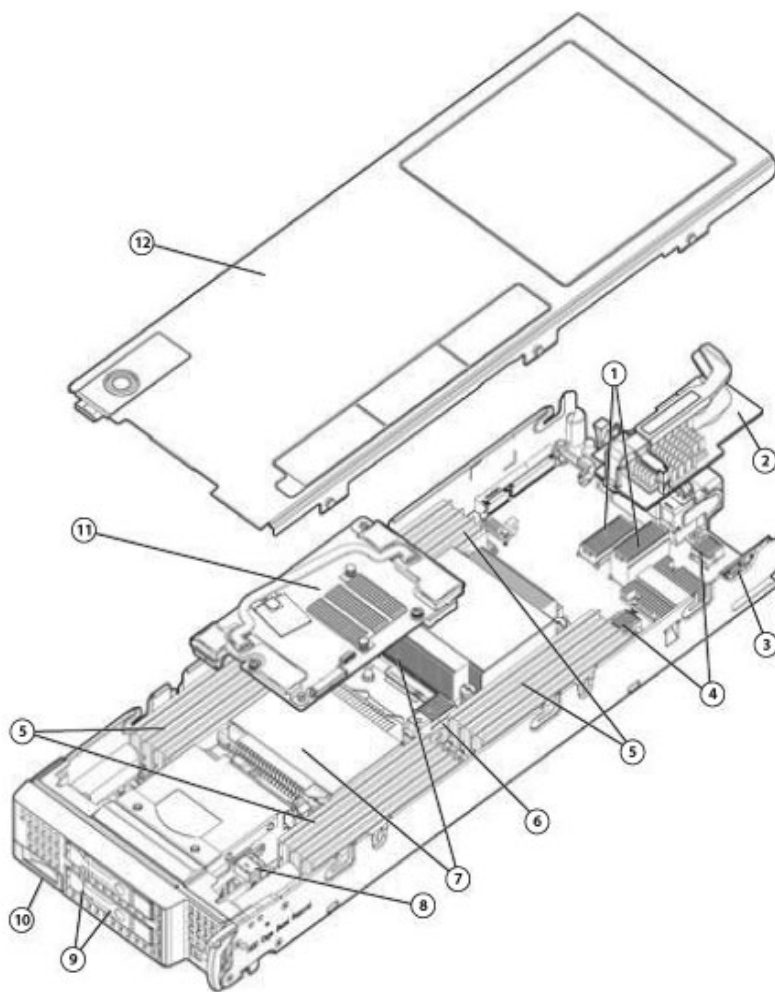


# QuickSpecs

## HP ProLiant BL460c Generation 8 (Gen8) Server Blade - Carrier Grade Supplement

### Overview

**HP ProLiant BL460c Generation 8 (Gen8) Server Blade - NEBS (GR-63 & GR-1089) and ETSI 300 386-2 certified.**



### 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   |

## 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 c7000 Enclosure - Carrier Grade Supplement QuickSpecs at [http://h18000.www1.hp.com/products/quickspecs/13181\\_na/13181\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/13181_na/13181_na.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:** The following Processors are considered NEBS certified, either by testing or Compliant by Similarity

**Processor**

One of the following  
depending on Model

**E5-2600 v2 series Processors**

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

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, Turbo2-2/2/2/2/2/2/2/2/3/4)

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)

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****Eight-Core Processors**

Intel® Xeon® E5-2670 (2.60GHz/8-core/20MB/115W) Processor

Intel® Xeon® E5-2665 (2.40GHz/8-core/20MB/115W) Processor

Intel® Xeon® E5-2660 (2.20GHz/8-core/20MB/95W) Processor

Intel® Xeon® E5-2658 (2.10GHz/8-core/20MB/95W) Processor

Intel® Xeon® E5-2650 (2.0GHz/8-core/20MB/95W) Processor

Intel® Xeon® E5-2648L (1.80GHz/8-core/20MB/70W) Processor

**Six-Core Processors**

Intel® Xeon® E5-2640 (2.50GHz/6-core/15MB/95W) Processor

Intel® Xeon® E5-2630 (2.30GHz/6-core/15MB/95W) Processor

Intel® Xeon® E5-2620 (2.0GHz/6-core/15MB/95W) Processor

**Dual-Core Processors**

Intel® Xeon® E5-2637 (3.0GHz/2-core/5MB/80W) Processor

# QuickSpecs

## HP ProLiant BL460c Generation 8 (Gen8) Server Blade-Carrier Grade Supplement

### Standard Features

#### 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 Six-core processors.

5MB (1x5MB) Level 3 cache

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

#### 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/>.

#### Upgradeability

Upgradeable to two (2) processors

#### 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

Maximum (RDIMM)

