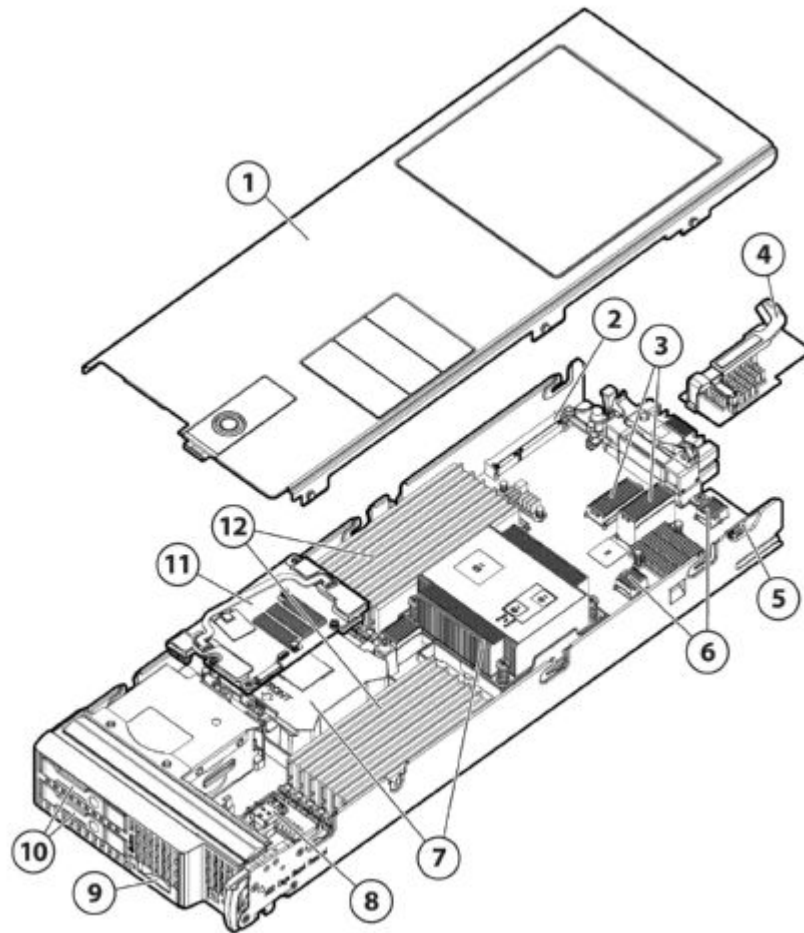## Overview

Redefining the term "entry-level" in the blade market, the BL420c Gen8 provides breakthrough server blade economics for essential enterprise workloads.

1. Access panel

2. Cache module connector

3. Two (2) PCIe 3.0 mezzanine I/O expansion slots
4. FlexibleLOM Adapter
5. MicroSDHC card connector
6. FlexibleLOM connectors (2) supporting one (1) FlexibleLOM Adapter

7. Up to two (2) Intel® Xeon® E5-2400v2 or E5-2400 series processors
8. Internal USB 2.0 connector and Trusted Platform Module (TPM) connectors
9. HP c-Class Blade SUV (Serial, USB, VGA) connector
10. Two (2) small form factor (SFF) hot-plug drive bays
11. SAS controller
12. Twelve (12) DDR3 DIMM memory slots (6 per processor)

What's New

- Support for the Intel® Xeon® processor E5-2400 v2 product family

Standard Features

NOTE: This document covers the HP ProLiant BL420c Gen8 server blade only. For information on HP BladeSystems c-Class Platinum 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_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 at
  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 at
  http://h18004.www1.hp.com/products/blades/components/c-class-interconnects.html
  http://h18004.www1.hp.com/products/blades/components/c-class-adapters.html

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

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

Processor One of the following depending on Model	**E5-2400 v2 series Processors** Intel® Xeon® E5-2470v2 (2.4GHz/10-core/25MB/95W) Processor Intel® Xeon® E5-2450v2 (2.5GHz/8-core/20MB/95W) Processor Intel® Xeon® E5-2440v2 (1.9GHz/8-core/20MB/95W) Processor Intel® Xeon® E5-2430v2 (2.5GHz/6-core/15MB/80W) Processor Intel® Xeon® E5-2420v2 (2.2GHz/6-core/15MB/80W) Processor Intel® Xeon® E5-2407v2 (2.4GHz/4-core/10MB/80W) Processor Intel® Xeon® E5-2403v2 (1.8GHz/4-core/10MB/80W) Processor Intel® Xeon® E5-2450Lv2 (1.7GHz/10-core/25MB/60W) Processor Intel® Xeon® E5-2430Lv2 (2.4GHz/6-core/15MB/60W) Processor **E5-2400 series Processors** Intel® Xeon® E5-2470 (2.3GHz/8-core/20MB/95W) Processor Intel® Xeon® E5-2450 (2.1GHz/8-core/20MB/95W) Processor Intel® Xeon® E5-2450L (1.8GHz/8-core/20MB/70W) Processor Intel® Xeon® E5-2440 (2.4GHz/6-core/15MB/95W) Processor Intel® Xeon® E5-2430 (2.2GHz/6-core/15MB/95W) Processor Intel® Xeon® E5-2430L (2.0GHz/6-core/15MB/60W) Processor Intel® Xeon® E5-2420 (1.9GHz/6-core/15MB/95W) Processor Intel® Xeon® E5-2407 (2.2GHz/4-core/10MB/80W) Processor Intel® Xeon® E5-2403 (1.8GHz/4-core/10MB/80W) Processor **NOTE:** In a 2 processor configuration, there are twelve (12) total available DIMM slots. **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:** The BL420c Gen8 supports one or two processors. **NOTE:** The BL420c 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).

Standard Features

NOTE: All processors within the server must be identical. Mixing different processor models is not supported.
NOTE: All processors support Intel® Hyper-Threading and Intel® Turbo Boost Technologies except the E5-2403 and E5-2407.
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.

Cache Memory One of the following depending on Model	25MB shared L3 cache **NOTE:** For Ten-core processors. 20MB shared L3 cache **NOTE:** For Eight-core processors. 15MB shared L3 cache **NOTE:** For Six-core processors. 10MB shared L3 cache **NOTE:** For Quad-core processors.
Chipset	Intel® C600 Series Chipset Intel® E5-2400 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 **NOTE:** Processor upgrade available from Intel® Xeon® Processors E5-2400 to E5-2400 v2. Please contact HP Technology Sales (http://www.hp.com/support), your local HP Re-seller, or reference the following Customer Advisory: ProLiant Servers-Instructions for Upgrading an HP ProLiant Gen8 Server from an Intel Xeon Processor E5-2400 to an Intel Xeon Processor E5-2400v2, regarding critical details before upgrading. An explanation of requirements and limitations are provided.
On System Management Chipset	HP iLO (Firmware: HP iLO 4) **NOTE:** For more information, visit: http://www.hp.com/go/ilo
Memory Protection	Advanced ECC Memory Online Spare Mode (Rank Spare Mode) Memory Lockstep Mode

Standard Features

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)	12GB (3 x 4GB) DDR3 1333MHz RDIMMs at 1.35V
		24GB (6 x 4GB) DDR3 1600MHz RDIMMs at 1.5V
	Maximum (LRDIMM)	384GB (12 x 32GB) up to 1600MHz at 1.5V
	Maximum (RDIMM)	192GB (12 x 16GB) up to 1600MHz at 1.5V
		192GB (12 x 16GB) up to 1333MHz at 1.35V
	Maximum (UDIMM)	96GB (12 x 8GB) up to 1600MHz at 1.5V
		96GB (12 x 8GB) up to 1333MHz at 1.35V

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_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: The Intel Xeon E5-2400 Processor Family cannot be configured with the new 1866MHz HP Smart Memory or the new 1600MHz Low Voltage (1.35v) HP Smart Memory.
NOTE: Depending on the memory configuration and processor model, 1866MHz, 1600MHz and 1333MHz memory may operate at a lower speed. Please see the see the "Memory" section later in this document and the Online Memory Configuration Tool for details at:
www.hp.com/go/ddr3memory-configurator.
NOTE: The Intel Xeon E5-2400v2 processor architecture supports memory speeds up to 1600MHz. 1866MHz HP Smart Memory will run at 1600MHz.

