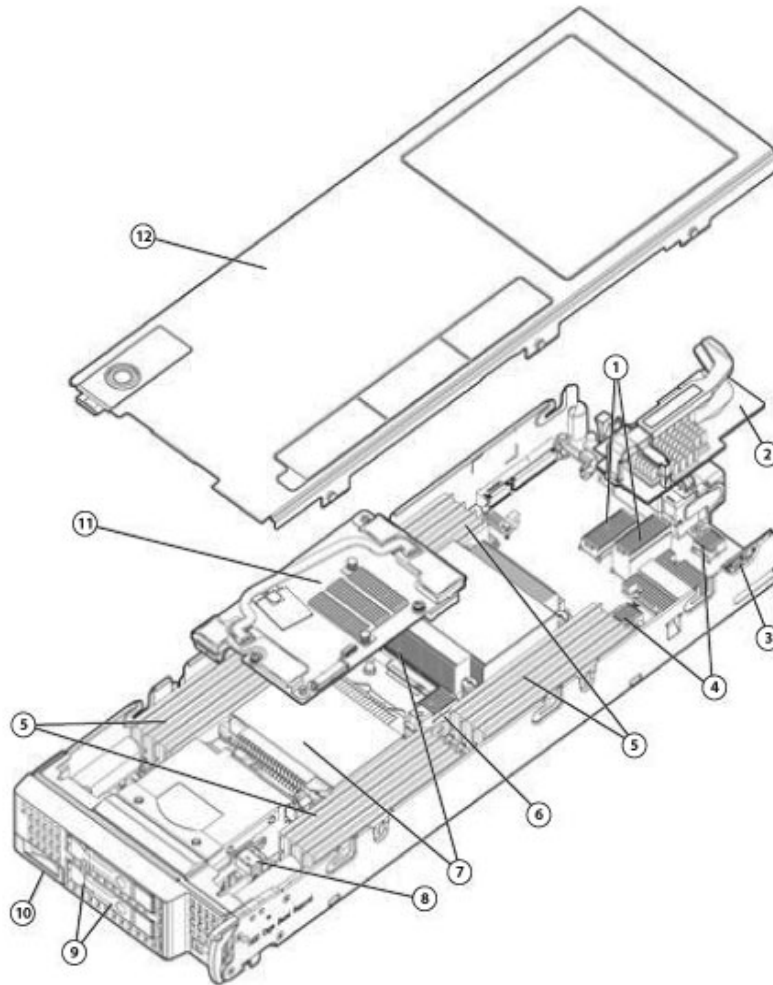


### Overview



### HP ProLiant BL460c Generation 8 (Gen8) Server Blade

- |  |  |
|--|--|
| 1. Two (2) PCIe 3.0 mezzanine I/O expansion slots          | 7. Up to two (2) Intel® Xeon® E5-2600 family processors          |
| 2. FlexibleLOM adapter                                     | 8. Internal USB 2.0 and Trusted Platform Module (TPM) connectors |
| 3. MicroSDHC card connector                                | 9. Two (2) small form factor (SFF) hot-plug drive bays           |
| 4. FlexibleLOM connectors (supporting one (1) FlexibleLOM) | 10. HP c-Class Blade SUV (Serial, USB, VGA) connector            |
| 5. Sixteen (16) DDR3 DIMM memory slots (8 per processor)   | 11. HP Smart Array P220i Controller with 512MB FBWC              |
| 6. HP Smart Array P220i Controller connector               | 12. Access panel   |

### What's New

### Overview

- Support for HP 1.2TB 6G SAS 10K 2.5in DP ENT SC HDD
- Support for 600 GB and 300GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Hard Drives
- Support for HP Oneview Software License

### Standard Features

**NOTE:** This document covers the HP ProLiant BL460c Gen8 server blade only. For information on HP BladeSystems c-Class Enclosures and HP BladeSystem c-Class Interconnect and Mezzanine Components, please see the following:

HP BladeSystem c-Class Enclosures QuickSpecs:

- HP BladeSystem c3000 Enclosure QuickSpecs at [http://h18000.www1.hp.com/products/quickspecs/12790\\_na/12790\\_na.html](http://h18000.www1.hp.com/products/quickspecs/12790_na/12790_na.html)  
**NOTE:** The c3000 HP 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.
- HP BladeSystem c7000 Enclosure QuickSpecs at [http://h18000.www1.hp.com/products/quickspecs/12810\\_na/12810\\_na.html](http://h18000.www1.hp.com/products/quickspecs/12810_na/12810_na.html)  
**NOTE:** The c7000 HP 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.
- HP BladeSystem c-Class Interconnect and Mezzanine Components at <http://h18004.www1.hp.com/products/blades/components/c-class-interconnects.html>  
<http://h18004.www1.hp.com/products/blades/components/c-class-adapters.html>

**NOTE:** For proper BladeSystem operation, the minimum required versions of HP Onboard Administrator and HP Virtual Connect are required and available via the HP Service Pack for ProLiant, please see <http://www.hp.com/go/spp/download>.

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

#### Processor

One of the following depending on Model

#### E5-2600 v2 series Processors

Intel® Xeon® E5-2697 v2 (2.7GHz/12-core/30MB/8.0GT-s QPI/130W, DDR3-1866, HT, Turbo2-3/3/3/3/3/3/4/5/6/7/8)

Intel® Xeon® E5-2695 v2 (2.4GHz/12-core/30MB/8.0GT-s QPI/115W, DDR3-1866, HT, Turbo2-4/4/4/4/4/4/4/5/6/7/8)

Intel® Xeon® E5-2690 v2 (3.0GHz/10-core/25MB/8.0GT-s QPI/130W, DDR3-1866, HT, Turbo2-3/3/3/3/3/3/4/5/6)

Intel® Xeon® E5-2680 v2 (2.8GHz/10-core/25MB/8.0GT-s QPI/115W, DDR3-1866, HT, Turbo2-3/3/3/3/3/4/5/6/7/8)

Intel® Xeon® E5-2670 v2 (2.5GHz/10-core/25MB/8.0GT-s QPI/115W, DDR3-1866, HT, Turbo2-4/4/4/4/4/4/5/6/7/8)

Intel® Xeon® E5-2660 v2 (2.2GHz/10-core/25MB/8.0GT-s QPI/95W, DDR3-1866, HT, Turbo2-4/4/4/4/4/4/5/6/7/8)

Intel® Xeon® E5-2650 v2 (2.6GHz/8-core/20MB/8.0GT-s QPI/95W, DDR3-1866, HT, Turbo2-4/4/4/4/5/6/7/8)

Intel® Xeon® E5-2650L v2 (1.7GHz/10-core/25MB/8.0GT-s QPI/70W, DDR3-1600, HT, Turbo2-2/2/2/2/2/2/2/3/4)

Intel® Xeon® E5-2667 v2 (3.3GHz/8-core/25MB/8.0GT-s QPI/130W, DDR3-1866, HT, Turbo2-3/3/3/3/4/5/6/7)

Intel® Xeon® E5-2643 v2 (3.5GHz/6-core/25MB/8.0GT-s QPI/130W, DDR3-1866, HT, Turbo2- 1/1/1/1/2/3)

Intel® Xeon® E5-2637 v2 (3.5GHz/4-core/15MB/8.0GT-s QPI/130W, DDR3-1866, HT, Turbo2- 1/1/2/3)

Intel® Xeon® E5-2640 v2 (2.0GHz/8-core/20MB/7.2GT-s QPI/95W, DDR3-1600, HT, Turbo2-3/3/3/3/3/3/4/5)

Intel® Xeon® E5-2630 v2 (2.6GHz/6-core/15MB/7.2GT-s QPI/80W, DDR3-1600, HT, Turbo2- 3/3/3/3/4/5)

### Standard Features

Intel® Xeon® E5-2630L v2 (2.4GHz/6-core/15MB/7.2GT-s QPI/60W, DDR3-1600, HT, Turbo2- 2/2/2/2/3/4)

Intel® Xeon® E5-2620 v2 (2.1GHz/6-core/15MB/7.2GT-s QPI/80W, DDR3-1600, HT, Turbo2- 3/3/3/3/4/5)

Intel® Xeon® E5-2609 v2 (2.5GHz/4-core/10MB/6.4GT-s QPI/80W)

Intel® Xeon® E5-2603 v2 (1.8GHz/4-core/10MB/6.4GT-s QPI/80W)

#### E5-2600 series Processors

Intel® Xeon® E5-2690 (2.9GHz/8-core/20MB/8.0GT-s QPI/135W, DDR3-1600, HT, Turbo2- 4/4/4/5/5/7/7/9)

Intel® Xeon® E5-2680 (2.7GHz/8-core/20MB/8.0GT-s QPI/130W, DDR3-1600, HT, Turbo2- 4/4/5/5/5/7/8/8)

Intel® Xeon® E5-2670 (2.6GHz/8-core/20MB/8.0GT-s QPI/115W, DDR3-1600, HT, Turbo2- 4/4/5/5/6/6/7/7)

Intel® Xeon® E5-2665 (2.4GHz/8-core/20MB/8.0GT-s QPI/115W, DDR3-1600, HT, Turbo2- 4/4/5/5/6/6/7/7)

Intel® Xeon® E5-2667 (2.9GHz/6-core/15MB/8.0GT-s QPI/130W, DDR3-1600, HT, Turbo2- 3/3/3/4/5/6)

Intel® Xeon® E5-2660 (2.2GHz/8-core/20MB/8.0GT-s QPI/95W, DDR3-1600, HT, Turbo2- 5/5/6/6/7/7/8/8)

Intel® Xeon® E5-2650 (2.0GHz/8-core/20MB/8.0GT-s QPI/95W, DDR3-1600, HT, Turbo2- 4/4/5/5/5/7/8/8)

Intel® Xeon® E5-2650L (1.8GHz/8-core/20MB/8.0GT-s QPI/70W, DDR3-1600, HT, Turbo2- 2/2/3/3/4/4/5/5)

Intel® Xeon® E5-2643 Kit (3.30 GHz/4-core/10MB/130W) Processor

Intel® Xeon® E5-2640 (2.5GHz/6-core/15MB/7.2GT-s QPI/95W, DDR3-1333, HT, Turbo2- 3/3/4/4/5/5)

Intel® Xeon® E5-2637 (3.0GHz/2-core/5MB/8.0GT-s QPI/80W, DDR3-1600, HT, Turbo2- 5/5)

Intel® Xeon® E5-2630 (2.3GHz/6-core/15MB/7.2GT-s QPI/95W, DDR3-1333, HT, Turbo2- 3/3/4/4/5/5)

Intel® Xeon® E5-2630L (2.0GHz/6-core/15MB/8.0GT-s QPI/60W, DDR3-1333, HT, Turbo2- 3/3/4/4/5/5)

Intel® Xeon® E5-2620 (2.0GHz/6-core/15MB/7.2GT-s QPI/95W, DDR3-1333, HT, Turbo2- 3/3/4/4/5/5)

Intel® Xeon® E5-2609 (2.4GHz/4-core/10MB/6.4GT-s QPI/80W)

Intel® Xeon® E5-2603 (1.8GHz/4-core/10MB/6.4GT-s QPI/80W)

**NOTE:** The Intel Xeon E5-2600 Processor Family cannot be configured with the new 1866MHz HP Smart Memory or the new 1600MHz Low Voltage (1.35v) HP Smart Memory.

**NOTE:** DIMM slots 4 and 5 are not accessible when either the E5-2690, the E5-2643, the E5-2643 v2, or the E5-2637 v2, or the E5-2667 v2 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:** HT indicates that the processor model supports Intel® Hyper-Threading Technology.

**NOTE:** Turbo indicates the maximum potential frequency increment when using Intel® Turbo Boost Technology, with 8, 7, 6, 5, 4, 3, 2 or 1 core(s) active.

**NOTE:** DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.

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

**NOTE:** For the Intel® C600 Chipset E5-2600 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 Gen8 supports one or two processors.

**NOTE:** The BL460c Gen8 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

### Standard Features

installed in processor slot 2 for access to the second mezzanine expansion slot (expansion slot 2).

**NOTE:** All processors within the server must be identical.

**NOTE:** All processors support Intel® Hyper-Threading and Intel® Turbo Boost Technologies except the E5-2603 and E5-2609.

**NOTE:** The letter "L" following the model number indicates denotes lower wattage.

**NOTE:** The processor model as well as the memory configuration determines the maximum speed memory can operate. Please see the see the "Memory" section later in this document.

**NOTE:** The Intel Xeon E5-2620 processor does not support DIMMs at 1.35V. Using the HP RBSU, 1.35V DIMMs can be changed to operate at 1.5V.

**NOTE:** When HP 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage FIO Memory Kits are used with any processors except the E5-2690, the E5-2643, the E5-2637 v2, the E5-2643 v2, or the E5-2667 v2 all 16 DIMM slots on the BL460c Gen8 must be fully populated with these 24GB DIMMs. When HP 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage FIO Memory Kits are used with either the E5-2690, the E5-2643, the E5-2637 v2, the E5-2643 v2, or the E5-2667 v2, all 12 available DIMM slots on the BL460c Gen8 must be fully populated with these 24GB DIMMs.

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#### Cache Memory

One of the following depending on Model

30MB (1x30MB) L3 cache

**NOTE:** For Twelve-core processors.

25MB (1x25MB) L3 cache

**NOTE:** For Six, Eight or Ten-core processors.

20MB (1x20MB) L3 cache

**NOTE:** For Eight-core processors.

15MB (1x15MB) L3 cache

**NOTE:** For Quad or Six-core processors.

10MB (1x10MB) L3 cache

**NOTE:** For Quad-core processors.

5MB (1x5MB) Level 3 cache

**NOTE:** For Dual-core processors.

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#### Chipset

Intel® C600 Series Chipset

Intel® E5-2600 and 2600v2 Processor Families

**NOTE:** For more information regarding Intel chipsets, please see the following:

<http://www.intel.com/products/server/chipsets/>.

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### Standard Features

#### Upgradeability

Upgradeable to two (2) processors

**NOTE:** Processor upgrade available from Intel® Xeon® Processors E5-2600 to E5-2600 v2. Please contact HP Technology Sales (<http://www.hp.com/support>), your local HP Re-seller, or reference the following Customer Advisory: [ProLiant Servers-Instructions for Upgrading an HP ProLiant Gen8 Server from an Intel Xeon Processor E5-2600 to an Intel Xeon Processor E5-2600 v2](#), regarding critical details before upgrading. An explanation of requirements and limitations are provided.

#### On System Management Chipset

HP iLO (Firmware: HP iLO 4)

**NOTE:** For more information, visit: <http://www.hp.com/go/ilo>

#### Memory Protection

Advanced ECC

Memory Online Spare Mode (Rank Spare Mode)

Lockstep Mode

#### Memory

One of the following depending on Model

Type

HP SmartMemory

DDR3 Load Reduced (LRDIMM), Registered (RDIMM), or Unbuffered ECC (UDIMM)

Standard (Pre-configured Models)

64GB (8 x 8GB) DDR3 1600MHz RDIMMs at 1.5V  
64GB (4 x 16GB) DDR3 1866MHz RDIMMs at 1.5V  
32GB (4 x 8GB) DDR3 1600MHz RDIMMs at 1.5V  
32GB (2 x 16GB) DDR3 1866MHz RDIMMs at 1.5V  
32GB (4 x 8GB) DDR3 1333MHz RDIMMs at 1.35V  
32GB (2 x 16GB) DDR3 1600MHz RDIMMs at 1.35V  
16GB (2 x 8GB) DDR3 1866MHz RDIMMs at 1.5V  
16GB (4 x 4GB) DDR3 1333MHz RDIMMs at 1.35V  
16GB (2 x 8GB) DDR3 1600MHz RDIMMs at 1.35V

Maximum (LRDIMM)

512GB (16 x 32GB) up to 1333MHz at 1.35V

Maximum (RDIMM)

256GB (16 x 16GB) up to 1600MHz at 1.5V  
384GB (16 x 24GB) up to 1333MHz at 1.35V

Maximum (UDIMM)

128GB (16 x 8GB) up to 1600MHz at 1.5v

**NOTE:** HP memory from previous generation servers are not qualified or warranted with this server. HP SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen8. For additional information, please see the HP SmartMemory QuickSpecs at: [http://h18000.www1.hp.com/products/quickspecs/14225\\_na/14225\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14225_na/14225_na.html)

**NOTE:** LRDIMM, RDIMM and UDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen8 servers support RDIMM, UDIMM and LRDIMM.

**NOTE:** The internal USB 2.0 Port is not available when the HP 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage FIO Memory Kits (700404-B21) are used.