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

#### 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



# QuickSpecs

## HP ProLiant BL460c Generation 8 (Gen8) Server Blade-Carrier Grade Supplement

### Standard Features

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.

### 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)

### Storage Controller

All 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)

# QuickSpecs

## HP ProLiant BL460c Generation 8 (Gen8) Server Blade-Carrier Grade Supplement

### Standard Features

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/20Gb FlexibleLOM Configure-to-order Blade Server (641016-B21). However when choosing the HP ProLiant BL460c Gen8 E5-v2 10Gb/20Gb 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.

#### Maximum Internal Storage

One of the following depending on Model

|                      |       |           |
|----------------------|-------|-----------|
| Hot Plug SFF SAS     | 1.8TB | 2 x 900GB |
| Hot Plug SFF SAS SSD | 1.6TB | 2 x 800GB |

**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.

#### 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.

#### 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

#### 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

NEBS certified HP ProLiant BL460c Gen8 is a half-height server blade that plugs into the HP BladeSystem c7000 -48VDC enclosure.

#### Warranty

This product is covered by a global limited warranty and supported by HP Services and a worldwide



# QuickSpecs

## HP ProLiant BL460c Generation 8 (Gen8) Server Blade-Carrier Grade Supplement

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### Standard Features

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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**HP OneView** The HP OneView architecture combines server, storage, and networking with control of datacenter environmental 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>.

# QuickSpecs

## HP ProLiant BL460c Generation 8 (Gen8) Server Blade- Carrier Grade Supplement

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### Service and Support

**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/bladeprogram](http://www.hp.com/services/bladeprogram)



## 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> | HP ProLiant BL460c Gen8 E5-v2 10Gb FlexibleLOM Configure-to-order Blade Server | 735151-B21 |
|---------------|--|------------|

**Configurable Models ship with:**

One (1) FlexibleLOM connector providing a choice for one (1) of the supported 10Gb FlexibleLOMs (see Step 2)

Two (2) HP small form factor hot-plug SAS/SATA/SSD hard drive bays

Two (2) x16 PCIe I/O expansion slots (one Type A, one Type A/B)

One (1) integrated USB connector and one (1) MicroSDHC connector

One (1) TPM connector

HP iLO Management Engine (standard)

|  |  |            |
|--|--|------------|
|  | HP ProLiant BL460c Gen8 10Gb FlexibleLOM Configure-to-order Blade Server | 641016-B21 |
|--|--|------------|

**Configurable Models ship with:**

One (1) FlexibleLOM connector providing a choice for one (1) of the supported 10Gb FlexibleLOMs (see Step 2)

One (1) HP Smart Array P220i Controller with 512MB FBWC and RAID 0 and 1 support

Two (2) HP small form factor hot-plug SAS/SATA/SSD hard drive bays

Two (2) x16 PCIe I/O expansion slots (one Type A, one Type A/B)

One (1) integrated USB connector and one (1) MicroSDHC connector

One (1) TPM connector

HP iLO Management Engine (standard)

**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:** 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.

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

**NOTE:** All configure-to-order processor kits (i.e. xxxxxx-L21) contain one (1) processor.

**NOTE:** If two processors are desired, select one xxxxxx-L21 here in Step 2 and one xxxxxx-B21 in Step 4.

**E5-2600 v2 series Processors**

|  |            |
|--|------------|
| HP BL460c Gen8 Intel® Xeon® E5-2697v2 (2.7GHz/12-core/30MB/130W) FIO Processor Kit | 718045-L21 |
|--|------------|

|  |            |
|--|------------|
| 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 |
|--|------------|

## Configuration Information - Factory Integrated Models

|  |            |
|--|------------|
| Processor Kit  |            |
| 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 |

# QuickSpecs

## HP ProLiant BL460c Generation 8 (Gen8) Server Blade-Carrier Grade Supplement

### Configuration Information - Factory Integrated Models

|  |            |
|--|------------|
| 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 |

**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.

#### 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 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\\_div/14225\\_div.html](http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.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:** 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.