Network Controller One of the following depending on Model	

NOTE: Supports one of the following FlexibleLOMs and iLO Management.
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
www.hp.com/go/virtualconnect.
One (1) HP Flex-10 10Gb 2-port 530FLB FlexibleLOM
One (1) HP Ethernet 10Gb 2-port 560FLB FlexibleLOM
One (1) HP Ethernet 1Gb 2-port 361FLB 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 On System Management Chipset
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.

Standard Features

Expansion Slots   Two (2) I/O expansion mezzanine slots:

- x8 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

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

Standard Features

Storage Controller	One of the following depending on Model	One (1) HP Smart Array P220i Controller with 512MB FBWC, (RAID 0 and 1) **NOTE:** Upgradeable firmware with recovery ROM. **NOTE:** The HP Smart Array P220i supports two (2) small form factor (SFF) hot plug drive bays. One (1) HP Dynamic Smart Array B320i Controller (SATA RAID 0 and 1 standard; SAS RAID 0 and 1 standard on preconfigured models and optional with SAS License Key upgrade on Configure-to-Order models) **NOTE:** HP Dynamic Smart Array B320i 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, SAS License Key (RAID 0 and 1) and HP 512MB FBWC for B-Series Smart Array.

Maximum Internal Storage	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	2 x 800GB

NOTE: The ProLiant BL420c 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 BL420c 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 dependent 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

Standard Features

Operating Systems and Virtualization Software Support for ProLiant Servers	Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) Canonical Ubuntu Oracle Solaris VMware **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/BL420cGen8

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 BL420c Gen8 servers plugged vertically. ● The HP BladeSystem c3000 rack enclosure is 6U high and holds up to eight (8) HP ProLiant BL420c 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

---

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 ● 256 MB DDR 3 with ECC (112 MB after ECC and video)

Form Factor	HP ProLiant BL420c Gen8 is a half-height server blade that plugs into the HP BladeSystem c3000 and c7000 enclosures.

Standard Features

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 (Integrated Lights-Out) management processor is the core foundation for the 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 firmware DVD are needed.

    o 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

Standard Features

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

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

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

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

Standard Features

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

Availability

Memory

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

Mezzanine options and I/O

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

Storage

- Two (2) Small Form Factor hot-plug SAS/SATA/SSD drive bays.
- Choice of SAS controller:
  - HP Smart Array P220i Controller with 512MB FBWC, RAID 0 and 1 support, and upgradeable firmware with recovery ROM capability.
  - HP Dynamic Smart Array B320i controller with optional 512MB FBWC upgrade and/or SAS license upgrade for RAID 0 and 1 support (SAS license comes standard on pre-configured models and comes as an upgrade option when selecting Configure-to-Order models).
- Optional HP D2200sb Storage Blade for direct attached and shared storage within the c-Class enclosure.
- Optional dual-port Fibre Channel mezzanine cards for redundant SAN connections.

Processor/Chipset

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

Standard Features

- Cache parity/ECC protects cache data from accidental data corruption.
- Machine Check Architecture (MCA) detects and captures hardware errors such as system bus, memory ECC, parity, and cache, and improves service time.
- Intel® QPI Protocol Protection allows detection of data errors using a checksum of 8-bits.
- Core Disable for FRB (fault resilient boot) allows a system to power-on despite a failing core-pair. It uses BIST (built-in self test) results to detect a failure and disables the target core-pair upon subsequent boot.

Server Blade Enclosure Infrastructure

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

Warranty

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

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

Optional Features

Fibre Channel Support Up to two (2) optional Fibre Channel mezzanine HBAs are supported on the HP ProLiant BL420c Gen8.

Compatible SAN HP ProLiant BL420c Gen8 server blades are optimized for HP MSA, EVA and XP.

HP ProLiant BL420c Gen8 server blades are compatible with select 3rd party SANs. Please see blade storage page for more details at:
http://h18004.www1.hp.com/products/blades/components/c-class-sans.html.

HP Virtual Connect HP Virtual Connect is an interconnect option for BladeSystem c-Class that simplifies server connectivity to data and storage networks, and reduces costs. Unique HP Flex-10 technology makes maximum use of network bandwidths, provide dynamic tuning and enable extreme flexibility to meet individual server and infrastructure requirements by allocating up to 4 network connections per server port. Virtual Connect FlexFabric modules extend those capabilities to allocate one function per port to storage connections. HP Virtual Connect Enterprise Manager (VCEM) provides server management software with a central console to administer network connections and workloads for thousands of servers. For more information on Virtual Connect Enterprise Manager, see http://www.hp.com/go/vcem. For more information on Virtual Connect Ethernet, Fibre Channel, Converged Network and management options, see http://www.hp.com/go/virtualconnect.

HP Insight management software

HP Insight Control — HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. For more information about this service, see http://www.hp.com/services/insight.

HP Insight Control includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates.

HP Matrix Operating Environment — The HP Matrix Operating Environment (Matrix OE) for ProLiant and Integrity servers is an integrated command center that helps you instantly adjust to dynamic business demands. This advanced infrastructure management software lets you reduce the cost of common data center tasks by up to 40 percent while keeping pace with your changing business.

The HP Matrix OE includes the automated provisioning, optimization, and recovery management capabilities for HP CloudSystem Matrix, the ideal platform for private cloud and Infrastructure as a Service (IaaS). For more information, see http://www.hp.com/go/matrixoe.

HP iLO Scale-Out — The HP iLO Scale-Out license ideal for web/hosting/cloud service providers and High Performance Computing environments. This license is a specific subset of iLO Advanced functionality, provides fast remote access through Text Console via SSH, lower operational cost with Dynamic power capping, and faster time to resolution through Email-based Alerting and proactive notifications. With this newly designed HP iLO Scale-Out HPC customers now have a server management package solely design and priced for their massive data environments. HP iLO Scale-Out is available on all HP ProLiant Gen8 BL and SL platforms. For more information, see:
http://www.hp.com/go/iLO/scale-out

HP iLO Advanced — HP Integrated Lights-Out Advanced License a product option,

Optional Features

providing smart remote server management without compromise. iLO Advanced unlocks the full set of remote administration functionality for all HP ProLiant servers by activating the full Virtual Keyboard Video and Mouse remote console, multi-user collaboration, console record and replay, GUI-based and scripted virtual media and virtual folders, and enhanced security and power management functionality. For more information, see: http://www.hp.com/go/iloadvance

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

High Performance Clusters	HP Cluster Platforms	HP Cluster Platforms are specifically engineered, factory-integrated large-scale ProLiant clusters optimized for High Performance Computing, with a choice of servers, networks and software. Operating system options include specially priced offerings for Red Hat Enterprise Linux and SUSE Linux Enterprise Server, as well as Microsoft Windows HPC Server. A Cluster Platform Configurator simplifies ordering. http://www.hp.com/go/clusters
	HP HPC Interconnects	High Performance Computing (HPC) interconnect technologies are available for this server as part of the HP Cluster Platform portfolio. These high-speed InfiniBand and Gigabit interconnects are fully supported by HP when integrated within an HP cluster. Flexible, validated solutions can be defined with the help of configuration tools. http://www.hp.com/techservers/clusters/ucp/index.html
	HP Insight Cluster Management Utility	HP Insight Cluster Management Utility (CMU) is an HP-licensed and HP-supported suite of tools that are used for lifecycle management of hyperscale clusters of Linux ProLiant systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective. http://www.hp.com/go/cmu

