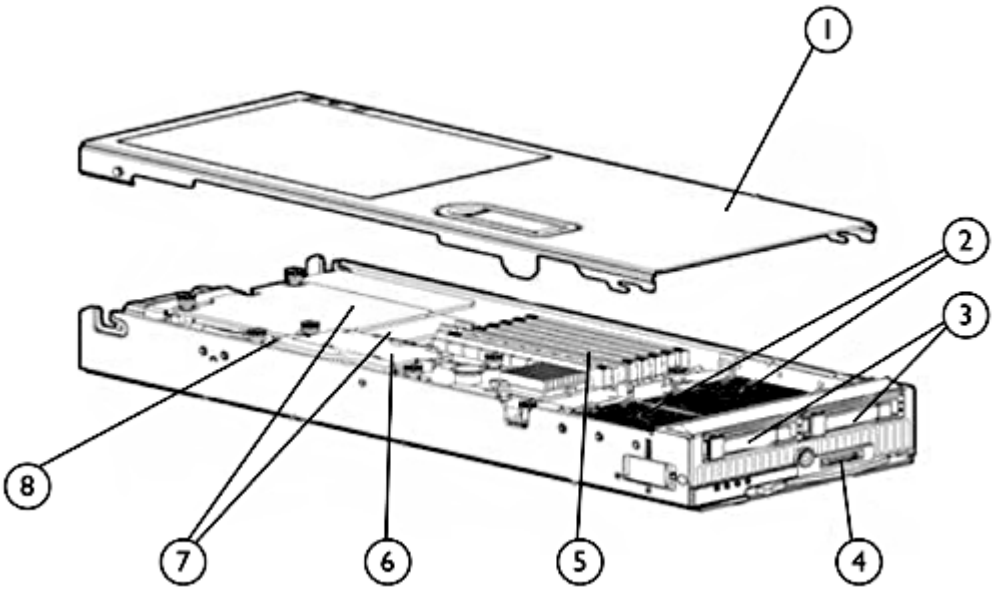
Overview



HP ProLiant BL460c Server Blade

1. Access Panel
2. Up to two Quad-Core or Dual-Core Intel® Xeon® 5000 sequence processors
3. Small form factor (SFF) hot-plug drive bays (standard BTO models)
4. Local I/O connector
5. Eight (8) PC2-5300, Fully Buffered DIMMs (DDR2-667) Memory Slots
6. HP Smart Array E200i Controller (optional battery-backed write cache) (standard BTO models)
7. Two Mezzanine slots
8. Internal USB Connector (standard BTO models)

What's New

- Support for new Intel® Xeon® Dual-Core Low Voltage 5200 Sequence Processors
- Support for up to 64GB of Memory with 16GB REG PC2-5300 2x8GB 2r memory option kit
- Support for Entry (ETY) HP 120GB 1.5G SATA 5.4K SFF HDD

At A Glance

This document covers the HP ProLiant BL460c server blade only. For more information on HP BladeSystems c-Class Infrastructure and HP BladeSystem c-Class Interconnect Components, please see the following QuickSpecs:

HP BladeSystem c-Class Infrastructure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12517_na/12517_na.html

HP BladeSystem c-Class Interconnect Components QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12524_na/12524_na.html

The HP ProLiant BL460c provides greater 2P x86 server blade density without compromise and maximum power-efficiency with flexibility and choice.

Overview

HP ProLiant BL460c server blade includes:

- **Processor:**
  - Up to two Quad-Core Intel® Xeon® 5400 sequence processors
  - Up to two Quad-Core Intel® Xeon® 5300 sequence processors
  - Up to two Dual-Core Intel® Xeon® 5200 or 5100 sequence processors
  - Supports up to 2 Dual-Core 3.33GHz, 1333 MHz FSB-1X6 MB Level 2 cache memory, and up to 2 Quad-3.00 GHz 1333MHz-2x6 MB Level 2 cache memory
  - Intel 5000P chipset supporting up to a 1333 MHz Front Side Bus
- **Memory:**
  - Up to 64 GB of memory, supported by (8) slots of PC2-5300 Fully Buffered DIMMs at 667 MHz
    - **NOTE:** 64GB of Memory is supported with 80W processors and below. Not supported with 120W processors
  - Supporting low-power memory
  - Advanced ECC memory support
  - Supporting memory interleaving (2x1); memory mirroring and online spare capacity.
- **Storage Controller:**
  - Integrated HP Smart Array E200i RAID controller with 64 MB cache (with optional battery-backed write-cache with an upgrade to 128MB cache (BBWC)) in standard BTO models. Supports RAID 0,1 in standard BTO models
    - **NOTE:** Drive-less model now available through CTO for customers not utilizing internal disk drives and attaching directly to SAN. Please note that this model does not replace any prior model offerings. The feature listed above is not included in the standard Drive-less configure to order model. However, all configure to order models offer optional support for small form factor (SFF) hot-plug drive bays, HP Smart Array E200i Controller (with optional battery-backed write cache), and Internal USB Connector. See Factory Integrated Model section for more information
- **Internal Drive Support:**
  - Up to 2 small form factor (SFF) SAS or SATA hot plug hard disk drives in standard BTO models
    - **NOTE:** Drive-less model now available through CTO for customers not utilizing internal disk drives and attaching directly to SAN. Please note that this model does not replace any prior model offerings. The feature listed above is not included in the standard Drive-less configure to order model. However, all configure to order models offer optional support for small form factor (SFF) hot-plug drive bays, HP Smart Array E200i Controller (with optional battery-backed write cache), and Internal USB Connector. See Factory Integrated Model section for more information.
- **Network Controller:**
  - Two (2) embedded NC373i Multifunction Gigabit Server Adapters with TCP/IP Offload Engine for Microsoft Windows
  - One (1) additional embedded 10/100 network adapter dedicated to iLO 2 management
    NOTE: The Gigabit Ethernet adapters transmit from the server only at 2000 Mbps, full duplex per port. For more information, see the "Network Controller" item in Standards Features section.
- **Mezzanine Support:**
  - Two (2) additional I/O expansion slots via mezzanine card.
  - Supports up to (2) mezzanine cards
    - Dual-Port Fibre Channel Mezzanine (4-Gb) options for SAN connectivity (Choice of Emulex or QLogic).
    - Ethernet NIC Mezzanine options for additional network ports
    - HP NC325m PCI Express Quad Port Gigabit Server Adapter for c-Class BladeSystem
      NOTE: The NC325m must be installed in mezzanine slot 2 of a half-height server blade to provide connectivity on all four ports. If installed in mezzanine slot 1 of a half-height server blade, the NC325m will provide connectivity on 2 of the 4 ports.
    - HP NC326m PCI Express Dual Port 1Gb Server Adapter for c-Class BladeSystem
    - HP NC360m Dual Port 1GbE BL-c Adapter
    - HP NC364m Quad Port 1GbE BL-c Adapter
      - **NOTE:** If the NC364m is installed in mezzanine slot 1 of a half-height server, connectivity will be provided on only 2 of the 4 ports

Overview

    - HP NC373m PCI Express Dual Port Multifunction Gigabit Server Adapter
    - HP NC512m Dual Port 10GbE Multifunction BL-c Adapter
    - 4X DDR InfiniBand (IB) Mezzanine (20 Gb/s) options for low latency server interconnectivity (based on Mellanox technology
- **Internal USB Support:**
  - One (1) internal USB 2.0 connector for security key devices and USB drive keys in standard BTO models
    - **NOTE:** Drive-less model now available through CTO for customers not utilizing internal disk drives and attaching directly to SAN. Please note that this model does not replace any prior model offerings. The feature listed above is not included in the standard Drive-less configure to order model. However, all configure to order models offer optional support for small form factor (SFF) hot-plug drive bays, HP Smart Array E200i Controller (with optional battery-backed write cache), and Internal USB Connector. See Factory Integrated Model section for more information.
- **VMware ESX Server 3i and Citrix XenServer virtualization technology**
  - Integrated Hypervisors:
    - VMware ESX Server 3i virtualization technology
    - Citrix XenServer virtualization technology
- **Form Factor:**
  - HP ProLiant BL460c server blade plugs vertically into the BladeSystem c3000 and c7000 enclosures
- **Management:**
  - Integrated Lights-Out 2 (iLO 2) Standard Blade Edition with virtual KVM and graphical remote console at no additional cost.
- **Operating Systems:**
  - Supports Windows, Linux, Netware, and Solaris Operating Systems
- **Enclosures:**
  - HP offers three different c-Class server blade enclosures to meet your individual needs:
    - The HP BladeSystem c7000 rack enclosure is 10U high and holds up to 16 ProLiant BL460c servers plugged vertically.
    - The HP BladeSystem c3000 rack enclosure is 6U high and holds up to 8 HP ProLiant BL460c servers plugged horizontally.
    - The HP BladeSystem c3000 tower enclosure is designed with casters for sites without racks and holds up to 8 HP ProLiant BL460c servers plugged vertically.
  - 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.
- For additional enclosure information, please see: http://h18004.www1.hp.com/products/blades/components/enclosures/c-class/index.html.
- **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. Additional support may be covered under the warranty or available for an additional fee. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Certain restrictions and exclusions apply. SATA hard drives have a one year warranty.
  - **NOTE:** Server warranty includes 3 year Parts, 3 year Labor, 3-year on-site support. Additional information regarding worldwide limited warranty and technical support is available at: http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html

Standard Features

NOTE: For a brief, printer friendly data sheet that describes this product and informs you of the essential capabilities and specifications, please visit: http://h71028.www7.hp.com/erc/downloads/4AA0-6087enw.pdf.

