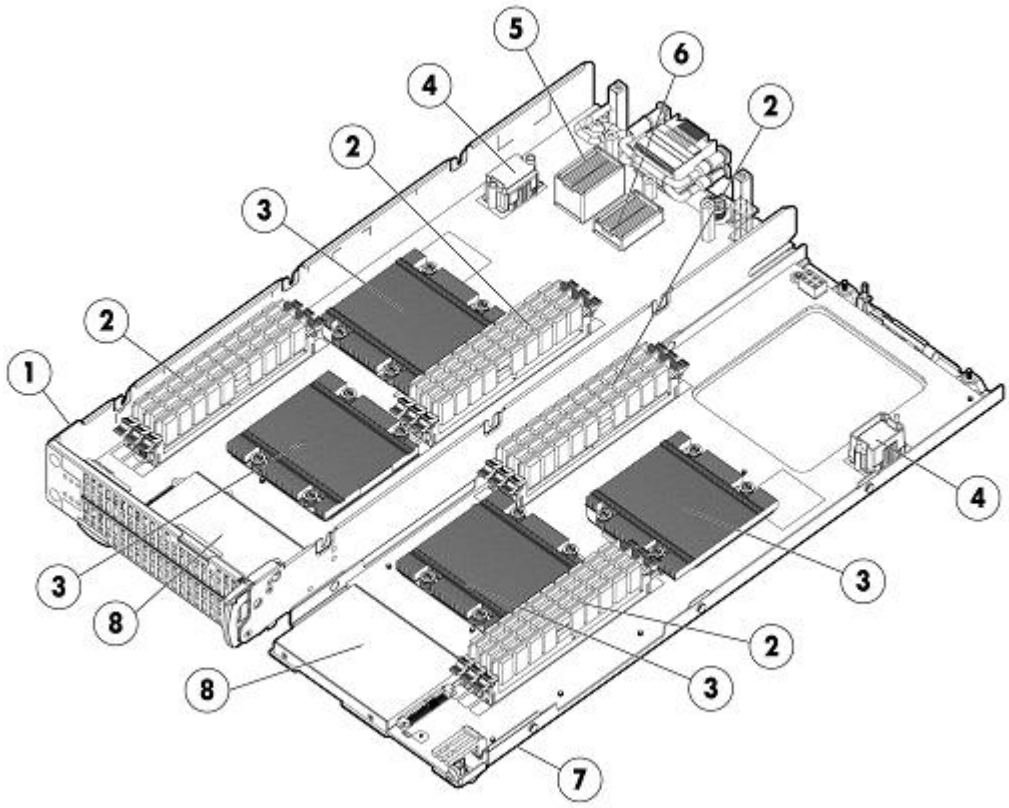
Overview



HP ProLiant BL2x220c Generation 6 (G6) Server Blade

1. Server A
2. Six (6) PC3-10600 (DDR3) Registered or Unbuffered DIMM Memory Slots
3. Two (2) Intel® Xeon® 5600 or 5500 series processors
4. Server Interconnection
5. Local I/O connection
6. Local I/O connection
7. Server B
8. Two (2) small form factor (SFF) non-hot plug drive bays

What's New

- Support for HP NC553m 10Gb 2-port FlexFabric Adapter

At A Glance

This document covers the HP ProLiant BL2x220c G6 server blade only. For more information on HP BladeSystems c-Class Enclosures and HP BladeSystem c-Class Interconnect and Mezzanine Components, please see the following:

HP BladeSystem c-Class c7000 Enclosure QuickSpecs:
http://h18004.www1.hp.com/products/quickspecs/12810_div/12810_div.html
HP BladeSystem c-Class Interconnect and Mezzanine Components:
http://h18004.www1.hp.com/products/blades/components/c-class-interconnects.html
http://h18004.www1.hp.com/products/blades/components/c-class-adapters.html

Overview

The HP ProLiant BL2x220c provides maximum 2-socket x86 server blade density with benchmark leading power efficiency. HP ProLiant BL2x220c server blade includes 2 server nodes per blade providing up to 256 processor sockets/1536 processor cores in 40U of rack space. All specifications listed per node (2 nodes per blade chassis).