Optional Features

Storage Software

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

Storage software that gets the job done:

- **Data Protection and Recovery Software**
  Whether you're a large enterprise or a smaller business, HP data protection and recovery software will cost-effectively protect you against disaster and ensure business continuity.
- **Data Archive and Migration Software**
  HP's storage software enables you to comply with data retention and retrieval requirements, improve application performance, and reduce costs by efficiently migrating infrequently accessed or less valuable data to lower cost storage.
- **Storage Resource Management Software (SRM)**
  HP's storage resource management software reduces operational costs and provides the command and control foundation you need to efficiently manage and visualize your physical and virtual environments.
- **Data Replication Software**
  HP offers array-based and host-based replication software for use in disaster recovery, testing, application development and reporting.
- **Storage Device Management Software**
  Maximize your investment in HP storage and networking with software that enables hardware-specific configuration, performance tuning and connectivity management.

HP StoreVirtual VSA
HP StoreVirtual VSA allows you to create fully featured shared storage on a VMware vSphere or Microsoft Hyper-V virtualized server. This server model starting November 2013, includes a limited license for HP StoreVirtual VSA software with 1TB of capacity. To download the license key and StoreVirtual VSA software, visit www.hp.com/go/unlockVSA.
NOTE: You will need your server serial number in order to complete the registration form. Fully functional, capacity-based licenses are available in 4TB, 10T and 50TB sizes. For more information and access to the 60-day free trial, visit: www.hp.com/go/tryVSA

HP Insight Online

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

HP Proactive Insight experience

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

Expansion Blade Support

Supports one (1) optional storage, tape, or PCI expansion blade.

Optional Features

Factory Express Portfolio for Servers and Storage

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

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

For more information on Factory Express services on your specific server model please contact your sales representative or go to: http://www.hp.com/go/factory-express.html

HP Simple Configurator

SCE is a guided self service tool to help sales and non technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes. If you require "custom" rack configuration or configuration for products not available in SCE, please contact HP's Customer Business Center or an Authorized Partner for assistance. http://www.hp.com/products/configurator

Service and Support

Service and Support	**HP Technology Services for Industry Standard Servers and BladeSystem** Capitalizing on HP ProLiant server and HP BladeSystem capabilities requires a service partner who understands your increasingly complex business technology environment. That's why it makes sense to team up with the people who know HP infrastructure hardware and software best - the experienced professionals at HP Services. **Protect your business beyond warranty with HP Care Pack Services** HP Care Pack services offer complete care and support expertise with committed response choices designed to meet your IT and business needs. HP Foundation Care services offer scalable reactive support-packages for HP industry-standard servers and software. You can choose the type and level of service that is most suitable for your IT and business needs. HP Proactive Care delivers high levels of system availability through proactive service management and advanced technical response.

Recommended HP Care Pack Services for your HP product

Optimized Care	**3-Year HP 6 hour Call to Repair Response, Proactive Care** Combined reactive and proactive support for hardware and software helping optimize your systems and delivering high levels of availability through proactive service management and advanced technical response. Hardware problem resolution to return the hardware in operating condition within 6 hours of the initial service request. A Technical Account Manager, as your single point of contact, will own your call or issue end to end until resolved. http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855EEE.pdf **HP Install c-Class Server Blade Service** This easy-to-buy, easy-to-use HP Care Pack service helps ensure that your new HP hardware is installed smoothly, efficiently, and with minimal disruption of your IT and business operations.
Standard Care	**3-Year HP 24x7 4 hour response, Proactive Care Service** This service gives you combined reactive and proactive support including rapid access to our Advanced Solution Center to manage and prevent problems and a Technical Support Specialist with a broad level of technical knowledge that will engage with additional technical expertise as needed from HP's vast global resources. http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855EEE.pdf **HP Install c-Class Server Blade Service** This easy-to-buy, easy-to-use HP Care Pack service helps ensure that your new HP hardware is installed smoothly, efficiently, and with minimal disruption of your IT and business operations.
Related Services	**HP Proactive Care Personalized Support - Environmental Option** The Personalized Support option provides an assigned Account Support Manager who can bring best practices from across the industry plus extra technical skills to your IT team. This option is only available as an add-on to HP Proactive Care Support. **HP Proactive Select Service** Provides a flexible way to purchase HP best-in-class consultancy and technical services. You can buy Proactive Select Service Credits when you purchase your hardware and then use the credits over the next 12 months. http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENN.pdf Additional HP Care Pack services can be found at: http://www.hp.com/go/cpc

Service and Support

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

NOTE: Insight Remote Support is a prerequisite for Proactive Care. All blades within a single HP BladeSystem enclosure must be at the same service level. |
| **HP Support Center** | Personalized online support portal with access to information, tools and experts to support HP business products. Submit support cases online, chat with HP experts, access support resources or collaborate with peers. Learn more http://www.hp.com/go/hpsc

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

NOTE: HP Support Center Mobile App is subject to local availability. |
| **Parts and Materials** | HP will provide HP-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

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

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HP due to malfunction. |
| **For more information** | To learn more on HP ProLiant servers and HP BladeSystem servers, please contact your HP sales representative or HP Authorized ServiceOne Channel Partner. Or visit: www.hp.com/services/bladesystem |

Preconfigured Models

NOTE: Not all models are available in all regions. Check with your local country HP offices for availability.

E5-2400 series Processors

HP ProLiant BL420c Gen8 E5-2450 2P 24GB-R P220i SFF Server 668356-B21	**Processor(s)**	(2) Intel® Xeon® E5-2450 (2.1GHz/8-core/20MB/95W)
	Cache Memory	20MB L3 Cache
	Memory	24GB (6 x 4GB-R DDR3-1600) **NOTE:** Total of 12 DIMM slots.
	Network Controller	One (1) HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM
	Storage Controller	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	Hard Drive	None Ship Standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	Internal Storage	SAS: 2.4TB; SATA: 2.0TB; SAS SSD: 1.6TB; SATA SSD: 1.6TB
	Optical Drive Bay	None
	Expansion Slots	2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	Management	HP iLO Management Engine (standard) Optional: HP iLO Scale-Out or HP Insight Control
	Form Factor	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
	Warranty	Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.

HP ProLiant BL420c Gen8 E5-2450L 1P 12GB-R B320i SFF Server 668358-B21	**Processor(s)**	(1) Intel® Xeon® E5-2450L (1.8GHz/8-core/20MB/70W)
	Cache Memory	20MB Level 3 cache
	Memory	12GB (3 x 4GB-R DDR3-1333) **NOTE:** Total of 12 DIMM slots.
	Network Controller	One (1) HP Ethernet 1Gb 2-port 361FLB FlexibleLOM
	Storage Controller	HP Dynamic Smart Array B320i Controller with SAS license key RAID 0,1
	Hard Drive	None Ship Standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	Internal Storage	SAS: 2.4TB; SATA: 2.0TB; SAS SSD: 1.6TB; SATA SSD: 1.6TB
	Optical Drive Bay	None
	Expansion Slots	2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	Management	HP iLO Management Engine (standard) Optional: HP iLO Scale-Out or HP Insight Control
	Form Factor	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
	Warranty	Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.