Processor

Quad-Core Processor Option Kits

Quad-Core Intel® Xeon® Processor X5460 (3.160 GHz, 1333 FSB, 120W)*
Quad-Core Intel® Xeon® Processor X5450 (3.00 GHz, 1333 FSB, 120W)*
Quad-Core Intel® Xeon® Processor E5450 (3.0 GHz, 1333 FSB, 80W)
Quad-Core Intel® Xeon® Processor E5440 (2.83 GHz, 1333 FSB, 80W)
Quad-Core Intel® Xeon® Processor E5430 (2.66 GHz, 1333 FSB, 80W)
Quad-Core Intel® Xeon® Processor E5420 (2.50 GHz, 1333 FSB, 80W)
Quad-Core Intel® Xeon® Processor L5420 (2.50 GHz, 1333 FSB, 50W, LV)
Quad-Core Intel® Xeon® Processor E5410 (2.33 GHz, 1333 FSB, 80W)*
Quad-Core Intel® Xeon® Processor L5410 (2.33GHz, 1333FSB, 50W, LV)*
Quad-Core Intel® Xeon® Processor E5405 (2.0 GHz, 1333 FSB, 80W)
Quad-Core Intel® Xeon® Processor X5365 (3.00 GHz, 1333 FSB, 120W)
Quad-Core Intel® Xeon® Processor X5355 (2.66 GHz, 1333 FSB, 120W)
Quad-Core Intel® Xeon® Processor E5345 (2.33 GHz, 1333 FSB, 80W)
Quad-Core Intel® Xeon® Processor E5335 (2.00 GHz, 1333 FSB, 80W)*
Quad-Core Intel® Xeon® Processor L5335 (2.00 GHz, 1333 FSB, 50W)
Quad-Core Intel® Xeon® Processor E5320 (1.86 GHz, 1066 FSB, 80W)
Quad-Core Intel® Xeon® Processor L5320 (1.86 GHz, 1066 FSB, 50W)
Quad-Core Intel® Xeon® Processor E5310 (1.60 GHz, 1066 FSB, 80W)

Dual-Core Processor Option Kits

Dual-Core Intel® Xeon® processor X5260 (3.33 GHz, 1333 FSB, 80W)
Dual-Core Intel® Xeon® processor L5240 (3.00 GHz, 1333 FSB, 40 W, LV)
Dual-Core Intel® Xeon® processor E5205 (1.86GHz, 1333 FSB, 65W)
Dual-Core Intel® Xeon® processor X5160 (3.00 GHz, 1333 MHz FSB, 65W)
Dual-Core Intel® Xeon® processor X5150 (2.66 GHz, 1333 MHz FSB, 65W)
Dual-Core Intel® Xeon® processor X5148 (2.33 LV GHz, 1333 MHz FSB, 40W,LV)
Dual-Core Intel® Xeon® processor X5140 (2.33 GHz, 1333 MHz FSB, 65W)
Dual-Core Intel® Xeon® processor X5130 (2.00 GHz, 1333 MHz FSB, 65W)*
Dual-Core Intel® Xeon® processor X5120 (1.86 GHz, 1066 MHz FSB, 65W)*
Dual-Core Intel® Xeon® processor X5110 (1.6 GHz, 1066 MHz FSB, 65W)

*Offered through Configure-To-Order only. See Factory Integrated Models section for more details.

NOTE: Intel 5400, 5300, 5200 and 5100 series processors are 64-bit and support Intel VT. Intel. 5200 and 5100 Series processors are dual-core; Intel 5400 and 5300 Series processors are quad-core.

NOTE: For the Intel 5200, 5300 and 5400 series, the letter preceding the model number indicates the performance/wattage of the processor. "X" denotes High Performance/Wattage; "E" denotes Enterprise Performance/Wattage (Mainstream); and "L" denotes Lower Wattage.

Upgradeability

Upgradeable to 2 processors

Standard Features

Cache Memory	2 x 6 MB shared L2 cache (5400 Sequence) 1 x 6 MB L2 cache (5200 Sequence) 2 x 4 MB Level 2 cache memory (5300 Sequence 1 x 4 MB Level 2 cache memory (5100 Sequence)	
Chipset	Intel® 5000P Chipset	
Memory	Type	PC2-5300 Fully Buffered DIMMs at 667 MHz
	Standard	1 GB (2 x 512 MB) 2 GB (2 x 1 GB)
	Maximum	64 GB (8 x 8 GB) **NOTE:** Memory must be installed in pairs. **NOTE:** 64GB of Memory is supported with 80W processors and below. Not supported with 120W processors.
Network Controller	Two (2) embedded NC373i Multifunction Gigabit Server Adapters with TCP/IP Offload Engine for Microsoft Windows One (1) additional 10/100 NIC dedicated to iLO 2 Management **NOTE:** The Gigabit Ethernet adapters transmit from the server only at 2000 Mbps, full duplex per port. However, within a Linux environment, the speed can be reduced or "throttled" using a feature available within the Linux operating system; see the white paper at: http://h71028.www7.hp.com/ERC/downloads/4AA1-5513ENW.pdf for more information. The 10 Gigabit KX-4 NC512m adapter transmits from the server only at 20 Gbps (20,000 Mbps), full duplex. Once the adapter signal reaches the interconnect within the blade enclosure and communicates outside the blade enclosure to the LAN, the blade interconnect uplink types and settings determine the cable media, speed, duplex mode, and auto negotiation mode. Interconnects are available with Ethernet uplinks supporting 10/100/1000T, 10/100/1000 SFP, 1000 SX fiber, and 10Gb KX-4.	

Standard Features

Multifunction Networking

The embedded multifunction NC373i combines standard Gigabit Ethernet networking, TCP/IP offload engine (TOE) for Microsoft Windows and Linux iSCSI boot capability into a single adapter.

- TOE moves the processing of data in the TCP protocol stack from the server CPU to the network card, freeing CPU cycles for other activities. With TOE, network communications are improved, and server efficiency is increased. The NC373i offers TOE for Microsoft® Windows 2000 and 2003 environments.
- The Linux iSCSI network boot (iSCSI boot) allows the BL460c to boot from a remote operating system (OS) image located on a storage area network (SAN) within a Ref Hat or SUSE Linux environment. The BL460c uses an iSCSI firmware image (iSCSI boot option ROM) making the remote disk drive appear as a local, bootable C: drive. The BL460c is configured to connect to and boot from the iSCSI target disk on the network and download the OS image from the iSCSI target disk. The iSCSI boot option ROM is supplied by HP at no cost. The additional cost and mezzanine slot usage of an add-in iSCSI HBA card is not required. Additionally, the HP iSCSI boot solution includes scripts to significantly simplify the installation process.

I/O Expansion Slots

Two I/O expansion mezzanine slots (One x8 and one x4)

Integrated Manageability

Integrated Lights-Out 2 (iLO 2) Standard Blade Edition (integrated on motherboard)

Storage Controller

HP Smart Array E200i Controller	64 MB memory module supports RAID 0,1 Available upgrades: 128 MB with Battery-backed write cache

NOTE: For customers who choose to configure a driveless model via CTO, a storage controller is not required. See Factory Integrated Models section for more information.

Maximum Internal Storage

Hot Plug Serial Attach SCSI (SAS)	292 GB SAS	2 x 146 GB Serial SCSI
Hot Plug Serial ATA (SATA)	240 GB SATA	2 x 120 GB Serial ATA

NOTE: For customers who choose to configure a driveless model via CTO, internal storage is not required. See Factory Integrated Models section for more information.

Graphics

Integrated ATI RN-50 1600x1280x64K 16M color (32 MB DDR1 memory)

Graphics Resolution Supported

Resolution Color Depths	1600 x 1280, 64K, 256, 16 1280 x 1024, 16.7M, 64k, 256.16 1024 x 768, 16.7M, 64k, 256,16 800 x 600, 16,7M, 64k, 256, 16 640 x 480, 16,7M, 64k, 256, 16

Standard Features

Fibre Channel Support Two optional Fibre Channel HBAs are supported by the HP ProLiant BL460c. Both mezzanine circuit boards connect directly to the server blade system board. These Fibre Channel HBAs are available via option kits and must be ordered separately.

Two option kits

Emulex LPe1105-HP 4Gb FC HBA for HP c-Class BladeSystem (403621-B21)

- Based on the same field-proven ASIC, firmware, and driver technology as Emulex's renowned LPe1150 HBA, the Emulex LPe1105-HP is fully driver compatible with all Emulex HBAs

QLogic QMH2462 4Gb FC HBA for HP c-Class BladeSystem (403619-B21)

- Uses common drivers which means that customers can standardize on one QLogic driver whether they are using the QMH2462 or other 4Gb and 2Gb HBAs powered by QLogic

Emulex and QLogic Fibre Channel HBAs feature:

- Optimal performance utilizing PCI Express
- 4/2/1Gb/s auto negotiating speeds
- Dual-ports for redundant path connections
- Up to two FC HBAs per server blade providing redundant FC HBA support
- Optimized for HP StorageWorks and supported by third party SAN vendors
- Support for Microsoft® Windows® and Linux operating systems environments

---

Compatible SAN HP ProLiant BL460c server blades are optimized for HP StorageWorks MSA, EVA and XP

HP ProLiant 460c server blades are compatible with select 3rd party SANs (please see blade storage page for more details: http://h18000.www1.hp.com/products/servers/proliant-bl/c-class/storage.html

Standard Features

Insight Control Management Suites for BladeSystem

Insight Control Environment for BladeSystem delivers foundation management for HP BladeSystem lifecycles, including hardware resource deployment, health monitoring, software version control, performance monitoring, vulnerability, scanning and patch management and power management.