**NOTE:** When HP 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage FIO Memory Kits are used with any processors except the E5-2690, the E5-2643, the E5-2637 v2, the E5-2643 v2, or the E5-2667 v2 all 16 DIMM slots on the BL460c Gen8 must be fully populated with these 24GB DIMMs. When HP 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage FIO Memory Kits are used with either the E5-2690, the E5-2643, the E5-2637 v2, the E5-2643 v2, or the E5-2667 v2, all 12 available DIMM slots on the BL460c Gen8 must be fully populated with these 24GB DIMMs.

### Standard Features

**NOTE:** The Intel Xeon E5-2600 Processor Family cannot be configured with the new 1866MHz HP Smart Memory or the new 1600MHz Low Voltage (1.35v) HP Smart Memory.

**NOTE:** Depending on the memory configuration and processor model, the memory speed may run at 1866MHz, 1600MHz, 1333MHz, or 1066MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: [www.hp.com/go/ddr3memory-configurator](http://www.hp.com/go/ddr3memory-configurator).

#### Network Controller

One of the following depending on Model

One (1) HP FlexFabric 10Gb 2-port 534FLB FlexibleLOM or HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM  
**NOTE:** Supports FCoE, Flex-10, TCP/IP offload engine, hardware-based accelerated iSCSI, iSCSI boot, and autosensing 10Gb/1Gb Ethernet.

**NOTE:** Each port is autosensing 1Gb/10Gb, and can interoperate with 1Gb HP BladeSystem c-Class interconnect components. Both ports will operate at the same speed.

**NOTE:** FlexFabric capabilities require the use of an HP Virtual Connect FlexFabric module. Fibre Channel over Ethernet (FCoE) is supported with the HP 10GbE Pass-Thru Module, HP 6120XG Blade Switch with the CEE license installed, HP Cisco B22HP Fabric Extender and HP Cisco B22HP Fabric Extender with 16 FET for BladeSystem c-Class. Learn more at: <http://www.hp.com/go/bladesystem/interconnects>

One (1) HP Flex-10 10Gb 2-port 530FLB FlexibleLOM

One (1) HP Ethernet 10Gb 2-port 560FLB 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 HP iLO 4 to Onboard Administrator link. The Onboard Administrator (with 10/100/1000 Mbps) to BladeSystem link is 1Gbps

#### Expansion Slots

Two (2) I/O expansion mezzanine slots:

- x16 PCIe 3.0 Type A (supports Type A mezzanine cards) (expansion slot 1).  
**NOTE:** This expansion slot supports dual-port mezzanine cards: one port is routed to interconnect module bay 3 and the other to bay 4.
- x16 PCIe 3.0 Type B (supports Type A and Type B mezzanine cards) (expansion slot 2).  
**NOTE:** This expansion slot supports dual-port and quad-port mezzanine cards. For dual-port cards, one port is routed to interconnect module bay 5 and the other to bay 6. For quad-port cards, one port is routed to interconnect module bay 5, one to bay 6, one to bay 7, and one to bay 8.  
**NOTE:** A second processor must be installed (in processor slot 2) to have access to the second expansion slot (expansion slot 2).

Mezzanine card options include:

- Dual-port 10Gb FlexFabric, 10Gb Flex-10, 10GbE options, and quad-port 1Gb Ethernet server adapter mezzanine options for additional network ports.
- Dual-port 8Gb 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

### Standard Features

#### HP Server ROM

HP ROM (read only memory) is now digitally signed using HP's Corporate Signing Service. This signature is verified before the flash process starts, reducing accidental programming and preventing malicious efforts to corrupt system ROM.

HP ROM provides for essential initialization and validation of hardware components before control is passed to the customer-installed operating system. The ROM also provides the capability of booting from various fixed media (HDD, CD-ROM) and removable media (USB), to continue operation to the operating system.

HP ROM performs very early configuration of the video controller, to allow monitoring of initialization progress via an attached monitor. If configuration or hardware errors are discovered during this early phase of hardware initialization, suitable messages are now displayed on the connected monitor. Additionally, these configuration or hardware errors are logged to the Integrated Management Log (IML) to assist in diagnosis.

HP's 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 HP ROM-Based Setup Utility (RBSU).

**NOTE:** For further information, please refer to HP's RBSU (ROM based setup utility) user guide: [www.hp.com/support/rbsu](http://www.hp.com/support/rbsu)

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#### Storage Controller

All BTO Models

One (1) HP Smart Array P220i Controller with 512MB Flash-Backed Write Cache (FBWC) supporting RAID 0 and RAID 1.

**NOTE:** Upgradeable firmware with recovery ROM.

**NOTE:** The HP Smart Array P220i supports two (2) small form factor (SFF) hot plug drive bays.

**NOTE:** The server supports up to a combined total of two (2) FBWC supercap options.

**NOTE:** The HP Smart Array P220i Controller FIO Kit (690164-B21) comes included with the HP ProLiant BL460c Gen8 10Gb FlexibleLOM Configure-to-order Blade Server (641016-B21). However when choosing the HP ProLiant BL460c Gen8 E5-v2 10Gb FlexibleLOM Configure-to-order Blade Server (735151-B21), the HP Smart Array P220i Controller FIO Kit (690164-B21) must be added separately as part of the Server Blade Configuration Process.

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#### Maximum Internal Storage

One of the following depending on Model

Hot Plug SFF SAS	2.4TB	2 x 1.2TB
Hot Plug SFF SATA	2.0TB	2 x 1.0TB
Hot Plug SFF SAS SSD	1.6TB	2 x 800GB
Hot Plug SFF SATA SSD	1.6TB	2x800GB

**NOTE:** The ProLiant BL460c Gen8 server includes the new HP hot plug small form factor (SFF) SmartDrive carrier for enhanced management and reduced maintenance errors. HP drives from previous generation servers are not compatible with the ProLiant BL460c Gen8 drive bays.



### Standard Features

#### Interfaces

Micro SDHC Slot

One (1) internal Micro Secure Digital High Capacity (Micro SDHC) card slot

USB 2.0 Port

One (1) internal USB 2.0 connector for USB flash media drive keys

**NOTE:** The above options are for integrated hypervisor virtualization environments needing a low cost boot solution with the highest performance and reliability.

**NOTE:** The internal USB 2.0 Port is not available when the HP 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage FIO Memory Kits (700404-B21) are used.

#### Industry Standard Compliance

ACPI 2.0

Microsoft® Logo certifications

USB 2.0 Support

IPMI 2.0

Secure Digital 2.0

TPM 1.2 Support

IEEE (specific IEEE standards depending on Ethernet adapter card(s) installed)

Advanced Encryption Standard (AES)

Triple Data Encryption Standard (3DES)

SNMP

SSL 2.0

DMTF Systems Management Architecture for Server Hardware Command Line Protocol (SMASH CLP)

Active Directory v1.0

PCIe 3.0

#### Operating Systems and Virtualization Software Support for ProLiant Servers

[Microsoft Windows Server](#)

[Red Hat Enterprise Linux \(RHEL\)](#)

[SUSE Linux Enterprise Server \(SLES\)](#)

[Canonical Ubuntu](#)

[Oracle Solaris](#)

[VMware](#)

[Citrix XenServer](#)

**NOTE:** For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: <http://www.hp.com/go/ossupport> and our driver download page: <http://www.hp.com/support/BL460cGen8>

#### Enclosures

HP offers two different c-Class server blade enclosures to meet your individual needs:

- The HP BladeSystem c7000 rack enclosure is 10U high and holds up to sixteen (16) ProLiant BL460c Gen8 servers plugged vertically.
- The HP BladeSystem c3000 rack enclosure is 6U high and holds up to eight (8) HP ProLiant BL460c Gen8 servers plugged horizontally.
- Server blades, storage blades, interconnect modules, power supplies, fans, and redundant Onboard Administrator modules are all designed to fit into the c3000 and c7000 enclosures.

**NOTE:** For additional enclosure information, please see:

<http://h18004.www1.hp.com/products/blades/components/enclosures/c-class/index.html>

### Standard Features

#### Graphics

Integrated Matrox G200 video standard

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

HP iLO 4 On System Management Memory

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

#### Form Factor

HP ProLiant BL460c Gen8 is a half-height server blade that plugs into the HP BladeSystem c3000 and c7000 enclosures.

#### On System Management

HP iLO Management Engine

HP iLO Management Engine is a comprehensive set of embedded management features supporting the complete lifecycle of the server, from initial deployment, through ongoing management, to service alerting and remote support. HP iLO Management Engine comes standard on all HP ProLiant Gen8 servers. The HP iLO Management Engine portfolio includes:

- **HP iLO:** The HP iLO management processor is the core foundation for other capabilities within HP iLO Management Engine
- **HP Agentless Management:** Provides built in server health monitoring and alerting capability without OS agents, that starts working the moment a power cord and an Ethernet cable are connected.
- **HP Active Health System:** Always on, continuous monitoring for increased stability and shorter downtimes; 100% configuration history; Health and service alerts and easy export and upload to Service and Support.
- **HP Intelligent Provisioning:** Lets customers provision and configure a single server without any separate media. No more SmartStart CDs or Smart Update Firmware DVD are needed.
  - To start Intelligent Provisioning:
    - Press the F10 key during the ProLiant Gen8 server boot process (also known as power on self test or POST).
    - Please go to the Intelligent Provisioning website at [www.hp.com/go/intelligentprovisioning](http://www.hp.com/go/intelligentprovisioning) for additional information and to view usage videos.
    - Use the Service Pack for ProLiant (SPP) at [www.hp.com/go/spp](http://www.hp.com/go/spp) to get firmware and software updates.
- **HP iLO Mobile App:** Enables the ability to access, deploy, and manage your server anytime from anywhere from select smartphones and mobile devices. For additional information please visit: [www.hp.com/go/ilo/mobileapp](http://www.hp.com/go/ilo/mobileapp)

**NOTE:** For more information, visit: <http://www.hp.com/go/ilo> or HP iLO Management Engine technologies whitepaper

### Standard Features

**HP Insight management software** HP Service Pack for ProLiant (SPP)

HP Service Pack for ProLiant (SPP) and HP Smart Update Manager (HP SUM) provide a comprehensive approach to firmware and system software maintenance. Together they provide better operating stability and ensure maximum uptime. The SPP will be updated at a predictable cadence, typically coinciding with new HP server hardware launches. By enabling firmware to be updated online and integrating firmware and system software updates in one operation, HP SUM and the SPP offer faster updates of individual servers and dramatically faster updates of entire BladeSystem enclosures. Further improving system uptime and stability is the fact that HP provides 12 months of support for each Service Pack for ProLiant release.

The user experience around HP SUM and the SPP has been improved in several ways, starting with the web download. A single web page provides access to a single download containing both the latest version of HP SUM and the latest SPP. Optional smaller subsets with only specific types of servers or specific operating systems are offered to save on download time. The HP SUM application provides a straightforward, intuitive user interface that guides the user through the steps of discovery, analyses and update, providing comprehensive information on available updates, criticality and interdependencies. This information is also available in reports. By providing the option of multiple local or shared repositories which can be easily updated from hp.com, HP SUM provides the tools to optimize stability and consistency throughout the company. While HP SUM and the SPP recommend the combinations of firmware and system software that HP has found to be the best practice, the application gives customers the flexibility to set their own specific baseline.

The Service Pack for ProLiant has been rigorously tested with specific attention for interaction between firmware, drivers and agents both within the server as well as in interaction with the BladeSystem enclosure components (Onboard Administrator and Virtual Connect). This testing ensures the highest quality as well as providing the input for HP SUM to deploy updates taking into account all interdependencies, when determining the correct updates and order of update deployment.

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

### Standard Features

#### Security

- Power-on password
- Administrator's password
- Keyboard password (QuickLock)
- HP iLO 4 On System Management Chipset with:
  - SSL encryption
  - Secure Shell version 2
  - Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser, CLP and XML scripting interface
  - AES and RC4 encryption of video
- External USB port enable/disable
- Network server mode
- Serial interface control
- TPM (Trusted Platform Module) 1.2 option
- Advanced Encryption Standard (AES)
- Intel® Advanced Encryption Standard–New Instructions (AES-NI)

#### Availability

#### Memory

- Advanced ECC uses single device data correction (SDDC) to detect and correct single and all multi-bit error that occurs within a single DRAM chip. Both x4 and x8 SDDC are supported (x8 requires lockstep mode).
- Memory online spare mode (also known as rank spare mode) detects a rank that is degrading and switches operation to the spare rank.
- Memory Lockstep mode is used to correct a single x8 DRAM device failure on a DIMM. The DIMMs in each paired memory channel must have identical HP part numbers.
- Memory demand and patrol scrubbing to prevent accumulation of correctable errors and reducing the likelihood of unplanned downtime.
- Failed DIMM isolation improves the service time thus improving the overall system availability.
- Address parity protection available on RDIMMs and LRDIMMs detects address bit errors to improve service time and overall system availability.

#### Mezzanine options and I/O

- Support for one (1) FlexibleLOM, providing two (2) (i.e. redundant) Ethernet ports
- Multiple mezzanine I/O expansion slots that support a wide variety of mezzanine cards each supporting multiple data paths routed to redundant interconnect modules.
- Network Adapter Teaming (bonding) provides network fault tolerance, transmit load balancing, and switch-assisted load balancing.

#### Storage

- Two (2) Small Form Factor hot-plug SAS/SATA/SSD drive bays.
- Integrated HP Smart Array P220i Controller with 512MB FBWC, RAID 0 and 1 support, and upgradeable firmware with recovery ROM capability.
- Optional HP D2200sb Storage Blade for direct attachment of up to 12 drives to an adjacent blade within the c-Class enclosure.
- Optional dual-port Fibre Channel mezzanine card(s) for redundant SAN connections.

#### Processor/Chipset

- Processor internal sensors & thermal control protection against over-temperature conditions.

### Standard Features

- Cache parity/ECC protects cache data from accidental data corruption.
- Machine Check Architecture (MCA) detects and captures hardware errors such as system bus, memory ECC, parity, and cache, and improves service time.
- Intel® 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 core-pair. It uses BIST (built-in self test) results to detect a failure and disables the target core-pair upon subsequent boot.

### Server Blade Enclosure Infrastructure

- Pooled power for true N+N power redundancy through up to six (6) hot-plug, high-efficiency, common slot enclosure-based power supplies (configuration dependent).
- Up to ten (10) redundant enclosure-based hot-plug HP Active Cool fans that scale to meet future demands and optimize airflow, reduce power draw, and improve acoustic performance.
- Dual grid power providing redundant rack enclosure power feeds to the server blade enclosure.
- HP Dynamic Power Saver Mode the total enclosure power consumption is monitored in real time and automatically adjusted with changes in demand for improved efficiency and reliability.
- HP Dynamic Power Capping safely limits power usage without impacting performance by capping peak usage instead of average power usage, removes risk to electrical infrastructure with a fast-acting, hardware-based capping algorithm, and reclaims more power by dynamically controlling power limits based on workload demand.
- Up to eight interconnect modules per server blade enclosure providing four simultaneous redundant fabrics for FlexFabric, Virtual Connect Ethernet, Fibre Channel, InfiniBand, Pass Thru Ethernet, etc.
- Enclosure crosslinks between adjacent enclosures to provide interconnect module-to-module connections or as Virtual Connect module stacking links.
- Optional enclosure redundant Onboard Administrator system management module.

### Warranty

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

**NOTE:** Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at <http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>.

### Optional Features

**Fibre Channel Support** Up to two (2) optional Fibre Channel mezzanine HBAs are supported on the HP ProLiant BL460c Gen8.

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**Compatible SAN** HP ProLiant BL460c Gen8 server blades are optimized for HP MSA, EVA and XP.

HP ProLiant BL460c Gen8 server blades are compatible with select 3rd party SANs. Please see blade storage page for more details at <http://h18004.www1.hp.com/products/blades/components/c-class-sans.html>.

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**HP Virtual Connect** HP Virtual Connect is an interconnect option for BladeSystem c-Class that simplifies server connectivity to data and storage networks, and reduces costs. Unique HP 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. HP Virtual Connect Enterprise Manager (VCEM) provides server management software with a central console to administer network connections and workloads for thousands of servers. For more information on Virtual Connect Enterprise Manager, see <http://www.hp.com/go/vcem>. For more information on Virtual Connect Ethernet, Fibre Channel, Converged Network and management options, see <http://www.hp.com/go/virtualconnect>.

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**HP Insight management software**

HP Insight Control	HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. For more information, see <a href="http://www.hp.com/go/insightcontrol">http://www.hp.com/go/insightcontrol</a> .
	HP Insight Control includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, see <a href="http://www.hp.com/services/insight">http://www.hp.com/services/insight</a> .
HP Matrix Operating Environment	The HP 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 HP Matrix OE includes the automated provisioning, optimization, and recovery management capabilities for HP CloudSystem Matrix, the ideal platform for private cloud and Infrastructure as a Service (IaaS). For more information, see <a href="http://www.hp.com/go/matrixoe">http://www.hp.com/go/matrixoe</a> .
HP iLO Scale-Out	The HP iLO Scale-Out license ideal for web/hosting/cloud service providers and High Performance Computing environments. This license is a specific subset of iLO Advanced functionality, provides fast remote access through Text Console via SSH, lower operational cost with Dynamic power capping, and faster time to resolution through Email-based Alerting and proactive notifications. With this newly designed HP iLO Scale-Out HPC customers now have a server management package solely design and priced for their massive data environments. HP iLO Scale-Out is available on all HP ProLiant Gen8 SL

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### Optional Features

#### HP iLO Advanced License for ProLiant Servers

platforms.