## Configuration Information - Factory Integrated Models

**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 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit | 761501-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 |
| HP 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit | 761501-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 |

# QuickSpecs

## HP ProLiant BL460c Generation 8 (Gen8) Server Blade-Carrier Grade Supplement

### Configuration Information - Factory Integrated Models

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

#### Load Reduced DIMMs (LRDIMMs) - E5-2600 v2 series Processors

HP 32GB (1x32GB) Quad Rank x4 PC3-14900L (DDR3-1866) Load Reduced CAS-13 Memory Kit 708643-B21

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

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

**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

**HP Insight Software** HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO License C6N36A

**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.

**Converged Infrastructure Management Software** **HP OneView with iLO Advanced - Server hardware required on same purchase order**

HP OneView incl 3yr 24x7 Supp Bundle 1 Svr E-LTU 85Y43AAE

HP OneView for Blade Server incl 3yr 24x7 Supp FIO Bundle Physical 1 Svr Lic F6Q89A

HP OneView for Blade Server incl 3yr 24x7 Supp FIO Bundle 1 Svr E-LTU F6Q89AAE



## Configuration Information - Factory Integrated Models

|                               |   |            |
|-------------------------------|---|------------|
| <b>HP Storage Controllers</b> | HP Smart Array P220i Controller FIO Kit         | 690164-B21 |
|                               | HP Smart Array P230i/512 6Gb FIO SAS Controller | 735062-B21 |

**NOTE:** When ordering the HP ProLiant BL460c Gen8 E5v2 10Gb FlexibleLOM Configure-to-order Blade Server (PN 735151-B21) please choose the HP Smart Array P220i/512 FIO Controller (PN 690164-B21) or the HP Smart Array P230i/512 6Gb FIO Controller (PN 735062-B21). When ordering the HP ProLiant BL460c Gen8 10Gb FlexibleLOM Configure-to-order Blade Server (PN 641016-B21) the HP Smart Array P220i FIO Controller (PN 690164-B21) ships standard.

**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\\_div/12790\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.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\\_div/12810\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.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>

**NOTE:** For optimal cooling and system performance the BL460c Gen8 Server Blade requires the c7000 enclosure to be configured with 10 fans and the c3000 enclosure to be configured with 6 fans.

## 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\\_div/14478\\_div.html](http://h18000.www1.hp.com/products/quickspecs/14478_div/14478_div.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\\_div/14217\\_div.html](http://h18000.www1.hp.com/products/quickspecs/14217_div/14217_div.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\\_div/14619\\_div.html](http://h18000.www1.hp.com/products/quickspecs/14619_div/14619_div.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\\_div/14218\\_div.html](http://h18000.www1.hp.com/products/quickspecs/14218_div/14218_div.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\\_div/14221\\_div.html](http://h18000.www1.hp.com/products/quickspecs/14221_div/14221_div.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\\_div/14335\\_div.html](http://h18000.www1.hp.com/products/quickspecs/14335_div/14335_div.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\\_div/14216\\_div.html](http://h18000.www1.hp.com/products/quickspecs/14216_div/14216_div.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\\_div/14617\\_div.html](http://h18000.www1.hp.com/products/quickspecs/14617_div/14617_div.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\\_div/14219\\_div.html](http://h18000.www1.hp.com/products/quickspecs/14219_div/14219_div.html).