HP Control Insight Environment for BladeSystem installs and licenses the following components by default using a wizard-based integrated installer:

- HP Systems Insight Manager
- HP iLO Select Pack
- HP Insight Power Manager
- HP ProLiant Essentials Rapid Deployment Pack
- HP ProLiant Essentials Performance Management Pack
- HP ProLiant Essentials Vulnerability and Patch Management Pack
- HP ProLiant Essentials Virtual Machine Management Pack

Additional ProLiant Essentials software and management tools included on the Insight Control Management kit can be installed manually.

- HP Server Migration Pack – Universal Edition
- HP Open Service Event Manager
- HP Instant Support Enterprise Edition

NOTE: HP Server Migration Pack – Universal Edition can be installed from the SMP-Universal CD included in the Insight Control Management media kit.
NOTE: Insight Control Environment for BladeSystem can be installed from the Insight Control Management DVD, which can be delivered with HP BladeSystem c-Class enclosures with a choice of licensing options. Licensing options include a free 30 day evaluation license for 8 servers (default option for every enclosure order), a full purchased license for 8 blade servers or a full purchased license for 16 blade servers). For additional information on HP c-Class Infrastructure please visit HP BladeSystem c-Class Infrastructure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12517_na/12517_na.html
NOTE: For additional product and licensing information about Insight Control Environment for BladeSystem, HP Systems Insight Manager and Essentials software refer to: http://www.hp.com/servers/proliantessentials.

HP Insight Control Environment for Linux (ICE-Linux) provides comprehensive discovery, imaging & deployment, monitoring, and management for Linux-based ProLiant server platforms. Built on the industry-leading HP Systems Insight Manager framework, this solution integrates open source technology with experience leveraged from HP's Linux products in HP ICLE and HP XC Clusters, while providing paths to the future with developing management technologies.

HP Insight Control management suites and most HP ProLiant Essentials include 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. From more information about this service, please visit: http://www.hp.com/services/insight.

Server Management Stand Alone Software Product – ProLiant Essentials	HP Systems Insight Manager	HP Systems Insight Manager (HP SIM) provides a unified, secure and extensible standards-based environment to centrally manage servers, storage and other infrastructure devices, (both HP and non-HP) across multiple operating system platforms.

Standard Features

Integrated Lights-Out Advanced Pack	Upgrades the iLO 2 processor with comprehensive remote control including Virtual KVM remote graphical console, enhanced console sharing and replay, virtual media (floppy, CD/DVD, USB key), virtual folders, and enterprise security (directory services and two-factor authentication).
Integrated Lights-Out Select Pack	Upgrades the iLO 2 processor with enhanced console sharing and replay, virtual media (floppy, CD/DVD, USB key), virtual folders, historical power reporting, power capping and enterprise security (directory services and two-factor authentication) for servers managed using remote consoles available in iLO 2 Standard and iLO 2 Standard Blade Edition.
ProLiant Essentials Rapid Deployment Pack	Rapid Deployment Pack (RDP) extends HP Systems Insight Manager with a complete deployment solution for HP ProLiant blade servers. RDP provides a central location to configure server hardware, deploy Windows, Linux and VMware ESX operating environments and install HP ProLiant Support Pack drivers using images and scripted profiles.
Insight Power Manager (IPM)	Upgrades the single-server remote management capabilities of iLO Select/Advanced to include centralized reporting and policy-based management of power consumption and thermal output provided by the Insight Power Manager. IPM unifies all of this functionality within a single user interface – HP Systems Insight Manager.
Integrated Lights-Out Power Management Pack	Is energy-efficient management software that delivers centralized control, reliable security, and energy savings for your BladeSystem infrastructure. iPMP combines the total control of iLO 2 Advanced in the area of remote management with the energy monitoring and control of the Insight Power Manager to deliver a robust solution capable of full remote control and power management of ProLiant servers through a unified interface within HP Systems Insight Manager.
ProLiant Essentials Server Migration Pack – Universal Edition	Upgrading, replacing, or virtualizing your existing server? Effortlessly transition to new virtual or physical HP ProLiant servers or BladeSystem with automated, accurate and affordable migration of OS, application and data. SMP Universal automates the manual processes required for migrating servers between physical or virtual platforms, whether migrating to VMware or Microsoft virtual machines. SMP Universal allows all of the following migrations: • physical to ProLiant • physical to virtual • virtual to virtual • virtual to ProLiant **NOTE:** For more information, visit: http://www.hp.com/go/migrate.
ProLiant Essentials Performance Management Pack	Performance Management Pack (offered exclusively through the Insight Control suites) – a performance management solution that identifies and explains hardware performance bottlenecks on ProLiant servers and attached options enabling users to better utilize their valuable resources
The Vulnerability and Patch Management Pack	Vulnerability and Patch Management Pack (offered exclusively through the Insight Control suites) – identifies and remediates software security vulnerabilities due to missing patches as well operating system configurations that can be exploited by viruses, worms, and other blended threats.

Standard Features

	Virtual Machine Management Pack	Virtual Machine Management Pack – provides central management and control of virtual machines from Microsoft and VMware. Integrated approach provides the ability to manage both physical and virtual resources from a single management console. **NOTE:** Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to: http://www.hp.com/servers/proliantessentials/vpm or the various ProLiant Essentials Value Pack product QuickSpecs for more information. **NOTE:** Selected software packages listed here include one year of 24 x 7 Software Technical Support and Update Service. If you have any questions about this service please visit the HP website at: http://www.hp.com/services/insight.
Core Infrastructure Management	SmartStart	SmartStart is a tool that simplifies server setup, providing a rapid way to deploy reliable and consistent server configurations. For more information, please visit the SmartStart Web site at: http://www.hp.com/servers/smartstart. SmartStart version supported (minimum): SmartStart 7.60
	Insight Management Agents	The Insight Management Agents should be installed on all HP servers to present system instrumentation, health and configuration information into HP Systems Insight Manager and the HP System Management Homepage. The HP System Management Homepage aggregates systems data from Insight Management Agents and other HP management tools, providing a consolidated browser-based interface for managing individual servers. Insight Management Agents and The HP System Management Homepage are included on ProLiant Support Packs, and can also be installed using the server profiles provided with the ProLiant Essentials Rapid Deployment Pack. For additional information about the Management Agents and the HP System Management Homepage please visit the management Web site at: http://www.hp.com/servers/manage.
	Subscriber's Choice	Subscriber's Choice Driver and Support Alerts/Notifications is a web-based email subscription service that provides software and driver change notifications for ProLiant products. Sign up at: http://www.hp.com/go/subscriberschoice and customize your profile to receive various new alerts as they become available, on a weekly or monthly basis.
	ProLiant Support Packs and ROMPaq, software	The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options, available through ProLiant Support Packs the ProLiant Essentials Rapid Deployment Pack, SmartStart or downloaded from software and drivers download pages website at: http://www.hp.com/go/support.

Standard Features

HP Serviceguard for Linux (SGLX)

HP Serviceguard for Linux is a high availability clustering solution designed to protect applications and services from a wide variety of software and hardware failures, monitoring the health of each server (node) and quickly responding to failures such as those that affect system processes, system memory, LAN media and adapters, and application processes.

The following is a quick summary of HP Serviceguard for Linux features and support. For the most recent list of Linux distributions & kernels, servers and storage supported with Serviceguard for Linux, see the Serviceguard for Linux Certification Matrix, available at: http://www.hp.com/go/sglx/info.

- Supported Linux Distributions:
  - Red Hat EL 4
  - Red Hat EL 5
  - SUSE SLES10
- Supported Server Platforms
  - HP Integrity
  - HP ProLiant
  - Selected 3rd party x86 class servers
- Physical and virtual server support
- Application Integration Toolkits
  - Oracle Single Instance Database
  - Serviceguard Extension for SAP for Linux (SGeSAP/LX)
  - Other Application Integration Toolkits for sendmail, MySQL and more are free to download at: http://www.hp.com/go/softwaredepot/ha
- Disaster Tolerant Solutions
  - Serviceguard for Linux Extended Distance Cluster (XDC) extends cluster distances up to 100 km, utilizes software RAID mirroring for data replication and is storage array independent
  - HP StorageWorks XP/EVA Cluster Extension Software for Linux (CLX) works seamlessly with HP Serviceguard for Linux, HP StorageWorks Continuous Access, and HP Disk Arrays to automate failover and failback between sites
- Software updates are distributed by HP Services to customers with support contracts

NOTE: For additional information on HP Serviceguard for Linux, visit: http://www.hp.com/go/sglx or see the HP Serviceguard for Linux QuickSpecs.
NOTE: HP Serviceguard for Linux products for HP ProLiant and select 3rd party x86 class servers include one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: http://www.hp.com/services/swsupport.

