Tool

HPE RESTful API tool is a scripting tool to provision servers using RESTfu and deploy servers at scale. Learn more at **https://www.hpe.com/us/en/**

HPE iLO Mobile Application

Enables the ability to access, deploy, and manage your server anytime fro smartphones and mobile devices. For additional information please visit: **https://www.hpe.com/us/en/servers/integrated-lights-out-ilo.html**

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 Triple Data Encryption Standard (3DES) 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

Memory

- Advanced ECC uses single device data correction (SDDC) to detect and correct single an within a single DRAM chip. Both x4 and x8 SDDC are supported (x8 requires lockstep mod
- Memory online spare mode (also known as rank spare mode) detects a rank that is degrad to the spare rank.
- Memory demand and patrol scrubbing to prevent accumulation of correctable errors and re unplanned downtime.
- Failed DIMM isolation improves the service time thus improving the overall system availabil
- Address parity protection available on RDIMMs and LRDIMMs detects address bit errors to 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 support a wide variety of mezzanine cards eac paths routed to redundant interconnect modules.
- Network Adapter Teaming (bonding) provides network fault tolerance, transmit load balanc balancing.

Storage

- Two (2) Small Form Factor hot-plug SAS/SATA HDD or SSD or NVMe SSD drive bays.
- Choice of the HPE Smart Array P244br Controller with 1GB FBWC, HPE Smart HBA H244

Standard Features

SATA). RAID 0 and 1 support for all three storage controller offerings.
- Optional dual-port Fibre Channel mezzanine card(s) for redundant SAN connections.

NOTE: For NVMe support, please select the NVMe FIO setting (825555-B21) available o

Processor/Chipset

- Processor internal sensors & thermal control protection against over-temperature conditio
- Cache parity/ECC protects cache data from accidental data corruption.
- Machine Check Architecture (MCA) detects and captures hardware errors such as system and cache, and improves service time.
- Intel® QPI 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 co 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-efficienc based power supplies (configuration dependent).
- Up to ten (10) enclosure-based hot-plug HPE Active Cool fans that scale to meet future de reduce power draw, and improve acoustic performance.
- Dual grid power providing redundant rack enclosure power feeds to the server blade enclo
- HPE Dynamic Power Saver Mode monitors the total enclosure power consumption in real adjusts with change in demand for improved efficiency and reliability.HPE Dynamic Power usage without impacting performance by capping peak usage instead of average power us electrical infrastructure with a fast-acting, hardware-based capping algorithm, and reclaims controlling power limits based on workload demand.
- Up to eight interconnect modules per server blade enclosure providing four simultaneous r FlexFabric, Virtual Connect Ethernet, Fibre Channel, InfiniBand, Pass Thru Ethernet, etc.
- Enclosure crosslinks between adjacent enclosures to provide interconnect module-to-mod 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 worl Packard Enterprise Authorized Channel Partners. Hardware diagnostic support and repair is ava date of purchase. Support for software and initial setup is available for 90 days from date of purc warranty services are available through HPE Pointnext operational services or customized servi restrictions and exclusions apply. Hard drives have either a one year or three year warranty; refe QuickSpecs for details.

NOTE: Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support. Warranty re through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Ma designed for easy replacement. A travel and labor charge will result when customers decline to r part; 2) Optional CSR parts are also designed for easy replacement but may involve added com choose to have HPE replace Optional CSR parts at no charge. Additional information regarding and technical support is available at **https://support.hpe.com/hpsc/wc/public/home**

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, 3PAR 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/bladesystem.html**.
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. Virtual Connect FlexFabric modules extend those capabilities to allocate one function per port to storage connections (FCoE). 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** 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**
Embedded Management	**iLO Advanced for BladeSystem**	HPE iLO Advanced for BladeSystem 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 **https://www.hpe.com/us/en/servers/integrated-lights-out-ilo.html**
Server Management	**HPE OneView**	Powerful converged management of servers, storage, and network for IT service automation and infrastructure simplicity.
	HPE Matrix Operating Environment	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). For more information, visit: **http://h20392.www2.hpe.com/portal/swdepot/displayProductInfo.do?productNumber=HPID**
	HPE Insight	HPE Insight Cluster Management Utility is a Hyperscale management

Optional Features

	Cluster Management Utility (CMU)	framework that includes software for the centralized provisioning, management and monitoring of nodes and infrastructure. Learn more at **https://www.hpe.com/us/en/product-catalog/detail/pip.3296361.html**
High Performance Clusters	**HPE Cluster Platforms**	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. **https://www.hpe.com/us/en/solutions/hpc-high-performance-computing.html**
	HPE HPC Interconnects	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.

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**
  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 software, visit: **https://www.hpe.com/us/en/product-catalog/storage/storage-software.hits-**

Optional Features

12.html

NOTE: You will need your server serial number in order to complete the registration form. Fully functional, capacity-based licenses are available in 4TB, 10T and 50TB sizes.

NOTE: For more information available Storage Software including QuickSpecs, please see: **http://www.hpe.com/storage**

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. Insight Online can automatically display devices remotely monitored by HPE Remote Support tools. With Insight Online's easy navigation you can efficiently track your IT support contracts and device status from anywhere and at anytime.
https://h20392.www2.hpe.com/portal/swdepot/displayProductInfo.do?productNumber=RSSWMBASE

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 P246br controller.

NOTE: Expansion blade support requires server firmware versions from SPP 2015.04 or later.

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.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. Hewlett Packard Enterprise products supported through Factory Express include a wide array of servers and storage: HPE Integrity, HPE ProLiant, HPE ProLiant Server Blades, HPE BladeSystem, HPE 9000 servers as well as the MSAxxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.

For more information on Factory Express services on your specific server model please contact your sales representative or go to: **https://www.hpe.com/us/en/services/factory-express.html**

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. If you require "custom" rack configuration or configuration for products not available in SCE, please contact the HPE Customer Business Center or an Authorized Partner for assistance.
https://h22174.www2.hpe.com/SimplifiedConfig/Welcome

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. 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 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%[1] reduction in down time, near 100%[2] diagnostic accuracy and a single consolidated view of your environment. By connecting, you will receive 24x7monitoring, 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

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. Leverage your system's ability to connect to Hewlett Packard Enterprise for pre-failure alerts, automatic call logging and parts dispatch. For business critical incidents, this service offers critical event management to reduce mean time to resolution. This recommendation provides 24x7 coverage with four-hour response for hardware and collaborative support that offers two-hour callback for supported software issues. Collaborative software management is included with independent software vendors unless you have your software support from Hewlett Packard Enterprise where we own all cases from start through to resolution.
https://www.hpe.com/h20195/V2/GetDocument.aspx?docname=4AA5-3259ENW&cc=us&lc=en

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. This Service combines three years' proactive reporting and advice with our 24x7 coverage, four hour hardware response time when there is a problem. In addition, this service 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/GetPDF.aspx/4AA3-8855ENW.pdf

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

Recommended Support Services for BL460

SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction.