HP Ethernet 10Gb 2-port 560FLB Adapter 655639-B21

**NOTE:** Please see QuickSpecs for technical specifications and additional information at [http://h18000.www1.hp.com/products/quickspecs/14331\\_div/14331\\_div.html](http://h18000.www1.hp.com/products/quickspecs/14331_div/14331_div.html)

**1Gb FlexibleLOM Adapters**

HP Ethernet 1Gb 2-port 361FLB Adapter 652500-B21

**NOTE:** Please see QuickSpecs for technical specifications and additional information

# QuickSpecs

## HP ProLiant BL460c Generation 8 (Gen8) Server Blade-Carrier Grade Supplement

### Core Options

at: [http://h18000.www1.hp.com/products/quickspecs/14333\\_div/14333\\_div.html](http://h18000.www1.hp.com/products/quickspecs/14333_div/14333_div.html)

#### HP InfiniBand Mezzanine Adapters

**NOTE:** When an InfiniBand adapter is installed in mezzanine slot 1, only one port is active (regardless of operating mode). When installed in any other mezzanine slot, both ports are active.

HP InfiniBand QDR/Ethernet 10Gb 2-port 544M Adapter 644160-B21

**NOTE:** The QDR InfiniBand adapter may be installed in any mezzanine slot of the server.

HP InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544M Adapter 644161-B22

**NOTE:** The FDR InfiniBand adapter must be installed in mezzanine slot 1 for FDR mode and may be installed in any mezzanine slot if operated in any other mode.

HP InfiniBand FDR 2-port 545M Adapter 702213-B21

**NOTE:** 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:

[http://h18004.www1.hp.com/products/quickspecs/12586\\_div/12586\\_div.html](http://h18004.www1.hp.com/products/quickspecs/12586_div/12586_div.html)

[http://h18000.www1.hp.com/products/quickspecs/13078\\_div/13078\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13078_div/13078_div.html)

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**HP Fibre Channel** HP QMH2572 8Gb Fibre Channel Host Bus Adapter 651281-B21

**NOTE:** Please see QuickSpecs for technical specifications and additional information at [http://h18000.www1.hp.com/products/quickspecs/14230\\_div/14230\\_div.html](http://h18000.www1.hp.com/products/quickspecs/14230_div/14230_div.html)

### 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





# QuickSpecs

## HP ProLiant BL460c Generation 8 (Gen8) Server Blade-Carrier Grade Supplement

### Core Options

|  |            |
|--|------------|
| 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 |
| <b>E5-2600 series Processors</b>   |            |
| 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 |
| 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

## Core Options

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.

## 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\\_div/14225\\_div.html](http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.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.

## 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 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit 761501-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

HP 24GB (1x24GB) Three Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit 761501-B21

# QuickSpecs

## HP ProLiant BL460c Generation 8 (Gen8) Server Blade-Carrier Grade Supplement

### Core Options

#### 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

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

#### Load Reduced DIMMs (LRDIMMs) - E5-2600 v2 series Processors

HP 32GB (1x32GB) Quad Rank x4 PC3-14900L (DDR3-1866) Load Reduced CAS-13 Memory Kit 708643-B21

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

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).

### 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.

**NOTE:** 12G SAS hard drives will only operate at 6G speeds in a ProLiant BL460c Gen8

#### 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\\_div/13021\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13021_div/13021_div.html).

## Core Options

**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 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\\_div/12244\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html).

**12G SAS High Endurance Hot Plug SFF (2.5-inch) Enterprise Performance Solid State Drives**

|  |            |
|--|------------|
| HP 800GB 12G SAS High Endurance SFF 2.5-in SC Enterprise Performance 3yr Wty Solid State Drive | 741159-B21 |
|--|------------|

**NOTE:** This drive supports Gen8 servers only.

|  |            |
|--|------------|
| HP 400GB 12G SAS High Endurance SFF 2.5-in SC Enterprise Performance 3yr Wty Solid State Drive | 741155-B21 |
|--|------------|

**NOTE:** This drive supports Gen8 servers only.

|  |            |
|--|------------|
| HP 200GB 12G SAS High Endurance SFF 2.5-in SC Enterprise Performance 3yr Wty Solid State Drive | 741151-B21 |
|--|------------|

**NOTE:** This drive supports Gen8 servers only.

**12G SAS Mainstream Endurance Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives**

|   |            |
|---|------------|
| HP 800GB 12G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive | 741146-B21 |
|---|------------|