Standard Features

OS Support

Microsoft Windows 2000 Server
Microsoft Windows 2000 Advanced Server
Microsoft Windows Server 2003, Standard Edition
Microsoft Windows Server 2003 R2, Standard Edition
Microsoft Windows Server 2003, Standard x64 Edition
Microsoft Windows Server 2003 R2, Standard x64 Edition
Microsoft Windows Server 2003, Web Edition
Microsoft Windows Server 2003 R2, Web Edition
Microsoft Windows Server 2003, Enterprise Edition
Microsoft Windows Server 2003 R2, Enterprise Edition
Microsoft Windows Server 2003, Enterprise x64 Edition
Microsoft Windows Server 2003 R2, Enterprise x64 Edition
Microsoft Windows Small Business Server 2003, R2
Microsoft Windows Server 2008
Red Hat Enterprise Linux
Solaris 10 (32 and 64-bit)
SUSE Linux Enterprise Server
Netware 6.5
VMware ESX Server 3.0.2
Integrated VMware ESX Server 3i
Integrated Citrix XenServer

NOTE: For more complete and up-to-date information of all supported OSes for ProLiants, certification information and how to buy server operating systems from HP please visit the OS product site at: http://h18004.www1.hp.com/products/servers/software/OEM.html.

NOTE: For an up-to-date listing of the latest software and drivers available for your server, please select your server: http://h20000.www2.hp.com/bizsupport/TechSupport/Product.jsp?lang=en&cc=us&taskId=135&prodTypeId=15351&prodCatId=241435.

NOTE: Not all of the server options support the full list of server operating systems. For the list of operating systems supported on a specific server option, please consult the QuickSpecs for that specific option at: http://h18004.www1.hp.com/products/blades/components/c-class-components.html.

Integrated Manageability

Integrated Lights-Out 2 Standard Blade Edition (iLO 2)

- Virtual KVM based remote console
- Virtual media (single server, browser based access only)
- Remote Serial Console
- Virtual Power Button Control
- Virtual Unit ID control
- Integrated Remote Console (ActiveX Control client)
- Dedicated network connectivity
- OS independent hardware health status
- Present server power consumption
- Browser, command line and scripted access
- Automatic IP Configuration via DHCP/DNS/WINS
- Industry Standard 128-bit Secure Sockets Layer (SSL) and Secure Shell security (SSH)
- Advanced Encryption Standard (AES)/Triple Data Encryption Standard (3DES)
- IML and iLO Event Logging
- Support for 12 user accounts with customizable access privilege
- Single sign-on from HP BladeSystem Onboard Administrator

Standard Features

Availability

- Dual-Port Fibre Channel Mezzanine Card for redundant SAN connection
- Two (2) embedded Gigabit Ethernet adapters for redundant LAN connections Two (2) hot-plug SAS/SATA hard drive bays and integrated RAID (HP Smart Array E200i) controller on every BTO model server blade (Battery-backed write cache is optional.)*
- Redundant ROM on each server blade
- Advanced ECC Memory – can correct a multi-bit error (up to 4 bits) that occurs within one memory chip
- Memory Mirroring
- Memory Online Spare Capacity
- Network adapter teaming (network fault tolerance, transmit load balancing, switch-assisted load balancing)

* For customers who choose to configure a driveless model via CTO, these features are not required. See Factory Integrated Models section for more information.

Industry Standard Compliance

ACPI 2.0 Compliant
PCI 2.2 Compliant
WOL Support
Microsoft® Logo certifications
USB 2.0 Support

Security

- One (1) internal USB 2.0 connector for security key devices and USB drive keys on every BTO model server blade* Power-on password
- Administrator's password
- Integrated Lights-Out 2 has 12 customizable user accounts and SSL encryption
- Integrated Lights-Out 2 can be disabled via a Global Setting

* For customers who choose to configure a driveless model via CTO, internal USB connectors are not available unless 447711-B21 is selected. See Factory Integrated Models section for more information.

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.

Standard Features

HP Enterprise Configurator

The HP eCo-Enterprise Configurator now provides factory default racking for our HP hardware portfolio. This approach is aligned with our strategic direction to meet the needs and expectations of our valued customers. If you require "custom" rack configuration, please contact HP's Customer Business Center or an Authorized Partner for assistance.
NOTE: This feature is not supported in the NEW Drive-less model which is available through CTO for those who do not utilize internal hard disk drives and attach to SAN.

Service and Support

HP Care Pack services provide total care and support expertise with committed response designed to meet your IT and business needs.

The HP Care Pack service for HP ProLiant BL c-Class server blades, cover the server blade and all HP branded hardware options qualified for the server, purchased at the same time or afterwards, internal to the server.

To fully capitalize on your HP BladeSystem servers' capabilities requires a service partner who thoroughly understands your server technology and systems environment. HP Services, an industry leader in provision of multi vender support solutions provides a range of support services designed to meet the varying needs of business. Whether an SMB or large global corporation HP has a HP BladeSystem server support offer to help you speedily deploy and maximize system uptime.

Recommended Service – Simplify ProLiant solution implementation, maintenance and management.

- **Support Service** – 4-Hour Response Coverage, 3-Year, 24 x 7, Same Business Day
- **Deployment Service** – Installation and Start Up for HP BladeSystem Infrastructure

Enhanced Service - Optimize service level to increase IT performance and availability

- **Support Service** – HP Proactive BladeSystem Service, 1-Year
- **Deployment Service** – Enhanced Network Installation and Start-up for HP BladeSystem Switches

Installation & Start-Up service for HP BladeSystem Infrastructure plus HP BladeSystem Enhanced Network Installation and Start-UP as per the Customer Description and/or Data Sheet. To be delivered on a scheduled basis 8am-5pm, M-F, excluding HP holidays.

For a complete listing of service offerings and information visit:
http://www.hp.com/services/bladesystemservices
http://www.hp.com/go/proliant/carepack

Quad-Core Models

HP ProLiant BL460c E5450 2G (1P) 459483-B21 **HP ProLiant BL460c E5440 2G (1P)** 459484-B21 **HP ProLiant BL460c E5430 2G (1P)** 459485-B21 **HP ProLiant BL460c E5420 2G (1P)** 459486-B21 **HP ProLiant BL460c L5420 2G (1P)** 462872-B21 **HP ProLiant BL460c L5410 2G (1P)** 462873-B21 **HP ProLiant BL460c E5405 1G (1P)** 459487-B21 **HP ProLiant BL460c X5365 2G (1P)** 453330-B21 **HP ProLiant BL460c X5355 2G (1P)** 435459-B21 **HP ProLiant BL460c E5345 2G (1P)** 435458-B21 **HP ProLiant BL460c L5335 2G (1P)** 453608-B21 **HP ProLiant BL460c E5320 2G (1P)** 435457-B21 **HP ProLiant BL460c L5320 2G (1P)**	**Processor(s)** One of the following depending on model	(1) Quad-Core Intel® Xeon® Processor E5450 (3.00 GHz, 1333 FSB, 80W) (1) Quad-Core Intel® Xeon® Processor E5440 (2.83 GHz, 1333 FSB, 80W) (1) Quad-Core Intel® Xeon® Processor E5430 (2.66 GHz, 1333 FSB, 80W) (1) Quad-Core Intel® Xeon® Processor E5420 (2.50 GHz, 1333 FSB, 80W) (1) Quad-Core Intel® Xeon® Processor L5420 (2.50 GHz, 1333 FSB, 50W) (1) Quad-Core Intel® Xeon® Processor L5410 (2.33 GHz, 1333 FSB, 50W) (1) Quad-Core Intel® Xeon® Processor E5405 (2.00 GHz, 1333 FSB, 80W) (1) Quad-Core Intel® Xeon® Processor X5365 (3.00 GHz, 1333 FSB, 120W) (1) Quad-Core Intel® Xeon® Processor X5355 (2.66 GHz, 1333 FSB, 120W) (1) Quad-Core Intel® Xeon® Processor E5345 (2.33 GHz, 1333 FSB, 80W) (1) Quad-Core Intel® Xeon® Processor L5335 (2.00 GHz, 1333 FSB, 50W) (1) Quad-Core Intel® Xeon® Processor E5320 (1.86GHz, 1066 FSB, 80W) (1) Quad-Core Intel® Xeon® Processor E5310 (1.60 GHz, 1066 FSB, 80W) (1) Quad-Core Intel® Xeon® Processor L5320 (1.86 GHz, 1066 FSB, 50W)
	Cache Memory	2 x 6 MB Level 2 cache (5400 Sequence) 2 x 4 MB Level 2 cache (5300 sequence)
	Memory One of the following depending on model	2 GB (2 x 1 GB) PC2-5300, FBD DDR2-667 1 GB (2 x 512 MB) PC2-5300, FBD DDR2-667
	Network Adapter	Two (2) embedded NC373i Multifunction Gigabit Server Adapters plus one (1) additional 10/100 NIC dedicated to iLO 2 Management
	Storage Controller	HP Smart Array E200i Controller with 64MB (optional battery-backed write cache)
	Hard Drives	No drives included; (2) SFF SAS/SATA drive bays
	Internal Storage	292 GB SAS 240 GB SATA
	Optical Drive	None

Models

443751-B21	**Form Factor**	Up to 8 half-height blades supported in HP BladeSystem c3000 Enclosure Up to 16 half-height blades supported in HP BladeSystem c7000 Enclosure
HP ProLiant BL460c E5310 1G (1P) 435456-B21		