Preconfigured Models

HP ProLiant BL420c Gen8 E5-2430 1P 12GB-R B320i SFF Server 668357-B21		
Processor(s)	(1) Intel® Xeon® E5-2430 (2.2GHz/6-core/15MB/95W)	
Cache Memory	15MB Level 3 cache	
Memory	12GB (3 x 4GB-R DDR3-1333) **NOTE:** Total of 12 DIMM slots.	
Network Controller	One (1) HP Ethernet 1Gb 2-port 361FLB FlexibleLOM	
Storage Controller	HP Dynamic Smart Array B320i Controller with SAS license key RAID 0,1	
Hard Drive	None Ship Standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives	
Internal Storage	SAS: 2.4TB; SATA: 2.0TB; SAS SSD: 1.6TB; SATA SSD: 1.6TB	
Optical Drive Bay	None	
Expansion Slots	2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.	
Management	HP iLO Management Engine (standard)	
	Optional: HP iLO Scale-Out or HP Insight Control	
Form Factor	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure	
	Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure	
Warranty	Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.	

HP ProLiant BL420c Gen8 E5-2403 1P 12GB-R B320i SFF Server 668359-B21		
Processor(s)	(1) Intel® Xeon® E5-2403 (1.8GHz/4-core/10MB/80W)	
Cache Memory	10MB Level 3 cache	
Memory	12GB (3 x 4GB-R DDR3-1333) **NOTE:** Total of 12 DIMM slots.	
Network Controller	One (1) HP Ethernet 1Gb 2-port 361FLB FlexibleLOM	
Storage Controller	HP Dynamic Smart Array B320i Controller with SAS license key RAID 0,1	
Hard Drive	None Ship Standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives	
Internal Storage	SAS: 2.4TB; SATA: 2.0TB; SAS SSD: 1.6TB; SATA SSD: 1.6TB	
Optical Drive Bay	None	
Expansion Slots	2 standard - Slot 1 supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.	
Management	HP iLO Management Engine (standard)	
	Optional: HP iLO Scale-Out or HP Insight Control	
Form Factor	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure	
	Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure	
Warranty	Server warranty includes 3-year Parts, 3-year Labor, 3-year on-site support.	

Configuration Information - Factory Integrated Models

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

HP Models   HP ProLiant BL420c Gen8 10Gb FlexibleLOM Configure-to-order Blade Server   640996-B21

Configurable Model ships with:

One (1) FlexibleLOM connector providing a choice of one (1) of the supported 10Gb FlexibleLOMs (see Step 2)
One (1) SAS controller connector providing a choice of one (1) of the supported SAS controllers (see step 2)
Two (2) HP small form factor hot-plug SAS/SATA/SSD hard drive bays
One (1) x8 PCIe 3.0 I/O expansion slot (Type A)
One (1) x16 PCIe 3.0 I/O expansion slot (Type B)
One (1) integrated USB connector and one (1) Micro SDHC connector
One (1) TPM connector
HP iLO Management Engine (standard)

HP ProLiant BL420c Gen8 1Gb FlexibleLOM Configure-to-order Blade Server   690142-B21

Configurable Model ships with:

One (1) FlexibleLOM connector providing a choice of one (1) of the supported 1Gb FlexibleLOMs (see Step 2)
One (1) SAS controller connector providing a choice of one (1) of the supported SAS controllers (see step 2)
Two (2) HP small form factor hot-plug SAS/SATA/SSD hard drive bays
One (1) x8 PCIe 3.0 I/O expansion slot (Type A)
One (1) x16 PCIe 3.0 I/O expansion slot (Type B)
One (1) integrated USB connector and one (1) Micro SDHC connector
One (1) TPM connector
HP iLO Management Engine (standard)

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

HP Processors   **For single processor configuration choose:**

Core Processor Option Kits
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.

E5-2400 v2 series Processors

HP BL420c Gen8 Intel® Xeon® E5-2470v2 (2.4GHz/10-core/25MB/95W) FIO Processor Kit   724181-L21

HP BL420c Gen8 Intel® Xeon® E5-2450v2 (2.5GHz/8-core/20MB/95W) FIO Processor Kit   724182-L21

HP BL420c Gen8 Intel® Xeon® E5-2440v2 (1.9GHz/8-core/20MB/95W) FIO Processor Kit   724183-L21

HP BL420c Gen8 Intel® Xeon® E5-2430 v2 (2.5GHz/6-core/15MB/80W) FIO Processor Kit   724184-L21

HP BL420c Gen8 Intel® Xeon® E5-2420v2 (2.2GHz/6-core/15MB/80W) FIO Processor Kit   724185-L21

Configuration Information - Factory Integrated Models

HP BL420c Gen8 Intel® Xeon® E5-2407v2 (2.4GHz/4-core/10MB/80W) FIO Processor Kit	724188-L21
HP BL420c Gen8 Intel® Xeon® E5-2403v2 (1.8GHz/4-core/10MB/80W) FIO Processor Kit	724189-L21
HP BL420c Gen8 Intel® Xeon® E5-2450Lv2 (1.7GHz/10-core/25MB/60W) FIO Processor Kit	724190-L21
HP BL420c Gen8 Intel® Xeon® E5-2430Lv2 (2.4GHz/6-core/15MB/60W) FIO Processor Kit	724191-L21

E5-2400 series Processors

HP BL420c Gen8 Intel® Xeon® E5-2470 (2.3GHz/8-core/20MB/95W) FIO Processor Kit	667372-L21
HP BL420c Gen8 Intel® Xeon® E5-2450 (2.1GHz/8-core/20MB/95W) FIO Processor Kit	667373-L21
HP BL420c Gen8 Intel® Xeon® E5-2450L (1.8GHz/8-core/20MB/70W) FIO Processor Kit	667423-L21
HP BL420c Gen8 Intel® Xeon® E5-2440 (2.4GHz/6-core/15MB/95W) FIO Processor Kit	667374-L21
HP BL420c Gen8 Intel® Xeon® E5-2430 (2.2GHz/6-core/15MB/95W) FIO Processor Kit	667375-L21
HP BL420c Gen8 Intel® Xeon® E5-2430L (2.0GHz/6-core/15MB/60W) FIO Processor Kit	667424-L21
HP BL420c Gen8 Intel® Xeon® E5-2420 (1.9GHz/6-core/15MB/95W) FIO Processor Kit	667376-L21
HP BL420c Gen8 Intel® Xeon® E5-2407 (2.2GHz/4-core/10MB/80W) FIO Processor Kit	667421-L21
HP BL420c Gen8 Intel® Xeon® E5-2403 (1.8GHz/4-core/10MB/80W) FIO Processor Kit	667422-L21

NOTE: In a 2 processor configuration, there are twelve (12) total available DIMM slots.
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: The BL420c Gen8 supports one or two processors.
NOTE: The BL420c 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. Mixing different processor models is not supported.
NOTE: All processors support Intel® Hyper-Threading and Intel® Turbo Boost Technologies except the E5-2403 and E5-2407.
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.

HP Memory

NOTE: HP memory from previous generation servers are not qualified or warranted with this HP ProLiant BL420c 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
NOTE: LRDIMM, RDIMM and UDIMMs are all distinct memory technologies and

QuickSpecs

Configuration Information - Factory Integrated Models

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)
NOTE: The following memory is supported by the E5-2400v2 series Processors.

HP 4GB (1x4GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713981-B21
HP 8GB (1x8GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	731765-B21
HP 8GB (1x8GB) Dual Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713983-B21
HP 16GB (1x16GB) Dual Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713985-B21

Registered DIMMs (RDIMMs)
NOTE: The following memory is supported by the E5-2400 series Processors.

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

Unbuffered with ECC DIMMs (UDIMMs)
NOTE: The following memory is supported by the E5-2400v2 series Processors.