**NOTE:** This drive supports Gen8 servers only.

|   |            |
|---|------------|
| HP 400GB 12G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive | 741142-B21 |
|---|------------|

**NOTE:** This drive supports Gen8 servers only.

|   |            |
|---|------------|
| HP 200GB 12G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive | 741138-B21 |
|---|------------|

**NOTE:** This drive supports Gen8 servers only.

**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 |
|---|------------|

|   |            |
|---|------------|
| HP 600GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive | 739898-B21 |
|---|------------|

## Core Options

|   |            |
|---|------------|
| State Drive   |            |
| HP 480GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive           | 717971-B21 |
| HP 300GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive           | 739888-B21 |
| HP 240GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive           | 717969-B21 |
| <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\\_div/14038\\_div.html](http://h18000.www1.hp.com/products/quickspecs/14038_div/14038_div.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 including 1yr 24x7 Technical Support and Updates Electronic License C6N28ABE

HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle FIO Electronic License C6N36ABE

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

## HP iLO Advanced License

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

HP iLO Advanced for BladeSystem including 3yr 24x7 Technical Support and Updates E-LTU E6U63ABE

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

HP iLO Advanced for BladeSystem including 1yr 24x7 Technical Support and Updates E-LTU E6U60ABE

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

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.

## Additional Options

**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\\_div/14276\\_div.html](http://h18004.www1.hp.com/products/quickspecs/14276_div/14276_div.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\\_div/14621\\_div.html](http://h18004.www1.hp.com/products/quickspecs/14621_div/14621_div.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\\_div/12612\\_div.html](http://h18004.www1.hp.com/products/quickspecs/12612_div/12612_div.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

**HP Security**

HP Trusted Platform Module Option 488069-B21

**NOTE:** The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 has not been tampered with while the system was offline.

**NOTE:** For more information about TPM, including a white paper, go to <http://www.hp.com/go/TPM>.

**NOTE:** ProLiant OS pre-installed units will come with the partition required for TPM deployment.

**NOTE:** The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.

# QuickSpecs

## HP ProLiant BL460c Generation 8 (Gen8) Server Blade-Carrier Grade Supplement

### Additional Options

|   |  |            |
|---|--|------------|
| <b>HP Storage Controllers</b>             | <b>HP Smart Array P721m Controller</b>   |            |
|   | HP Smart Array P721m/2GB FBWC 6Gb 4-ports Ext Mezzanine SAS Controller   | 650072-B21 |
|   | HP Smart Array P721m/FBWC 6Gb 4-ports Ext Mezzanine SAS Controller   | 655636-B21 |
|   | <b>HP Smart Array P731m Controller</b>   |            |
|   | HP Smart Array P731m/2GB FBWC 6Gb 4-ports Ext Mezzanine SAS Controller   | 698535-B21 |
|   | HP Smart Array P731m/512 FBWC 6Gb 4-ports Ext Mezzanine SAS Controller   | 698536-B21 |
|   | <b>NOTE:</b> Please see the QuickSpecs for Technical Specifications and additional information at<br><a href="http://h18000.www1.hp.com/products/quickspecs/14404_div/14404_div.html">http://h18000.www1.hp.com/products/quickspecs/14404_div/14404_div.html</a> .<br>(Smart Array P721M Controller)<br><a href="http://h18000.www1.hp.com/products/quickspecs/14626_div/14626_div.html">http://h18000.www1.hp.com/products/quickspecs/14626_div/14626_div.html</a> .<br>(Smart Array P731M Controller)                                    |            |
| <b>HP Secure Encryption</b>               | HP Secure Encryption No Media E-LTU per Drive  | D8S85AAE   |
|   | HP Secure Encryption No Media Flexible License per Drive   | D8S84A     |
|   | <b>NOTE:</b> HP Secure Encryption is supported on the HP Smart Array P731m and the P230i as an option. HP Secure Encryption licensing is based on the number of physical drives requiring encryption.  |            |
|   | <b>NOTE:</b> For more information about HP Secure Encryption, go to <a href="http://www.hp.com/go/hpsecureencryption">www.hp.com/go/hpsecureencryption</a> .   |            |
| <b>HP InfiniBand Mezzanines</b>           | <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.   |            |
|   | <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:<br><a href="http://h18004.www1.hp.com/products/quickspecs/12586_div/12586_div.html">http://h18004.www1.hp.com/products/quickspecs/12586_div/12586_div.html</a><br><a href="http://h18000.www1.hp.com/products/quickspecs/13078_div/13078_div.html">http://h18000.www1.hp.com/products/quickspecs/13078_div/13078_div.html</a> |            |
|   | HP Infiniband QDR/Ethernet 10Gb 2-port 544M Adapter  | 644160-B21 |
|   | <b>NOTE:</b> The QDR InfiniBand adapter may be installed in any mezzanine slot of the server.  |            |
|   | HP Infiniband FDR/Ethernet 10Gb/40Gb 2-port 544M Adapter   | 644161-B22 |
|   | <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.   |            |
|   | HP InfiniBand FDR 2-port 545M Adapter  | 702213-B21 |
| <b>HP Storage Blades</b>                  | HP D2220sb PCIe and StoreVirtual VSA Bundle  | QW914A     |
|   | HP D2220sb PCIe w/(12) 900 GB 6G SAS HDD Bundle  | QW915A     |
|   | HP D2220sb Build-to-order Storage Blade  | QW917A     |
|   | <b>NOTE:</b> For additional information, please see the QuickSpecs for technical specifications and additional information at:<br><a href="http://h18000.www1.hp.com/products/quickspecs/14507_div/14507_div.html">http://h18000.www1.hp.com/products/quickspecs/14507_div/14507_div.html</a>  |            |
| <b>HP Flash Media Kits for USB Drives</b> | <b>HP Flash Media Kits for USB Drives</b>  |            |
|   | <b>HP Enterprise Mainstream Flash Media Kits for Memory Cards</b>  |            |
|   | HP 8GB USB Enterprise Mainstream Flash Media Drive Key Kit   | 737953-B21 |
|   | HP 8GB microSD Enterprise Mainstream Flash Media Kit   | 726116-B21 |