For more information, see: <http://www.hp.com/go/iLO/scale-out>

HP iLO management processors for HP ProLiant Gen8 servers virtualizes system controls to help simplify server setup, engage health monitoring and power and thermal control, and promote remote administration. HP iLO functions out-of-the-box without additional software installation and functions regardless of the servers' state of operation. The HP iLO can be accessed from any location via a web browser and works hand-in-hand with HP Systems Insight Manager, Insight Control, and Matrix Operating Environment, helping customers unleash the value of the ProLiant platform and deliver the highest possible quality of IT service to the business.

Advanced functionality, such as graphical remote console, multi-user collaboration, and video record/playback can be activated with the optional HP iLO Advanced or HP iLO Advanced for BladeSystem licenses. The Advanced licensed features offer sophisticated remote administration of servers in dynamic data center and remote locations and can help significantly reduce cost associated with IT-related travel and unplanned downtime.

**NOTE:** For more information, visit <http://www.hp.com/go/ilo>.

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#### HP OneView

The HP OneView architecture combines server, storage, and networking with control of datacenter environmentals into a single, integrated management platform. Architected to deliver lifecycle management for the complete Converged Infrastructure, it facilitates collaboration, removes friction, collapses cycle times, eliminates error-prone work, and accelerates time to value. HP OneView v1.0 combines management of servers and virtual connect with open integration to automate and customize existing tools and processes. With OneView, you'll work smarter—with greater visibility and control—and fully capitalize on the benefits of a Converged Infrastructure.

For more information on HP OneView management, see: <http://www.hp.com/go/oneview>.

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#### High Performance Clusters

##### HP Cluster Platforms

HP Cluster Platforms are specifically engineered, factory-integrated large-scale ProLiant clusters optimized for High Performance Computing, with a choice of servers, networks and software. Operating system options include specially priced offerings for Red Hat Enterprise Linux and SUSE Linux Enterprise Server, as well as Microsoft Windows HPC Server. A Cluster Platform Configurator simplifies ordering. <http://www.hp.com/go/clusters>

##### HP HPC Interconnects

High Performance Computing (HPC) interconnect technologies are available for this server as part of the HP Cluster Platform portfolio. These high-speed InfiniBand and Gigabit interconnects are fully supported by HP when integrated within an HP cluster. Flexible, validated solutions can be defined with the help of configuration tools.

<http://www.hp.com/techservers/clusters/ucp/index.html>

##### HP Insight Cluster Management Utility

HP Insight Cluster Management Utility (CMU) is an HP-licensed and HP-supported suite of tools that are used for lifecycle management of hyperscale clusters of Linux ProLiant systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective.

<http://www.hp.com/go/cmu>

### Optional Features

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#### Storage Software

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

Storage software that gets the job done:

- **Data Protection and Recovery Software**  
Whether you're a large enterprise or a smaller business, HP data protection and recovery software will cost-effectively protect you against disaster and ensure business continuity.
- **Data Archive and Migration Software**  
HP's storage software enables you to comply with data retention and retrieval requirements, improve application performance, and reduce costs by efficiently migrating infrequently accessed or less valuable data to lower cost storage.
- **Storage Resource Management Software (SRM)**  
HP's storage resource management software reduces operational costs and provides the command and control foundation you need to efficiently manage and visualize your physical and virtual environments.
- **Data Replication Software**  
HP offers array-based and host-based replication software for use in disaster recovery, testing, application development and reporting.
- **Storage Device Management Software**  
Maximize your investment in HP storage and networking with software that enables hardware-specific configuration, performance tuning and connectivity management.
- **HP StoreVirtual VSA**  
HP 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 HP StoreVirtual VSA software with 1TB of capacity. To download the license key and StoreVirtual VSA software, visit: [www.hp.com/go/unlockVSA](http://www.hp.com/go/unlockVSA).  
**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. For more information and access to the 60-day free trial, visit: [www.hp.com/go/tryVSA](http://www.hp.com/go/tryVSA)

**NOTE:** For more information available Storage Software including QuickSpecs, please see: [www.hp.com/go/storage/software](http://www.hp.com/go/storage/software).

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#### HP Insight Online

HP Insight Online is a new addition to the HP Support Center for one stop, secure access to product and HP support information personalized to your IT environment. Insight Online can automatically display devices remotely monitored by HP Insight Remote Support. With Insight Online's easy navigation you can efficiently track your IT support contracts and device status from anywhere and at anytime. <http://www.hp.com/go/insightonline>

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### Optional Features

**HP Proactive Insight experience**

Prevent problems with innovative, automated monitoring tools and proactive services. The HP Proactive Insight experience consist of using Insight Online, Insight Remote Support, and Proactive Care Support Service as one integrated solution. The Proactive Insight experience provides you with expert advice and personalized, cloud-based automated IT support, helping to prevent unplanned down time and solve problems quickly. For more information, visit: [www.hp.com/go/proactiveinsightexperience](http://www.hp.com/go/proactiveinsightexperience)

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**Expansion Blade Support** Supports one (1) optional storage, tape, or PCI expansion blade.

**Factory Express Portfolio for Servers and Storage** HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

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. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 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: <http://www.hp.com/go/factory-express.html>

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**HP 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 HP's Customer Business Center or an Authorized Partner for assistance. <http://www.hp.com/products/configurator>

### Service and Support

#### Service and Support

##### **HP Technology Services for Industry Standard Servers and BladeSystem**

Capitalizing on HP ProLiant server and HP BladeSystem capabilities requires a service partner who understands your increasingly complex business technology environment. That's why it makes sense to team up with the people who know HP infrastructure hardware and software best - the experienced professionals at HP Services.

##### **Protect your business beyond warranty with HP Care Pack Services**

HP Care Pack services offer complete care and support expertise with committed response choices designed to meet your IT and business needs.

HP Foundation Care services offer scalable reactive support-packages for HP industry-standard servers and software. You can choose the type and level of service that is most suitable for your IT and business needs. HP Proactive Care delivers high levels of system availability through proactive service management and advanced technical response.

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### Recommended HP Care Pack Services for your HP product

#### Optimized Care

##### **3-Year HP 6 hour Call to Repair Response, Proactive Care**

Combined reactive and proactive support for hardware and software helping optimize your systems and delivering high levels of availability through proactive service management and advanced technical response. Hardware problem resolution to return the hardware in operating condition within 6 hours of the initial service request. A Technical Account Manager, as your single point of contact, will own your call or issue end to end until resolved.

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855EEE.pdf>

##### **HP Install c-Class Server Blade Service**

This easy-to-buy, easy-to-use HP Care Pack service helps ensure that your new HP hardware is installed smoothly, efficiently, and with minimal disruption of your IT and business operations.

#### Standard Care

##### **3-Year HP 24x7 4 hour response, Proactive Care Service**

This service gives you combined reactive and proactive support including rapid access to our Advanced Solution Center to manage and prevent problems and a Technical Support Specialist with a broad level of technical knowledge that will engage with additional technical expertise as needed from HP's vast global resources.

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855EEE.pdf>

##### **HP Install c-Class Server Blade Service**

This easy-to-buy, easy-to-use HP Care Pack service helps ensure that your new HP hardware is installed smoothly, efficiently, and with minimal disruption of your IT and business operations

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#### Related Services

##### **HP Proactive Care Personalized Support - Environmental Option**

The Personalized Support option provides an assigned Account Support Manager who can bring best practices from across the industry plus extra technical skills to your IT team. This option is only available as an add-on to HP Proactive Care Support.

##### **HP Proactive Select Service**

Provides a flexible way to purchase HP best-in-class consultancy and technical services. You can buy Proactive Select Service Credits when you purchase your hardware and then use the credits over the next 12 months. <http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENN.pdf>

### Service and Support

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

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#### Insight Online/Insight Remote Support

HP Insight Remote Support provides 24 X 7 remote monitoring, proactive notifications, and problem resolution. This comes at no additional cost with your HP solution. Learn more about Insight Remote Support <http://www.hp.com/go/insightremotesupport> and Insight Online <http://www.hp.com/go/insightonline>

**NOTE:** Insight Remote Support is a prerequisite for Proactive Care. All blades within a single HP BladeSystem enclosure must be at the same service level.

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#### HP Support Center

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

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

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

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#### Parts and Materials

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

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

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

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#### For more information

To learn more on HP ProLiant servers and HP BladeSystem servers, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: [www.hp.com/services/bladesystem](http://www.hp.com/services/bladesystem)

### 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:** HP 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 HP offices for availability.

#### E5-2600 v2 series Processors

<b>HP ProLiant BL460c Gen8 E5-2670v2 2P 64GB-R P220i/512 FBWC Server</b> 724082-B21	<b>Processor(s)</b>	(2) Intel® Xeon® E5-2670 v2 (2.5GHz/10-core/25MB/8.0GT-s QPI/115W, DDR3-1866, HT, Turbo2- 4/4/4/4/4/4/5/6/7/8)
	<b>Cache Memory</b>	25MB (1x25MB) Level 3 cache
	<b>Memory</b>	64GB (4x 16GB) PC3-14900R (DDR3-1866) Registered DIMMS at 1.5V <b>NOTE: Total of 16 DIMM slots.</b>
	<b>Network Controller</b>	HP FlexFabric 10Gb 2-port 534FLB FlexibleLOM
	<b>Storage Controller</b>	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	<b>Hard Drive</b>	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	<b>Internal Storage</b>	SAS: 2.4TB; SATA: 2.0TB; SAS SSD: 1.6TB; SATA SSD: 1.6TB
	<b>Optical Drive Bay</b>	None
	<b>Expansion Slots</b>	2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	<b>Management</b>	HP iLO Management Engine (standard) Optional: HP iLO Scale-Out or HP Insight Control
	<b>Form Factor</b>	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
	<b>Warranty</b>	Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.

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<b>HP ProLiant BL460c Gen8 E5-2660v2 2P 64GB-R P220i/512 FBWC Server</b> 724083-B21	<b>Processor(s)</b>	(2) Intel® Xeon® E5-2660 v2 (2.20GHz/10-core/25MB/8.0GT-s QPI/95W, DDR3-1866, HT, Turbo2- 4/4/4/4/4/4/5/6/7/8)
	<b>Cache Memory</b>	20MB (1x25MB) Level 3 cache
	<b>Memory</b>	64GB (4x 16GB) PC3-14900R (DDR3-1866) Registered DIMMS at 1.5V <b>NOTE: Total of 16 DIMM slots.</b>
	<b>Network Controller</b>	HP FlexFabric 10Gb 2-port 534FLB FlexibleLOM
	<b>Storage Controller</b>	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	<b>Hard Drive</b>	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	<b>Internal Storage</b>	SAS: 2.4TB; SATA: 2.0TB; SAS SSD: 1.6TB ; SATA SSD: 1.6TB

### Models

<b>Optical Drive Bay</b>	None
<b>Expansion Slots</b>	2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
<b>Management</b>	HP iLO Management Engine (standard) Optional: HP iLO Scale-out or HP Insight Control
<b>Form Factor</b>	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
<b>Warranty</b>	Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.

<b>HP ProLiant BL460c Gen8 E5-2650v2 1P 32GB-R P220i/512 FBWC Server</b> 724084-B21	<b>Processor(s)</b>	(1) Intel® Xeon® E5-2650 v2 (2.6GHz/8-core/20MB/8.0GT-s QPI/95W, DDR3-1866, HT, Turbo2- 4/4/4/4/5/6/7/8)
	<b>Cache Memory</b>	20MB (1x20MB) Level 3 cache
	<b>Memory</b>	32GB (2x 16GB) PC3-14900R (DDR3-1866 Registered DIMMs at 1.5V) <b>NOTE: Total of 16 DIMM slots. Only eight (8) usable with single processor.</b>
	<b>Network Controller</b>	HP FlexFabric 10Gb 2-port 534FLB FlexibleLOM
	<b>Storage Controller</b>	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	<b>Hard Drive</b>	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	<b>Internal Storage</b>	SAS: 2.4TB; SATA: 2.0TB; SAS SSD: 1.6TB; SATA SSD: 1.6TB
	<b>Optical Drive Bay</b>	None
	<b>Expansion Slots</b>	2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	<b>Management</b>	HP iLO Management Engine (standard) Optional: HP iLO Scale-out or HP Insight Control
	<b>Form Factor</b>	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
<b>Warranty</b>	Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.	

<b>HP ProLiant BL460c Gen8 E5-2650Lv2 1P 32GB-L P220i/512 FBWC Server</b> 724088-B21	<b>Processor(s)</b>	(1) Intel® Xeon® E5-2650L v2 (1.7GHz/10-core/25MB/8.0GT-s QPI/70W, DDR3-1600, HT, Turbo2- 2/2/2/2/2/2/2/3/4)
	<b>Cache Memory</b>	25MB (1x25MB) Level 3 cache
	<b>Memory</b>	32GB (2x 16GB) PC3L-12800R (DDR3-1600 Registered DIMMs at 1.35V) <b>NOTE: Total of 16 DIMM slots. Only eight (8) usable with single processor.</b>
	<b>Network Controller</b>	HP FlexFabric 10Gb 2-port 534FLB FlexibleLOM
	<b>Storage Controller</b>	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	<b>Hard Drive</b>	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
<b>Internal Storage</b>	SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB	

### Models

<b>Optical Drive Bay</b>	None
<b>Expansion Slots</b>	2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
<b>Management</b>	HP iLO Management Engine (standard) Optional: HP iLO Scale-out or HP Insight Control
<b>Form Factor</b>	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
<b>Warranty</b>	Server warranty includes 3-year Parts, 3-year3-year Labor, 3-year on-site support.

<b>HP ProLiant BL460c Gen8 E5-2640v2 1P 32GB-R P220i/512 FBWC Server</b> 724085-B21	<b>Processor(s)</b>	(1) Intel® Xeon® E5-2640 v2 (2.0GHz/8-core/20MB/7.2GT-s QPI/95W, DDR3-1600, HT, Turbo2- 3/3/3/3/3/4/5)
	<b>Cache Memory</b>	15MB (1x15MB) Level 3 cache
	<b>Memory</b>	32GB (2x 16GB) PC3L-12800R (DDR3-1600 Registered DIMMs at 1.35V) <b>NOTE: Total of 16 DIMM slots. Only eight (8) usable with single processor.</b>
	<b>Network Controller</b>	HP FlexFabric 10Gb 2-port 534FLB FlexibleLOM
	<b>Storage Controller</b>	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	<b>Hard Drive</b>	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	<b>Internal Storage</b>	SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB
	<b>Optical Drive Bay</b>	None
	<b>Expansion Slots</b>	2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	<b>Management</b>	HP iLO Management Engine (standard) Optional: HP iLO Scale-out or HP Insight Control
	<b>Form Factor</b>	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
<b>Warranty</b>	Server warranty includes 3-year Parts, 3-year3-year Labor, 3-year on-site support.	

<b>HP ProLiant BL460c Gen8 E5-2620v2 1P 16GB-R P220i/512 FBWC Server</b> 724086-B21	<b>Processor(s)</b>	(1) Intel® Xeon® E5-2620 v2 (2.1GHz/6-core/15MB/7.2GT-s QPI/80W, DDR3-1600, HT, Turbo2- 3/3/3/3/4/5)
	<b>Cache Memory</b>	15MB (1x15MB) Level 3 cache
	<b>Memory</b>	16GB (2x 8GB) PC3L-12800R (DDR3-1600) Registered DIMMs at 1.35V) <b>NOTE: Total of 16 DIMM slots. Only eight (8) usable with single processor.</b>
	<b>Network Controller</b>	HP FlexFabric 10Gb 2-port 534FLB FlexibleLOM
	<b>Storage Controller</b>	Smart Array P220i Controller with 512MB FBWC RAID 0,1

### Models

<b>Hard Drive</b>	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
<b>Internal Storage</b>	SAS: 2.4TB; SATA: 2.0TB; SAS SSD: 1.6TB; SATA SSD: 1.6TB
<b>Optical Drive Bay</b>	None
<b>Expansion Slots</b>	2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
<b>Management</b>	HP iLO Management Engine (standard) Optional: HP iLO Scale-out or HP Insight Control
<b>Form Factor</b>	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
<b>Warranty</b>	Server warranty includes 3-year3-year Parts, 3-year Labor, 3-year on-site support.