HP 2GB (1x2GB) Single Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713975-B21
HP 4GB (1x4GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713977-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713979-B21

Unbuffered with ECC DIMMs (UDIMMs)
NOTE: The following memory is supported by the E5-2400 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

Configuration Information - Factory Integrated Models

	HP 8GB (1x8GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647909-B21

Load Reduced DIMMs (LRDIMMs)
NOTE: The following memory is supported by the E5-2400v2 series Processors.

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

Load Reduced DIMMs (LRDIMMs)
NOTE: The following memory is supported by the E5-2400 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, 1866MHz, 1600MHz and 1333MHz memory may operate at a lower speed. Please see the see the "Memory" section later in this document and the Online Memory Configuration Tool for details at: www.hp.com/go/ddr3memory-configurator.

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: HP ProLiant BL420c Gen8 10Gb FlexibleLOM Configure-to-order Blade Server (640996-B21) must be selected in order to select one of the 10Gb FlexibleLOM Adapters	
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: www.hp.com/go/ProLiantNICs	
	1Gb FlexibleLOM Adapters	
	HP Ethernet 1Gb 2-port 361FLB FIO Adapter **NOTE:** HP ProLiant BL420c Gen8 1Gb FlexibleLOM Configure-to-order Blade Server (690142-B21) must be selected in order to select the 1Gb FlexibleLOM Adapter.	684216-B21

HP Storage Controller	HP Dynamic Smart Array B320i FIO Adapter for BL420c Gen8 **NOTE:** B320i controller requires SAS License Key for SAS RAID 0,1 (see "HP Storage Controllers - Optional Upgrades" below in the section labeled "Core Options").	651732-B21
	HP Smart Array P220i Controller FIO Kit **NOTE:** P220i Controller comes standard with 512MB FBWC.	690164-B21

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

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
  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
  NOTE: The c7000 HP c-Class enclosures have full backwards and forwards compatibility, existing server blades are supported in the new enclosures and any future server blades will be supported in the existing enclosures.
- HP BladeSystem c-Class Interconnect and Mezzanine Components:
  http://h18004.www1.hp.com/products/blades/components/c-class-interconnects.html and
  http://h18004.www1.hp.com/products/blades/components/c-class-adapters.html

Core Options

HP Networking	**NOTE:** Each 10 Gigabit Ethernet adapter requires a minimum of 2GB of server memory. **NOTE:** A 10 Gigabit Ethernet adapter supports linking at 1Gbps or 10Gbps when connected to an interconnect module with 10Gb Ethernet downlinks. **NOTE:** A 10 Gigabit Ethernet adapter supports linking at only 1Gbps when connected to an interconnect module with 1Gb Ethernet downlinks. **NOTE:** The 10 Gigabit Ethernet adapters on each server blade connect to a 10Gb interconnect in bays 3-8 (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
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.

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.

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/14617_div/14617_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.

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

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.

10 Gigabit Ethernet FlexibleLOM Adapters

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

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

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

Core Options

	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

1Gb FlexibleLOM Adapters

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

NOTE: Please see QuickSpecs for technical specifications and additional information at:
http://h18000.www1.hp.com/products/quickspecs/14333_div/14333_div.html

HP Fibre Channel	HP LPe1205A 8Gb Fibre Channel Host Bus Adapter for BladeSystem c-Class	659818-B21

NOTE: Please see QuickSpecs for technical specifications and additional information at:
http://h18000.www1.hp.com/products/quickspecs/14338_div/14338_div.html

	HP QMH2572 8Gb Fibre Channel Host Bus Adapter for BladeSystem c-Class	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

HP Processors

NOTE: The BL420c Gen8 supports one or two processors.
NOTE: The BL420c 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: the letter "L" preceding 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.

E5-2400 v2 series Processors

HP BL420c Gen8 Intel® Xeon® E5-2470v2 (2.4GHz/10-core/25MB/95W) Processor Kit	724181-B21
HP BL420c Gen8 Intel® Xeon® E5-2450v2 (2.5GHz/8-core/20MB/95W) Processor Kit	724182-B21
HP BL420c Gen8 Intel® Xeon® E5-2440v2 (1.9GHz/8-core/20MB/95W) Processor Kit	724183-B21
HP BL420c Gen8 Intel® Xeon® E5-2430v2 (2.5GHz/6-core/15MB/80W) Processor Kit	724184-B21
HP BL420c Gen8 Intel® Xeon® E5-2420v2 (2.2GHz/6-core/15MB/80W) Processor Kit	724185-B21
HP BL420c Gen8 Intel® Xeon® E5-2407v2 (2.4GHz/4-core/10MB/80W) Processor Kit	724188-B21
HP BL420c Gen8 Intel® Xeon® E5-2403v2 (1.8GHz/4-core/10MB/80W) Processor Kit	724189-B21
HP BL420c Gen8 Intel® Xeon® E5-2450Lv2 (1.7GHz/10-core/25MB/60W) Processor Kit	724190-B21
HP BL420c Gen8 Intel® Xeon® E5-2430Lv2 (2.4GHz/6-core/15MB/60W) Processor Kit	724191-B21

E5-2400 series Processors

Core Options

HP BL420c Gen8 Intel® Xeon® E5-2470 (2.3GHz/8-core/20MB/95W) Processor Kit	667372-B21
HP BL420c Gen8 Intel® Xeon® E5-2450 (2.1GHz/8-core/20MB/95W) Processor Kit	667373-B21
HP BL420c Gen8 Intel® Xeon® E5-2450L (1.8GHz/8-core/20MB/70W) Processor Kit	667423-B21
HP BL420c Gen8 Intel® Xeon® E5-2440 (2.4GHz/6-core/15MB/95W) Processor Kit	667374-B21
HP BL420c Gen8 Intel® Xeon® E5-2430 (2.2GHz/6-core/15MB/95W) Processor Kit	667375-B21
HP BL420c Gen8 Intel® Xeon® E5-2430L (2.0GHz/6-core/15MB/60W) Processor Kit	667424-B21
HP BL420c Gen8 Intel® Xeon® E5-2420 (1.9GHz/6-core/15MB/95W) Processor Kit	667376-B21
HP BL420c Gen8 Intel® Xeon® E5-2407 (2.2GHz/4-core/10MB/80W) Processor Kit	667421-B21
HP BL420c Gen8 Intel® Xeon® E5-2403 (1.8GHz/4-core/10MB/80W) Processor Kit	667422-B21

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: The BL420c Gen8 supports one or two processors.
NOTE: The BL420c 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. Mixing different processor models is not supported.
NOTE: All processors support Intel® Hyper-Threading and Intel® Turbo Boost Technologies except the E5-2403 and E5-2407.
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.

HP Memory

NOTE: HP memory from previous generation servers are not qualified or warranted with this HP ProLiant BL420c 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
NOTE: LRDIMM, RDIMM and UDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen8 servers support RDIMM, UDIMM and LRDIMM.

HP SmartMemory

Registered DIMMs (RDIMMs)
NOTE: The following memory is supported by the E5-2400v2 series Processors.