Dual-Core Models

HP ProLiant BL460c X5260 2G, (1P) 461603-B21	**Processor(s)** One of the following depending on model	(1) Dual-Core Intel® Xeon® processor X5260 (3.3 GHz, 1333 FSB, 80 W) (1) Dual-Core Intel® Xeon® processor L5240 (3.00 GHz, 1333 FSB, 40 W, LV) (1) Dual-Core Intel® Xeon® processor E5205 (1.86 GHz, 1333 FSB, 65 W) (1) Dual-Core Intel® Xeon® processor X5160 (3.00 GHz, 1333 FSB, 65 W) (1) Dual-Core Intel® Xeon® processor X5150 (2.66 GHz, 1333 FSB, 65 W) (1) Dual-Core Intel® Xeon® processor X5148 (2.33 GHz LV, 1333 FSB, 40 W) (1) Dual-Core Intel® Xeon® processor X5140 (2.33 GHz, 1333 FSB, 65 W) (1) Dual-Core Intel® Xeon® processor X5110 (1.6 GHz, 1066 FSB, 65 W)
HP ProLiant BL460c L5240 2G, (1P) 461604-B21		
HP ProLiant BL460c E5205 1G, (1P) 461605-B21		
HP ProLiant BL460c X5160 DC 2G (1P) 416656-B21		
HP ProLiant BL460c X5150 DC 2G (1P) 416655-B21	**Cache Memory** One of the following depending on model	1 x 6 MB Level 2 cache memory (5200 Sequence) 1 x 4 MB Level 2 cache memory (5100 Sequence)
HP ProLiant BL460c X5148 2G (1P) 432636-B21	**Memory** One of the following depending on model	2 GB (2 x 1 GB) PC2-5300, FBD DDR2-667 1 GB (2 x 512 MB) PC2-5300, FBD DDR2-667
HP ProLiant BL460c X5140 DC 2GB (1P) 416654-B21	**Network Adapter**	Two (2) embedded NC373i Multifunction Gigabit Server Adapters plus one (1) additional 10/100 NIC dedicated to iLO 2 Management
HP ProLiant BL460c X5110 DC 1GB (1P) 416653-B21	**Storage Controller**	HP Smart Array E200i Controller with 64MB (optional 128 MB battery-backed write cache)
	Hard Drives	No drives included; (2) SFF SAS/SATA drive bays
	Internal Storage	292 GB SAS 240 GB SATA
	Optical Drive	None
	Form Factor	Up to 8 half-height blades supported in HP BladeSystem c3000 Enclosure Up to 16 half-height blades supported in HP BladeSystem c7000 Enclosure

Smart Buy

The ProLiant Smart Buy program offers a collection of promotional server and option products that are configured with SMB in mind, offered at discounted prices, and positioned for quick delivery. Smart Buy server offers are available for a limited time only.

For a full listing of ProLiant Smart Buys available for all server families, visit http://www.hp.com/go/smartbuy/server/specs

S-Buy BL460c E5345 461273-001	**Processor**	(1) Quad Core Intel Xeon Processor E5345 (2.33GHz, 1333 FSB)
	Cache Memory	2x4 MB Level 2 cache
	Memory	4 GB (2 x 2 GB) PC2-5300, FBD (DDR2-667)
	Network Adapter	Two (2) embedded NC373i Multifunction Gigabit Server Adapters plus one (1) additional 10/100 NIC dedicated to iLO 2 Management
	Storage controller	HP Smart Array E200i Controller with 64MB (optional 128MB battery-backed write cache)
	Hard Drives	No drives included; (2) SFF SAS/SATA drive bays
	Internal Storage	292GB SAS 240GB SATA
	Optical Drive	None
	Form Factor	Up to 8 half-height blades supported in HP BladeSystem c3000 Enclosure Up to 16 half-height blades supported in HP BladeSystem c7000 Enclosure

S-Buy BL460c E5430 485475-001	**Processor**	(1) Quad-Core Intel® Xeon® processor E5430 (2.66 GHz, 1333 FSB)
	Cache Memory	2 x 6 MB Level 2 cache
	Memory	4 GB (2 x 2 GB) PC2-5300, FBD (DDR2-667)
	Network Adapter	Two (2) embedded NC373i Multifunction Gigabit Server Adapters plus one (1) additional 10/100 NIC dedicated to iLO 2 Management
	Storage controller	HP Smart Array E200i Controller with 64MB (optional 128MB battery-backed write cache)
	Hard Drives	No drives included; (2) SFF SAS/SATA drive bays
	Internal Storage	292GB SAS 240GB SATA
	Optical Drive	None
	Form Factor	Up to 8 half-height blades supported in HP BladeSystem c3000 Enclosure Up to 16 half-height blades supported in HP BladeSystem c7000 Enclosure

NOTE: This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on CTO product offerings and requirements.
NOTE: HP does not allow factory integration of options into standard models listed above. Configure-to-order server blades must start with a CTO Blade.
NOTE: This product offering does not support HP Factory Express Server Configuration Level 1.
NOTE: FIO indicates that this option is a Factory Installable Option.

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

Models	**HP ProLiant BL460c Driveless CTO Blade**	447707-B21
	Configurable Model ships with:	
	Two (2) embedded NC373i Multifunction Gigabit Server Adapters plus one (1) additional 10/100 NIC dedicated to iLO 2 Management	
	Integrated Lights-Out 2 Standard Blade Edition	

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

Processors	**For single processor configuration choose:**	
	Quad-Core Processor Option Kits	
	Quad-Core Intel® Xeon® processor X5460 (3.16 GHz, 1333 FSB, 120 W) Option Kit, FIO Base	459973-L21
	Quad-Core Intel® Xeon® processor X5450 (3.00 GHz, 1333 FSB, 120 W) Option Kit, FIO Base	463056-L21
	Quad-Core Intel® Xeon® processor E5450 (3.00 GHz, 1333 FSB, 80 W) Option Kit, FIO Base	459489-L21
	Quad-Core Intel® Xeon® processor E5440 (2.83 GHz, 1333 FSB, 80 W) Option Kit, FIO Base	459490-L21
	Quad-Core Intel® Xeon® processor E5430 (2.66 GHz, 1333 FSB, 80 W) Option Kit, FIO Base	459491-L21
	Quad-Core Intel® Xeon® Processor E5420 (2.50 GHz, 1333 FSB, 80 W) Option Kit, FIO Base	459492-L21
	Quad-Core Intel® Xeon® Processor L5420 (2.50 GHz, 1333 FSB, 50 W, LV) Option Kit, FIO Base	462876-L21
	Quad-Core Intel® Xeon® processor E5410 (2.33 GHz, 1333 FSB) Option Kit, FIO Base	459493-L21
	Quad-Core Intel® Xeon® Processor L5410 (2.33 GHz, 1333 FSB, 50 W LV), Option Kit, FIO Base	462877-L21
	Quad-Core Intel® Xeon® processor E5405 (2.00 GHz, 1333 FSB, 80 W) Option Kit, FIO Base	459494-L21
	Quad-Core Intel® Xeon® processor X5365 (3.00 GHz,1333 FSB, 120 W) Option Kit, FIO Base	453190-L21
	Quad-Core Intel® Xeon® processor X5355 (2.66 GHz, 1333 FSB, 120 W). Option Kit, FIO Base	435565-L21
	Quad-Core Intel® Xeon® processor E5345 (2.33 GHz, 1333 FSB, 80 W) Option Kit, FIO Base	435564-L21
	Quad-Core Intel® Xeon® processor E5335 (2.00 GHz, 1333 FSB, 80 W) Option Kit, FIO Base	443753-L21

	Quad-Core Intel® Xeon® processor L5335 (2.00 GHz, 1333 FSB, 50 W) Option Kit, FIO Base	453609-L21
	Quad-Core Intel® Xeon® Processor E5320 (1.86GHz, 1066 FSB, 80 W) Option Kit, FIO Base	435563-L21
	Quad-Core Intel® Xeon® Processor L5320 (1.86 GHz, 1066 FSB, 80 W) Option Kit, FIO Base	443752-L21
	Quad-Core Intel® Xeon® Processor E5310 (1.60GHz, 1066 FSB, 80 W) Option Kit, FIO Base	435562-L21
	Dual-Core Processor Option Kits	
	Dual-Core Intel® Xeon® processor X5260 (3.33 GHz, 1333 FSB, 80 W) Option Kit, FIO Base	461623-L21
	Dual-Core Intel® Xeon® processor L5240 (3.00 GHz, 1333 FSB, 40 W, LV) Option Kit, FIO Base	461624-L21
	Dual-Core Intel® Xeon® processor E5205 (1.86 GHz, 1333 FSB, 65 W) Option Kit, FIO Base	461625-L21
	Dual-Core Intel® Xeon® processor X5160 (3.0 GHz, 1333FSB, 65 W) Option Kit, FIO Base	416660-L21
	Dual-Core Intel® Xeon® processor X5150 (2.66 GHz 1333 FSB, 65 W) Option Kit, FIO Base	416659-L21
	Dual-Core Intel® Xeon® processor X5148 (2.33 GHz LV, 1333 FSB, 40 W) Low-Voltage Option Kit, FIO Base	419736-L21
	Dual-Core Intel® Xeon® processor X5140 (2.33 GHz 1333 FSB, 65 W) Option Kit, FIO Base	416658-L21
	Dual-Core Intel® Xeon® processor X5130 (2.00 GHz, 1333 MHz FSB, 65W) Option Kit, FIO Base	419735-L21
	Dual-Core Intel® Xeon® processor X5120 (1.86 GHz, 1066 MHz FSB, 65 W) Option Kit, FIO Base	419734-L21
	Dual-Core Intel® Xeon® processor X5110 (1.6 GHz, 1066 FSB, 65 W) Option Kit, FIO Base	416657-L21
Memory	1 GB FBD PC2-5300 (2 x 512 MB) Kit	397409-B21
	2 GB FBD PC2-5300 (2 x 1 GB LP) Kit	461826-B21
	2 GB FBD PC2-5300 (2 x 1 GB) Kit	397411-B21
	4 GB FBD PC2-5300 (2 x 2 GB LP) Kit	461828-B21
	4 GB FBD PC2-5300 (2 x 2 GB) Kit	397413-B21
	8 GB FBD PC2-5300 (2 x 4 GB) Kit	397415-B21
	8 GB FBD PC2-5300 (2 x 4 GB LP) Kit	466440-B21
	16 GB FBD PC2-5300 (2 x 8 GB) Kit	413015-B21
	NOTE: Memory Option Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: http://h18004.www1.hp.com/products/servers/platforms/energyefficient/	
	NOTE: Must be installed in pairs	