**HP ProLiant BL460c Gen8  
E5-2609v2 1P 16GB-L  
P220i/512 FBWC Server  
724087-B21**

<b>Processor(s)</b>	(1)Intel® Xeon® E5-2609 v2 (2.5GHz/4-core/10MB/6.4GT-s QPI/80W)
<b>Cache Memory</b>	10MB (1x10MB) Level 3 cache
<b>Memory</b>	16GB (2x 8GB) PC3L-12800R (DDR3-1600) Registered DIMMs at 1.35V <b>NOTE: Total of 16 DIMM slots. Only eight (8) usable with single processor.</b>
<b>Network Controller</b>	HP FlexFabric 10Gb 2-port 534FLB FlexibleLOM
<b>Storage Controller</b>	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
<b>Hard Drive</b>	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
<b>Internal Storage</b>	SAS: 2.4TB; SATA: 2.0TB; SAS SSD: 1.6TB; SATA SSD: 1.6TB
<b>Optical Drive Bay</b>	None
<b>Expansion Slots</b>	2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
<b>Management</b>	HP iLO Management Engine (standard) Optional: HP iLO Scale-out or HP Insight Control
<b>Form Factor</b>	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
<b>Warranty</b>	Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.

**E5-2600 series Processors**

**HP ProLiant BL460c Gen8  
E5-2670 2P 64GB-R P220i  
Server  
666157-B21**

<b>Processor(s)</b>	(2) Intel® Xeon® E5-2670 (2.6GHz/8-core/20MB/8.0GT-s QPI/115W, DDR3-1600, HT, Turbo2- 4/4/5/5/6/6/7/7)
<b>Cache Memory</b>	20MB (1x20MB) Level 3 cache
<b>Memory</b>	64GB (8x 8GB) PC3-12800R (DDR3-1600) Registered DIMMS at 1.5V <b>NOTE: Total of 16 DIMM slots.</b>
<b>Network Controller</b>	HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM

### Models

<b>Storage Controller</b>	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
<b>Hard Drive</b>	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
<b>Internal Storage</b>	SAS: 2.4TB; SATA: 2.0TB; SAS SSD: 1.6TB; SATA SSD: 1.6TB
<b>Optical Drive Bay</b>	None
<b>Expansion Slots</b>	2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
<b>Management</b>	HP iLO Management Engine (standard) Optional: HP iLO Scale-Out or HP Insight Control
<b>Form Factor</b>	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
<b>Warranty</b>	Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.

<b>HP ProLiant BL460c Gen8 E5-2660 2P 64GB-R P220i SFF Server</b> 666158-B21	<b>Processor(s)</b>	(2) Intel® Xeon® E5-2660 (2.2GHz/8-core/20MB/8.0GT-s QPI/95W, DDR3-1600, HT, Turbo2- 5/5/6/6/7/7/8/8)
	<b>Cache Memory</b>	20MB (1x20MB) Level 3 cache
	<b>Memory</b>	64GB (8x 8GB) PC3-12800R (DDR3-1600) Registered DIMMS at 1.5V) <b>NOTE: Total of 16 DIMM slots.</b>
	<b>Network Controller</b>	HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM
	<b>Storage Controller</b>	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	<b>Hard Drive</b>	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	<b>Internal Storage</b>	SAS: 2.4TB; SATA: 2.0TB; SAS SSD: 1.6TB ; SATA SSD: 1.6TB
	<b>Optical Drive Bay</b>	None
	<b>Expansion Slots</b>	2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	<b>Management</b>	HP iLO Management Engine (standard) Optional: HP iLO Scale-out or HP Insight Control
	<b>Form Factor</b>	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
	<b>Warranty</b>	Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.



### Models

<p><b>HP ProLiant BL460c Gen8 E5-2650 1P 32GB-R P220i SFF Server</b> 666159-B21</p>	<p><b>Processor(s)</b></p> <p><b>Cache Memory</b></p> <p><b>Memory</b></p> <p><b>Network Controller</b></p> <p><b>Storage Controller</b></p> <p><b>Hard Drive</b></p> <p><b>Internal Storage</b></p> <p><b>Optical Drive Bay</b></p> <p><b>Expansion Slots</b></p> <p><b>Management</b></p> <p><b>Form Factor</b></p> <p><b>Warranty</b></p>	<p>(1) Intel® Xeon® E5-2650 (2.0GHz/8-core/20MB/8.0GT-s QPI/95W, DDR3-1600, HT, Turbo2- 4/4/5/5/5/7/8/8)</p> <p>20MB (1x20MB) Level 3 cache</p> <p>32GB (4x 8GB) PC3-12800R (DDR3-1600 Registered DIMMs at 1.5V) <b>NOTE: Total of 16 DIMM slots. Only eight (8) usable with single processor.</b></p> <p>HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM</p> <p>HP Smart Array P220i Controller with 512MB FBWC RAID 0,1</p> <p>None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives</p> <p>SAS: 2.4TB; SATA: 2.0TB; SAS SSD: 1.6TB; SATA SSD: 1.6TB</p> <p>None</p> <p>2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.</p> <p>HP iLO Management Engine (standard) Optional: HP iLO Scale-out or HP Insight Control</p> <p>Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure</p> <p>Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.</p>
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<p><b>HP ProLiant BL460c Gen8 E5-2650L 1P 32GB-R P220i SFF Server</b> 666163-B21</p>	<p><b>Processor(s)</b></p> <p><b>Cache Memory</b></p> <p><b>Memory</b></p> <p><b>Network Controller</b></p> <p><b>Storage Controller</b></p> <p><b>Hard Drive</b></p> <p><b>Internal Storage</b></p> <p><b>Optical Drive Bay</b></p> <p><b>Expansion Slots</b></p> <p><b>Management</b></p> <p><b>Form Factor</b></p> <p><b>Warranty</b></p>	<p>(1) Intel® Xeon® E5-2650L (1.8GHz/8-core/20MB/8.0GT-s QPI/70W, DDR3-1600, HT, Turbo2- 2/2/3/3/4/4/5/5)</p> <p>20MB Level 3 cache</p> <p>32GB (4x 8GB) PC3L-10600R (DDR3-1333 Registered DIMMs at 1.35V) <b>NOTE: Total of 16 DIMM slots. Only eight (8) usable with single processor.</b></p> <p>HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM</p> <p>HP Smart Array P220i Controller with 512MB FBWC RAID 0,1</p> <p>None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives</p> <p>SAS: 2.4TB; SATA: 2.0TB; SAS SSD: 1.6TB; SATA SSD 1.6TB</p> <p>None</p> <p>2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.</p> <p>HP iLO Management Engine (standard) Optional: HP iLO Scale-out or HP Insight Control</p> <p>Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure</p> <p>Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.</p>
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<p><b>HP ProLiant BL460c Gen8 E5-2640 1P 32GB-R P220i SFF Server</b> 666160-B21</p>	<p><b>Processor(s)</b></p> <p><b>Cache Memory</b></p> <p><b>Memory</b></p> <p><b>Network Controller</b></p> <p><b>Storage Controller</b></p> <p><b>Hard Drive</b></p> <p><b>Internal Storage</b></p> <p><b>Optical Drive Bay</b></p> <p><b>Expansion Slots</b></p> <p><b>Management</b></p> <p><b>Form Factor</b></p> <p><b>Warranty</b></p>	<p>(1) Intel® Xeon® E5-2640 (2.5GHz/6-core/15MB/7.2GT-s QPI/95W, DDR3-1333, HT, Turbo2- 3/3/4/4/5/5)</p> <p>15MB (1x15MB) Level 3 cache</p> <p>32GB (4x 8GB) PC3L-10600R (DDR3-1333 Registered DIMMs at 1.35V) <b>NOTE: Total of 16 DIMM slots. Only eight (8) usable with single processor.</b></p> <p>HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM</p> <p>HP Smart Array P220i Controller with 512MB FBWC RAID 0,1</p> <p>None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives</p> <p>SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB</p> <p>None</p> <p>2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.</p> <p>HP iLO Management Engine (standard) Optional: HP iLO Scale-out or HP Insight Control</p> <p>Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure</p> <p>Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.</p>
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<p><b>HP ProLiant BL460c Gen8 E5-2620 1P 16GB-R P220i SFF Server</b> 666161-B21</p>	<p><b>Processor(s)</b></p> <p><b>Cache Memory</b></p> <p><b>Memory</b></p> <p><b>Network Controller</b></p> <p><b>Storage Controller</b></p> <p><b>Hard Drive</b></p> <p><b>Internal Storage</b></p> <p><b>Optical Drive Bay</b></p> <p><b>Expansion Slots</b></p> <p><b>Management</b></p> <p><b>Form Factor</b></p> <p><b>Warranty</b></p>	<p>(1) Intel® Xeon® E5-2620 (2.0GHz/6-core/15MB/7.2GT-s QPI/95W, DDR3-1333, HT, Turbo2- 3/3/4/4/5/5)</p> <p>15MB (1x15MB) Level 3 cache</p> <p>16GB (4x 4GB) PC3L-10600R (DDR3-1333) Registered DIMMs at 1.35V <b>NOTE: Total of 16 DIMM slots. Only eight (8) usable with single processor.</b></p> <p>HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM</p> <p>Smart Array P220i Controller with 512MB FBWC RAID 0,1</p> <p>None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives</p> <p>SAS: 2.4TB; SATA: 2.0TB; SAS SSD: 1.6TB; SATA SSD: 1.6TB</p> <p>None</p> <p>2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.</p> <p>HP iLO Management Engine (standard) Optional: HP iLO Scale-out or HP Insight Control</p> <p>Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure</p> <p>Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.</p>
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### Models

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<b>HP ProLiant BL460c Gen8 E5-2609 1P 16GB-R P220i SFF Server</b> 666162-B21	<b>Processor(s)</b>	(1) Intel® Xeon® E5-2609 (2.4GHz/4-core/10MB/6.4GT-s QPI/80W)
	<b>Cache Memory</b>	10MB (1x10MB) Level 3 cache
	<b>Memory</b>	16GB (4x 4GB) PC3L-10600R (DDR3-1333) Registered DIMMs at 1.35V <b>NOTE:</b> Total of 16 DIMM slots. Only eight (8) usable with single processor.
	<b>Network Controller</b>	HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM
	<b>Storage Controller</b>	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	<b>Hard Drive</b>	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	<b>Internal Storage</b>	SAS: 2.4TB; SATA: 2.0TB; SAS SSD: 1.6TB; SATA SSD: 1.6TB
	<b>Optical Drive Bay</b>	None
	<b>Expansion Slots</b>	2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	<b>Management</b>	HP iLO Management Engine (standard) Optional: HP iLO Scale-out or HP Insight Control
	<b>Form Factor</b>	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
	<b>Warranty</b>	Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.

### Smart Buys

<b>HP ProLiant BL460c Gen8 E5-2670 2P Svr/S-Buy</b> 742688-S01	<b>Processor(s)</b>	(2) Intel® Xeon® E5-2670 (2.60GHz/8-core/20MB/115W) Processor
	<b>Cache Memory</b>	20MB (1x20MB) Level 3 cache
	<b>Memory</b>	128GB (8 x 16GB) PC3-12800R (DDR3-1600) Registered DIMMs at 1.5V <b>NOTE:</b> Total of 16 DIMM slots.
	<b>Network Controller</b>	HP FlexFabric 10Gb 2-port 554FLB FlexLOM
	<b>Storage Controller</b>	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	<b>Hard Drive</b>	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	<b>Internal Storage</b>	SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB
	<b>Optical Drive Bay</b>	None
	<b>Expansion Slots</b>	2 standard - Slot1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	<b>Management</b>	iLO Management Engine Standard
	<b>Form Factor</b>	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
	<b>Warranty</b>	Server warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

<b>HP ProLiant BL460c Gen8 E5-2650 2P Svr/S-Buy</b> 670656-S01	<b>Processor(s)</b>	(2) Intel® Xeon® E5-2650 (2.0GHz/8-core/20MB/95W), 64GB
	<b>Cache Memory</b>	20MB (1x20MB) Level 3 cache
	<b>Memory</b>	64GB (8x 8GB) PC3-12800R (DDR3-1600) Registered DIMMs at 1.5V <b>NOTE:</b> Total of 16 DIMM slots.
	<b>Network Controller</b>	HP FlexFabric 10Gb 2-port 554FLB FlexLOM
	<b>Storage Controller</b>	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	<b>Hard Drive</b>	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	<b>Internal Storage</b>	SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB
	<b>Optical Drive Bay</b>	None
	<b>Expansion Slots</b>	2 standard - Slot1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	<b>Management</b>	iLO Management Engine Standard
	<b>Form Factor</b>	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
	<b>Warranty</b>	Server warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

### Smart Buys

<b>HP ProLiant BL460c Gen8 E5-2640 2P Svr/S-Buy 670657-S01</b>	<b>Processor(s)</b>	(2) Intel® Xeon® E5-2640 (2.50GHz/6-core/15MB/95W)
	<b>Cache Memory</b>	15MB (1x15MB) Level 3 cache
	<b>Memory</b>	48GB (6x 8GB) PC3L-10600R (DDR3-1333) Registered DIMMs at 1.35V <b>NOTE: Total of 16 DIMM slots.</b>
	<b>Network Controller</b>	HP FlexFabric 10Gb 2-port 554FLB FlexLOM
	<b>Storage Controller</b>	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	<b>Hard Drive</b>	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	<b>Internal Storage</b>	SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB
	<b>Optical Drive Bay</b>	None
	<b>Expansion Slots</b>	2 standard - Slot1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	<b>Management</b>	iLO Management Engine Standard
	<b>Form Factor</b>	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
	<b>Warranty</b>	Server warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

<b>HP ProLiant BL460c Gen8 E5-2620 2P Svr/S-Buy 670658-S01</b>	<b>Processor(s)</b>	(2) Intel® Xeon® E5-2620 (2.0GHz/6-core/15MB/95W)
	<b>Cache Memory</b>	15MB (1x15MB) Level 3 cache
	<b>Memory</b>	32GB (4x 8GB) PC3L-10600R (DDR3-1333) Registered DIMMs at 1.35V <b>NOTE: Total of 16 DIMM slots.</b>
	<b>Network Controller</b>	HP FlexFabric 10Gb 2-port 554FLB FlexLOM
	<b>Storage Controller</b>	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	<b>Hard Drive</b>	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	<b>Internal Storage</b>	SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB
	<b>Optical Drive Bay</b>	None
	<b>Expansion Slots</b>	2 standard - Slot1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	<b>Management</b>	iLO Management Engine Standard
	<b>Form Factor</b>	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
	<b>Warranty</b>	Server warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

### Smart Buys

<p><b>HP ProLiant BL460c Gen8 E5-2650v2 2P Svr/S-Buy</b> 741446-S01</p>	<p><b>Processor(s)</b></p> <p><b>Cache Memory</b></p> <p><b>Memory</b></p> <p><b>Network Controller</b></p> <p><b>Storage Controller</b></p> <p><b>Hard Drive</b></p> <p><b>Internal Storage</b></p> <p><b>Optical Drive Bay</b></p> <p><b>Expansion Slots</b></p> <p><b>Management</b></p> <p><b>Form Factor</b></p> <p><b>Warranty</b></p>	<p>(2) Intel® Xeon® E5-2650 v2 (2.6GHz/8-core/20MB/8.0GT-s QPI/95W, DDR3-1866, HT, Turbo2- 4/4/4/4/5/6/7/8)</p> <p>20MB (1x20MB) Level 3 cache</p> <p>64GB (8x 8GB) Single Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory</p> <p>HP FlexFabric 10Gb 2-port 534FLB FlexibleLOM</p> <p>HP Smart Array P220i Controller with 512MB FBWC RAID 0,1</p> <p>None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives</p> <p>SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB</p> <p>None</p> <p>2 standard - Slot1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.</p> <p>iLO Management Engine Standard</p> <p>Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure</p> <p>Server warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.</p>
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<p><b>HP ProLiant BL460c Gen8 E5-2640v2 2P Svr/S-Buy</b> 741447-S01</p>	<p><b>Processor(s)</b></p> <p><b>Cache Memory</b></p> <p><b>Memory</b></p> <p><b>Network Controller</b></p> <p><b>Storage Controller</b></p> <p><b>Hard Drive</b></p> <p><b>Internal Storage</b></p> <p><b>Optical Drive Bay</b></p> <p><b>Expansion Slots</b></p> <p><b>Management</b></p> <p><b>Form Factor</b></p> <p><b>Warranty</b></p>	<p>(2) Intel® Xeon® E5-2640 v2 (2.0GHz/8-core/20MB/7.2GT-s QPI/95W, DDR3-1600, HT, Turbo2- 3/3/3/3/3/3/4/5)</p> <p>20MB (1x20MB) Level 3 cache</p> <p>48GB (6x 8GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory</p> <p>HP FlexFabric 10Gb 2-port 534FLB FlexibleLOM</p> <p>HP Smart Array P220i Controller with 512MB FBWC RAID 0,1</p> <p>None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives</p> <p>SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB</p> <p>None</p> <p>2 standard - Slot1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.</p> <p>iLO Management Engine Standard</p> <p>Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure</p> <p>Server warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.</p>
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### Smart Buys