HP ProLiant BL2x220c G6 includes:

- Processor:
  - Up to two (2) Intel® Xeon® 5600 or 5500 Series processors, up to 2.93 GHz
- Intel® 5500 chipset
- Memory:
  - Six (6) DIMM slots
  - Up to 96GB memory with PC3-10600 or PC3-8500 (DDR3-1333) Registered DIMMs, or up to 24GB memory with PC3-10600 (DDR3-1333) Unbuffered DIMMs
  - Advanced ECC memory support
- Internal Drive Support:
  - 1 non-hot plug small form factor SATA drive (120GB or 250GB)
  - 1 non-hot plug small form factor Solid State Drive (SSD) (32GB or 64GB)
- Network Controller:
  - Embedded Dual-port NC362i Gigabit Server Adapter
  - Additional Ethernet adapter ports available via the mezzanine expansion slot
  - One (1) additional 10/100 network adapter dedicated to iLO 2 Management
- Mezzanine Support:
  - One (1) I/O expansion slot per server node via mezzanine card (Type I only)
    - Dual Port FlexFabric Adapter mezzanine option
    - Fibre Channel Mezzanine options for SAN connectivity (Choice of Emulex or QLogic)
    - Ethernet adapter Mezzanine options for additional network ports
    - InfiniBand (IB) Mezzanine 4X QDR (40Gbps) and DDR (20Gbps) options for low latency and high bandwidth server interconnectivity
    - SAS mezzanine option for external direct attach and shared SAS storage
- Internal USB Support:
  - One (1) internal USB 2.0 connector for security key devices and USB drive keys
  - One (1) optional internal SD-HC card slot
    NOTE: Internal USB 2.0 not available when SD-HC card slot option is installed
  - Form Factor:
  - Half height c-Class Server Blade
- Infrastructure Management:
  - This server blade requires the latest version of the Onboard Administrator firmware. This firmware release may also require other subsystem firmware upgrades. For information on the latest firmware versions, please see the Blades Firmware Maintenance website at: http://h18004.www1.hp.com/products/blades/components/c-class-compmatrix.html
  - HP Integrated Lights-Out 2 (iLO 2) management processor for simplified server setup, health monitoring and recovery, power and thermal control, and lights-out remote administration.
  - HP Insight Control, as product options, deliver essential infrastructure management that can help save time and money by making it easy to deploy, monitor, control and optimize your IT infrastructure through a single, simple management console. Insight Control support both Windows and Linux-based central management server
  - HP Insight Dynamics for ProLiant servers, a product option, is an integrated command center that enables you to continuously analyze and optimize your adaptive infrastructure. This advanced infrastructure management software lets you reduce the cost of common data center tasks by as much as 40 percent while keeping pace with your changing business.
- Operating Systems:
  - Supports Windows, Linux, Solaris, Citrix XenServer and VMware Operating Systems
- Enclosures:

Overview

- The BL2x220c G6 supports the following enclosure:
  - The HP BladeSystem c7000 rack enclosure is 10U high and holds up to 16 ProLiant BL2x220c Blades (32 server nodes) plugged vertically.
    NOTE: Ten (10) fans are required in the c7000 enclosure.
    NOTE: N + N power supply redundancy is not supported. N + 1 power supply redundancy is supported.
    NOTE: The BL2x220c G6 is not supported in the c3000 enclosure.
- Server blades, storage blades, interconnect modules, power supplies, fans, and redundant Onboard Administrator modules are all designed to fit into the c7000 enclosures
- 95 Watt Processor Configuration Requirements and Limitations
  - When 95W processors are installed the following configuration requirements and limitations apply:
    - All six (6) DIMM slots must be populated on each server node.
      - Six (6) enclosure power supplies are required.
    - N + N power supply redundancy is NOT supported. N + 1 power supply redundancy is supported.
      - Memory mirroring and lock-step mode are not supported with 95W processors.
- 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 one year 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. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.
    NOTE: Server Warranty includes 3 year Next Day Parts replacement, 0-Years Labor, 0-Years Onsite support.
    Additional information regarding worldwide limited warranty and technical support is available at:
    http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html.