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.
https://www.hpe.com/h20195/V2/GetPDF.aspx/5981-9356EN.pdf

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."? You can deploy, operate, and evolve your datacenter wherever you are on your IT journey. With HPE Datacenter Care, you benefit from a personalized relationship with Hewlett Packard Enterprise via a single point of accountability for HPE and others' products. For more information, visit
https://www.hpe.com/us/en/services/datacenter-hybrid-services.html

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. Our retention services allow you to keep drives and other devices upon failure with Defective Media Retention and Comprehensive Defective Material Retention, 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.
https://www.hpe.com/us/en/services/platform-consulting-services.html

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.
For more information: **http://www.hpe.com/services**

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.
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 "Configuration Information - Factory Integrated Models" section of this QuickSpecs.
NOTE: All Pre-configured Models come populated with some hard drive blanks installed.
NOTE: Not all models are available in all regions. Check with your local country Hewlett Packard Enterprise offices for availability.

E5-2600 v4 series Processors

HPE ProLiant BL460c Gen9 E5-2620v4 1P 16GB-R Server 813193-B21	**Processor(s)**	(1) Intel® Xeon® E5-2620 v4 (2.1GHz/8-core/20MB/8GT-s QPI/85W, DDR4-2133)
	Cache Memory	20MB (1x20MB) Level 3 cache
	Memory	16GB (2x 8GB) 2400MT/s (DDR4-2400) 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 E5-2640v4 1P 32GB-R Server 813194-B21	**Processor(s)**	(1) Intel® Xeon® E5-2640 v4 (2.4GHz/10-core/25MB/8GT-s QPI/90W, 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.

Models

	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 E5-2650v4 2P 64GB-R Server 813195-B21	**Processor(s)**	(2) Intel® Xeon® E5-2650 v4 (2.2GHz/12-core/30MB/9.6GT-s QPI/90W, 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 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 E5-2660v4 2P 128GB-R Server 813196-B21	**Processor(s)**	(2) Intel® Xeon® E5-2660 v4 (2.0GHz/14-core/35MB/9.6GT-s QPI/105W, 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

Models

	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 E5-2680v4 2P 256GB-R Server 813197-B21	**Processor(s)**	(2) Intel® Xeon® E5-2680 v4 (2.4GHz/14-core/35MB/9.6GT-s QPI/120W, 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
	Warranty	Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.

Configuration Information - Factory Integrated Models

NOTE: This section lists some of the steps 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.
NOTE: Configure-to-order server blades must start with a CTO Blade Server.
NOTE: FIO indicates that this option is only available as a factory installable option.
NOTE: All Factory Integrated Models will be populated with sufficient hard drive blanks based on the number of initial hard drives ordered with the server.

Step 1: Base Server Blade Configuration (Select a configurable Blade)

Models	HPE ProLiant BL460c Gen9 E5-v4 10Gb/20Gb FlexibleLOM Configure-to-order Blade Server	813198-B21
	Configurable Models ship with:	
	One (1) FlexibleLOM connector providing a choice for one (1) of the supported 10Gb/20Gb FlexibleLOMs (see Step 2) Two (2) HPE small form factor hot-plug SAS/SATA/ HDD or SSD hard drive bays Two (2) x16 PCIe I/O expansion slots (one Type A, one Type A/B) One (1) integrated USB connector and one (1) MicroSDHC connector One (1) TPM connector HPE iLO Management (standard)	

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

HPE Processors	**NOTE:** All configure-to-order processor kits (i.e. xxxxxx-L21) contain one (1) processor. **NOTE:** If two processors are desired, select one xxxxxx-L21 here in Step 2 and one xxxxxx-B21 in Step 4.	
	E5-2600 v4 series Processors	
	HPE BL460c Gen9 Intel Xeon E5-2690v4 (2.6GHz/14-core/35MB/135W) FIO Processor Kit	819852-L21
	HPE BL460c Gen9 Intel Xeon E5-2683v4 (2.1GHz/16-core/40MB/120W) FIO Processor Kit	819851-L21
	HPE BL460c Gen9 Intel Xeon E5-2680v4 (2.4GHz/14-core/35MB/120W) FIO Processor Kit	819842-L21
	HPE BL460c Gen9 Intel Xeon E5-2650v4 (2.2GHz/12-core/30MB/105W) FIO Processor Kit	819840-L21
	HPE BL460c Gen9 Intel Xeon E5-2640v4 (2.4GHz/10-core/25MB/90W) FIO Processor Kit	819839-L21
	HPE BL460c Gen9 Intel Xeon E5-2630v4 (2.2GHz/10-core/25MB/85W) FIO Processor Kit	819845-L21
	HPE BL460c Gen9 Intel Xeon E5-2620v4 (2.1GHz/8-core/20MB/85W) FIO Processor Kit	819838-L21
	HPE BL460c Gen9 Intel Xeon E5-2698v4 (2.2GHz/20-core/50MB/135W) FIO Processor Kit	819855-L21
	HPE BL460c Gen9 Intel Xeon E5-2697v4 (2.3GHz/18-core/45MB/145W) FIO Processor Kit	819854-L21
	HPE BL460c Gen9 Intel Xeon E5-2697Av4 (2.6GHz/16-core/40MB/145W) FIO Processor Kit	819857-L21

Configuration Information - Factory Integrated Models

	HPE BL460c Gen9 Intel Xeon E5-2695v4 (2.1GHz/18-core/45MB/120W) FIO Processor Kit	819853-L21
	HPE BL460c Gen9 Intel Xeon E5-2667v4 (3.2GHz/8-core/25MB/135W) FIO Processor Kit	819850-L21
	E5-2600 v4 series Processors	
	HPE BL460c Gen9 Intel Xeon E5-2650Lv4 (1.7GHz/14-core/35MB/65W) FIO Processor Kit	819849-L21
	HPE BL460c Gen9 Intel Xeon E5-2623v4 (2.6GHz/4-core/10MB/85W) FIO Processor Kit	819844-L21
	HPE BL460c Gen9 Intel Xeon E5-2699v4 (2.2GHz/22-core/55MB/145W) FIO Processor Kit	819856-L21
	HPE BL460c Gen9 Intel Xeon E5-2643v4 (3.4GHz/6-core/20MB/135W) FIO Processor Kit	819848-L21
	HPE BL460c Gen9 Intel Xeon E5-2637v4 (3.5GHz/4-core/15MB/135W) FIO Processor Kit	819847-L21