<b>HP ProLiant BL460c Gen8 E5-2620v2 2P Svr/S-Buy</b> 741448-S01	<b>Processor(s)</b>	(2) Intel® Xeon® E5-2620 v2 (2.1GHz/6-core/15MB/7.2GT-s QPI/80W, DDR3-1600, HT, Turbo2- 3/3/3/3/4/5)
	<b>Cache Memory</b>	15MB (1x15MB) Level 3 cache
	<b>Memory</b>	32GB (4x 8GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory
	<b>Network Controller</b>	HP FlexFabric 10Gb 2-port 534FLB FlexibleLOM
	<b>Storage Controller</b>	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	<b>Hard Drive</b>	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	<b>Internal Storage</b>	SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB
	<b>Optical Drive Bay</b>	None
	<b>Expansion Slots</b>	2 standard - Slot1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	<b>Management</b>	iLO Management Engine Standard
	<b>Form Factor</b>	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
	<b>Warranty</b>	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, HP recommends the use of an HP 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)

<b>Models</b>	<p>HP ProLiant BL460c Gen8 E5-v2 10Gb FlexibleLOM Configure-to-order Blade Server <span style="float: right;">735151-B21</span></p> <p><b>Configurable Models ship with:</b></p> <ul style="list-style-type: none"> <li>One (1) FlexibleLOM connector providing a choice for one (1) of the supported 10Gb FlexibleLOMs (see Step 2)</li> <li>Two (2) HP small form factor hot-plug SAS/SATA/SSD hard drive bays</li> <li>Two (2) x16 PCIe I/O expansion slots (one Type A, one Type A/B)</li> <li>One (1) integrated USB connector and one (1) MicroSDHC connector</li> <li>One (1) TPM connector</li> <li>HP iLO Management Engine (standard)</li> </ul>
	<p>HP ProLiant BL460c Gen8 10Gb FlexibleLOM Configure-to-order Blade Server <span style="float: right;">641016-B21</span></p> <p><b>Configurable Models ship with:</b></p> <ul style="list-style-type: none"> <li>One (1) FlexibleLOM connector providing a choice for one (1) of the supported 10Gb FlexibleLOMs (see Step 2)</li> <li>One (1) HP Smart Array P220i Controller with 512MB FBWC and RAID 0 and 1 support</li> <li>Two (2) HP small form factor hot-plug SAS/SATA/SSD hard drive bays</li> <li>Two (2) x16 PCIe I/O expansion slots (one Type A, one Type A/B)</li> <li>One (1) integrated USB connector and one (1) MicroSDHC connector</li> <li>One (1) TPM connector</li> <li>HP iLO Management Engine (standard)</li> </ul> <p><b>NOTE:</b> The HP ProLiant BL460c Gen8 10Gb FlexibleLOM Configure-to-order Blade Server (641016-B21) cannot be configured the new 1866MHz HP Smart Memory or the new 1600MHz Low Voltage (1.35v) HP Smart Memory.</p> <p><b>NOTE:</b> The HP Smart Array P220i Controller FIO Kit (690164-B21) comes included with the HP ProLiant BL460c Gen8 10Gb FlexibleLOM Configure-to-order Blade Server (641016-B21). However, when choosing the HP ProLiant BL460c Gen8 E5-v2 10Gb FlexibleLOM Configure-to-order Blade Server (735151-B21), the HP Smart Array P220i Controller FIO Kit (690164-B21) must be added separately as part of the Server Blade Configuration Process.</p>

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

<b>HP Processors</b>	<p><b>NOTE:</b> All configure-to-order processor kits (i.e. xxxxxx-L21) contain one (1) processor.</p> <p><b>NOTE:</b> If two processors are desired, select one xxxxxx-L21 here in Step 2 and one xxxxxx-B21 in Step 4.</p> <p><b>E5-2600 v2 series Processors</b></p> <p>HP BL460c Gen8 Intel® Xeon® E5-2697v2 (2.7GHz/12-core/30MB/130W) FIO Processor Kit <span style="float: right;">718045-L21</span></p>
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### Configuration Information - Factory Integrated Models

HP BL460c Gen8 Intel® Xeon® E5-2695v2 (2.4GHz/12-core/30MB/115W) FIO Processor Kit	718054-L21
HP BL460c Gen8 Intel® Xeon® E5-2690v2 (3.0GHz/10-core/25MB/130W) FIO Processor Kit	718055-L21
HP BL460c Gen8 Intel® Xeon® E5-2680v2 (2.8GHz/10-core/25MB/115W) FIO Processor Kit	718056-L21
HP BL460c Gen8 Intel® Xeon® E5-2670v2 (2.5GHz/10-core/25MB/115W) FIO Processor Kit	718057-L21
HP BL460c Gen8 Intel® Xeon® E5-2667v2 (3.3GHz/8-core/25MB/130W) FIO Processor Kit	718366-L21
HP BL460c Gen8 Intel® Xeon® E5-2660v2 (2.2GHz/10-core/25MB/95W) FIO Processor Kit	718058-L21
HP BL460c Gen8 Intel® Xeon® E5-2650v2 (2.6GHz/8-core/20MB/95W) FIO Processor Kit	718358-L21
HP BL460c Gen8 Intel® Xeon® E5-2650Lv2 (1.7GHz/10-core/25MB/70W) FIO Processor Kit	718364-L21
HP BL460c Gen8 Intel® Xeon® E5-2643v2 (3.5GHz/6-core/25MB/130W) FIO Processor Kit	718367-L21
HP BL460c Gen8 Intel® Xeon® E5-2640v2 (2.0GHz/8-core/20MB/95W) FIO Processor Kit	718359-L21
HP BL460c Gen8 Intel® Xeon® E5-2637v2 (3.5GHz/4-core/15MB/130W) FIO Processor Kit	718368-L21
HP BL460c Gen8 Intel® Xeon® E5-2630v2 (2.6GHz/6-core/15MB/80W) FIO Processor Kit	718360-L21
HP BL460c Gen8 Intel® Xeon® E5-2630Lv2 (2.4GHz/6-core/15MB/60W) FIO Processor Kit	718365-L21
HP BL460c Gen8 Intel® Xeon® E5-2620v2 (2.1GHz/6-core/15MB/80W) FIO Processor Kit	718361-L21
HP BL460c Gen8 Intel® Xeon® E5-2609v2 (2.5GHz/4-core/10MB/80W) FIO Processor Kit	718362-L21
HP BL460c Gen8 Intel® Xeon® E5-2603v2 (1.8GHz/4-core/10MB/80W) FIO Processor Kit	718363-L21
<b>E5-2600 series Processors</b>	
HP BL460c Gen8 Intel® Xeon® E5-2690 (2.9GHz/8-core/20MB/135W) FIO Processor Kit	662076-L21
HP BL460c Gen8 Intel® Xeon® E5-2680 (2.7GHz/8-core/20MB/130W) FIO Processor Kit	662063-L21
HP BL460c Gen8 Intel® Xeon® E5-2670 (2.6GHz/8-core/20MB/115W) FIO Processor Kit	662064-L21
HP BL460c Gen8 Intel® Xeon® E5-2667 (2.9GHz/6-core/15MB/130W) FIO Processor Kit	667804-L21
HP BL460c Gen8 Intel® Xeon® E5-2665 (2.4GHz/8-core/20MB/115W) FIO Processor Kit	667803-L21
HP BL460c Gen8 Intel® Xeon® E5-2660 (2.2GHz/8-core/20MB/95W) FIO Processor Kit	662065-L21
HP BL460c Gen8 Intel® Xeon® E5-2650 (2.0GHz/8-core/20MB/95W) FIO Processor Kit	662066-L21
HP BL460c Gen8 Intel® Xeon® E5-2650L (1.8GHz/8-core/20MB/70W) FIO Processor Kit	662078-L21
HP BL460c Gen8 Intel® Xeon® E5-2643 (3.3GHz/4-core/10MB/130W) FIO Processor Kit	662072-L21
HP BL460c Gen8 Intel® Xeon® E5-2640 (2.5GHz/6-core/15MB/95W) FIO Processor Kit	662067-L21
HP BL460c Gen8 Intel® Xeon® E5-2637 (3.0GHz/2-core/5MB/80W) FIO Processor Kit	662077-L21
HP BL460c Gen8 Intel® Xeon® E5-2630 (2.3GHz/6-core/15MB/95W) FIO Processor Kit	662068-L21
HP BL460c Gen8 Intel® Xeon® E5-2630L (2.0GHz/6-core/15MB/60W) FIO Processor Kit	662079-L21
HP BL460c Gen8 Intel® Xeon® E5-2620 (2.0GHz/6-core/15MB/95W) FIO Processor Kit	662069-L21
HP BL460c Gen8 Intel® Xeon® E5-2609 (2.4GHz/4-core/10MB/80W) FIO Processor Kit	662070-L21
HP BL460c Gen8 Intel® Xeon® E5-2603 (1.8GHz/4-core/10MB/80W) FIO Processor Kit	667805-L21

### Configuration Information - Factory Integrated Models

**NOTE:** The Intel Xeon E5-2600 Processor Family cannot be configured with the new 1866MHz HP Smart Memory or the new 1600MHz Low Voltage (1.35v) HP Smart Memory.

**NOTE:** DIMM slots 4 and 5 are not accessible when either the E5-2690, the E5-2643, the E5-2643 v2, the E5-2637 v2, or the E5-2667 v2 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:** HT indicates that the processor model supports Intel® Hyper-Threading Technology.

**NOTE:** Turbo indicates the maximum potential frequency increment when using Intel® Turbo Boost Technology, with 8, 7, 6, 5, 4, 3, 2 or 1 core(s) active.

**NOTE:** DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.

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

**NOTE:** For the Intel® C600 Chipset E5-2600 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 Gen8 supports one or two processors.

**NOTE:** The BL460c Gen8 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:** All processors within the server must be identical.

**NOTE:** All processors support Intel® Hyper-Threading and Intel® Turbo Boost Technologies except the E5-2603 and E5-2609.

**NOTE:** The letter "L" following the model number indicates denotes lower wattage.

**NOTE:** The processor model as well as the memory configuration determines the maximum speed memory can operate. Please see the see the "Memory" section later in this document.

**NOTE:** The Intel Xeon E5-2620 processor does not support DIMMs at 1.35V. Using the HP RBSU, 1.35V DIMMs can be changed to operate at 1.5V.

**NOTE:** When HP 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage FIO Memory Kits are used with any processors except the E5-2690, the E5-2643, the E5-2637 v2, the E5-2643 v2, or the E5-2667 v2 all 16 DIMM slots on the BL460c Gen8 must be fully populated with these 24GB DIMMs. When HP 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage FIO Memory Kits are used with either the E5-2690, the E5-2643, the E5-2637 v2, the E5-2643 v2, or the E5-2667 v2, all 12 available DIMM slots on the BL460c Gen8 must be fully populated with these 24GB DIMMs.

**NOTE:** The HP ProLiant BL460c Gen8 10Gb FlexibleLOM Configure-to-order Blade Server (641016-B21) cannot be configured the new 1866MHz HP Smart Memory or the new 1600MHz Low Voltage (1.35v) HP Smart Memory.

**NOTE:** HP memory from previous generation servers are not qualified or warranted with this HP ProLiant BL460c Server. HP SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen8. For additional information, please see the HP SmartMemory QuickSpecs at:

#### HP Memory



### Configuration Information - Factory Integrated Models

[http://h18000.www1.hp.com/products/quickspecs/14225\\_na/14225\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14225_na/14225_na.html)

**NOTE:** LRDIMM, RDIMM and UDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen8 servers support RDIMM, UDIMM and LRDIMM.

**NOTE:** A minimum of one DIMM is required per server.

**NOTE:** For additional memory rules and guidelines, see the "Memory" section later in this document.

**NOTE:** When HP 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage FIO Memory Kits are used with any processors except the E5-2690, the E5-2643, the E5-2637 v2, the E5-2643 v2, or the E5-2667 v2 all 16 DIMM slots on the BL460c Gen8 must be fully populated with these 24GB DIMMs. When HP 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage FIO Memory Kits are used with either the E5-2690, the E5-2643, the E5-2637 v2 the E5-2643 v2, or the E5-2667 v2, all 12 available DIMM slots on the BL460c Gen8 must be fully populated with these 24GB DIMMs.

**NOTE:** The internal USB 2.0 Port is not available when the HP 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage FIO Memory Kits (700404-B21) are used.

#### HP SmartMemory

##### Registered DIMMs (RDIMMs) - E5-2600 v2 series Processors

HP 4GB (1x4GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713981-B21
HP 4GB (1x4GB) Single Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory Kit	708637-B21
HP 8GB (1x8GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	731765-B21
HP 8GB (1x8GB) Single Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory Kit	731761-B21
HP 16GB (1x16GB) Dual Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713985-B21
HP 16GB (1x16GB) Dual Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory Kit	708641-B21
HP 24 GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage FIO Memory Kit	716324-B21

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

HP 4GB (1x4GB) Single Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647893-B21
HP 4GB (1x4GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647895-B21
HP 8GB (1x8GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647897-B21
HP 8GB (1x8GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647899-B21
HP 8GB (1x8GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	690802-B21
HP 16GB (1x16GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647901-B21

### Configuration Information - Factory Integrated Models

HP 16GB (1x16GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	672631-B21
HP 24 GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage FIO Memory Kit	716324-B21
<b>Unbuffered with ECC DIMMs (UDIMMs) - E5-2600 v2 series Processors</b>	
HP 4GB (1x4GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713977-B21
HP 4GB (1x4GB) Dual Rank x8 PC3-14900E (DDR3-1866) Unbuffered CAS-13 Memory Kit	708633-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713979-B21
HP 8GB (1x8GB) Dual Rank x8 PC3-14900E (DDR3-1866) Unbuffered CAS-13 Memory Kit	708635-B21
<b>Unbuffered with ECC DIMMs (UDIMMs) - E5-2600 series Processors</b>	
HP 2GB (1x2GB) Single Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669320-B21
HP 2GB (1x2GB) Single Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647905-B21
HP 4GB (1x4GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669322-B21
HP 4GB (1x4GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647907-B21
HP 8GB (1x8GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669324-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647909-B21
<b>Load Reduced DIMMs (LRDIMMs) - E5-2600 v2 series Processors</b>	
HP 32GB (1x32GB) Quad Rank x4 PC3-14900L (DDR3-1866) Load Reduced CAS-13 Memory Kit	708643-B21
<b>Load Reduced DIMMs (LRDIMMs) - E5-2600 series Processors</b>	
HP 32GB (1x32GB) Quad Rank x4 PC3L-10600L (DDR3-1333) Load Reduced CAS-9 Low Voltage Memory Kit	647903-B21

**NOTE:** All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: [www.hp.com/go/ddr3memory-configurator](http://www.hp.com/go/ddr3memory-configurator).

**NOTE:** Depending on the memory configuration and processor model, 1600MHz and 1333MHz memory may operate at a lower speed. Please see the "Memory" section later in this document and the Online Memory Configuration Tool for details at: [www.hp.com/go/ddr3memory-configurator](http://www.hp.com/go/ddr3memory-configurator).