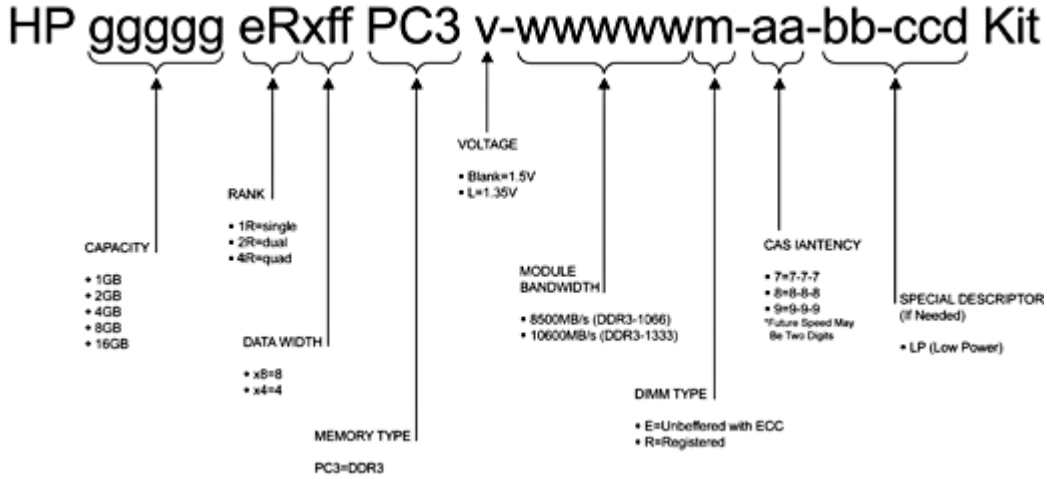
Standard Features

Processor	NOTE: If selecting a 95W processor configuration, there are specific enclosure configuration requirements and limitations. Please see page 3 for these requirements and limitations. Six-Core Processors Intel® Xeon® processor X5670 (2.93 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) Intel® Xeon® processor X5660 (2.80 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) Intel® Xeon® processor X5650 (2.66 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) Intel® Xeon® processor L5640 (2.26 GHz, 12MB L3 Cache, 60W, DDR3-1333,, HT, Turbo 2/2/3/3/4/4) Quad-Core Processors Intel® Xeon® Processor X5570 (2.93 GHz, 8MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3) Intel® Xeon® Processor X5560 (2.80 GHz, 8MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3) Intel® Xeon® Processor X5550 (2.66 GHz, 8MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3) Intel® Xeon® processor E5640 (2.66 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) Intel® Xeon® processor E5630 (2.53 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) Intel® Xeon® processor E5620 (2.40 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) Intel® Xeon® processor E5540 (2.53 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) Intel® Xeon® processor E5530 (2.40 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) Intel® Xeon® processor E5506 (2.13 GHz, 4MB L3 Cache, 80W, DDR3-800) Intel® Xeon® processor L5630 (2.13 GHz, 12MB L3 Cache, 40W, DDR3-1066, HT, Turbo 1/1/2/2) Intel® Xeon® processor L5530 (2.40 GHz, 8MB L3 cache, 60W, DDR-31066, HT, Turbo 1/1/2/2) Intel® Xeon® processor L5520 (2.26 GHz, 8MB L3 Cache, 60W, DDR3-1066, HT, Turbo 1/1/2/2) Intel® Xeon® processor L5506 (2.13 GHz, 4MB L3 Cache, 60W, DDR3-800) NOTE: HT indicates that the processor model supports Intel® Hyper-Threading Technology. NOTE: Turbo indicates the maximum potential frequency increment when using Intel® Turbo Boost Technology, with 6, 5, 4, 3, 2, and 1 cores active. NOTE: DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed. NOTE: For the Intel 5600 and 5500 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	2 processors per server node standard
Cache Memory	4MB, 8MB or 12MB shared L3 cache
Chipset	Intel® 5500 chipset

Standard Features

Memory	Type	PC3-10600 (DDR3-1333) Registered or Unbuffered DIMMS
	Standard	24 GB (6 x 4GB) per server node
	Maximum (RDIMM)	96 GB (6 x 16GB) per server node
	Maximum (UDIMM)	24 GB (6 x 2GB) per server node