HP 4GB (1x4GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713981-B21
HP 8GB (1x8GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	731765-B21

Core Options

HP 8GB (1x8GB) Dual Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713983-B21
HP 16GB (1x16GB) Dual Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713985-B21
Registered DIMMs (RDIMMs) **NOTE:** The following memory is supported by the E5-2400 series Processors.	
HP 4GB (1x4GB) Single Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647893-B21
HP 4GB (1x4GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647895-B21
HP 8GB (1x8GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647897-B21
HP 8GB (1x8GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647899-B21
HP 8GB (1x8GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	690802-B21
HP 16GB (1x16GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647901-B21
HP 16GB (1x16GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	672631-B21
Unbuffered with ECC DIMMs (UDIMMs) **NOTE:** The following memory is supported by the E5-2400v2 series Processors.	
HP 2GB (1x2GB) Single Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713975-B21
HP 4GB (1x4GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713977-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713979-B21
Unbuffered with ECC DIMMs (UDIMMs) **NOTE:** The following memory is supported by the E5-2400 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) **NOTE:** The following memory is supported by the E5-2400v2 series Processors.	
HP 32GB (1x32GB) Quad Rank x4 PC3-14900L (DDR3-1866) Load Reduced CAS-13 Memory Kit	708643-B21
Load Reduced DIMMs (LRDIMMs) **NOTE:** The following memory is supported by the E5-2400 series Processors.	
HP 32GB (1x32GB) Quad Rank x4 PC3L-10600L (DDR3-1333) Load Reduced CAS-9 Low Voltage Memory Kit	647903-B21

Core Options

NOTE: Depending on the memory configuration and processor model, 1866MHz, 1600MHz and 1333MHz memory may operate at a lower speed. Please see the see the "Memory" section later in this document and the Online Memory Configuration Tool for details at: www.hp.com/go/ddr3memory-configurator.

HP Hard Drives

NOTE: The ProLiant BL420c 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 BL420c Gen8 drive bays.
NOTE: The mixing of standard SAS drives with SAS SSD is supported within the server, but limits the RAID configuration to two separate RAID 0 volumes. Mixing of other drives types is not supported.
NOTE: HP hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.
NOTE: The hard drive options are not required when configuring a drive-less model.

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

HP 1TB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	655710-B21
HP 500GB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	655708-B21

NOTE: Please see the QuickSpecs for technical specifications and additional information at:
http://h18000.www1.hp.com/products/quickspecs/13021_div/13021_div.html.

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

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

6G SAS ME Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives

HP 800GB 6G SAS Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	690829-B21

Core Options

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

6G SAS SLC Hot Plug SFF (2.5-inch) Enterprise Performance Solid State Drives

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

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
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

6G SATA ME Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives

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: HP Dynamic Smart Array B320i Controller requires a SAS license key for RAID 0 and 1 functionality for SAS drives when selecting a Configure-to-Order server. The SAS RAID license comes standard with preconfigured servers. SATA RAID 0/1 standard.

NOTE: Please see the QuickSpecs for technical specifications and information at:
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: HP Insight Control 7.2 introduces Insight Control server provisioning, a new capability ideal for multi-server OS and firmware provisioning to ProLiant and BladeSystem servers. Insight Control server provisioning is included and licensed as part of HP Insight Control. A media kit, "HP Insight Control server provisioning USB media kit" (# BD883A), including a USB, is available for customers who require a physical copy of the media loaded with Insight Control server provisioning software. Please note that this media kit is separate and in addition to the "HP Insight Management DVD media kit" (#C6N31A).

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

HP iLO Advanced	**HP Integrated Lights-Out (iLO) Advanced for ProLiant BladeSystem Remote Management**	
	HP iLO Advanced for BladeSystem including 1yr 24x7 Technical Support and Updates E-LTU	E6U60ABE
	NOTE: The Electronic software license is available in EMEA only.	
	HP iLO Advanced for BladeSystem including 1yr 24x7 Support Single Server License	512488-B21
	HP iLO Advanced for BladeSystem including 3yr 24x7 Technical Support and Updates E-LTU	E6U63ABE
	NOTE: The Electronic software license is available in EMEA only.	
	HP iLO Advanced Blade 1 Server License with 3yr 24x7 Tech Support and Updates	BD502A
	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

Additional Options

	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 year of 24 x 7 HP Software Technical Support Service.
NOTE: For additional license kits, including electronic delivery options, please see the iLO QuickSpecs at http://www.hp.com/go/iLO

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	
	HP OneView Media Kit Phys No Lic	E5Y37A
	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

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.

HP I/O Accelerator Options	HP 1.2TB Multi Level Cell IO Accelerator for BladeSystem c-Class	QK763A

NOTE: This option is a Type B mezzanine and only supported on mezzanine 2, which requires the second processor to be installed for functionality.

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

NOTE: This option is a Type B mezzanine and only supported on mezzanine 2, which requires the second processor to be installed for functionality.

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

NOTE: This option is a Type B mezzanine and only supported on mezzanine 2, which requires the second processor to be installed for functionality.

Additional Options

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.

HP Storage Controllers **HP Smart Array P731m/2G Controller**

HP Smart Array P731m/2GB FBWC 6Gb 4-ports Ext Mezzanine SAS Controller	698535-B21

NOTE: This option is a Type B mezzanine and only supported on mezzanine 2, which requires the second processor to be installed for functionality.

HP Smart Array P731m/512 FBWC 6Gb 4-ports Ext Mezzanine SAS Controller	698536-B21

NOTE: This option is a Type B mezzanine and only supported on mezzanine 2, which requires the second processor to be installed for functionality.

NOTE: Please see the QuickSpecs for Technical Specifications and additional information at:
http://h18000.www1.hp.com/products/quickspecs/14626_div/14626_div.html. (Smart Array P731m Controller)

HP Smart Array P721m Controller

HP Smart Array P721m/2G FBWC 4-ports Ext Mezzanine SAS Controller	650072-B21

NOTE: This option is a Type B mezzanine and only supported on mezzanine 2, which requires the second processor to be installed for functionality.

HP Smart Array P721m/512 4-ports Ext Mezzanine SAS Controller	655636-B21

NOTE: This option is a Type B mezzanine and only supported on mezzanine 2, which requires the second processor to be installed for functionality.

NOTE: Please see the QuickSpecs for Technical Specifications and additional information at:
http://h18000.www1.hp.com/products/quickspecs/14404_div/14404_div.html. (Smart Array P721m Controller)

HP Dynamic Smart Array B320i Specific Options:

NOTE: The following storage controller options below are not supported on the HP Smart Array P220i controller.

HP 512MB B-series Dynamic Smart Array Flash Backed Write Cache with 24 inch Cable	676473-B21
HP SAS License Key No Media 1 Single Server License for B320i	BC393A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information at:
http://h18000.www1.hp.com/products/quickspecs/13200_div/13200_div.html (Smart Array Advanced Pack)

Additional Options

HP InfiniBand Mezzanines	**NOTE:** When an InfiniBand adapter is installed in mezzanine slot 1, only one port is active (regardless of operating mode). When installed in any other mezzanine slot, both ports are active. **NOTE:** InfiniBand QDR and FDR speeds are only supported on the 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://h18000.www1.hp.com/products/quickspecs/13078_div/13078_div.html	
	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
HP Ultrium Tape Blades	HP StoreEver LTO-4 Ultrium SB1760c Tape Blade **NOTE:** LTO-4 Ultrium tape technology.	AQ697B
	HP StoreEver LTO-5 Ultrium SB3000c Tape Blade **NOTE:** LTO-5 Ultrium tape technology.	BS580B
	NOTE: For the above Ultrium tape drives, please see the QuickSpecs for technical specifications and additional information at: http://h18000.www1.hp.com/products/quickspecs/12729_div/12729_div.html	
HP Storage Blades	HP D2200sb PCIe Storage Blade **NOTE:** Please see the QuickSpecs for technical specifications and additional information at: http://h18006.www1.hp.com/storage/bladesystem/index.html.	AP880A
HP Expansion Blade	HP BLc PCI Expansion Blade **NOTE:** The PCI Expansion Blade provides PCI card slots for an adjacent c-Class Server Blade. Order one PCI expansion Blade for each server blade needing standard PCI-X or PCIe expansion slots. **NOTE:** Ships with one pre-installed PCI-X connect board. Also includes one PCIe connect board which requires installation. **NOTE:** Please see the QuickSpecs for technical specifications and additional information at http://h18000.www1.hp.com/products/quickspecs/12753_div/12753_div.html	448018-B21