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, E5-2697A 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.
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, E5-2603 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 processors. Mixing different processor models is not supported.
NOTE: For the Intel® C610 Chipset E5-2600 v3 and v4 Series, the letter preceding the model number indicates the Product Line (E3, E5, E7); 2600x, 2 = number of CPUs in a Node, 6 is socket/segment designation, 00 = Processor SKU, and x = 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 mezzanine expansion slot (expansion slot 2).
NOTE: The letter "L" following the model number indicates denotes 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 memory 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/h20195/v2/GetHTML.aspx?docname=c04111535
NOTE: LRDIMM and RDIMM are distinct memory technologies and cannot be mixed within a server.
NOTE: 128GB DIMMs cannot be mixed with other DIMM capacities within the 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 the Online Memory Configuration Tool at:
https://memoryconfigurator.hpe.com/DDR4memoryconfig/Home/Legal

HPE SmartMemory

Registered DIMMs (RDIMMs) - E5-2600 v4 series Processors

HPE 16GB (1x16GB) Single Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	805349-B21
HPE 16GB (1x16GB) Dual Rank x8 DDR4-2400 CAS-17-17-17 Registered Smart Memory Kit	P00423-B21
HPE 32GB (1x32GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	805351-B21
HPE 8GB (1x8GB) Single Rank x8 DDR4-2400 CAS-17-17-17 Registered Memory Kit	805347-B21

Registered DIMMs (RDIMMs) - E5-2600 v4 series Processors

HPE 16GB (1x16GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	836220-B21

Load Reduced DIMMs (LRDIMMs) - E5-2600 v4 series Processors

HPE 64GB (1x64GB) Quad Rank x4 DDR4-2400 CAS-17-17-17 Load Reduced Memory Kit	805358-B21
HPE 32GB (1x32GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Load Reduced Memory Kit	805353-B21
HPE 128GB (1x128GB) Octal Rank x4 DDR4-2400 CAS-20-18-18 Load Reduced Memory Kit	809208-B21

NOTE: For more information on ProLiant Energy Efficient Features, see:
https://www.hpe.com/us/en/about/environment/eco-labels.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 routed to interconnect module bay 1 and the other to bay 2.

10Gb FlexibleLOM Adapters

HPE FlexFabric 10Gb 2-port 536FLB Adapter	766490-B21
HPE Ethernet 10Gb 2-port 560FLB Adapter	655639-B21

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

20Gb FlexibleLOM Adapters

HPE FlexFabric 20Gb 2-port 630FLB Adapter	700065-B21
HPE FlexFabric 20Gb 2-port 650FLB Adapter	700763-B21

Step 3: Choose Additional Factory Integration Options

Converged Infrastructure Management Software

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	F6Q89A

HPE Storage

Storage Controllers

Configuration Information - Factory Integrated Models

Controllers	HPE Smart Array P244br/1GB FBWC 12Gb 2-ports Int SAS Controller	749680-B21
	HPE Smart Array P246br/1GB FBWC 12Gb 4-ports Int SAS Controller	726793-B21
	HPE FIO Enable Smart Array SW RAID	784308-B21
	Storage Controllers	
	HPE H244br 12Gb 2-ports Int Smart Host Bus Adapter	726809-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 P246br, 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 option.
NOTE: The HPE Smart Array B140i Controller (chipset SATA) comes standard with the HPE BL460c 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).
NOTE: The HPE Smart Array P246br controller is only required when using a PCI expansion blade or D2220sb 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; or the following:

- HPE BladeSystem c3000 Enclosure QuickSpecs:
  https://www.hpe.com/h20195/v2/GetPDF.aspx/c04128340.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.hpe.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:
  https://www.hpe.com/us/en/integrated-systems/bladesystem.html#portfolio and
  https://www.hpe.com/us/en/integrated-systems/bladesystem.html#portfolio

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 Gigabit Ethernet adapter supports linking at 1Gbps or 10Gbps when connected to an interconnect module with 10Gb Ethernet downlinks.
NOTE: A 10 Gigabit Ethernet adapter supports linking at only 1Gbps when connected to an interconnect module with 1Gb Ethernet downlinks.
NOTE: The 10 Gigabit 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.hpe.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.hpe.com/h20195/v2/GetDocument.aspx?docname=c04347342**

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: **https://www.hpe.com/us/en/product-catalog/servers/server-adapters.html**

HPE Ethernet 10Gb 2-port 560M Adapter 665246-B21

NOTE: Please see QuickSpecs for technical specifications and additional information at:
https://www.hpe.com/h20195/v2/GetPDF.aspx/c04111406.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.hpe.com/h20195/v2/getpdf.aspx/c04111456.pdf?ver=10

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 700065-B21

NOTE: Please see QuickSpecs for technical specifications and additional information at **https://www.hpe.com/h20195/v2/GetDocument.aspx?docname=c04312719**

HPE FlexFabric 20Gb 2-port 650FLB Adapter 700763-B21

NOTE: Please see QuickSpecs for technical specifications and additional information at **https://www.hpe.com/h20195/v2/GetDocument.aspx?docname=c04347341**

10Gb FlexibleLOM Adapters

Core Options

	HPE FlexFabric 10Gb 2-port 536FLB Adapter	766490-B21
	NOTE: Please see QuickSpecs for technical specifications and additional information at **https://www.hpe.com/h20195/v2/GetDocument.aspx?docname=c04347246**	
	HPE Ethernet 10Gb 2-port 560FLB Adapter	655639-B21
	NOTE: Please see QuickSpecs for technical specifications and additional information at **https://www.hpe.com/h20195/v2/GetPDF.aspx/c04111516.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.hpe.com/h20195/v2/GetPDF.aspx/c04128339.pdf** **https://www.hpe.com/h20195/v2/getpdf.aspx/c04126044.pdf?ver=26**	
	HPE InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+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.	
	HPE InfiniBand FDR 2-port 545M Adapter	702213-B21
HPE Fibre Channel	**HPE Fibre Channel Adapters**	
	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.hpe.com/h20195/v2/getpdf.aspx/c04315132.pdf?ver=2**	
	HPE QMH2672 16Gb Fibre Channel Host Bus Adapter	710608-B21
	NOTE: Please see QuickSpecs for technical specifications and additional information at **https://www.hpe.com/h20195/v2/GetDocument.aspx?docname=c04126962**	
	HPE Fibre Channel Adapters	
	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.hpe.com/h20195/v2/GetDocument.aspx?docname=c04163733**	
	HPE QMH2572 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.hpe.com/h20195/v2/GetDocument.aspx?docname=c04126040**	
HPE	**E5-2600 v4 series Processors**	