DDR3 memory options part number decoder



Network Controller	Embedded NC362i Dual Port Gigabit Server Adapter One (1) additional 10/100 network adapter dedicated to iLO 2 Management per server node		
I/O Expansion Slots	One (1) I/O expansion mezzanine slot (x8 PCI Express Gen 2) per server node		
Integrated Manageability	HP Integrated Lights-Out 2 (iLO 2) management processor		
Storage Controller	HP Embedded SATA Controller		
Maximum Internal Storage	Non-Hot Plug Serial ATA (SATA)	250GB SATA	1 x 250GB Serial ATA (Per server node)
	Non-Hot Plug SSD (SATA)	64GB SATA	1 x 64GB SATA (Per server node)
Graphics	Integrated ATI RN-50, 32 MB video memory		

Standard Features

Graphics Resolution Supported

Resolution Color Depths	Depths
	1600x1280, 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

NOTE: Maximum resolution available via HP Integrated Lights-Out 2 (iLO 2) remote console is 1280 x 1024.

Partner Blade Support

Partner blades such as the PCI Expansion Blade, Tape Blade and SB40c are not supported on the BL2x220c.

Onboard Administrator

The BL2x220c is supported with Onboard Administrator firmware version 2.60 or later. This firmware release may also require other subsystem firmware upgrades please consult http://h18004.www1.hp.com/products/blades/components/c-class-compmatrix.html for more information.

Fibre Channel Support

One optional Fibre Channel HBA is supported per node by the HP ProLiant BL2x220c. Mezzanine circuit boards connect directly to the server blade system board. Fibre Channel HBAs are available via option kits and must be ordered separately.

HBA mezzanine option kits:

Emulex LPe1105 4Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem (PN 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 Fibre Channel Host Bus Adapter for c-Class BladeSystem (PN 403619-B21)

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

Emulex and QLogic Fibre Channel HBAs feature:

- Optimal performance utilizing PCI Express
- 4/2/1Gb/s auto negotiating speeds (4 Gb HBAs)
- 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 BL2x220c server blades are optimized for HP StorageWorks MSA, EVA and XP

HP ProLiant BL2x220c 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

HP Virtual Connect		HP Virtual Connect is an interconnection option for HP BladeSystem c-Class that simplifies server connectivity to data and storage networks, and reduces costs. Unique HP Flex-10 and FlexFabric technologies make maximum use of network bandwidths, provide dynamic tuning and enable extreme flexibility to meet individual server and infrastructure requirements. HP Virtual Connect Enterprise Manager (VCEM) provides a central console to administer network connections and workloads for thousands of servers. For more information on Virtual Connect Ethernet, Fibre Channel, Converged Network and management options see: www.hp.com/go/virtualconnect
HP Insight management software	HP Insight Foundation	Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex Datacenters. HP provides management solutions that are designed to simplify a server's installation, configuration and maintenance throughout the entire server lifecycle. This provides the customer with higher levels of operational efficiency and highly reliable systems: www.hp.com/go/foundation. The foundation pack includes: • HP SmartStart • HP Management DVD • HP ProLiant Smart Update Firmware DVD • SmartStart version supported (minimum): SmartStart 8.30 http://www.hp.com/servers/smartstart NOTE: In an effort to support reducing our environmental impact, the HP Insight Foundation Suite for ProLiant media will be available as a selectable option for this server at time of order of a Factory Integrated Model. This will allow customers to order the number of media kits that best meet their needs and eliminate receiving unnecessary duplicate media.
	HP Integrated Lights-Out (iLO)	HP Integrated Lights-Out (iLO) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP iLO functions without additional software and can be accessed from any location via a web browser. HP iLO works hand-in-hand with HP Systems Insight Manager, Insight Control suites, and Insight Dynamics for ProLiant, helping customers unleash the value of the ProLiant platform and deliver the highest possible quality of IT service. For more information, visit: www.hp.com/go/iLO
	HP Insight Control	HP Insight Control, as product options, deliver essential infrastructure management that can help save time and money by making it easy to deploy, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. Insight Control installs and licenses software modules that are integrated into HP System Insight Manager. Two Insight Control suites are available, to serve environments requiring either a Linux-based or a Windows-based central management server: HP Insight Control for Linux, and HP Insight Control. See www.hp.com/go/insightcontrol