**NOTE:** For additional memory rules and guidelines, see the "Memory" section later in this document.

**NOTE:** For more information on ProLiant Energy Efficient Features, see: [www.hp.com/go/proliant-energy-efficient](http://www.hp.com/go/proliant-energy-efficient)

**NOTE:** PC3L is a low voltage memory.

#### HP Networking

#### FlexibleLOM Adapters



### Configuration Information - Factory Integrated Models

**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

HP Ethernet 10Gb 2-port 560FLB FIO Adapter	684214-B21
HP FlexFabric 10Gb 2-port 554FLB FIO Adapter	684212-B21
HP FlexFabric 10Gb 2-port 534FLB FIO Adapter	700742-B21
HP Flex-10 10Gb 2-port 530FLB FIO Adapter	684211-B21

**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: [www.hp.com/go/ProLiantNICs](http://www.hp.com/go/ProLiantNICs)

### Step 3: Choose Additional Factory Integration Options

<b>HP Insight Software</b>	HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO License	C6N36A
	<b>NOTE:</b> The HP Smart Array P220i Controller FIO Kit (690164-B21) comes included with the HP ProLiant BL460c Gen8 10Gb FlexibleLOM Configure-to-order Blade Server (641016-B21). However when choosing the HP ProLiant BL460c Gen8 E5-v2 10Gb FlexibleLOM Configure-to-order Blade Server (735151-B21), the HP Smart Array P220i Controller FIO Kit (690164-B21) must be added separately as part of the Server Blade Configuration Process.	
<b>Converged Infrastructure Management Software</b>	<b>HP OneView with iLO Advanced - Server hardware required on same purchase order</b>	
	HP OneView incl 3yr 24x7 Supp Bundle 1 Svr E-LTU	E5Y43AAE
	HP OneView for Blade Server incl 3yr 24x7 Supp FIO Bundle Physical 1 Svr Lic	F6Q89AA
	HP OneView for Blade Server incl 3yr 24x7 Supp FIO Bundle 1 Svr E-LTU	F6Q89AAE
<b>HP Storage Controllers</b>	HP Smart Array P220i Controller FIO Kit	690164-B21
<b>HP Storage Blades</b>	HP D2220sb Configure-to-order Storage Blade	QW918A

### 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:

- HP BladeSystem c3000 Enclosure QuickSpecs:  
[http://h18000.www1.hp.com/products/quickspecs/12790\\_na/12790\\_na.html](http://h18000.www1.hp.com/products/quickspecs/12790_na/12790_na.html)  
**NOTE:** The c3000 HP 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.
- HP BladeSystem c7000 Enclosure QuickSpecs:  
[http://h18000.www1.hp.com/products/quickspecs/12810\\_na/12810\\_na.html](http://h18000.www1.hp.com/products/quickspecs/12810_na/12810_na.html)  
**NOTE:** The c7000 HP 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.
- HP BladeSystem c-Class Interconnect and Mezzanine Components:  
<http://h18004.www1.hp.com/products/blades/components/c-class-interconnects.html> and  
<http://h18004.www1.hp.com/products/blades/components/c-class-adapters.html>

### Core Options

#### HP Networking

**NOTE:** Each 10 Gigabit Ethernet adapter requires a minimum of 2GB of server memory.

**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 (HP BladeSystem c7000 Enclosure) or bays 2-4 (HP BladeSystem c3000 Enclosure).

#### 10 Gigabit Ethernet Mezzanines

HP Ethernet 10Gb 2-port 560M Adapter

665246-B21

**NOTE:** Please see QuickSpecs for technical specifications and additional information at: [http://h18000.www1.hp.com/products/quickspecs/14478\\_na/14478\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14478_na/14478_na.html).

HP Flex-10 10Gb 2-port 530M Adapter

631884-B21

**NOTE:** Please see QuickSpecs for technical specifications and additional information at: [http://h18000.www1.hp.com/products/quickspecs/14217\\_na/14217\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14217_na/14217_na.html).

HP FlexFabric 10Gb 2-port 534M Adapter

700748-B21

**NOTE:** Please see QuickSpecs for technical specifications and additional information at: [http://h18000.www1.hp.com/products/quickspecs/14619\\_na/14619\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14619_na/14619_na.html)

HP Flex-10 10Gb 2-port 552M Adapter

674764-B21

**NOTE:** Please see QuickSpecs for technical specifications and additional information at: [http://h18000.www1.hp.com/products/quickspecs/14218\\_na/14218\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14218_na/14218_na.html)

HP FlexFabric 10Gb 2-port 554M Adapter

647590-B21

**NOTE:** Please see QuickSpecs for technical specifications and additional information at: [http://h18000.www1.hp.com/products/quickspecs/14221\\_na/14221\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14221_na/14221_na.html).

#### 1 Gigabit Ethernet Mezzanines

HP Ethernet 1Gb 4-port 366M Adapter

615729-B21

**NOTE:** Please see QuickSpecs for technical specifications and additional information at: [http://h18000.www1.hp.com/products/quickspecs/14335\\_na/14335\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14335_na/14335_na.html)

#### 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.

#### 10Gb FlexibleLOM Adapters

HP Flex-10 10Gb 2-port 530FLB Adapter

656590-B21

**NOTE:** Please see QuickSpecs for technical specifications and additional information at: [http://h18000.www1.hp.com/products/quickspecs/14216\\_na/14216\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14216_na/14216_na.html).

HP FlexFabric 10Gb 2-port 534FLB Adapter

700741-B21

**NOTE:** Please see QuickSpecs for technical specifications and additional information at: [http://h18000.www1.hp.com/products/quickspecs/14617\\_na/14617\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14617_na/14617_na.html)

HP FlexFabric 10Gb 2-port 554FLB Adapter

647586-B21

**NOTE:** Please see QuickSpecs for technical specifications and additional information at: [http://h18000.www1.hp.com/products/quickspecs/14219\\_na/14219\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14219_na/14219_na.html).

### Core Options

HP Ethernet 10Gb 2-port 560FLB Adapter	655639-B21
<b>NOTE:</b> Please see QuickSpecs for technical specifications and additional information at <a href="http://h18000.www1.hp.com/products/quickspecs/14331_na/14331_na.html">http://h18000.www1.hp.com/products/quickspecs/14331_na/14331_na.html</a>	
<b>1Gb FlexibleLOM Adapters</b>	
HP Ethernet 1Gb 2-port 361FLB Adapter	652500-B21
<b>NOTE:</b> Please see QuickSpecs for technical specifications and additional information at: <a href="http://h18000.www1.hp.com/products/quickspecs/14333_na/14333_na.html">http://h18000.www1.hp.com/products/quickspecs/14333_na/14333_na.html</a>	

### HP Fibre Channel

HP LPe1205A 8Gb Fibre Channel Host Bus Adapter for BladeSystem c-Class	659818-B21
<b>NOTE:</b> Please see QuickSpecs for technical specifications and additional information at <a href="http://h18000.www1.hp.com/products/quickspecs/14338_na/14338_na.html">http://h18000.www1.hp.com/products/quickspecs/14338_na/14338_na.html</a>	
HP QMH2672 16Gb Fibre Channel Host Bus Adapter	710608-B21
<b>NOTE:</b> Please see QuickSpecs for technical specifications and additional information at <a href="http://h18000.www1.hp.com/products/quickspecs/14622_na/14622_na.html">http://h18000.www1.hp.com/products/quickspecs/14622_na/14622_na.html</a>	
HP QMH2572 8Gb Fibre Channel Host Bus Adapter for BladeSystem c-Class	651281-B21
<b>NOTE:</b> Please see QuickSpecs for technical specifications and additional information at <a href="http://h18000.www1.hp.com/products/quickspecs/14230_na/14230_na.html">http://h18000.www1.hp.com/products/quickspecs/14230_na/14230_na.html</a>	

### HP Processors

#### E5-2600 v2 series Processors

HP BL460c Gen8 Intel® Xeon® E5-2697v2 (2.7GHz/12-core/30MB/130W) Processor Kit	718045-B21
HP BL460c Gen8 Intel® Xeon® E5-2695v2 (2.4GHz/12-core/30MB/115W) Processor Kit	718054-B21
HP BL460c Gen8 Intel® Xeon® E5-2690v2 (3.0GHz/10-core/25MB/130W) Processor Kit	718055-B21
HP BL460c Gen8 Intel® Xeon® E5-2680v2 (2.8GHz/10-core/25MB/115W) Processor Kit	718056-B21
HP BL460c Gen8 Intel® Xeon® E5-2670v2 (2.5GHz/10-core/25MB/115W) Processor Kit	718057-B21
HP BL460c Gen8 Intel® Xeon® E5-2667v2 (3.3GHz/8-core/25MB/130W) Processor Kit	718366-B21
HP BL460c Gen8 Intel® Xeon® E5-2660v2 (2.2GHz/10-core/25MB/95W) Processor Kit	718058-B21
HP BL460c Gen8 Intel® Xeon® E5-2650v2 (2.6GHz/8-core/20MB/95W) Processor Kit	718358-B21
HP BL460c Gen8 Intel® Xeon® E5-2650Lv2 (1.7GHz/10-core/25MB/70W) Processor Kit	718364-B21
HP BL460c Gen8 Intel® Xeon® E5-2643v2 (3.5GHz/6-core/25MB/130W) Processor Kit	718367-B21
HP BL460c Gen8 Intel® Xeon® E5-2640v2 (2.0GHz/8-core/20MB/95W) Processor Kit	718359-B21
HP BL460c Gen8 Intel® Xeon® E5-2637v2 (3.5GHz/4-core/15MB/130W) Processor Kit	718368-B21
HP BL460c Gen8 Intel® Xeon® E5-2630v2 (2.6GHz/6-core/15MB/80W) Processor Kit	718360-B21
HP BL460c Gen8 Intel® Xeon® E5-2630Lv2 (2.4GHz/6-core/15MB/60W) Processor Kit	718365-B21
HP BL460c Gen8 Intel® Xeon® E5-2620v2 (2.1GHz/6-core/15MB/80W) Processor Kit	718361-B21
HP BL460c Gen8 Intel® Xeon® E5-2609v2 (2.5GHz/4-core/10MB/80W) Processor Kit	718362-B21
HP BL460c Gen8 Intel® Xeon® E5-2603v2 (1.8GHz/4-core/10MB/80W) Processor Kit	718363-B21

#### E5-2600 series Processors

HP BL460c Gen8 Intel® Xeon® E5-2690 (2.9GHz/8-core/20MB/135W) Processor Kit	662076-B21
HP BL460c Gen8 Intel® Xeon® E5-2680 (2.7GHz/8-core/20MB/130W) Processor Kit	662063-B21
HP BL460c Gen8 Intel® Xeon® E5-2670 (2.6GHz/8-core/20MB/115W) Processor Kit	662064-B21
HP BL460c Gen8 Intel® Xeon® E5-2667 (2.9GHz/6-core/15MB/130W) Processor Kit	667804-B21

### Core Options

HP BL460c Gen8 Intel® Xeon® E5-2665 (2.4GHz/8-core/20MB/115W) Processor Kit	667803-B21
HP BL460c Gen8 Intel® Xeon® E5-2660 (2.2GHz/8-core/20MB/95W) Processor Kit	662065-B21
HP BL460c Gen8 Intel® Xeon® E5-2650 (2.0GHz/8-core/20MB/95W) Processor Kit	662066-B21
HP BL460c Gen8 Intel® Xeon® E5-2650L (1.8GHz/8-core/20MB/70W) Processor Kit	662078-B21
HP BL460c Gen8 Intel® Xeon® E5-2643 (3.3GHz/4-core/10MB/130W) Processor Kit	662072-B21
HP BL460c Gen8 Intel® Xeon® E5-2640 (2.5GHz/6-core/15MB/95W) Processor Kit	662067-B21
HP BL460c Gen8 Intel® Xeon® E5-2637 (3.0GHz/2-core/5MB/80W) Processor Kit	662077-B21
HP BL460c Gen8 Intel® Xeon® E5-2630 (2.3GHz/6-core/15MB/95W) Processor Kit	662068-B21
HP BL460c Gen8 Intel® Xeon® E5-2630L (2.0GHz/6-core/15MB/60W) Processor Kit	662079-B21
HP BL460c Gen8 Intel® Xeon® E5-2620 (2.0GHz/6-core/15MB/95W) Processor Kit	662069-B21
HP BL460c Gen8 Intel® Xeon® E5-2609 (2.4GHz/4-core/10MB/80W) Processor Kit	662070-B21
HP BL460c Gen8 Intel® Xeon® E5-2603 (1.8GHz/4-core/10MB/80W) Processor Kit	667805-B21

**NOTE:** The Intel Xeon E5-2600 Processor Family cannot be configured with the new 1866MHz HP Smart Memory or the new 1600MHz Low Voltage (1.35v) HP Smart Memory.

**NOTE:** DIMM slots 4 and 5 are not accessible when either the E5-2690, the E5-2643, the E5-2643 v2, the E5-2637 v2, or the E5-2667 v2 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:** HT indicates that the processor model supports Intel® Hyper-Threading Technology.

**NOTE:** Turbo indicates the maximum potential frequency increment when using Intel® Turbo Boost Technology, with 8, 7, 6, 5, 4, 3, 2 or 1 core(s) active.

**NOTE:** DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.

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

**NOTE:** For the Intel® C600 Chipset E5-2600 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 Gen8 supports one or two processors.

**NOTE:** The BL460c Gen8 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:** All processors within the server must be identical.

**NOTE:** All processors support Intel® Hyper-Threading and Intel® Turbo Boost Technologies except the E5-2603 and E5-2609.

**NOTE:** The letter "L" following the model number indicates denotes lower wattage.

**NOTE:** The processor model as well as the memory configuration determines the maximum speed memory can operate. Please see the see the "Memory" section later in this document.

**NOTE:** The Intel Xeon E5-2620 processor does not support DIMMs at 1.35V. Using the HP RBSU, 1.35V DIMMs can be changed to operate at 1.5V.

**NOTE:** When HP 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered



### Core Options

CAS-9 Low Voltage FIO Memory Kits are used with any processors except the E5-2690, the E5-2643, the E5-2637 v2, the E5-2643 v2, or the E5-2667 v2 all 16 DIMM slots on the BL460c Gen8 must be fully populated with these 24GB DIMMs. When HP 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage FIO Memory Kits are used with either the E5-2690, the E5-2643, the E5-2637 v2, the E5-2643 v2, or the E5-2667 v2, all 12 available DIMM slots on the BL460c Gen8 must be fully populated with these 24GB DIMMs.

### HP Memory

**NOTE:** The HP ProLiant BL460c Gen8 10Gb FlexibleLOM Configure-to-order Blade Server (641016-B21) cannot be configured the new 1866MHz HP Smart Memory or the new 1600MHz Low Voltage (1.35v) HP Smart Memory.

**NOTE:** HP memory from previous generation servers are not qualified or warranted with this HP ProLiant BL460c Gen8 Server. HP SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen8. For additional information, please see the HP SmartMemory QuickSpecs at:

[http://h18000.www1.hp.com/products/quickspecs/14225\\_na/14225\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14225_na/14225_na.html)

**NOTE:** LRDIMM, RDIMM and UDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen8 servers support RDIMM, UDIMM and LRDIMM.

**NOTE:** A minimum of one DIMM is required per server.

**NOTE:** For additional memory rules and guidelines, see the "Memory" section later in this document.

**NOTE:** When HP 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage FIO Memory Kits are used with any processors except the E5-2690, the E5-2643, the E5-2637 v2, the E5-2643 v2, or the E5-2667 v2 all 16 DIMM slots on the BL460c Gen8 must be fully populated with these 24GB DIMMs. When HP 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage FIO Memory Kits are used with either the E5-2690, the E5-2643, the E5-2637 v2, the E5-2643 v2, or the E5-2667 v2, all 12 available DIMM slots on the BL460c Gen8 must be fully populated with these 24GB DIMMs.

#### HP SmartMemory

##### Registered DIMMs (RDIMMs)

##### Registered DIMMs (RDIMMs) - E5-2600 v2 series Processors

HP 4GB (1x4GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit 713981-B21

HP 4GB (1x4GB) Single Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory Kit 708637-B21

HP 8GB (1x8GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit 731765-B21

HP 8GB (1x8GB) Single Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory Kit 731761-B21

HP 16GB (1x16GB) Dual Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit 713985-B21

HP 16GB (1x16GB) Dual Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory Kit 708641-B21

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



### Core Options

HP 4GB (1x4GB) Single Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647893-B21
HP 4GB (1x4GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647895-B21
HP 8GB (1x8GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647897-B21
HP 8GB (1x8GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647899-B21
HP 8GB (1x8GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	690802-B21
HP 16GB (1x16GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647901-B21
HP 16GB (1x16GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	672631-B21
<b>Unbuffered with ECC DIMMs (UDIMMs) - E5-2600 v2 series Processors</b>	
HP 4GB (1x4GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713977-B21
HP 4GB (1x4GB) Dual Rank x8 PC3-14900E (DDR3-1866) Unbuffered CAS-13 Memory Kit	708633-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713979-B21
HP 8GB (1x8GB) Dual Rank x8 PC3-14900E (DDR3-1866) Unbuffered CAS-13 Memory Kit	708635-B21
<b>Unbuffered with ECC DIMMs (UDIMMs) - E5-2600 series Processors</b>	
HP 2GB (1x2GB) Single Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669320-B21
HP 2GB (1x2GB) Single Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647905-B21
HP 4GB (1x4GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669322-B21
HP 4GB (1x4GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647907-B21
HP 8GB (1x8GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669324-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647909-B21
<b>Load Reduced DIMMs (LRDIMMs) - E5-2600 v2 series Processors</b>	
HP 32GB (1x32GB) Quad Rank x4 PC3-14900L (DDR3-1866) Load Reduced CAS-13 Memory Kit	708643-B21
<b>Load Reduced DIMMs (LRDIMMs) - E5-2600 series Processors</b>	
HP 32GB (1x32GB) Quad Rank x4 PC3L-10600L (DDR3-1333) Load Reduced CAS-9 Low Voltage Memory Kit	647903-B21

**NOTE:** Depending on the memory configuration and processor model, 1600MHz and 1333MHz memory may operate at a lower speed. Please see the "Memory" section later in this document and the Online Memory Configuration Tool for details at [www.hp.com/go/ddr3memory-configurator](http://www.hp.com/go/ddr3memory-configurator).