Core Options

Processors	HPE BL460c Gen9 Intel Xeon E5-2690v4 (2.6GHz/14-core/35MB/135W) Processor Kit	819852-B21
	HPE BL460c Gen9 Intel Xeon E5-2683v4 (2.1GHz/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 E5-2650v4 (2.2GHz/12-core/30MB/105W) Processor Kit	819840-B21
	HPE BL460c Gen9 Intel Xeon E5-2640v4 (2.4GHz/10-core/25MB/90W) Processor Kit	819839-B21
	HPE BL460c Gen9 Intel Xeon E5-2630v4 (2.2GHz/10-core/25MB/85W) Processor Kit	819845-B21
	HPE BL460c Gen9 Intel Xeon E5-2620v4 (2.1GHz/8-core/20MB/85W) Processor Kit	819838-B21
	HPE BL460c Gen9 Intel Xeon E5-2698v4 (2.2GHz/20-core/50MB/135W) Processor Kit	819855-B21
	HPE BL460c Gen9 Intel Xeon E5-2697v4 (2.3GHz/18-core/45MB/145W) Processor Kit	819854-B21
	HPE BL460c Gen9 Intel Xeon E5-2697Av4 (2.6GHz/16-core/40MB/145W) Processor Kit	819857-B21
	HPE BL460c Gen9 Intel Xeon E5-2695v4 (2.1GHz/18-core/45MB/120W) Processor Kit	819853-B21
	HPE BL460c Gen9 Intel Xeon E5-2667v4 (3.2GHz/8-core/25MB/135W) Processor Kit	819850-B21
	E5-2600 v4 series Processors	
	HPE BL460c Gen9 Intel Xeon E5-2660v4 (2.0GHz/14-core/35MB/105W) Processor Kit	819841-B21
	HPE BL460c Gen9 Intel Xeon E5-2650Lv4 (1.7GHz/14-core/35MB/65W) Processor Kit	819849-B21
	HPE BL460c Gen9 Intel Xeon E5-2623v4 (2.6GHz/4-core/10MB/85W) Processor Kit	819844-B21
	HPE BL460c Gen9 Intel Xeon E5-2699v4 (2.2GHz/22-core/55MB/145W) Processor Kit	819856-B21
	HPE BL460c Gen9 Intel Xeon E5-2643v4 (3.4GHz/6-core/20MB/135W) Processor Kit	819848-B21
	HPE BL460c Gen9 Intel Xeon E5-2637v4 (3.5GHz/4-core/15MB/135W) Processor Kit	819847-B21

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, E5-2697A 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.

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, E5-2603 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.

Core Options

NOTE: Supports 1 or 2 processors. Mixing different processor models is not supported.
NOTE: For the Intel® C610 Chipset E5-2600 v3 and v4 Series, the letter preceding the model number indicates the Product Line (E3, E5, E7); 2600x, 2 = number of CPUs in a Node, 6 is socket/segment designation, 00 = Processor SKU, and x = 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 mezzanine expansion slot (expansion slot 2).
NOTE: The letter "L" following the model number indicates denotes 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 memory 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/h20195/v2/GetHTML.aspx?docname=c04111535
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 table at end of document or the Online Memory Configuration Tool at:
https://h22195.www2.hpe.com/DDR4memoryconfig/Home/LEGAL

HPE SmartMemory

Registered DIMMs (RDIMMs) - E5-2600 v4 series Processors

HPE 16GB (1x16GB) Single Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	805349-B21
HPE 16GB (1x16GB) Dual Rank x8 DDR4-2400 CAS-17-17-17 Registered Smart Memory Kit	P00423-B21
HPE 32GB (1x32GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	805351-B21
HPE 8GB (1x8GB) Single Rank x8 DDR4-2400 CAS-17-17-17 Registered Memory Kit	805347-B21

Registered DIMMs (RDIMMs) - E5-2600 v4 series Processors

HPE 16GB (1x16GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	836220-B21

Load Reduced DIMMs (LRDIMMs) - E5-2600 v4 series Processors

HPE 64GB (1x64GB) Quad Rank x4 DDR4-2400 CAS-17-17-17 Load Reduced Memory Kit	805358-B21
HPE 32GB (1x32GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Load Reduced Memory Kit	805353-B21
HPE 128GB (1x128GB) Octal Rank x4 DDR4-2400 CAS-20-18-18 Load Reduced Memory Kit	809208-B21

HPE Drives

NOTE: The ProLiant BL460c Gen9 server includes the HPE hot-plug small form factor (SFF) SmartDrive carrier for enhanced management and

reduced maintenance 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 0 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.

HPE NVMe PCIe Read Intensive SFF (2.5-inch) Solid State Drives

HPE 2TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	877986-B21
HPE 480GB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	875587-B21
HPE 960GB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	875589-B21
HPE 1.92TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	875591-B21
HPE 1TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	877984-B21
HPE 4TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	877988-B21

HPE NVMe PCIe Mixed Use SFF (2.5-inch) Solid State Drives

HPE 400GB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	875593-B21
HPE 800GB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	875595-B21
HPE 1.6TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	877994-B21
HPE 1.6TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	875597-B21
HPE 3.2TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	877998-B21

HPE NVMe PCIe Write Intensive SFF (2.5-inch) SCN Drives

HPE 375GB NVMe x4 Lanes Write Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	878014-B21

SATA Hot Plug SmartDrive SFF (2.5-inch) SSD Drives

HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P04556-B21
HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P04560-B21
HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P04564-B21
HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P04566-B21
HPE 3.84TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P00896-B21
HPE 3.84TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P04570-B21