Standard Features

		HP Insight Control 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/insight.
	HP Insight Dynamics	HP Insight Dynamics for ProLiant, a product option, is advanced infrastructure management software that enables IT staff to instantly adjust their environments to meet dynamic business demands by provisioning, optimizing and protecting complex infrastructure in minutes. It's a powerful toolkit, integrated-by-design, that accelerates complex technology projects and simplifies daily operations, transforming data center economics. With Insight Dynamics IT professionals can plan capacity and power continuously, balance workloads across physical and virtual resources, and ensure cost-effective high availability. It also enables IT organizations to provision infrastructure consistently and automatically from pools of shared resources using a self-service portal. Resources provisioned can range from a single virtual machine to complex multi-tier environments and their associated physical and virtual resource requirements. In addition to the previous functional benefits, it also provides a cost-effective disaster recovery for physical and virtual environments that works with HP StorageWorks Continuous Access software for both the Enterprise Virtual Array and the XP storage array allowing application environments to be reactivated in minutes with the touch of a button to a remote location. NOTE: For more information, visit: http://www.hp.com/go/insightdynamics NOTE: You need to have two licenses of each Insight Software product (including ProLiant Onboard Administrator, Insight Control and Insight Dynamics) for using these products on double density server blades like ProLiant BL2x220c G6.
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 Novell SLES, 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 Cluster Management Utility	HP Cluster Management Utility (CMU) is an HP-licensed and HP-supported suite of tools that are used to manage large-scale 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

Standard Features

HP HPC Linux Value Pack	HP HPC Linux Value Pack (Value Pack) is an HP-licensed and HP-supported specially priced software bundle for the development and deployment of applications on HPC Cluster Platforms. Value Pack includes the Platform LSF workload scheduler, the HP-MPI parallelization library, the HP Unified Parallel C compiler and the HP Shmem library, as well as the execution environments for the libraries and compiler. HP HPC Linux Value Pack

OS Support

Microsoft Windows Server
Red Hat Enterprise Linux (RHEL)
SUSE Linux Enterprise Server (SLES)
Solaris 10 for x86/x64 based Systems
VMware
Citrix XenServer

NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: http://www.hp.com/go/supportos our driver download page http://www.hp.com/support/BL2x220cG6

Availability

- Dual-Port Fibre Channel Mezzanine Card per server node for redundant SAN connection
- Two (2) embedded Gigabit Ethernet adapters per server node for redundant LAN connections
- Advanced ECC Memory - can correct a multi-bit error (up to 4 bits) that occurs within one memory chip
- Network adapter teaming (network fault tolerance, transmit load balancing, switch-assisted load balancing)
- Emergency Recovery ROM

Industry Standard Compliance

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

Security

- 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

Standard 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.

HP Enterprise Configurator

The HP eConfigure 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. htttp://www.hp.com/products/configurator.

Service and Support

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.

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

Models

NOTE: The BL2x220c supports 2 server nodes in each Blade. All options listed are per server node.

HP BL2x220c G6 E5640 2x2P 24G 598102-B21	Processor(s) Two of the following depending on model	(2) Intel® Xeon® processor HP 2x220c G6 E5640 (2.66 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) (2) Intel® Xeon® processor HP 2x220c G6 E5630 (2.53 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) (2) Intel® Xeon® processor HP 2x220c G6 E5540 (2.53 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) (2) Intel® Xeon® processor HP 2x220c G6 E5530 (2.40 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) (2) Intel® Xeon® processor HP 2x220c G6 L5640 (2.26 GHz, 12MB L3 Cache, 60W, DDR3-1333, HT, Turbo 2/2/3/3/4/4) (2) Intel® Xeon® processor HP 2x220c G6 L5530 (2.40 GHz, 8MB L3 Cache, 60W, DDR3-1066, HT, Turbo 1/1/2/2)
HP BL2x220c G6 E5630 2x2P 24G 598103-B21		
HP BL2x220c G6 E5540 24G, 2P, 250GB 576947-B21		
HP BL2x220c G6 E5530 24G, 2P, 250GB 576948-B21	Cache Memory	12MB or 8MB L3 cache
	Memory	24 GB (6 x 4 GB) PC3-10600 (DDR3-1333) Registered DIMMs NOTE: Actual memory speed is limited by the maximum supported processor memory speed.
HP BL2x220c G6 L5640 2x2P 24G 598104-B21	Network Adapter	Embedded NC362i Dual Port Gigabit Server Adapter and one (1) additional 10/100 network adapter dedicated to iLO 2 Management
	Storage Controller	HP Embedded SATA Controller
HP BL2x220c G6 L5530 24G,2P, 250GB 576949-B21	Hard Drives	One (1) 250GB SATA Non-Hot Plug Hard Drive
	Internal Storage	SATA: 250GB
	Optical Drive	None
	Form Factor	Up to 16 half-height blades (32 server nodes) 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: FIO indicates that this option is a Factory Installable Option.