Step 3: Choose Additional Factory Integratable Options

VMware ESX Server 3i integrated hypervisor	VMware ESX Server 3i 2P integrated hypervisor	464668-B21
	VMware ESX Server 3i VI3 Enterprise 2P integrated hypervisor	464669-B21
	NOTE: For additional information and option kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12307_na/12307_na.html	
Citrix XenServer integrated hypervisor	Integrated XenServer HP Select Edition 2P/4P	464673-B21
	Integrated XenServer HP Enterprise Edition 2P/4P	464674-B21
	NOTE: For additional information and option kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/13019_na/13019_na.html	
Hard Drive Backplane	HP ProLiant BL460c Hard Disk Drive Backplane, FIO	447711-B21
	NOTE: The Hard Drive Backplane is required for all blades that support hard disk drives.	
Controller Cache	64 MB Cache - FIO Only **NOTE:** Integrated HP Smart Array E200i RAID controller supporting RAID 0/1 Controller cache module selection is required for all blades that support hard disk drives. Select either the standard 64 MB module above or the optional 128 MB module below. **NOTE:** This option is not required when configuring a Drive-less Model.	405102-B21
	128 MB Battery-Backed Cache Enabler **NOTE:** Supports the HP Smart Array E200i Controller. **NOTE:** This option is not required when configuring a Drive-less Model.	351580-B21

Step 4: Choose Additional Options for Factory Integration

NOTE: For additional options, including server blade enclosures interconnect options and power subsystem options; please see the options section below; or the following QuickSpecs:
HP BladeSystem c-Class Infrastructure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12517_na/12517_na.html
and HP BladeSystem c-Class Interconnect Components QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12524_na/12524_na.html.

Options

Ethernet Mezzanine Options	HP NC325m PCI Express Quad Port 1Gb Server Adapter for c-Class BladeSystem **NOTE:** The NC325m Server Adapter must be installed in Mezzanine Slot 2 of a half-height server blade to provide connectivity on all 4 ports. If installed in Mezzanine Slot 1 of a half-height server blade, the NC325m Server Adapter will provide connectivity on 2 of the 4 ports.	416585-B21
	HP NC326m PCI Express Dual Port 1Gb Server Adapter for c-Class BladeSystem	406771-B21
	HP NC360m Dual Port 1GbE BL-c Adapter	445978-B21
	HP NC364m Quad Port 1GbE BL-c Adapter **NOTE:** If the NC364m is installed in mezzanine slot 1 of a half-height server, connectivity will be provided on only 2 of the 4 ports	447883-B21
	HP NC373m PCI Express Dual Port Multifunction Gigabit Server Adapter for c-Class BladeSystem **NOTE:** The Gigabit Ethernet adapters above transmit from the server only at 2000 Mbps, full duplex per port. For more information, see the "Network Controller" segment in the Standards Features section.	406770-B21
	HP NC512m Dual Port 10GbE Multifunction BL-c Adapter **NOTE:** An NC512m network adapter card is required for each server blade connecting to the HP 10Gb Ethernet BL-c Switch. **NOTE:** A maximum of one NC512m is supported per server in a type II mezzanine slot. **NOTE:** The NC512m requires a minimum of 4 GB of server memory and supports a maximum of 32 GB. Therefore, when an NC512m is installed in a blade server, the server is limited to a maximum of 32 GB of memory. **NOTE:** The NC512m adapter transmits from the server only at 2 Gbps, full duplex.	440910-B21
Fiber Channel Mezzanine Options	Emulex LPe1105 FC Dual Channel 4Gb, PCI-E-to-Fibre Channel Host Bus Adapter	403621-B21
	QLogic QMH2462 4Gb FC HBA for HP c-Class BladeSystem	403619-B21
HP InfiniBand Mezzanine Options	HP 4X DDR IB Dual Port Mezzanine HCA for HP BladeSystem c-Class	448262-B21
	HP 4X DDR IB Mezzanine HCA for HP BladeSystem c-Class	410533-B21
HP StorageWorks SB40c Storage Blade	HP StorageWorks SB40c Storage Blade **NOTE:** Please see the SB40c Storage Blade QuickSpecs for additional options and configuration information at: http://h18000.www1.hp.com/products/quickspecs/12587_na/12587_na.html	411243-B21

Options

HP PCI Expansion Blade	HP PCI Expansion Blade **NOTE:** Ships with one pre-installed PCI-X connect board. Also includes one PCIe connect board which requires installation. **NOTE:** Please see the HP PCI Expansion Blade QuickSpecs for additional options and configuration information at: http://h18000.www1.hp.com/products/quickspecs/12753_na/12753_na.html	448018-B21
HP c-Class Tape Blades	HP StorageWorks SB920c Tape Blade **NOTE:** LTO-3 Ultrium technology	AJ401A
	HP StorageWorks Ultrium 448c Tape Blade **NOTE:** LTO-2 Ultrium technology	440947-B21
	NOTE: The HP PCI Express Mezzanine Pass-Thru Card for HP BladeSystem (431643-B21) is required when installing a tape blade adjacent to a full-height server blade. **NOTE:** Please see the HP Tape Blades QuickSpecs for additional options and configuration information at: http://h18000.www1.hp.com/products/quickspecs/12729_na/12729_na.html	
HP Insight Control Management Suites for HP BladeSystem	**NOTE:** Electronic licensing options are available for Insight Control suites software products. Please see the appropriate Insight Control QuickSpecs for additional information.	
	Insight Control Environment for BladeSystem	
	HP Insight Control Environment for BladeSystem, No Media 1-Server License including 1 year of 24x7 Technical Support and Updates **NOTE:** Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate 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 and Update Service.	453484-B21
	HP Insight Control Management Software Media Kit **NOTE:** Insight Control Management DVD media without licenses. Contains Insight Manager and Essentials software products and components licensed by Insight Control Management suites. Uses an integrated installer to perform quick and accurate software installation and updates.	436222-B21
	NOTE: For additional HP Insight Control Environment, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12631_na/12631_na.html	
	HP Insight Control Environment for Linux	
	HP Insight Control Linux Edition, No Media, 1-Server License including 1 year of 24x7 Technical Support and Updates **NOTE:** This part number can be used to purchase one (1) license with a single activation key. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate 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 and Update Service. One certificate is shipped for each license.	464423-B21
	HP Insight Control Linux Edition Media Only Kit **NOTE:** This optional Media pack CD contains the ISO image for HP Insight Control Environment for Linux, HP System Insight Manager, and an integrated installer. Servers must be acquired separately. This Media pack is optional because the latest ISO image and latest updates	464422-B21

may be downloaded at no cost from: http://www.hp.com/go/ice-linux (click on Download button).

NOTE: For additional HP Insight Control Linux Edition License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/13019_na/13019_na.html

HP iLO Power Management Pack for BladeSystems

HP iLO Power Management Pack for BladeSystem, No Media, 1-Server License including 1 year of 24x7 Technical Support and Updates **NOTE:** This option kit includes 1 license for iLO Select and Insight Power Manager. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate 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 and Update Service.	442937-B21

NOTE: For additional -HP Insight Power Manager Packs please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12632_na/12632_na.html

---

Server Management Stand Alone Software Product – ProLiant Essentials

NOTE: Electronic licensing options are available for Insight Control suites and select ProLiant Essentials software products. Please see the appropriate Insight Control and ProLiant Essentials QuickSpecs for additional information.