Core Options

SATA Hot Plug SmartDrive SFF (2.5-inch) SSD Drives	
HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877740-B21
HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877746-B21
HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877752-B21
HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877758-B21
HPE 3.84TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877764-B21
HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877776-B21
HPE 960GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877782-B21
HPE 1.92TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877788-B21
HPE 240GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	880295-B21
SAS Hot Plug with SmartDrive SFF (2.5-inch) Enterprise Drives	
HPE 300GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	870753-B21
HPE 600GB SAS 12G Enterprise 15K 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	870759-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
HPE 2.4TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD	881457-B21
SAS Hot Plug with SmartDrive SFF (2.5-inch) Enterprise Drives	
HPE 900GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD	870765-B21
HPE 1TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD	765464-B21
SATA (SFF 2.5-inch) Hard Drives	
HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD	655710-B21
HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD	765455-B21
12G SAS Write Intensive SFF (2.5-inch) SC DS SSD	
HPE 400GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873351-B21
HPE 800GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873355-B21
12G SAS Write Intensive SFF (2.5-inch) SC DS SSD	
HPE 1.6TB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873357-B21
12G SAS Read Intensive SFF (2.5-inch) SC SSD	

Core Options

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	875313-B21
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 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872392-B21
HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872394-B21
12G SAS Read Intensive SFF (2.5-inch) SC SSD	
HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875330-B21
HPE 7.68TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	870144-B21
HPE 15.3TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	870148-B21
12G SAS Mixed Use SFF (2.5-inch) SC SSD	
HPE 400GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873359-B21
HPE 800GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873363-B21
HPE 1.6TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873365-B21
HPE 400GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872374-B21
HPE 800GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872376-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	872386-B21
12G SAS Mixed Use SFF (2.5-inch) SC SSD	
HPE 3.2TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873367-B21
6G SAS Mixed Use SFF (2.5-inch) SC Solid State Drive	
HPE 1.92TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875478-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	875470-B21
HPE 240GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875483-B21
12G SAS SFF (2.5-inch) SC 3yr Wty H2 Drive	
HPE 1.8TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD	872481-B21

Core Options

HPE 1.2TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	872479-B21
HPE 600GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	872477-B21
HPE 300GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	872475-B21
12G SATA 2.5in RI-3 SFF SC SSD	
HPE 3.84TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P00896-B21
HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875513-B21
HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875511-B21
HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875509-B21
HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875503-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 iLO Advanced License

HPE Integrated Lights-Out (iLO) Advanced for ProLiant BladeSystem Remote Management

HPE iLO Advanced for BladeSystem Electronic License with 3yr Support on iLO Licensed Features	E6U63ABE
HPE iLO Advanced for BladeSystem 1-server License with 3yr Support on iLO Licensed Features	BD502A
HPE iLO Advanced for BladeSystem Electronic License with 1yr Support on iLO Licensed Features	E6U60ABE
HPE iLO Advanced for BladeSystem 1-server License with 1yr Support on iLO Licensed Features	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.hpe.com/us/en/servers/integrated-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 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=c04154343

HPE OneView Software for Converged Mgmt

HPE OneView

HPE OneView with iLO Advanced

HPE OneView including 3yr 24x7 Support Physical 1-server LTU	E5Y34A
HPE OneView including 3yr 24x7 Support Flexible Quantity E-LTU	E5Y35AAE
HPE OneView Physical Media Kit LTU	E5Y37A
HPE OneView w/o iLO including 3yr 24x7 Support 1-server LTU	P8B24A
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

NOTE: For additional license kits please see the QuickSpecs at
https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04154343

High Performance Clusters

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

Additional Options

NOTE: For additional license kits please see the QuickSpecs at **https://www.hpe.com/h20195/v2/GetDocument.aspx?docname=c04111735**

HPE Security

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://support.hpe.com/hpsc/doc/public/display?docId=emr_na-hpesbhf03789en_us**
NOTE: ProLiant OS pre-installed units will come with the partition 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 Storage Controllers

HPE Smart Array P244br/1GB FBWC 12Gb 2-ports Int SAS Controller	749680-B21
HPE Smart Array P246br/1GB FBWC 12Gb 4-ports Int SAS Controller	726793-B21
HPE BL460c G9 Broadwell NVMe FIO Setting	825555-B21

HPE Storage Controllers

HPE H244br 12Gb 2-ports Int Smart Host Bus Adapter	726809-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 P246br, or HPE Smart HBA H244br. HPE recommends recommends 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 (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).
NOTE: The HPE Smart Array P246br controller is only required when using a PCI expansion blade or D2220sb storage blade with the BL460c Gen9.

HPE Secure

HPE Secure Encryp 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 **https://www.hpe.com/us/en/product-catalog/detail/pip.6532260.html**

HPE InfiniBand Mezzanine Adapters

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 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.hpe.com/h20195/v2/GetPDF.aspx/c04128339.pdf
https://www.hpe.com/h20195/v2/getpdf.aspx/c04126044.pdf?ver=26

HPE InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+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.

HPE InfiniBand FDR 2-port 545M 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 - Recommended

HPE 8GB microSD Flash USB Drive	737953-B21
HPE 8GB microSD Flash Memory Card	726116-B21
HPE 32GB microSD Flash Memory Card	700139-B21
HPE 8GB Dual microSD Flash USB Drive	741279-B21

HPE Care Pack Services

Proactive Care Services

HPE 3 year Proactive Care 24x7 BL4xxc Gen9 Service	U7BN8E
HPE 3 year Proactive Care 24x7 with DMR BL4xxc Gen9 Service	U7BN9E
HPE 3 year Proactive Care Advanced 24x7 BL4xxc Gen9 Service	U7BT6E
HPE 3 year Proactive Care Advanced 24x7 with DMR BL4xxc Gen9 Service	U7CF8E

Installation Services

HPE Install c-Class Server Blade Service	UE493E

Memory

For detailed memory configuration rules and guidelines, please use the Online DDR4 Memory Configuration Tool:
https://memoryconfigurator.hpe.com/ddr4memoryconfig/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:

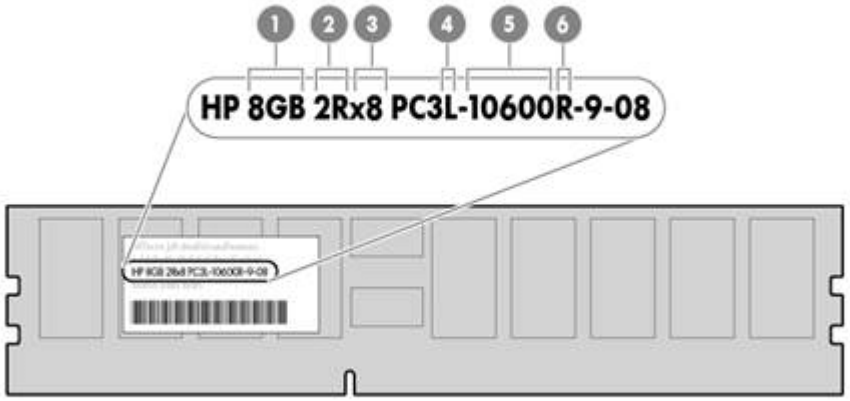
- A minimum of one DIMM is required per processor.
- Install DIMMs only if the corresponding processor is installed.
- If only one processor is installed in a two processor system, only half of the DIMM slots are available.
- DIMM sizes can be mixed in channel. To maximize performance, it is recommended 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.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111535**

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)	Octal Rank(8R)
DIMM Capacity	8GB	16GB	16GB	32GB	32GB	64GB	128GB
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							
16 slot servers	16	16	16	16	16	16	
MAXIMUM CAPACITY (GB)*							
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	2133	2133	2400	2400	

NOTE: Maximum Capacity will vary based on individual serve platform qualification schedule

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.hpe.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.