Additional Options

HP Flash Media Kits for USB Drives	**HP Flash Media Kits for USB Drives**	
	HP 2GB USB Flash Media Drive Key Kit	608447-B21
	NOTE: HP qualified blank USB key for use with HP ProLiant servers that support the VMware virtualization environment. HP recommends this industry standard USB flash device for use with VMware ESXi. USB device must be installed in the internal slot of the ProLiant server for use with VMware ESXi. Refer to HP VMware Getting Started Guide for installation instructions.	
	HP Enterprise Mainstream Flash Media Kits for Memory Cards	
	HP 8GB microSD Enterprise Mainstream Flash Media Kit	726116-B21
	HP 32GB microSD Enterprise Mainstream Flash Media Kit	700139-B21
	HP 8GB USB Enterprise Mainstream Flash Media Drive Key Kit	737953-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: 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	

Memory

For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool:
www.hp.com/go/ddr3memory-configurator

Memory Subsystem Architecture
Each Intel® Xeon® E5-2400 family or Intel Xeon E5-2400v2 family processor socket contains three memory channels that support two DIMMs each for a total of six (6) DIMMs per installed processor or a grand total of twelve (12) DIMMs for the server. Up to 32GB capacity DIMMs are supported for 384GB of memory (12 DIMM slots x 32GB per DIMM).

Memory Population Rules and Guidelines:

- A minimum of one DIMM is required per server.
- 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.
- 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.
- RDIMMs, LRDIMMs, and UDIMMs cannot be mixed.
- 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 BL420c 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.
- For memory population rules and additional memory guidelines, please see the BL420c Gen8 user guide at
  http://www.hp.com/support.

BL420c Gen8 Supported Memory Bandwidth on Intel E5-2400 series Processors

DIMM Type	Registered DIMMS (RDIMMs)							Load Reduced (LRDIMMs)	Unbuffered with ECC DIMMs (UDIMMs)					
DIMM Rank	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[1]	LV	Std	LV	Std	Std	LV	Std	LV	LV	Std	LV	Std	Std	LV

[1]LV= low voltage at 1.35V; Std = standard voltage at 1.5V.

SLOTS THAT CAN BE POPULATED

12 slot servers	12	12	12	12	12	12	12	12	12	12	12	12	12	12

MAXIMUM CAPACITY (GB)[2]

12 slot servers	48	48	96	96	96	192	192	384	24	24	48	48	96	96

POPULATED DIMM SPEED (MHz)

1 DIMM Per Channel	1333	1600	1333	1600	1600	1333	1600	1333[3]	1333	1600	1333	1600	1600	1333
2 DIMM Per Channel	1333	1600	1333	1600	1600	1333	1600	1333[3]	1333[4]	1600	1333[4]	1600	1600	1333[4]

Memory

[2] Maximum capacity will vary based on individual server platform qualification schedule
[3] Using HP SmartMemory, 1333MHz LRDIMM operate at 1.35V for 2 DIMMs per channel (2DPC). Third party 1333MHz LRDIMM memory may only support 1.5V at 2DPC.
[4] 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".

Intel Gen8 Supported Memory Bandwidth on E5-2400v2 series Processor								
DIMM Type	Registered DIMM				Load Reduced (LRDIMMs)	Unbuffered DIMM		
DIMM Rank	Single Rank (1R)	Dual Rank (2R)	Single Rank (1R)	Dual Rank (2R)	Quad Rank (4R)	Single Rank (1R)	Dual Rank (2R)	
DIMM Capacity	4GB	8GB	8GB	16GB	32GB	2GB	4GB	8GB
DIMM Native Speed (MT/s) - >	1600	1600	1600	1600	1866	1600	1600	1600
Voltage	LV	LV	LV	LV	Std	LV	LV	LV
[1]LV= low voltage at 1.35V; Std = standard voltage at 1.5V.								
SLOTS THAT CAN BE POPULATED								
12 slot servers	12	12	12	12	12	12	12	12
MAXIMUM CAPACITY (GB)*								
12 slot servers	48	96	96	192	384	24	48	96
POPULATED DIMM SPEED (MT/s)								
1 DIMM Per Channel	1600	1600	1600	1600	1600[1]	1600	1600	1600
2 DIMM Per Channel	1600	1600	1600	1600	1600[1]	1600	1600	1600
Memory speed is a function of the processor QPI bus speed. *Maximum capacity will vary based on individual server platform qualification schedule [1]Intel Xeon E5-2400v2 architecture supports maximum 1600MHz memory speeds.								

Memory Speed by E5-2400 series Processor Model

Processor Models	Supported Memory Speeds
E5-2450, E5-2450L, E5-2470	1600/1333/1066MHz
E5-2420, E5-2430, E5-2430L, E5-2440	1333/1066MHz
E5-2403, E5-2407	1066MHz

Memory Speed by E5-2400 v2 series Processor Model

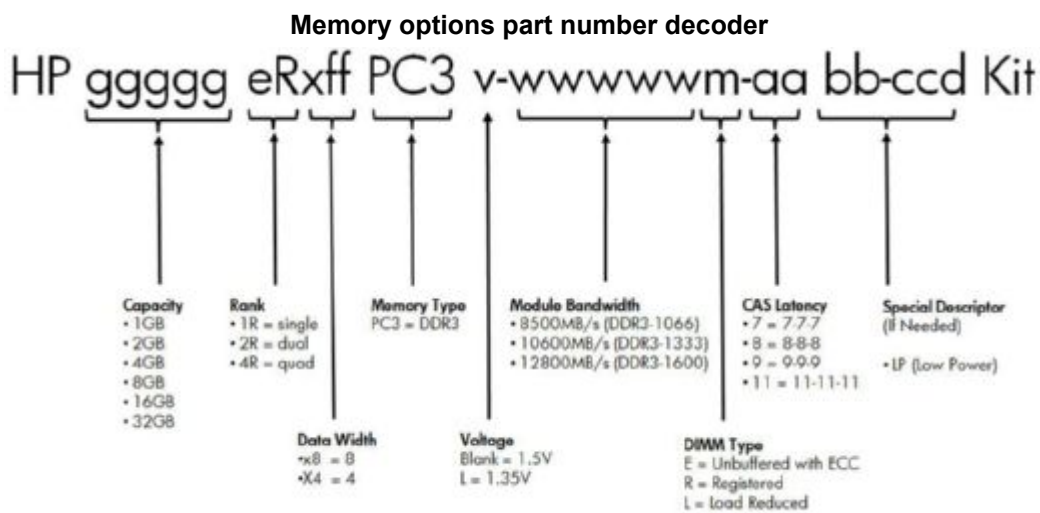| Processor Models	Supported Memory Speeds
E5-2420 v2, E5-2430 v2, E5-2430L v2, E5-2440 v2, E5-2450 v2, E5-2450L v2, E5-2470 v2	1600/1333MHz
E5-2403 v2, E5-2407 v2	1333MHz

Standard and Maximum Memory Capacity (Pre-configured Models)

Memory

Pre-Configured Models	Standard Memory	Maximum Memory Plus Optional Memory	Standard Memory Replaced with Optional Memory
E5-2450 (6x4GB 1600)	24GB (6x 4GB)	120GB (6x4GB + 6x 16GB)	384GB (12x 32GB LRDIMM)
E5-2450L, E5-2430, E5-2403 (3x4GB 1333)	12GB (3x 4GB)	156GB (3x 4GB + 9x 16GB)	384GB (12x 32GB LRDIMM)

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

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

Memory options part number decoder

HP ggggg eRxff PC3 v-wwwwwm-aa bb-ccd Kit

Capacity
- 1GB
- 2GB
- 4GB
- 8GB
- 16GB
- 32GB

Rank
- 1R = single
- 2R = dual
- 4R = quad

Memory Type
PC3 = DDR3

Module Bandwidth
- 8500MB/s (DDR3-1066)
- 10600MB/s (DDR3-1333)
- 12800MB/s (DDR3-1600)

CAS Latency
- 7 = 7-7-7
- 8 = 8-8-8
- 9 = 9-9-9
- 11 = 11-11-11

Special Descriptor
(If Needed)
- LP (Low Power)

Data Width
- x8 = 8
- X4 = 4

Voltage
Blank = 1.5V
L = 1.35V

DIMM Type
E = Unbuffered with ECC
R = Registered
L = Load Reduced

Following are memory options available from HP:

NOTE: HP memory from previous generation servers are not qualified or warranted with this HP ProLiant BL420c 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
NOTE: LRDIMM, RDIMM and UDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen8 servers support RDIMM, UDIMM and LRDIMM.