## Additional Options

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\\_div/13971\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13971_div/13971_div.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 Server Blade Service UG869E

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

# QuickSpecs

## HP ProLiant BL460c Generation 8 (Gen8) Server Blade-Carrier Grade Supplement

### 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 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\\_div/14225\\_div.html](http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.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

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

\*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 |
|-----------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

#### MAXIMUM CAPACITY (GB)

|                 |    |    |     |     |     |     |     |     |    |    |    |    |     |     |
|-----------------|----|----|-----|-----|-----|-----|-----|-----|----|----|----|----|-----|-----|
| 16 slot servers | 64 | 64 | 128 | 128 | 128 | 256 | 256 | 512 | 32 | 32 | 64 | 64 | 128 | 128 |
|-----------------|----|----|-----|-----|-----|-----|-----|-----|----|----|----|----|-----|-----|

#### POPULATED DIMM SPEED (MHz)



# QuickSpecs

## HP ProLiant BL460c Generation 8 (Gen8) Server Blade- Carrier Grade Supplement

### Memory

|                           |      |      |      |      |      |      |      |        |        |      |        |      |      |         |
|---------------------------|------|------|------|------|------|------|------|--------|--------|------|--------|------|------|---------|
| 1 DIMM Per Channel (1DPC) | 1333 | 1600 | 1333 | 1600 | 1600 | 1333 | 1600 | 1333** | 1333   | 1600 | 1333   | 1600 | 1600 | 1333    |
| 2 DIMM Per Channel (2DPC) | 1333 | 1600 | 1333 | 1600 | 1600 | 1333 | 1600 | 1333** | 1333** | 1600 | 1333** | 1600 | 1600 | 1333*** |

\*\*Using HP SmartMemory, 1333MHz RDIMM operate at 1.35V for 2 DIMMs per channel (2DPC). Third party 1333MHz RDIMM memory may only support 1.5V at 2DPC.