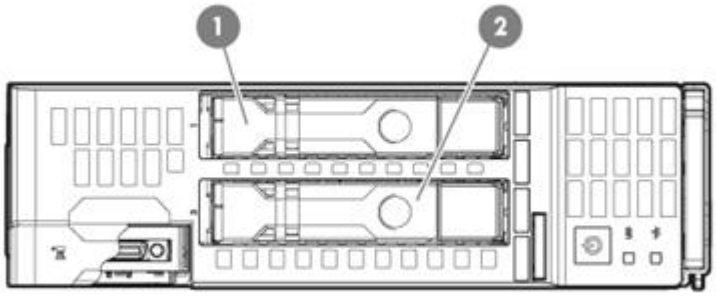
Registered DIMMs (RDIMMs) - E5-2600 v4 series Processors

HPE 16GB (1x16GB) Single Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	805349-B21
HPE 32GB (1x32GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	805351-B21

Memory

HPE 8GB (1x8GB) Single Rank x8 DDR4-2400 CAS-17-17-17 Registered Memory Kit	805347-B21
HPE 32GB (1x32GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Load Reduced Memory Kit	805353-B21
HPE 128GB (1x128GB) Octal Rank x4 DDR4-2400 CAS-20-18-18 Load Reduced Memory Kit	809208-B21
Load Reduced DIMMs (LRDIMMs) - E5-2600 v4 series Processors	
HPE 16GB (1x16GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	836220-B21

Storage



1-2 2 x SFF hot-plug SAS, SATA, SAS SDD, and SATA SSD hard drives

Technical Specifications

System Unit	**Dimensions** (H x W x D) (with bezel)	7.11 x 2.18 x 20.37 in (18.07 x 5.54 x 51.76 cm)	
	Weight (approximate)	Maximum: all processors, 16 DIMMs, hard drives, mezzanine cards, and two flash cache batteries installed)	14.00 lb (6.33 kg)
		Minimum: one processor and 2 DIMMs installed	10.50 lb (4.75 kg)
	Power Specifications	For power specifications including input requirements, BTU rating, and power supply output, please see the: • HPE BladeSystem c3000 Enclosure QuickSpecs at **https://www.hpe.com/h20195/v2/GetDocument.aspx?docname=c04123379** • HPE BladeSystem c7000 Enclosure QuickSpecs at **https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04229580** To review typical system power ratings use the HPE Power Advisor which is available via the online tool located at **https://paonline56.itcs.hpe.com**. **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.	
	System Inlet Temperature	Operating	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).
		Non-operating	-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: 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) **NOTE:** Qualifications for extended ambient configurations are detailed at: **http://www.hpe.com/servers/ashrae**	
	Relative Humidity (non-condensing)	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.
	Altitude	Operating	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	9,144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1,500 ft/min).
	Acoustic Noise	For acoustic noise specifications, please see the HPE BladeSystem c-Class Enclosures QuickSpecs located at: • HPE BladeSystem c3000 Enclosure QuickSpecs: **https://www.hpe.com/h20195/v2/GetPDF.aspx/c04128340.pdf** • HPE BladeSystem c7000 Enclosure QuickSpecs: **https://www.hpe.com/h20195/v2/GetPDF.aspx/c04128339.pdf**	

HPE Smart Array P244br Controller	**Disk Drive Interface**	12Gb/s SAS (Serial Attached SCSI) 6Gb/s SATA (Serial ATA)
	Server Interface	x8 PCIe 3.0 provides 8GB/s maximum bandwidth
	Cache Memory	1GB flash backed write cache (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	**Disk Drive Interface**	12Gb/s SAS (Serial Attached SCSI) 6Gb/s SATA (Serial ATA)
	Server Interface	x8 PCIe 3.0 provides 8GB/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) and RAID 0 (striping)
	Other	Upgradeable firmware with recovery ROM Online drive flash (with SAS drives)

HPE Dynamic Smart Array B140i	**Disk Drive Interface**	6Gb/s SATA (Serial ATA)
	Server Interface	Embedded x4 PCIe 2.0

Technical Specifications

Controller	**SAS Connectors**	2 internal SATA ports
	Cache Memory	None
	SAS Speed	6Gb/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	**Type**	Integrated dual-port KR 10Gb FlexibleLOM with FlexFabric (Flex-10, FCoE, hardware-based iSCSI, iSCSI boot, TCP/IP offload engine, and autosensing 1Gb/10Gb Ethernet capability)
	Network Processor	QLogic 57840S with integrated MAC/PHY
	Data Transfer Method	x8 PCI Express 3.0
	Network Transfer Rate	Two ports, each at 20Gbps full duplex; 40Gbps aggregate full duplex theoretical bandwidth **NOTE:** Each port is autosensing 1Gb/10Gb, and can interoperate with 1Gb or 10Gb HPE BladeSystem c-Class interconnect components. Both ports will operate at the same speed. **NOTE:** Each port on the 536FLB adapter transmits from the server at 20Gbps (theoretical) full duplex.
	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 converged Ethernet data and storage networks. Dual-port 10GbE Flex-10 FlexibleLOM network adapter that provides the flexibility to choose the type of LOM to meet growing infrastructure needs Industry-leading throughput and latency performance Supports the HPE Flex-10 blade interconnect technology User configurable bandwidth settings when combined with the 10Gb Flex-10 Virtual Connect module. From 100Mb/s to10Gb/s on up to four "Physical Function" NICs per port, in increments of 100Mb/s for NIC. The combined bandwidth of NICs cannot exceed port bandwidth i.e. 10 Gb. Up to 40Gb/s bi-directional near line rate throughput Hardware acceleration and offloads for stateless TCP/IP, TCP Offload Engine (TOE) Improved small packet performance Support for Preboot eXecution Environment (PXE) Integrated PHY and MAC Supports for SR-IOV Support for Network Partitioning (NPAR)
HPE FlexFabric 20Gb	**Type**	Integrated dual-port KR2 20Gb FlexibleLOM with FlexFabric (Flex-20, FCoE, RoCE, Tunnel Offload with VXLAN/NVGRE, hardware-based