### Core Options

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#### HP Hard Drives

**NOTE:** The ProLiant BL460c Gen8 server includes the new HP hot-plug small form factor (SFF) SmartDrive carrier for enhanced management and reduced maintenance errors. HP drives from previous generation servers are not compatible with the BL460c Gen8 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:** HP 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.

#### **6G SATA Hot Plug with SmartDrive SFF (2.5-inch) Midline (MDL) Drives**

HP 1TB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive 655710-B21

HP 500GB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive 655708-B21

**NOTE:** Please see the QuickSpecs for technical specifications and additional information at [http://h18000.www1.hp.com/products/quickspecs/13021\\_na/13021\\_na.html](http://h18000.www1.hp.com/products/quickspecs/13021_na/13021_na.html).

#### **SAS Hot Plug with SmartDrive SFF (2.5-inch) Enterprise Drives**

HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) SC Dual Port Enterprise 3yr Warranty Hard Drive 718162-B21

HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive 697574-B21

HP 900GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive 652589-B21

HP 600GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive 652583-B21

HP 450GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive 652572-B21

HP 300GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive 652564-B21

HP 300GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive 652611-B21

HP 146GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive 652605-B21

#### **SAS Hot Plug SmartDrive SFF (2.5-inch) Midline Drives**

HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive 652749-B21

HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive 652745-B21

**NOTE:** Please see QuickSpecs for technical specifications and additional information at [http://h18000.www1.hp.com/products/quickspecs/12244\\_na/12244\\_na.html](http://h18000.www1.hp.com/products/quickspecs/12244_na/12244_na.html).

#### **6G SATA Value Endurance Hot Plug SFF (2.5-inch) Enterprise Boot Solid State Drives**

**NOTE:** These drives support Gen8 servers only.

HP 120GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Boot 3yr Wty Solid State Drive 717965-B21

HP 80GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Boot 3yr Wty Solid State Drive 734360-B21

#### **6G SATA Value Endurance Hot Plug SFF (2.5-inch) Enterprise Value Solid State Drives**

**NOTE:** These drives support Gen8 servers only.

HP 800GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive 717973-B21

### Core Options

HP 600GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Boot 3yr Wty Solid State Drive	739898-B21
HP 480GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	717971-B21
HP 300GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Boot 3yr Wty Solid State Drive	739888-B21
HP 240GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	717969-B21
<b>6G SAS MLC Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives</b>	
HP 800GB 6G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	690829-B21
HP 400GB 6G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	690827-B21
HP 200GB 6G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	690825-B21
<b>6G SAS SLC Hot Plug SFF (2.5-inch) Enterprise Performance Solid State Drives</b>	
HP 400GB 6G SAS SLC SFF (2.5-inch) SC Enterprise Performance 3yr Warranty Solid State Drive	653082-B21
HP 200GB 6G SAS SLC SFF (2.5-inch) SC Enterprise Performance 3yr Warranty Solid State Drive	653078-B21
<b>6G SATA ME Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives</b>	
HP 800GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691868-B21
HP 400GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691866-B21
HP 200GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691864-B21
HP 100GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691862-B21

**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:** Please see the QuickSpecs for technical specifications and information at [http://h18000.www1.hp.com/products/quickspecs/14038\\_na/14038\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14038_na/14038_na.html).

### Additional Options

#### HP Insight software

#### HP Insight Control

HP Insight Control including 1yr 24x7 Technical Support and Updates Single Server License C6N27A

HP Insight Control Server Provisioning Media Kit BD883A

HP Insight Management Media Kit C6N31A

**NOTE:** HP Insight Management Media Kit contains DVDs without licenses. Contains HP Systems Insight Manager, HP Insight Control, HP Matrix Operating Environment, and Virtual Connect Enterprise Manager software. Uses an integrated installer to perform quick and accurate software installation and updates.

**NOTE:** Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key.

**NOTE:** Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.

**NOTE:** Licenses ship without media. The HP Insight Management Media Kit can be ordered separately, or can be downloaded at <http://www.hp.com/go/insightupdates>

**NOTE:** For additional license kits, please see the QuickSpecs at:

[http://h18004.www1.hp.com/products/quickspecs/12631\\_na/12631\\_na.html](http://h18004.www1.hp.com/products/quickspecs/12631_na/12631_na.html)

#### HP Insight Control server deployment

HP Insight Control Server Deployment including 1yr 24x7 Support Electronic License T9082AAE

HP Insight Control Server Deployment including 1yr 24x7 Support Single Server License 452151-B21

**NOTE:** Licenses ship without media. The HP Insight Management Media Kit can be ordered separately, or can be downloaded at <http://www.hp.com/go/insightupdates>.

**NOTE:** Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.

**NOTE:** For additional license kits, please see the QuickSpecs at:

[http://h18004.www1.hp.com/products/quickspecs/12631\\_na/12631\\_na.html](http://h18004.www1.hp.com/products/quickspecs/12631_na/12631_na.html)

#### HP iLO Advanced License

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

HP iLO Advanced Blade 1 Server License with 3yr 24x7 Tech Support and Updates BD502A

HP iLO Advanced for BladeSystem including 1yr 24x7 Support Single Server License 512488-B21

#### HP Integrated Lights-Out (iLO)

#### HP iLO Scale Out

HP Integrated Lights-Out Scale-Out 3yr 24x7 Tech Support and Updates Flex Quantity License BD776A

HP Integrated Lights-Out Scale-Out 1yr 24x7 Tech Support and Updates Flex Quantity License BD778A

HP Integrated Lights-Out Scale-Out including 3yr 24x7 Tech Support and Updates Flex Qty E-LTU BD776AAE

HP Integrated Lights-Out Scale-Out including 1yr 24x7 Tech Support and Updates Flex Qty E-LTU BD778AAE

### Additional Options

HP Integrated Lights-Out Scale-Out including 3yr 24x7 Tech Support and Updates Tracking License BD777A

HP Integrated Lights-Out Scale-Out including 1yr 24x7 Tech Support and Updates Tracking License BD779A

**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 HP Software Technical Support Service.

**NOTE:** For additional license kits, including electronic delivery options, please see the iLO QuickSpecs at <http://www.hp.com/go/iLO>

**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 HP Software Technical Support Service.

**NOTE:** For additional license kits, please see the QuickSpecs at: [http://h18004.www1.hp.com/products/quickspecs/14276\\_na/14276\\_na.html](http://h18004.www1.hp.com/products/quickspecs/14276_na/14276_na.html)

### Converged Infrastructure Management Software **HP OneView**

#### **HP OneView with iLO Advanced**

HP OneView incl 3yr 24x7 Supp Phys 1 Svr Lic E5Y34A

HP OneView incl 3yr 24x7 Supp Flex Qty E-LTU E5Y35AAE

HP OneView Media Kit Phys No Lic E5Y37A

#### **HP OneView without iLO Advanced**

HP OneView w/o iLO Adv incl 3yr 24x7 Supp Phys 1 Svr Lic E5Y38A

HP OneView w/o iLO Adv inc 3yr 24x7 Supp Flex Qty E-LTU E5Y39AAE

**NOTE:** For additional license kits please see the QuickSpecs at [http://h18004.www1.hp.com/products/quickspecs/14621\\_na/14621\\_na.html](http://h18004.www1.hp.com/products/quickspecs/14621_na/14621_na.html).

### High Performance Clusters

#### **HP Cluster Management Utility**

HP Insight Cluster Management Utility 1yr 24x7 Flexible License QL803B

HP Insight Cluster Management Utility 3yr 24x7 Flexible License BD476A

**NOTE:** These part numbers can be used to purchase one certificate for multiple licenses and support with a single activation key. Each license is for one node (server). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key. Customer also will receive a support agreement.

HP Insight Cluster Management Utility Media BD477A

**NOTE:** For additional license kits please see the QuickSpecs at [http://h18004.www1.hp.com/products/quickspecs/12612\\_na/12612\\_na.html](http://h18004.www1.hp.com/products/quickspecs/12612_na/12612_na.html).

### HP I/O Accelerator Options

HP 1.2TB Multi Level Cell IO Accelerator for BladeSystem c-Class QK763A

HP 785GB Multi Level Cell IO Accelerator for BladeSystem c-Class QK762A

HP 365GB Multi Level Cell IO Accelerator for BladeSystem c-Class QK761A

### Additional Options

<b>HP Security</b>	<p>HP Trusted Platform Module Option <span style="float: right;">488069-B21</span></p> <p><b>NOTE:</b> The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 has not been tampered with while the system was offline.</p> <p><b>NOTE:</b> For more information about TPM, including a white paper, go to <a href="http://www.hp.com/go/TPM">http://www.hp.com/go/TPM</a>.</p> <p><b>NOTE:</b> ProLiant OS pre-installed units will come with the partition required for TPM deployment.</p> <p><b>NOTE:</b> The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.</p>
<hr/>	
<b>HP Storage Controllers</b>	<p><b>HP Smart Array P721m Controller</b></p> <p>HP Smart Array P721m/2G FBWC 4-ports Ext Mezzanine SAS Controller <span style="float: right;">650072-B21</span></p> <p>HP Smart Array P721m/512 4-ports Ext Mezzanine SAS Controller <span style="float: right;">655636-B21</span></p> <p><b>HP Smart Array P731m/2G Controller</b></p> <p>HP Smart Array P731m/2GB FBWC 6Gb 4-ports Ext Mezzanine SAS Controller <span style="float: right;">698535-B21</span></p> <p><b>NOTE:</b> Please see the QuickSpecs for Technical Specifications and additional information at <a href="http://h18000.www1.hp.com/products/quickspecs/14404_na/14404_na.html">http://h18000.www1.hp.com/products/quickspecs/14404_na/14404_na.html</a>. (Smart Array P721M Controller)</p> <p><a href="http://h18000.www1.hp.com/products/quickspecs/14626_na/14626_na.html">http://h18000.www1.hp.com/products/quickspecs/14626_na/14626_na.html</a>. (Smart Array P731M Controller)</p>
<hr/>	
<b>HP InfiniBand Mezzanines</b>	<p><b>NOTE:</b> 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.</p> <p><b>NOTE:</b> InfiniBand QDR and FDR speeds are only supported on the HP BladeSystem c7000 Enclosure. For additional information, please see the HP BladeSystem c7000 Enclosure and InfiniBand QuickSpecs at: <a href="http://h18004.www1.hp.com/products/quickspecs/12586_na/12586_na.html">http://h18004.www1.hp.com/products/quickspecs/12586_na/12586_na.html</a> <a href="http://h18000.www1.hp.com/products/quickspecs/13078_na/13078_na.html">http://h18000.www1.hp.com/products/quickspecs/13078_na/13078_na.html</a></p> <p>HP Infiniband QDR/Ethernet 10Gb 2-port 544M Adapter <span style="float: right;">644160-B21</span></p> <p><b>NOTE:</b> The QDR InfiniBand adapter may be installed in any mezzanine slot of the server.</p> <p>HP Infiniband FDR/Ethernet 10Gb/40Gb 2-port 544M Adapter <span style="float: right;">644161-B22</span></p> <p><b>NOTE:</b> 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.</p>
<hr/>	
<b>HP Storage Blades</b>	<p>HP D2220sb PCIe and StoreVirtual VSA Bundle <span style="float: right;">QW914A</span></p> <p>HP D2220sb PCIe w/(12) 900 GB 6G SAS HDD Bundle <span style="float: right;">QW915A</span></p>

### Additional Options

HP D2220sb Build-to-order Storage Blade QW917A

**NOTE:** For additional information, please see the QuickSpecs for technical specifications and additional information at:  
[http://h18000.www1.hp.com/products/quickspecs/14507\\_na/14507\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14507_na/14507_na.html)

#### HP Flash Media Kits for USB Drives

##### HP Flash Media Kits for USB Drives

HP 2GB USB Flash Media Drive Key Kit 608447-B21

**NOTE:** HP qualified blank USB key for use with HP ProLiant servers that support the VMware virtualization environment. HP recommends this industry standard USB flash device for use with VMware ESXi. USB device must be installed in the internal slot of the ProLiant server for use with VMware ESXi. Refer to HP VMware Getting Started Guide for installation instructions.

##### HP Enterprise Mainstream Flash Media Kits for Memory Cards

HP 8GB USB Enterprise Mainstream Flash Media Drive Key Kit 737953-B21

HP 8GB microSD Enterprise Mainstream Flash Media Kit 726116-B21

HP 32GB microSD Enterprise Mainstream Flash Media Kit 700139-B21

**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information:  
[http://h18000.www1.hp.com/products/quickspecs/13971\\_na/13971\\_na.html](http://h18000.www1.hp.com/products/quickspecs/13971_na/13971_na.html)

#### HP Care Pack Services

**Proactive Care** - Collaborative Support plus Proactive services delivered by the on shore/near shore Advanced Solution Center (ASC) and backed by the global delivery organization, end-to-end case ownership from a Technical Solution Specialists and Technical Account Manager who remotely delivers firmware/software revision management, proactive scans and incident trend reports. Recommended for customers running a virtualized infrastructure and/or customers who desire an enhanced call support experience.

HP 3 year 4 hour 24x7 ProLiant BL4xxc Proactive Care Service U3B14E

HP 3 year 4 hour 24x7 with Defective Media Retention ProLiant BL4xxc Proactive Care Service U3B17E

HP 3 year 6 hour Call To Repair 24x7 ProLiant BL4xxc Proactive Care Service U3B20E

HP 3 year 6hr Call To Repair 24x7 with Defective Media Retention ProLiant BL4xxc Proactive Care SVC U3B23E

Proactive Care Personalized Support Environmental Option - to add an onsite Account Support Manager (ASM) to Proactive Care. ASM is an assigned resource who delivers support planning and brings technical expertise and best practices advice for the customer's environment.

HP 3 year ISS ProactiveCare Personalized Support U6W98E

**Installation Services** - reduce the time required to get your system up and running and help minimize disruptions to your business.

HP Install c-Class Server Blade Service UE493E

HP Hardware Installation during Non Standard Hours c-Class Enclosure and Server Blade Service UG869E

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



### Memory

For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool:

[www.hp.com/go/ddr3memory-configurator](http://www.hp.com/go/ddr3memory-configurator)

#### Memory Subsystem Architecture

Each Intel® Xeon® E5-2600 family or Intel® Xeon® E5-2600 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 32GB capacity DIMMs are supported for 512GB of memory (16 DIMM slots x 32GB 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.
- RDIMMs operating at either 1.35V or 1.5V may be mixed in any order, but the system will power them at the higher voltage.
- LRDIMM, RDIMM and UDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen8 servers support RDIMM, UDIMM and LRDIMM.
- The Intel Xeon E5-2620 processor does not support DIMMs at 1.35V.
- 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.
- HP memory from previous generation servers is not compatible with the BL460c Gen8 Server Blade.
- To realize the performance memory capabilities listed in this document, HP SmartMemory is required. For additional information, please see the HP SmartMemory QuickSpecs at: [http://h18000.www1.hp.com/products/quickspecs/14225\\_na/14225\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14225_na/14225_na.html).
- For memory population rules and additional memory guidelines, please see the BL460c Gen8 user guide at <http://www.hp.com/support>.

#### BL460c Gen8 Supported Memory Bandwidth on Intel® Xeon® E5-2600 series Processors

DIMM Type	Registered DIMMS (RDIMMs)								Load Reduced (LRDIMMs)	Unbuffered with ECC DIMMs (UDIMMs)					
	Single Rank (1R)		Dual Rank (2R)				Three Rank (3R)	Quad Rank (4R)	Single Rank (1R)	Dual Rank (2R)					
DIMM Capacity	4GB	4GB	8GB	8GB	8GB	16GB	16GB	24GB	32GB	2GB	2GB	4GB	4GB	8GB	8GB
DIMM Native Speed (MHz)	1333	1600	1600	1333	1600	1333	1600	1333	1333	1333	1600	1333	1600	1600	1333
Voltage*	LV	Std	Std	LV	Std	LV	Std	LV	LV	LV	Std	LV	Std	Std	LV

**NOTE:** \*LV= low voltage at 1.35V; Std = standard voltage at 1.5V.

#### SLOTS THAT CAN BE POPULATED

16 slot servers	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
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### Memory

MAXIMUM CAPACITY (GB) *															
16 slot servers	64	64	128	128	128	256	256	384	512	32	32	64	64	128	128

POPULATED DIMM SPEED (MHz)															
1 DIMM Per Channel (1DPC)	1333	1600	1600	1333	1600	1333	1600	n/a	1333**	1333	1600	1333	1600	1600	1333
2 DIMM Per Channel (2DPC)	1333	1600	1600	1333	1600	1333	1600	1333****	1333**	1333***	1600	1333***	1600	1600	1333

\* Maximum capacity will vary based on individual server platform qualification schedule

\*\*LRDIMM enables 3 DIMMs per channel. HP SmartMemory will supports up to 3DPC@DDR3-1066 at 1.35V. Third party memory may only support 3DPC @DDR3-1066 at 1.5V.