Deploy

Rapid Deployment Pack

ProLiant Essentials Rapid Deployment Pack No Media 1-Server License including 1 year of 24x7 Technical Support and Updates **NOTE:** This license allows 1 server to be deployed and managed via RDP. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate 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 and Update Service.	452151-B21

NOTE: For additional ProLiant Essentials Rapid Deployment Pack License Kits- please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11053_na/11053_na.html

HP Server Migration Pack – Universal Edition

HP Server Migration Pack – Universal Edition, No Media, Physical / Virtual to ProLiant Single Migration License, including 1 year of 24x7 Technical Support **NOTE:** This license allows 1 physical to ProLiant or virtual to ProLiant migration. Customer will receive a printed license entitlement certificate and documentation via physical shipment. The license entitlement certificate 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.	460750-B21
HP Server Migration Pack – Universal Edition, No Media, Physical / Virtual to Virtual Single Migration License, including 1 year of 24x7 Technical Support **NOTE:** This license allows 1 physical to virtual or virtual to virtual migration. Customer will receive a printed license entitlement certificate and documentation via physical shipment. The license entitlement certificate 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.	460753-B21
HP Server Migration Pack – Universal Edition, No Media, 1-Year Unlimited Migration License, including 1 year of 24x7 Technical Support **NOTE:** This license allows unlimited migrations (physical to ProLiant, physical to	460756-B21

virtual, virtual to virtual, and virtual to ProLiant) for one year. Customer will receive a printed license entitlement certificate and documentation via physical shipment. The license entitlement certificate 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 HP Server Migration Pack - Universal Edition License Kits please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12855_na/12855_na.html

Control

Integrated Lights-Out Select Pack

ProLiant Essentials Integrated Lights-Out Select Pack, No Media, 1-Server License — 452158-B21
NOTE: For additional License Kits, please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12362_na/12362_na.html

ProLiant Essentials Integrated Lights-Out Select Pack, No Media, 8-Blade License, including 1 year of 24x7 Technical Support and Updates — 452161-B21

Featuring: Sophisticated remote control and security features for HP BladeSystem servers and ProLiant ML/DL servers.
NOTE: For additional ProLiant Essentials Integrated Lights-Out Value Packs please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12362_na/12362_na.html

Optimize

HP Insight Power Manager (IPM)

HP Insight Power Manager, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates — 452677-B21
NOTE: Customers purchasing this upgrade must already have an iLO Advanced or Select license on each managed server. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate 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 and Update Service.

NOTE: For additional -HP Insight Power Manager Packs please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12623_na/12623_na.html

ProLiant Essentials Virtual Machine Management Pack

ProLiant Essentials Virtual Machine Management Pack, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates — 452153-B21
NOTE: Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate 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 and Update Service..

NOTE: For additional ProLiant Virtual Machine Management Pack License Kits please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12328_na/12328_na.html

NOTE: Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to: http://www.hp.com/servers/proliantessentials or the various ProLiant Essentials Value Pack product QuickSpecs for more information.
NOTE: For more information regarding ProLiant Essentials Software, please see the following URL: http://www.hp.com/servers/proliantessentials.

Processors	**Quad-Core Process Option Kits**	
	Quad-Core Intel® Xeon® Processor X5460 (3.16 GHz, 1333 FSB, 120 W)	459973-B21
	Quad-Core Intel® Xeon® processor X5450 (3.00GHz 1333 FSB, 120 W)	463056-B21
	Quad-Core Intel® Xeon® processor E5450 (3.00GHz 1333 FSB, 80 W)	459489-B21
	Quad-Core Intel® Xeon® processor E5440 (2.83 GHz, 1333 FSB, 80 W)	459490-B21
	Quad-Core Intel® Xeon® processor E5430 (2.66 GHz, 1333 FSB, 80 W)	459491-B21
	Quad-Core Intel® Xeon® processor E5420 (2.50 GHz, 1333 FSB, 80 W)	459492-B21
	Quad-Core Intel® Xeon® Processor L5420 (2.50 GHz, 1333 FSB, 50 W, LV)	462876-B21
	Quad-Core Intel® Xeon® processor E5410 (2.33 GHz, 1333 FSB, 80 W)	459493-B21
	Quad-Core Intel® Xeon® Processor L5410 (2.33 GHz, 1333 FSB, 50 W)	462877-B21
	Quad-Core Intel® Xeon® processor E5405 (2.00 GHz, 1333 FSB, 80 W)	459494-B21
	Quad-Core Intel® Xeon® processor X5365 (3.00 GHz, 1333 FSB, 120 W)	453190-B21
	Quad-Core Intel® Xeon® processor X5355 (2.66 GHz, 1333 FSB, 120 W)	435565-B21
	Quad-Core Intel® Xeon® processor E5345 (2.33 GHz, 1333 FSB, 80 W)	435564-B21
	Quad-Core Intel® Xeon® processor E5335 (2.00 GHz, 1333 FSB, 80 W)	443753-B21
	Quad-Core Intel® Xeon® processor L5335 (2.00 GHz, 1333 FSB, 50 W)	453609-B21
	Quad-Core Intel® Xeon® processor E5320 (1.86GHz, 1066 FSB, 80 W)	435563-B21
	Quad-Core Intel® Xeon® processor L5320 (1.86 GHz, 1066 FSB, 50 W)	443752-B21
	Quad-Core Intel® Xeon® processor E5310 (1.60GHz, 1066 FSB, 80 W)	435562-B21
	Dual-Core Process Option Kits	
	Dual-Core Intel® Xeon® processor X5260 (3.33 GHz, 1333 FSB, 80 W) Option Kit	461623-B21
	Dual-Core Intel® Xeon® processor L5240 (3.00 GHz, 1333 FSB, 40 W, LV) Option Kit	461624-B21
	Dual-Core Intel® Xeon® processor E5205 (1.86 GHz, 1333 FSB, 65 W) Option Kit	461625-B21
	Dual-Core Intel® Xeon® processor X5160 (3.0 GHz MV, 1333 FSB, 65 W) Option Kit	416660-B21
	Dual-Core Intel® Xeon® processor X5150 (2.66GHz, 1333 FSB, 65 W) Option Kit	416659-B21
	Dual-Core Intel® Xeon® processor X5148 (2.33 LV GHz, 1333 FSB, 40 W) Option Kit	419736-B21
	Dual-Core Intel® Xeon® processor X5140 (2.33 GHz, 1333 FSB, 65 W) Option Kit	416658-B21
	Dual-Core Intel® Xeon® processor X5130(2.00 GHz, 1333 FSB, 65 W) Option Kit	419735-B21
	Dual-Core Intel® Xeon® processor X5120 (1.86 GHz, 1066 FSB, 65 W) Option Kit	419734-B21
	Dual-Core Intel® Xeon® processor X5110 (1.6 GHz, 1066 FSB, 65 W) Option Kit	416657-B21

Options

Memory	1 GB FBD PC2-5300 2 x 512 MB Kit	397409-B21
	2 GB FBD PC2-5300 2 x 1 GB Low Power Kit	461826-B21
	2 GB FBD PC2-5300 2 x 1 GB Kit	397411-B21
	4 GB FBD PC2-5300 2 x 2 GB Low Power Kit	461828-B21
	4 GB FBD PC2-5300 2 x 2 GB Kit	397413-B21
	8 GB FBD PC2-5300 2 x 4 GB Kit	397415-B21
	8GB FBD PC2-5300 2 x 4 GB Low Power Kit	466440-B21
	16 GB FBD PC2-5300 2x8 GB Kit	413015-B21
	NOTE: Memory Option Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: http://h18004.www1.hp.com/products/servers/platforms/energyefficient/	
	NOTE: Must be installed in pairs.	
Hard Drives	**Serial Attached SCSI (SAS) SFF Hot Plug**	
	HP 72GB 3G SAS 15K SFF DP HDD	418371-B21
	HP 72GB 3G SAS 15K SFF SP HDD	431935-B21
	HP 36GB 3G SAS 15K SFF DP HDD	418369-B21
	HP 36GB 3G SAS 15K SFF SP HDD	431933-B21
	HP 146GB 3G SAS 10K SFF DP HDD	418367-B21
	HP 146GB 3G SAS 10K SFF SP HDD	431958-B21
	HP 72GB 3G SAS 10K SFF DP HDD	384842-B21
	HP 72GB 3G SAS 10K SFF SP HDD	375861-B21
	HP 36GB 3G SAS 10K SFF SP HDD	375859-B21
	NOTE: SAS drives have a 3 year warranty.	
	NOTE: Please see the SAS Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature: http://h18000.www1.hp.com/products/quickspecs/12244_na/12244_na.html	
	NOTE: The hard drive options are not required when configuring a Drive-less Model.	
	SFF SATA Hot Plug	
	HP 120GB 1.5G SATA 5.4K SFF HDD	431786-B21
	HP 60GB 1.5G SATA 5.4K SFF HDD	379306-B21
	NOTE: SATA drives have a 1 year warranty. Please see the SATA Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature: http://h18000.www1.hp.com/products/quickspecs/11940_na/11940_na.html	
	NOTE: The hard drive options are not required when configuring a Drive-less Model.	
Controller Cache	128MB Battery-Backed Cache Enabler	351580-B21
	NOTE: Supports the HP Smart Array E200i Controller.	
	NOTE: This option is not required when configuring a Drive-less Model.	