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

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

# QuickSpecs

## HP ProLiant BL460c Generation 8 (Gen8) Server Blade-Carrier Grade Supplement

### Technical Specifications

|                    |   |  |
|--------------------|---|--|
| <b>System Unit</b> | <b>Dimensions</b> (H x W x D)<br>(with bezel) | 7.11 x 2.18 x 20.37 in (18.07 x 5.54 x 51.76 cm)   |
|                    | <b>Weight</b><br>(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_div/12790_div.html">http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html</a>.</li> <li>HP BladeSystem c7000 Enclosure QuickSpecs at <a href="http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html">http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.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>Operating 10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1,000 ft) above sea level to a maximum of 3,050 m (10,000 ft), no direct sustained sunlight.</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>Non-operating -30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).</p>  |
|                    | <b>Relative Humidity</b><br>(non-condensing)  | <p>Operating 10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.</p> <p>Non-operating 5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.</p>  |
|                    | <b>Altitude</b>                               | <p>Operating 3,050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1,500 ft/min).</p> <p>Non-operating 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 Enclosures QuickSpecs located at: HP BladeSystem c3000 Enclosure QuickSpecs:  |

## Technical Specifications

[http://h18000.www1.hp.com/products/quickspecs/12790\\_div/12790\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html)

HP BladeSystem c7000 Enclosure QuickSpecs:

[http://h18000.www1.hp.com/products/quickspecs/12810\\_div/12810\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html)

|   |  |  |
|---|--|--|
| <b>HP Smart Array P220i Controller</b>              | <b>Disk Drive Interface</b><br><b>Server Interface</b><br><b>Cache Memory</b><br><b>Logical Drives Supported</b><br><b>Host Memory Addressing</b><br><b>RAID Support</b><br><b>Other</b> | 6Gb/s SAS (Serial Attached SCSI)<br>x4 PCI Express host interface<br>512MB flash backed write cache (FBWC) cache standard<br>64 (with included 512MB cache)<br>64-bit, supporting servers memory space greater than 4GB<br>RAID 1 (mirroring) and RAID 0 (striping)<br>Upgradeable firmware with recovery ROM<br>Online drive flash (with SAS drives)  |
| <b>HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM</b> | <b>Type</b><br><br><b>Network Processor</b><br><b>Data Transfer Method</b><br><b>Network Transfer Rate</b><br><br><b>IEEE Compliance</b><br><br><b>Standard Features</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)<br>Emulex BE3<br>x8 PCI Express 2.0<br>Two ports, each at 20Gbps full duplex; 40Gbps aggregate full duplex theoretical bandwidth<br><b>NOTE: 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><br><b>NOTE: Each port on the 554FLB adapter transmits from the server at 20Gbps (theoretical) full duplex.</b><br>802.1p, 802.1q, 802.1qau, 802.3ad, 802.3ae, 802.3ap (10GBase-KX4) and 802.3x<br>ProLiant Teaming including Network Fault Tolerance, Transmit Load Balancing, and Switch-Assisted Load Balancing<br>9K Jumbo frames (4K Jumbo frames when in FCoE mode)<br>Microsoft Windows Receive Side Scaling (RSS)<br>Hardware-based accelerated iSCSI<br>iSCSI boot<br>Flex-10 capability<br>Fibre Channel over Ethernet (FCoE)<br>TCP/IP offload engine (stateless TCP/IP)<br>Autosensing 1Gb/10Gb Ethernet |
| <b>Environment-friendly Products and Approach</b>   | <b>End-of-life Management and Recycling</b>  | 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: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a> . To recycle your product, please go to: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.<br><br>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: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a> . These instructions may be used by recyclers and other WEEE treatment facilities  |

# QuickSpecs

## HP ProLiant BL460c Generation 8 (Gen8) Server Blade- Carrier Grade Supplement

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### Technical Specifications

as well as HP OEM customers who integrate and re-sell HP equipment.

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# QuickSpecs

## HP ProLiant BL460c Generation 8 (Gen8) Server Blade- Carrier Grade Supplement

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### Summary of Changes

| Date        | Version History     | Action  | Description of Change:                    |
|-------------|---------------------|---------|---|
| 30-May-2014 | From Version 1 to 2 | Changed | Changes were made throughout the document |

# QuickSpecs

## HP ProLiant BL460c Generation 8 (Gen8) Server Blade- Carrier Grade Supplement

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### Summary of Changes

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