\*\*\*Using HP SmartMemory, UDIMMs at 2DPC are supported up to 1333MHz. Third party UDIMMs at 2DPC may only support up to 1066MHz

\*\*\*\* Only supported on BL460c Gen8

**NOTE:** Maximum memory speed is a function of the processor QPI bus speed; see the table below "Memory Speed by Processor Model".

**NOTE:** When HP 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage FIO Memory Kits are used with processors except the E5-2690, the E5-2643, the E5-2637 v2, the E5-2643 v2, or the E5-2667 v2 all 16 DIMM slots on the BL460c Gen8 must be fully populated with these 24GB DIMMs. When HP 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage FIO Memory Kits are used with either the E5-2690, the E5-2643, the E5-2637 v2, or the E5-2643 v2, or the E5-2667 v2, all 12 available DIMM slots on the BL460c Gen8 must be fully populated with these 24GB DIMMs.

**NOTE:** The internal USB 2.0 Port is not available when the HP 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage FIO Memory Kits (700404-B21) are used.

Intel Gen8 Supported Memory Bandwidth on E5-2600v2 series Processor												
DIMM Type	Register DIMM							Load Reduced (LRDIMMs)	Unbuffered DIMM			
DIMM Rank	Single Rank (1R)		Single Rank (1R)	Single Rank (1R)	Dual Rank (2R)	Dual Rank (2R)	Three Rank (3R)	Quad Rank (4R)	Dual Rank (2R)			
DIMM Capacity - >	4GB	4GB	8GB	8GB	16GB	16GB	24GB	32GB	4GB	4GB	8GB	8GB
DIMM Native Speed (MT/s) - >	1600	1866	1600	1866	1600	1866	1333	1866	1600	1866	1600	1866
Voltage	LV	Std	LV	Std	LV	Std	LV	Std	LV	Std	LV	Std
SLOTS THAT CAN BE POPULATED												
16 slot servers	16	16	16	16	16	16	16	16	16	16	16	16

### Memory

64 slot servers#	64	64	64	64	64	64	64	64	n/a	n/a	n/a	n/a
<b>MAXIMUM CAPACITY (GB) *</b>												
16 slot servers	64	64	128	128	256	256	384	512	64	64	128	128
<b>POPULATED DIMM SPEED (MT/s)</b>												
1 DIMM Per Channel	1600	1866	1600	1866	1600	1866	n/a	1866	1600	1866	1600	1866
2 DIMM Per Channel	1600	1866	1600	1866	1600	1866	1333###	1866	1600	1866	1600	1866
<p>Memory speed is a function of the processor QPI bus speed.</p> <p>* Maximum capacity will vary based on individual server platform qualification schedule</p> <p>****For HP SmartMemory, UDIMM is supported at 2DPC@DDR3-1333. Third party memory may only support up to 2DPC@DDR3-1066. Only supported on BL460c Gen8.</p> <p># All configurations on 64 slot server run at DDR3-1066.</p> <p>## RBSU setting required</p> <p>### with IVB processor</p>												

### Memory Speed by E5-2600 Series Processor Model

Processor Models	Supported Memory Speeds
E5-2680, E5-2670, E5-2667, E5-2665, E5-2660, E5-2650, E5-2650L, E5-2637	1600/1333/1066MHz
E5-2640, E5-2630, E5-2630L, E5-2620	1333/1066MHz
E5-2609, E5-2603	1066MHz

### Memory Speed by E5-2600 v2 Series Processor Model

Processor Models	Supported Memory Speeds
E5-2697 v2, E5-2695 v2, E5-2690 v2, E5-2680 v2, E5-2670 v2, E5-2667 v2, E5-2660 v2, E5-2650 v2, E5-2643 v2, E5-2637 v2	1866/1600MHz
E5-2640 v2, E5-2630 v2, E5-2620 v2, E5-2650L v2, E5-2630L v2	1600MHz
E5-2609 v2, E5-2603 v2	1333MHz

### Standard and Maximum Memory Capacity (Pre-configured Models) for E5-2600 Series

Pre Configured Models	Standard Memory	Maximum Memory Plus Optional Memory	Standard Memory Replaced with Optional Memory
Intel Xeon E5-2670, E5-2660	64GB (8x 8GB)	192GB (8x 8GB + 8x 16GB)	512GB (16x 32GB)
Intel Xeon E5-2650, E5-2650L	32GB (4x 8GB)	224GB (4x 8GB + 12x 16GB)	512GB (16x 32GB)
Intel Xeon E5-2620, E5-2609	16GB (4x 4GB)	208GB (4x 4GB + 12x 16GB)	512GB (16x 32GB)

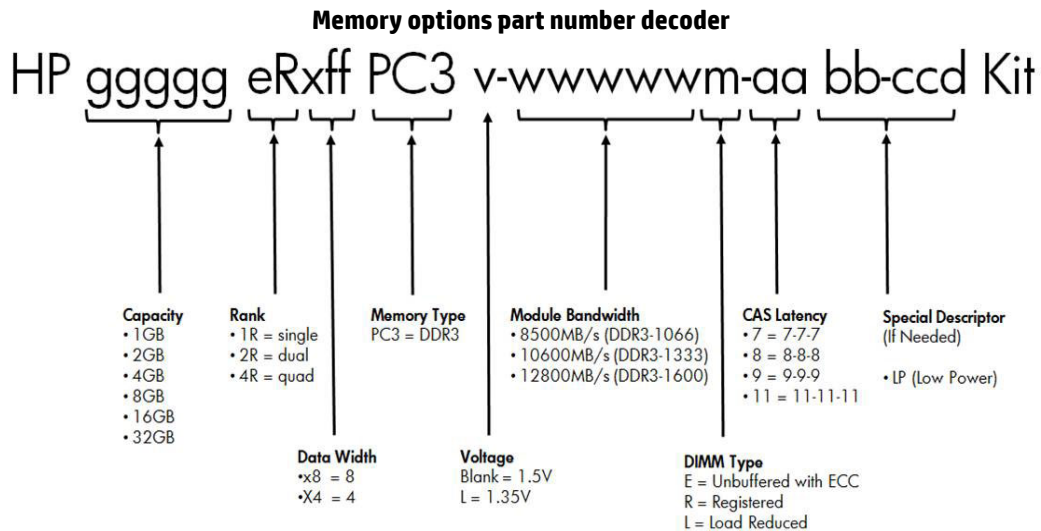
### Standard and Maximum Memory Capacity (Pre-configured Models) for E5-2600 v2 Series

### Memory

Pre Configured Models	Standard Memory	Maximum Memory Plus Optional Memory	Standard Memory Replaced with Optional Memory
Intel Xeon E5-2670 v2, E5-2660 v2	64GB (4x 16GB)	256GB (4x 16GB + 12x 16GB)	512GB (16x 32GB)
Intel Xeon E5-2650 v2, E5-2650L v2, E5-2640 v2	32GB (2x 16GB)	256GB (2x 16GB + 14x 16GB)	512GB (16x 32GB)
Intel Xeon E5-2620 v2, E5-2609 v2	16GB (2x 8GB)	240GB (2x 8GB + 14x 16GB)	512GB (16x 32GB)

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

- 2GB = 2,048MB
- 4GB = 4,096MB
- 8GB = 8,192MB
- 16GB = 16,384MB
- 32GB = 32,768MB



Following are memory options available from HP:

#### HP Memory

**NOTE:** The HP ProLiant BL460c Gen8 10Gb FlexibleLOM Configure-to-order Blade Server (641016-B21) cannot be configured the new 1866MHz HP Smart Memory or the new 1600MHz Low Voltage (1.35v) HP Smart Memory.

**NOTE:** HP memory from previous generation servers are not qualified or warranted with this HP ProLiant BL460c Gen8 Server. HP SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen8. For additional information, please see the HP SmartMemory QuickSpecs at:

[http://h18000.www1.hp.com/products/quickspecs/14225\\_na/14225\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14225_na/14225_na.html)

**NOTE:** LRDIMM, RDIMM and UDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen8 servers support RDIMM, UDIMM and LRDIMM.

#### HP SmartMemory

### Memory

#### Registered DIMMs (RDIMMs)

##### Registered DIMMs (RDIMMs) - E5-2600 v2 series Processors

HP 4GB (1x4GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713981-B21
HP 4GB (1x4GB) Single Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory Kit	708637-B21
HP 8GB (1x8GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	731765-B21
HP 8GB (1x8GB) Single Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory Kit	731761-B21
HP 16GB (1x16GB) Dual Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713985-B21
HP 16GB (1x16GB) Dual Rank x4 PC3-14900R (DDR3-1866) Registered CAS-13 Memory Kit	708641-B21

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

HP 4GB (1x4GB) Single Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647893-B21
HP 4GB (1x4GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647895-B21
HP 8GB (1x8GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647897-B21
HP 8GB (1x8GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647899-B21
HP 8GB (1x8GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	690802-B21
HP 16GB (1x16GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647901-B21
HP 16GB (1x16GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	672631-B21

##### Unbuffered with ECC DIMMs (UDIMMs) - E5-2600 v2 series Processors

HP 4GB (1x4GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713977-B21
HP 4GB (1x4GB) Dual Rank x8 PC3-14900E (DDR3-1866) Unbuffered CAS-13 Memory Kit	708633-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713979-B21
HP 8GB (1x8GB) Dual Rank x8 PC3-14900E (DDR3-1866) Unbuffered CAS-13 Memory Kit	708635-B21

##### Unbuffered with ECC DIMMs (UDIMMs) - E5-2600 series Processors

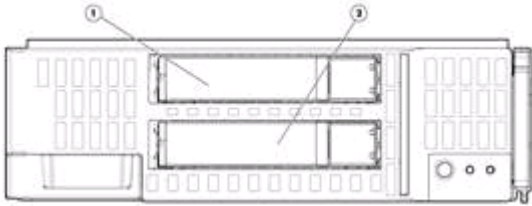
HP 2GB (1x2GB) Single Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669320-B21
HP 2GB (1x2GB) Single Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647905-B21
HP 4GB (1x4GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669322-B21

### Memory

HP 4GB (1x4GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647907-B21
HP 8GB (1x8GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669324-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647909-B21
<b>Load Reduced DIMMs (LRDIMMs) - E5-2600 v2 series Processors</b>	
HP 32GB (1x32GB) Quad Rank x4 PC3-14900L (DDR3-1866) Load Reduced CAS-13 Memory Kit	708643-B21
<b>Load Reduced DIMMs (LRDIMMs) - E5-2600 series Processors</b>	
HP 32GB (1x32GB) Quad Rank x4 PC3L-10600L (DDR3-1333) Load Reduced CAS-9 Low Voltage Memory Kit	647903-B21

**NOTE:** Depending on the memory configuration and processor model, 1600MHz and 1333MHz memory may operate at a lower speed. Please see the "Memory" section later in this document and the Online Memory Configuration Tool for details at [www.hp.com/go/ddr3memory-configurator](http://www.hp.com/go/ddr3memory-configurator).

### Storage



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

### Teradici PCoIP® Hardware Accelerator

Teradici PCoIP® Hardware Accelerator (APEX 2800) for HP Gen 8 Server Blades

**NOTE:** This is a third party product marketed, sold and supported by the solution's vendor. For more information, check vendor's website at: [www.teradici.com/hardware-accelerator](http://www.teradici.com/hardware-accelerator)

**NOTE:** This solution must be purchased separately and is available from solution vendor's authorized resellers. HP does not resell or factory integrate the solution

**NOTE:** This solution is supported by the vendor on servers:

- HP ProLiant BL460c Gen8 Server Blade
- HP ProLiant WS460c Gen8 Graphics Expansion Blade

**NOTE:** Teradici, PCoIP and PC-over-IP are trademarks of Teradici Corporation and may be registered in the United States and/or other countries

### Technical Specifications

<b>System Unit</b>	<b>Dimensions</b> (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)
	<b>Weight</b> (approximate)	<p>Maximum: all processors, 16 DIMMs, hard drives, mezzanine cards, and two flash cache batteries installed) 14.00 lb (6.33 kg)</p> <p>Minimum: one processor and 2 DIMMs installed 10.50 lb (4.75 kg)</p>
	<b>Power Specifications</b>	<p>For power specifications including input requirements, BTU rating, and power supply output, please see the:</p> <ul style="list-style-type: none"> <li>• HP BladeSystem c3000 Enclosure QuickSpecs at <a href="http://h18000.www1.hp.com/products/quickspecs/12790_na/12790_na.html">http://h18000.www1.hp.com/products/quickspecs/12790_na/12790_na.html</a>.</li> <li>• HP BladeSystem c7000 Enclosure QuickSpecs at <a href="http://h18000.www1.hp.com/products/quickspecs/12810_na/12810_na.html">http://h18000.www1.hp.com/products/quickspecs/12810_na/12810_na.html</a>.</li> </ul> <p>To review typical system power ratings use the HP Power Advisor which is available via the online tool located at <a href="http://www.hp.com/go/hppoweradvisor">www.hp.com/go/hppoweradvisor</a>.</p>
	<b>System Inlet Temperature</b>	<p><b>Operating</b> 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.</p> <p>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.</p> <p>System performance may be reduced if operating with a fan fault or above 30°C (86°F).</p> <p><b>Non-operating</b> -30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).</p>
	<b>Relative Humidity</b> (non-condensing)	<p><b>Operating</b> 10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.</p> <p><b>Non-operating</b> 5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.</p>
	<b>Altitude</b>	<p><b>Operating</b> 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).</p> <p><b>Non-operating</b> 9,144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1,500 ft/min).</p>
	<b>Acoustic Noise</b>	For acoustic noise specifications, please see the HP BladeSystem c-Class



### Technical Specifications

Enclosures QuickSpecs located at:  
HP BladeSystem c3000 Enclosure QuickSpecs:  
[http://h18000.www1.hp.com/products/quickspecs/12790\\_na/12790\\_na.html](http://h18000.www1.hp.com/products/quickspecs/12790_na/12790_na.html)  
HP BladeSystem c7000 Enclosure QuickSpecs:  
[http://h18000.www1.hp.com/products/quickspecs/12810\\_na/12810\\_na.html](http://h18000.www1.hp.com/products/quickspecs/12810_na/12810_na.html)

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<b>HP Smart Array P220i Controller</b>	<b>Disk Drive Interface</b>	6Gb/s SAS (Serial Attached SCSI)
	<b>Server Interface</b>	x4 PCI Express host interface
	<b>Cache Memory</b>	512MB flash backed write cache (FBWC) cache standard
	<b>Logical Drives Supported</b>	64 (with included 512MB cache)
	<b>Host Memory Addressing</b>	64-bit, supporting servers memory space greater than 4GB
	<b>RAID Support</b>	RAID 1 (mirroring) and RAID 0 (striping)
	<b>Other</b>	Upgradeable firmware with recovery ROM Online drive flash (with SAS drives)

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<b>HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM</b>	<b>Type</b>	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)
	<b>Network Processor</b>	Emulex BE3
	<b>Data Transfer Method</b>	x8 PCI Express 2.0
	<b>Network Transfer Rate</b>	Two ports, each at 20Gbps full duplex; 40Gbps aggregate full duplex theoretical bandwidth <b>NOTE:</b> Each port is autosensing 1Gb/10Gb, and can interoperate with 1Gb or 10Gb HP BladeSystem c-Class interconnect components. Both ports will operate at the same speed. <b>NOTE:</b> Each port on the 554FLB adapter transmits from the server at 20Gbps (theoretical) full duplex.
	<b>IEEE Compliance</b>	802.1p, 802.1q, 802.1qau, 802.3ad, 802.3ae, 802.3ap (10GBase-KX4) and 802.3x
	<b>Standard Features</b>	ProLiant Teaming including Network Fault Tolerance, Transmit Load Balancing, and Switch-Assisted Load Balancing 9K Jumbo frames (4K Jumbo frames when in FCoE mode) Microsoft Windows Receive Side Scaling (RSS) Hardware-based accelerated iSCSI iSCSI boot Flex-10 capability Fibre Channel over Ethernet (FCoE) TCP/IP offload engine (stateless TCP/IP) Autosensing 1Gb/10Gb Ethernet

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### Technical Specifications

**Environment-friendly  
Products and Approach****End-of-life Management  
and Recycling**

Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: <http://www.hp.com/go/green>. To recycle your product, please go to: <http://www.hp.com/go/green> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

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

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