Options

High Availability Cluster Options	HP Serviceguard Linux x86 Server License & Media including One Year 24x7 Software Support & Updates	463831-B21
	HP Serviceguard Linux Oracle Single Instance Database Toolkit x86 Cluster License & Media including One Year 24x7 Software Support & Update	463833-B21
	HP Serviceguard Linux Extension for SAP (SGeSAP/LX) x86 Server License & Media including One Year 24x7 Software Support & Updates	463834-B21
	HP Serviceguard Linux Extended Distance Cluster (XDC) x86 Server License & Media including One Year 24x7 Software Support & Updates	463835-B21
	NOTE: For a detailed list of supported configuration/certification options for HP Serviceguard for Linux please refer to the HP Serviceguard for Linux Certification Matrix at: http://www.hp.com/go/sglx/info.	
	NOTE: HP Serviceguard for Linux products running on x86 platforms now include one year of 24 x 7 Software Technical Support and Updates. Please see the Support Information section of the HP Serviceguard for Linux QuickSpecs for details.	
	NOTE: For additional information regarding the HP Serviceguard for Linux License, please see the following QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11518_na/11518_na.html	

USB Options	HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)	DC172B
	HP 1GB USB 2.0 Floppy Drive Key	442085-B21
	HP 256MB USB 2.0 Floppy Drive Key	442084-B21
	External USB 2.0 Multi-Bay II Cradle	PA509A
	Multibay II 9.5mm DVD Drive	PA849A
	USB 2.0 4-port Hub	DG954A
	2004 Standard Keyboard USB	DT528A#ABA
	1.44MB External USB Floppy Drive	DC141B

Service and Support Offerings (HP Care Pack Services)	**NOTE:** The HP Care Pack service part numbers below for ProLiant BL c-Class server blades, cover the server blade and all HP branded hardware options qualified for the server, purchased at the same time or afterwards, internal to the server.	
	Hardware Services On-site Service	
	4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	UK065E
	4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UK066E
	6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UK067E
	Support Plus 24	
	Onsite HW support 24x7, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	UE473E

Memory

NOTE: Memory configurations listed do not apply to "Factory Integrated Models".

DIMM installation guidelines:

1. All DIMMs must be PC2-5300 Fully Buffered DIMMs at 667 MHz.
2. Both DIMM slots in a memory bank must be populated.
3. Banks must be populated in sequential alphabetic order, starting with bank A.
4. Both DIMMs in a memory bank must be identical. Install identical DIMMs as pairs only, starting with DIMM socket 1, bank A.
5. Multiple advanced memory protection (AMP) modes are supported, based on FBDIMM population and RBSU selection. The server blade defaults to Advanced ECC

HP ProLiant BL460c Server Blade (1P Model)

Standard Memory

1024 MB (2 x 512 MB) or 2048 MB (2 x 1024 MB) (depending on model)of PC2-5300, FBD DDR2-667 ECC DIMMs

Standard Memory Plus Optional Memory

Up to 50176 MB or 51200 MB (depending on model) of PC2-5300, FBD DDR2-667 ECC DIMMs. Memory is available with the installation of optional PC2-5300, FBD DDR2-667 DIMM memory expansion kits.

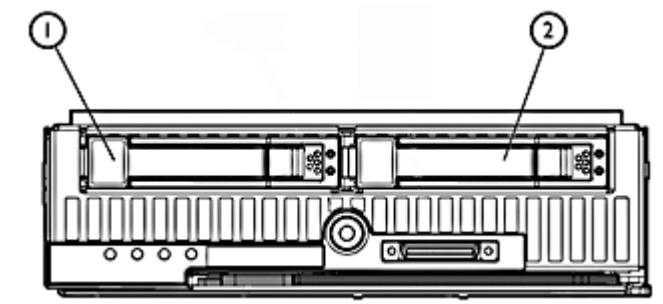
Standard Memory Replaced with Optional Memory

Up to 65536 MB of PC2-5300, FBD DDR2 FBD-667 ECC DIMMs. Memory is available with removal of standard and the installation of optional PC2-5300, FBD DDR2-667 DIMM memory expansion kits.

Memory		Slot							
		1A	2C	3A	4C	5B	6D	7B	8D
Standard	1024 MB	512 MB	Empty	512 MB	Empty	Empty	Empty	Empty	Empty
Standard	2048 MB	1024 MB	Empty	1024 MB	Empty	Empty	Empty	Empty	Empty
Optional	50176 MB	512 MB	8192 MB	512 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB
Optional	51200 MB	1024 MB	8192 MB	1024 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB
Maximum	65536 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB

Following are memory options available from HP:

1GB FBD PC2-5300 (2 x 512 MB) Kit	397409-B21
2GB FBD PC2-5300 (2 x 1 GB LP) Kit	461826-B21
2GB FBD PC2-5300 (2 x 1 GB) Kit	397411-B21
4GB FBD PC2-5300 (2 x 2 GB LP) Kit	461828-B21
4GB FBD PC2-5300 (2 x 2 GB) Kit	397413-B21
8GB FBD PC2-5300 (2 x 4 GB) Kit	397415-B21
8GB FBD PC2-5300 (2 x 4 GB LP) Kit	466440-B21
16 GB FBD PC2-5300(2x8 GB) Kit	413015-B21



1-2 2 x SFF SAS or SATA Hot Plug Hard Drives

Hard Drives

SAS Hard Drive

	Quantity Supported	Position Supported	Controller
72 GB 15,000 rpm SAS 36 GB 15,000 rpm SAS 146 GB 10,000 rpm SAS 72 GB 10,000 rpm SAS	2	1-2	HP Smart Array E200i Controller

Serial-ATA (SATA) Hard Drive

	Quantity Supported	Position Supported	Controller
120 GB 5,400 rpm SATA 60 GB 5,400 rpm SATA	2	1-2	HP Smart Array E200i Controller **NOTE:** This option is not supported or available within the Drive-less CTO Model.

SATA Hot Plug Entry (ETY) Drives

	Quantity Supported	Position Supported	Controller
HP 120 GB 1.5 G SATA 5.4K SFF ETY HDD	2	1-2	HP Smart Array E200i Controller **NOTE:** This option is not supported or available within the Drive-less CTO Model.

Storage

External Storage

	Quantity Supported	Position Supported	Host Controller or Adapter
XP Disk Array Systems	Please see the XP Disk Array Systems QuickSpecs below to determine configuration requirements	External	Please see the XP Disk Array Systems Quick Specs for the latest list of supported HBAs
HP StorageWorks XP10000 Disk Array: http://h18006.www1.hp.com/products/storageworks/xp10000/index.html			
Enterprise Virtual Array Systems	Please see the XP Disk Array Systems QuickSpecs below to determine configuration requirements	External	Please see the XP Disk Array Systems Quick Specs for the latest list of supported HBAs
HP StorageWorks Enterprise Virtual Array Family http://h18006.www1.hp.com/products/quickspecs/12408_na/12408_na.html			

System Unit	**Dimensions** (H x W x D) (with bezel)	7.154 x 2.19 x 20.058 in (18.17 x 5.56 x 50.95 cm)	
	Weight (approximate)	Maximum (all hard drives and processors installed)	14.20 lb (6.44 kg)
		Minimum (one hard drive and processor installed)	10.75 lb (4.87 kg)
	Power Specifications	For power specifications including Input Requirements, BTU Rating, and Power Supply Output, please see the HP BladeSystem c-Class Infrastructure QuickSpecs located at URL: http://h18000.www1.hp.com/products/quickspecs/12517_na/12517_na.html To review typical system power ratings use the HP BladeSystem Power Sizer which is available via the online tool located at URL: http://www.hp.com/go/bladesystem/powercalculator	
	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 1000 ft) above sea level to a maximum of 3050 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	3050 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 (1500 ft/min).
		Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Acoustic Noise	For acoustic noise specifications, please see the HP BladeSystem c-Class Infrastructure QuickSpecs located at URL: http://h18000.www1.hp.com/products/quickspecs/12517_na/12517_na.html	

Technical Specifications

HP Smart Array E200i Controller	**Disk Drive and Enclosure Interface**	3G SAS (Serial Attached SCSI) 1.5G SATA (Serial Advanced Technology Attachment)
	Cache Memory Speed	DDR-1/266 MHz provides up to 4.2 GB/s maximum bandwidth.
	Server Interface	x4 2.5G PCIe provides 2GB/s maximum bandwidth.
	SAS Speed	x2 3G SAS provides 600MB/s maximum bandwidth.
	Cache Memory	40-bit 64MB or 128MB cache: ECC protection, battery-backed, and transportable
	Logical Drives Supported	Up to 32 logical volumes
	Maximum Logical Drive Capacity	144GB (2 x 72GB)
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	RAID Support	RAID 5 (Distributed Data Guarding) requires 128MB BBWC option RAID1, 1+0 (Striping & Mirroring) RAID 0 (Striping)
	Upgradeable Firmware	Upgradeable Firmware

Embedded NC373i Multifunction Gigabit Server Adapter	**Network Processor**	Broadcom 5708S
	Data Transfer Method	Four lane (x4) PCI Express
	Network Transfer Rate	1000 Mb/s half duplex (theoretical maximum value) **NOTE:** The Gigabit Ethernet adapters above transmit from the server only at 2000 Mbps, full duplex per port. For more information, see the "Network Controller" segment in the Standards Features section.
	IEEE Compliance	802.1p, 802.1Q, 802.3, 802.3ad, and 802.3x
	Standard Features	• TCP/IP offload engine (TOE) for Microsoft Windows • iSCSI Boot for Linux • 9K jumbo frames • TCP/IP checksum offload (TCO) • Large send offload (LSO) • Interrupt coalescence • Dual address cycles (DAC) • Wake-on-LAN (WOL) • Pre-boot execution environment (PXE) • ProLiant Teaming including Network Fault Tolerance, Transmit Load Balancing, and Switch-Assisted Load Balancing • IPv6 packet transmit and receive (excluding all offload capabilities); IPv6 aware SNMPv1 agents for Windows

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.

© Copyright 2008 Hewlett-Packard Development Company, L.P.

The information contained herein is subject to change without notice.

Microsoft and Windows NT are US registered trademarks of Microsoft Corporation. Intel, the Intel logo, Xeon and Xeon Inside are trademarks of Intel Corporation in the U.S. and other countries.

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

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