Technical Specifications

2-port 650FLB FlexibleLOM		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 Gbps bi-directional; 80 Gbps 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 20GbE or 10GbE Converges FCoE or RoCE with LAN traffic on a single Ethernet wire Tunnel Offload support for VXLAN and NVGRE RDMA over Converged Ethernet (RoCE) for greater server efficiency and lower latency (6125XLG only) Advanced storage offload processing freeing up valuable CPU cycles Supports UEFI and legacy boot options Mixed Storage - supports NIC + FCoE on one port, 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 performance Supports the HPE Flex-20 blade interconnect technology Over eight million small packets/s, ideal for web/mobile applications, mobile messaging, and social media User configurable bandwidth settings when combined with the 20Gb Flex-20 Virtual Connect module. From 100Mb/s to10Gb/s on up to four "Physical Function" NICs per port, in increments of 100Mb/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 Preboot eXecution Environment (PXE) Support for Microsoft Windows SMB Direct Optimized host virtualization density with SR-IOV support

Environment-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
01-Oct-2018	Version 32	Changed	Configuration Information - Factory Integrated Models, Core Options, and Additional Options sections were updated.
		Removed	Obsolete SKU was deleted: 726782-B21.
06-Aug-2018	Version 31	Changed	Overview, Standard Features, Optional Features, Configuration Information - Factory Integrated Models, and Additional Options sections were updated.
		Added	SKUs added: 749680-B21, 726793-B21, 726809-B21, 726782-B21.
		Removed	Obsolete SKUs were deleted: C6N36A, 761871-B21, 761878-B21, 749975-B21, 726782-B21.
04-Jun-2018	Version 30	Changed	Overview, Standard Features, Configuration Information-Factory Integrated Models, Additional Options, Memory, and Technical Specifications sections were updated.
		Added	SKUs added: P00423-B21, 809208-B21, 700065-B21, 700763-B21, 766490-B21, 655639-B21, 878014-B21, P04556-B21, P04560-B21, P04564-B21, P04566-B21, P04570-B21, P00896-B21, 873351-B21, 873355-B21, 873357-B21.
		Removed	SKUs were deleted: 819846-L21, 819837-L21, 819843-L21, 700066-B21, 700764-B21, 766491-B21, 684214-B21, 825555-B21, 819846-B21, 819837-B21, 819843-B21, 880875-B21, 880877-B21, C6N27A, 805358-B21.
02-Apr-2018	Version 29	Changed	Standard Features, Models, Configuration Information - Factory Integrated Models, and Additional Options sections
		Removed	Obsolete SKUs were deleted: 727021-B21, 871770-B21, 871768-B21, 872363-B21, 748387-B21, 791034-B21, 652605-B21, 751518-B21, 785069-B21, 781516-B21, 785067-B21, 804631-B21, 832414-B21, 869386-B21, 869384-B21, 869378-B21, 804587-B21, 869376-B21, 869374-B21, 759208-B21, 759210-B21, 759212-B21, 870763-B21, 726720-B21, 759934-B21, 764282-B21.
06-Nov-2017	Version 28	Added	SKU was added in Core Options section: 651281-B21.
		Removed	Obsolete SKUs were deleted: 764908-B21, 764906-B21, 764904-B21, 765044-B21, 765038-B21, 765036-B21, 765034-B21, 764892-B21, 736939-B21, 736936-B21, 872855-B21, 872853-B21, 802578-B21, 802586-B21, 816576-B21, 802891-B21, 822567-B21, 822563-B21, 822555-B21, 764927-B21, 804605-B21, 804593-B21, 804575-B21, 779176-B21, 779164-B21, 779168-B21, 779172-B21,

Summary of Changes

			762261-B21, 794603-B21.
23-Oct-2017	Version 27	Changed	Care Pack naming and Service and Support-Parts and Materials updated.
25-Sep-2017	Version 26	Changed	QuickSpecs was updated.
07-Aug-2017	Version 25	Added	SKUs added: 875470-B21, 875474-B21, 875478-B21, 875483-B21, 870144-B21, 875311-B21, 875313-B21, 875326-B21, 875330-B21, 875503-B21, 875509-B21, 875511-B21, 875513-B21.
		Removed	Obsolete SKUs were removed: 846430-B21, 846432-B21, 846436-B21, 794605-B21, 775588-B21, 792278-B21, 846495-B21, 846497-B21, 875503-B21, 846434-B21, C6N31A.
12-Jun-2017	Version 24	Added	New SKUs added in Core Options section: 875593-B21, 875595-B21, 875597-B21, 875587-B21, 875589-B21, 875591-B21.
		Removed	Obsolete SKUs were deleted: C6N28ABE, C6N36ABE, 652572-B21, 652749-B21, 804599-B21, 804581-B21, 816929-B21, 838404-B21, 838406-B21, 838408-B21, 838410-B21, 838412-B21, 785233-B21, 802582-B21, 804677-B21, 804671-B21, 804665-B21, 804639-B21, 804625-B21, 804613-B21, 762263-B21.
27-Mar-2017	Version 23	Changed	Overview, Core Options, and Additional Options sections were updated.
		Removed	Obsolete SKUs were deleted: 718162-B21, 652589-B21, 652583-B21, 652564-B21, 652611-B21, 652564-B21, 652611-B21, 764923-B21, 764925-B21, 764929-B21, 817011-B21, 816995-B21, 816985-B21, 816909-B21.
13-Feb-2017	Version 22	Added	SKUs added: 872355-B21, 872359-B21, 872363-B21, 870753-B21, 870757-B21, 870759-B21, 870763-B21, 870765-B21, 872475-B21, 872477-B21, 872479-B21, 872481-B21, 872344-B21, 872348-B21, 872352-B21, 869374-B21, 869376-B21, 869378-B21, 869384-B21, 869386-B21.
		Changed	Memory section was corrected.
		Removed	Obsolete SKUs were deleted: 854845-B21
28-Nov-2016	Version 21	Added	SKUs added: 868814-B21, 868818-B21, 868822-B21, 868826-B21, 868830-B21, 871768-B21, 871770-B21, 872853-B21, 872855-B21
		Removed	Turn Off Skus deleted: 816879-B21, 816889-B21, 816899-B21, 816919-B21, 816965-B21, 822559-B21, 816975-B21. Obsolete SKUs were deleted: 655708-B21, 652745-B21, 717965-B21, 757339-B21, 717973-B21, 739898-B21, 717971-B21, 691868-B21, 691866-B21,

