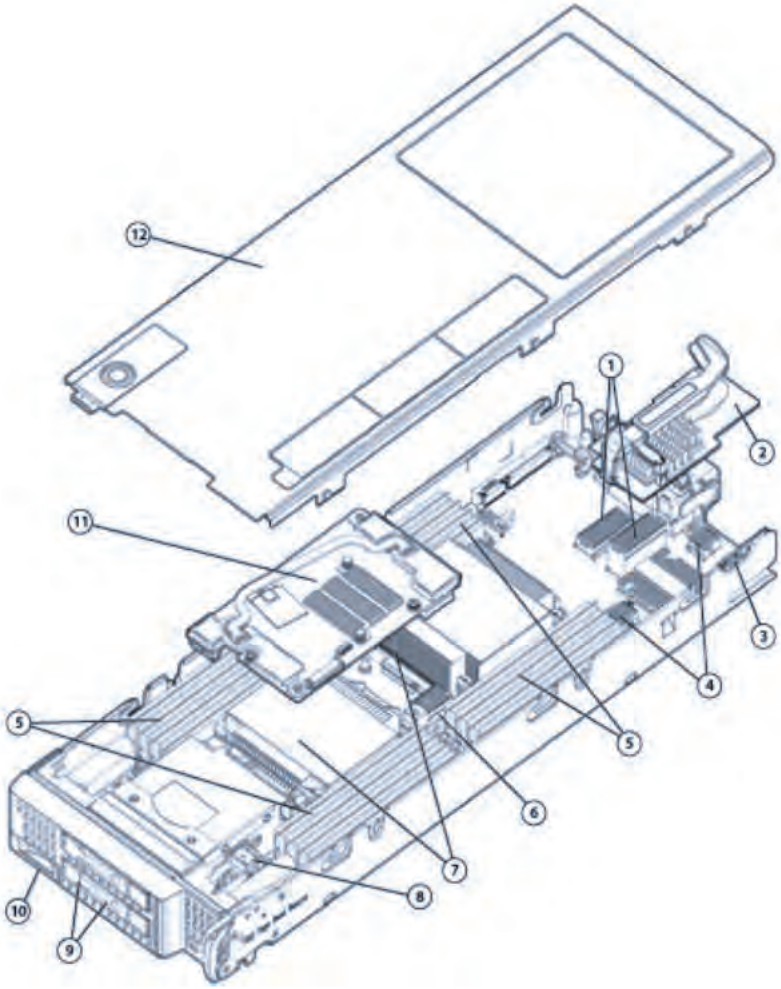
Overview



HP ProLiant BL460c Generation 8 (Gen8) Server Blade

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

What's New

- Support for HP 1.2TB 6G SAS 10K 2.5in DP ENT HDD
- Support for HP 6G SATA ME 2.5in SC EM SSD

Overview

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
  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
  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	**Eight-Core Processors** Intel® Xeon® E5-2690 Kit (2.90GHz/8-core/20MB/ 135W) Processor Intel® Xeon® E5-2680 (2.70GHz/8-core/20MB/130W) Processor 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® E5-2650 (2.0GHz/8-core/20MB/95W) Processor Intel® Xeon® E5-2650L (1.80GHz/8-core/20MB/70W) Processor **Six-Core Processors** Intel® Xeon® E5-2667 (2.90GHz/6-core/15MB/130W) Processor Intel® Xeon® E5-2640 (2.50GHz/6-core/15MB/95W) Processor Intel® Xeon® E5-2630 (2.30GHz/6-core/15MB/95W) Processor Intel® Xeon® E5-2630L (2.0GHz/6-core/15MB/60W) Processor Intel® Xeon® E5-2620 (2.0GHz/6-core/15MB/95W) Processor **Quad-Core Processors** Intel® Xeon® E5-2643 Kit (3.30 GHz/4-core/10MB/130W) Processor Intel® Xeon® E5-2609 (2.40GHz/4-core/10MB/80W) Processor Intel® Xeon® E5-2603 (1.80GHz/4-core/10MB/80W) Processor **Dual-Core Processors** Intel® Xeon® E5-2637 (3.0GHz/2-core/5MB/80W) Processor **NOTE:** DIMM slots 4 and 5 are not accessible when either the E5-2690 or the E5-2643 is used. In a 2 processor configuration, there are twelve (12) total available DIMM slots.

Standard Features

Cache Memory One of the following depending on Model	20MB (1x20MB) L3 cache **NOTE:** For Eight-core processors. 15MB (1x15MB) L3 cache **NOTE:** For Six-core processors. 10MB (1x10MB) L3 cache **NOTE:** For Quad-core processors. 5MB (1x5MB) Level 3 cache **NOTE:** For Dual-core processors.	
Chipset	Intel® C600 Series Chipset Intel® E5-2600 Processor Family **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 DDR3 Load Reduced (LRDIMM), Registered (RDIMM), or Unbuffered ECC (UDIMM)
	Standard (Pre-configured Models)	64GB (8 x 8GB) DDR3 1600MHz RDIMMs at 1.5V 32GB (4 x 8GB) DDR3 1600MHz RDIMMs at 1.5V 32GB (4 x 8GB) DDR3 1333MHz RDIMMs at 1.35V 16GB (4 x 4GB) DDR3 1333MHz 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 **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.	

Standard Features

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 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 & E5-2643, all 16 DIMM slots on the BL460c Gen8 must be fully populated with these 24GB DIMMs. When either the E5-2690 or E5-2643 are used, all 12 available DIMM slots on the BL460c Gen8 must be fully populated with these 24GB DIMMs.

Network Controller
One of the following depending on Model

One (1) 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

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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) hot plug drive bays.
NOTE: The server supports up to a combined total of two (2) FBWC supercap options.

Available Options: Smart Array Advanced Pack Software for enhanced performance, reliability, availability, and security of system data

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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 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)
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 for additional information and to view usage videos.
    - Use the Service Pack for ProLiant (SPP) at 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

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