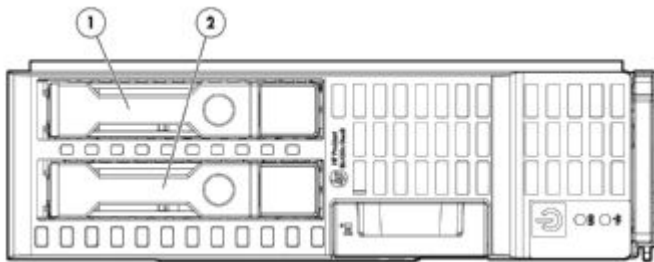|		
HP Memory	**HP SmartMemory**	
	Registered DIMMs (RDIMMs) **NOTE:** The following memory is supported by the E5-2400 v2 series Processors.	
	HP 4GB (1x4GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713981-B21
	HP 8GB (1x8GB) Single Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	731765-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713983-B21
	HP 16GB (1x16GB) Dual Rank x4 PC3L-12800R (DDR3-1600) Registered CAS-11 Low Voltage Memory Kit	713985-B21
	Registered DIMMs (RDIMMs) **NOTE: The following memory is supported by the E5-2400 series Processors.**	

Memory

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

Unbuffered with ECC DIMMs (UDIMMs)
NOTE: The following memory is supported by the E5-2400v2 series Processors.

HP 2GB (1x2GB) Single Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713975-B21
HP 4GB (1x4GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713977-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-12800E (DDR3-1600) Unbuffered CAS-11 Low Voltage Memory Kit	713979-B21

Unbuffered with ECC DIMMs (UDIMMs)
NOTE: The following memory is supported by the E5-2400 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)
NOTE: The following memory is supported by the E5-2400v2 series Processors.

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

Load Reduced DIMMs (LRDIMMs)
NOTE: The following memory is supported by the E5-2400 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, 1866MHz, 1600MHz and 1333MHz memory may operate at a lower speed. Please see the see the "Memory" section in this document and the Online Memory Configuration Tool for details at: www.hp.com/go/ddr3memory-configurator.

Storage

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

Maximum Internal Storage

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	2 x 800GB

Technical Specifications

System Unit			
	Dimensions (H x W x D) (with bezel)	7.11 x 2.18 x 20.37 in (18.07 x 5.54 x 51.76 cm)	
	Weight (approximate)	Maximum: all processors, 12 DIMMs, hard drives, mezzanine cards, and two flash cache batteries installed)	14.00 lb (6.33 kg)
		Minimum: one processor and 2 DIMMs installed	10.50 lb (4.75 kg)
	Power Specifications	For power specifications including input requirements, BTU rating, and power supply output, please see the:	

For power specifications including input requirements, BTU rating, and power supply output, please see the:

- HP BladeSystem c3000 Enclosure QuickSpecs at http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html.
- HP BladeSystem c7000 Enclosure QuickSpecs at http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html.

To review typical system power ratings use the HP Power Advisor which is available via the online tool located at: www.hp.com/go/hppoweradvisor.

	System Inlet Temperature	Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1,000 ft) above sea level to a maximum of 3,050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).
		Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
	Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
		Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
	Altitude	Operating	3,050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1,500 ft/min).
		Non-operating	9,144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1,500 ft/min).
	Acoustic Noise	For acoustic noise specifications, please see the HP BladeSystem c-Class Enclosures QuickSpecs located at: HP BladeSystem c3000 Enclosure QuickSpecs:	

Technical Specifications

HP BladeSystem c7000 Enclosure QuickSpecs:

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

HP Dynamic Smart Array B320i Controller		
	Dimensions	Embedded
	Disk Drive Interface - Transfer rate	Up to 6Gb/s SAS (Serial Attached SCSI) Up to 6Gb/s SATA (Serial ATA)
	Connectors	2 internal 4X connectors
	Server Interface	x8 PCIe 3.0 provides 8GB/s maximum bandwidth
	Speed	8 6Gb/s SAS links provide 4.8GB/s maximum bandwidth
	Cache Memory	Zero Memory RAID has no cache memory optional 40-bit 512MB ECC protected Flash Backed Write Cache (FBWC)
	Logical Drives Supported	Zero Memory, Up to 2 logical volumes (8 physical drives) Up to 64 logical drives with cache
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	Hot Plug Support	Yes
	RAID Support	RAID 0 (Striping), RAID 1 (Mirroring) RAID 1+0 (Striping & Mirroring) RAID 5 with optional 512MB FBWC **NOTE:** 512 MB cache is required to enable RAID 5 support

Technical Specifications

HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM	**Type**	Integrated dual-port KR 10Gb FlexibleLOM with FlexFabric (Flex-10, FCoE, hardware-based iSCSI, iSCSI boot, TCP/IP offload engine, and autosensing 1Gb/10Gb Ethernet capability)
	Network Processor	Emulex BE3
	Data Transfer Method	x8 PCIe 2.0
	Network Transfer Rate	Two ports, each at 20Gbps full duplex; 40Gbps aggregate full duplex theoretical bandwidth **NOTE:** Each port is autosensing 1Gb/10Gb, and can interoperate with 1Gb HP BladeSystem c-Class interconnect components. Both ports will operate at the same speed. **NOTE:** Each port on the 554FLB adapter transmits from the server at 20Gbps (theoretical) full duplex.
	IEEE Compliance	802.1p, 802.1q, 802.1qau, 802.3ad, 802.3ae, 802.3ap (10GBase-KX4) and 802.3x
	Standard Features	ProLiant Teaming including Network Fault Tolerance, Transmit Load Balancing, and Switch-Assisted Load Balancing 9K Jumbo frames (4K Jumbo frames when in FCoE mode) Microsoft Windows Receive Side Scaling (RSS) Hardware-based accelerated iSCSI iSCSI boot Flex-10 capability Fibre Channel over Ethernet (FCoE) TCP/IP offload engine (stateless TCP/IP) Autosensing 1Gb/10Gb Ethernet
HP Ethernet 1Gb 2-port 361FLB Adapter	**Type**	Dual port 1Gb Ethernet FlexibleLOM
	Network Processor	Intel I350 Ethernet Controller
	Data Transfer Method	x4 PCIe 2.0
	Network Transfer Rate	Two ports, each at 1000 Mbps full duplex (theoretical maximum) **NOTE:** The 361FLB adapter transmits from the server at only 1 Gbps full duplex per port.
	IEEE Compliance	802.1p, 802.1Q, 802.3, 802.3ad, and 802.3x, IEEE1588, 802.1AS
	Standard Features	ProLiant Teaming including Network Fault Tolerance, Transmit Load Balancing, and Switch-Assisted Load Balancing TCP/IP checksum offloading large send offloading Wake-on-LAN jumbo frames PXE VLAN tagging Virtualization IEEE 1588, DMA Coalescing HP Sea of Sensors 3-D Technology

Technical Specifications

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

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