Summary of Changes

			691862-B21, 789145-B21.
16-Sep-2016	Version 20	Changed	QuickSpecs information was updated.
		Added	Obsolete SKUs were deleted: 651281-B21, 734360-B21, 739888-B21, 717969-B21, 756636-B21, BD883A, 854845-B21.
06-Jun-2016	Version 19	Changed	Models, Configuration Information - Factory Integrated Models, Core Options, Memory, and Technical Specifications sections were updated.
		Added	SKUs added in Related Options and Core Options sections: 854845-B21, 809208-B21, 822559-B21, 846436-B21
31-Mar-2016	Version 18	Changed	Overview, Standard Features, Optional Features, Recomended Support Services for BL460, Models, Confirguration Information - Factory Integrated,Core Options, Additional Options, and Memory sections were updated.
		Added	SKUs added to QuickSpecs: 813198-B21, 819852-L21, 819851-L21, 819842-L21, 819841-L21, 819840-L21, 819849-L21, 819839-L21, 819845-L21, 819846-L21, 819844-L21, 819838-L21, 819837-L21, 819856-L21, 819855-L21, 819854-L21, 819857-L21, 819853-L21, 819850-L21, 819848-L21, 819847-L21, 805347-B21, 805349-B21, 836220-B21, 805351-B21, 805353-B21, 805358-B21, 825555-B21, 819852-B21, 819851-B21, 819842-B21, 819841-B21, 819840-B21, 819849-B21, 819839-B21, 819845-B21, 819846-B21, 819844-B21, 819838-B21, 819837-B21, 819843-B21, 819856-B21, 819855-B21, 819854-B21, 819857-B21, 819853-B21, 819850-B21, 819848-B21, 819847-B21, 764908-B21, 764906-B21, 764904-B21, 765044-B21, 765038-B21, 765036-B21, 765034-B21, 764892-B21, 736939-B21, 736936-B21, 802891-B21, 846430-B21, 846432-B21, 846434-B21, 846436-B21, 816879-B21, 838404-B21, 838406-B21, 838408-B21, 838410-B21, 838412-B21.
		Removed	Obsolete SKUs were deleted: 756601-B21, 691864-B21
16-Feb-2016	Version 17	Changed	Information updated in different sections.
		Added	SKUs Added in Core Options sections: 846495-B21, 846497-B21, 832514-B21.
		Removed	Obsolete SKUs were deleted: 789135-B21, E5Y38A, E5Y39AAE, QK763A, QK762A, QK761A, D8585AAE, D8584A.
09-Oct-2015	Version 16	Changed	Core Options section was updated.
		Added	SKUs added: P8B24A, P8B26AAE, P8B31A
		Removed	Obsolete SKUs were deleted: 756621-B21, 756657-B21, 789155-B21

Summary of Changes

28-Sep-2015	Version 15	Added	SKU added in Additional Options: 745823-B21
28-Aug-2015	Version 14	Changed	Information in Core Options section was updated.
		Added	SKUs added in Core Options section: 659818-B21, 651281-B21
17-Aug-2015	Version 13	Changed	Standard Features, Optional Features, Configuration Information - Factory Integrated Models, Core Options and Memory sections were updated.
		Added	SKUs added in Additional Options and Core Options sections: C9A82AAE, 804677-B21, 804671-B21, 804665-B21, 804639-B21, 804631-B21, 804625-B21, 832414-B21, 804613-B21, 804605-B21, 804599-B21, 804593-B21, 804587-B21, 804581-B21, 804575-B21.
		Removed	Obsolete SKU deleted: F6Q89AAE
19-Jun-2015	Version 12	Changed	Information updated.
1-Jun-2015	Version 11	Changed	Information in Optional Features, Configuration Information- Factory Integrated, and Models sections was updated.
		Added	SKUs added: 726724-B21, 748387-B21, 791034-B21, 726793-B21
		Removed	SKUs removed: 726793-B21, 741159-B21, 741151-B21
6-Apr-2015	Version 10	Changed	Industry Standard Compliance and Additional Options sections were updated
30-Mar-2015	Version 9	Added	SKUs Added: 741279-B21, 728629-B21, 726793-B21, 749975-B21, 726782-B21, 727261-B21, 802578-B21, 802582-B21, 802586-B21, 802891-B21, 781516-B21, 785067-B21, 765453-B21, 765455-B21, 765464-B21, 765466-B21, 789135-B21, 789145-B21, 789155-B21, 794603-B21, 794605-B21, 781518-B21, 785069-B21
		Removed	Obsolete SKUs Deleted: 741146-B21, 741138-B21
27-Feb-2015	Version 8	Changed	Smart Buy 779805-S01 processor was updated in Product Bulleting US version.
9-Feb-2015	Version 7	Changed	Core Options and Additional Options sections were updated
		Added	SKUs Added on Hard Drives section: 779164-B21, 779168-B21, 779172-B21, 779176-B21, 764923-B21, 764925-B21, 764927-B21, 764929-B21
		Removed	SKUs removed: 728935-B21, 718939-B21
12-Dec-2014	Version 6	Changed	Descriptions were updated throughout the QuickSpecs.
		Added	SKU Added on HPE Smart Memory: 792278-B21
1-Dec-2014	Version 5	Changed	Overview, Standard Features, Configuration Information - Factory Integrated Models and

Summary of Changes

			Core Options sections were updated
		Added	SKUs added: 759934-B21, 726720-B21, 775588-B21, 785233-B21, 757339-B21, 756657-B21, 756621-B21
		Removed	SKU E5Y35AAE deleted due to compatibility issues
10-Oct-2014	Version 4	Changed	Smart Buy section added to the NA version only
8-Oct-2014	Version 3	Changed	Network Controller, Enclosures and Compatible SAN sections were updated
		Added	HPE I/O Accelerator Options section has been added including following SKUs: QK763A, QK762A, QK761A
		Removed	Expansion Blade Support section was deleted
17-Sep-2014	Version 2	Changed	Changes made throughout the Standard Features, Models, SmartMemory, Core Options and Carepacks sections.
09-Sep-2014	Version 1	Created	New QuickSpecs

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

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