Step 1: Base Server Blade Configuration (Select CTO Blade, Server A and Server B)

Models	HP ProLiant BL2x220c G6 Configure-to-order Server	576951-B21
	HP ProLiant BL2x220c G6 Configure-to-order Node-A Server	576952-B21
	HP ProLiant BL2x220c G6 Configure-to-order Node-B Server	576953-B21
	NOTE: When ordering a BL2x220c all three parts CTO Blade, Server A and Server B must be included on the order. The Server A and Server B blades allow for configuration of each server node with CPUs, Memory and other options. It is not possible to order any of these 3 parts independently.	
	Configurable Model ships with:	
	Embedded 1GbE NC362i Dual-port Gigabit Server Adapter per server node plus one (1) additional 10/100 network adapter dedicated to iLO 2 Management	
	Integrated Lights-Out 2 Standard Blade Edition per server node	

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

HP Processors (2 processors per server node required)	NOTE: Processor kits listed below include 2 processors per kit. NOTE: If selecting a 95W processor configuration, there are specific enclosure configuration requirements and limitations. Please see page 3 for these requirements and limitations.	
	Six-Core Processor Option Kits	
	HP BL2x220c G6 Intel® Xeon® X5670 (2.93GHz/6-core/95W/12MB) FIO 2-processor Kit	598107-L21
	HP BL2x220c G6 Intel® Xeon® X5660 (2.80GHz/6-core/95W/12MB) FIO 2-processor Kit	598109-L21
	HP BL2x220c G6 Intel® Xeon® X5650 (2.66GHz/6-core/95W/12MB) FIO 2-processor Kit	598110-L21
	HP BL2x220c G6 Intel® Xeon® L5640 (2.26GHz/6-core/60W/12MB) FIO 2-processor Kit	598115-L21
	Quad-Core Processor Option Kits	
	Intel® Xeon® X5570 2.93GHz Quad Core 95 Watts BL2x220c G6 Factory Integrated Processor Option Kit	586578-L21
	Intel® Xeon® X5560 2.80GHz Quad Core 95 Watts BL2x220c G6 Factory Integrated Processor Option Kit	586579-L21
	Intel® Xeon® X5550 2.66GHz Quad Core 95 Watts BL2x220c G6 Factory Integrated Processor Option Kit	586580-L21
	HP BL2x220c G6 Intel® Xeon® E5640 (2.66GHz/4-core/80W/12MB) FIO 2-processor Kit	598111-L21

	HP BL2x220c G6 Intel® Xeon® E5630 (2.53GHz/4-core/80W/12MB) FIO Processor Kit	598112-L21
	HP BL2x220c G6 Intel® Xeon® E5620 (2.40GHz/4-core/80W/12MB) FIO 2-processor Kit	598113-L21
	Intel® Xeon® E5540 2.53GHz Quad Core 80 Watts BL2x220c G6 Factory Integrated Processor Option Kit	576964-L21
	Intel® Xeon® E5530 2.40GHz Quad Core 80 Watts BL2x220c G6 Factory Integrated Processor Option Kit	576965-L21
	Intel® Xeon® E5506 2.13GHz Quad Core 80 Watts BL2x220c G6 Factory Integrated Processor Option Kit	576967-L21
	HP BL2x220c G6 Intel® Xeon® L5630 (2.13GHz/4-core/40W/12MB) FIO 2-processor Kit	598116-L21
	Intel® Xeon® L5530 2.40GHz Quad Core 60 Watts BL2x220c G6 Factory Integrated Processor Option Kit	576970-L21
	Intel® Xeon® L5520 2.26GHz Quad Core 60 Watts BL2x220c G6 Factory Integrated Processor Option Kit	576971-L21
	Intel® Xeon® L5506 2.13GHz Quad Core 60 Watts BL2x220c G6 Factory Integrated Processor Option Kit	576972-L21
HP Memory	NOTE: 4 DIMMs minimum per server node required. NOTE: Must choose four memory part numbers below for 80W processors or lower. Must choose six memory part numbers below for 95W processors.	
	Registered DIMMs (RDIMMs)	
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500656-B21
	HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500658-B21
	HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	593339-B21
	HP 4GB (1x4GB) Quad Rank x8 PC3-8500 (DDR3-1066) Registered CAS-7 Low Power Memory Kit	500660-B21
	HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit NOTE: Low Voltage DIMMs can only be used with Intel Xeon 5600 series processors.	604504-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit NOTE: Low Voltage DIMMs can only be used with Intel Xeon 5600 series processors.	604506-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	516423-B21
	HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21
	Unbuffered with ECC DIMMs (UDIMMs)	
	HP 1GB (1x1GB) Single Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500668-B21

HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500670-B21
HP 4GB (1x4GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500672-B21

NOTE: All DDR3 memory option kits consist of one DIMM per kit.
NOTE: PC3L is a low voltage memory.

Step 3: Choose Additional Options for Factory Integration (One per server node)

NOTE: For additional options, including server blade enclosures interconnect and mezzanine options and power subsystem options; please see the options section below; or the following:
HP BladeSystem c-Class c7000 Enclosure QuickSpecs:
http://h18004.www1.hp.com/products/quickspecs/12810_div/12810_div.html
and HP BladeSystem c-Class Interconnect and Mezzanine Components:
http://h18004.www1.hp.com/products/blades/components/c-class-interconnects.html
http://h18004.www1.hp.com/products/blades/components/c-class-adapters.html

Core Options

HP Unique Options	HP BL2x220c SD Card Reader Kit	584518-B21
HP Ethernet Mezzanine Options	**Gigabit Ethernet Mezzanines**	
	HP NC325m PCI Express Quad Port 1Gb Server Adapter for c-Class BladeSystem NOTE: If the NC325m is installed in mezzanine slot 1 of a half-height server, connectivity will be provided 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 NC382m Dual Port 1GbE Multifunction BL-c Adapter	453246-B21
	QLogic iSCSI Dual Port Adapter with Virtual Connect for c-Class BladeSystem	488074-B22
	NOTE: The Gigabit Ethernet adapters above transmit from the server at 2000 Mbps, full duplex per port only. For more information, see the "Network Controller" segment in the Standards Features section.	
	10 Gigabit Ethernet Mezzanines	
	NOTE: A 10 Gigabit Ethernet adapter is required for each server blade connecting to a 10Gb interconnect in bays 3-8 (HP BladeSystem c7000 Enclosure) or bays 2-4 (HP BladeSystem c3000 Enclosure). NOTE: Each 10 Gigabit Ethernet adapter requires a minimum of 2GB of server memory. NOTE: Each 10 Gigabit Either adapter supports linking at 1000Mbps or 10000Mbps when not connected to a Flex-10 enabled module and will link with all current 1Gb switches at 1Gb. NOTE: The ROM Based Setup Utility (RBSU) feature allows for the configuring of a FlexFabric Adapter to any of the supported protocols. For example iSCSI to FCoE (Fibre Channel over Ethernet). Note that a HP Virtual Connect profile takes precedence over the setting in this menu. Also, some FlexFabric Adapters may require that network boot be enabled in order to configure the protocol. If the protocol is configured without enabling network boot with certain FlexFabric Adapters, the protocol may not take effect. Once the protocol has taken effect on the first boot after configuring this option, network boot may be disabled if desired.	
	HP 10GbE Dual Port Mezzanine Adapter	516936-B21
	HP NC532m Dual Port 10GbE BL-c Adapter	467799-B21
	HP BLc NC542m 10GbE KR Dual Port Adapter	539857-B21
	HP NC550m 10GbE 2-port PCIe x8 Flex-10 Ethernet Adapter	581204-B21
	HP NC551m Dual Port FlexFabric 10Gb Converged Network Adapter	580151-B21
	HP BLc NC552m Flex-10GbE Dual Port Adapter	610609-B21
	HP NC553m 10Gb 2-port FlexFabric Adapter	613431-B21

Core Options

HP Fibre Channel Mezzanine Options	4Gb Fibre Channel Mezzanine Cards	
	Emulex LPe1105 4Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem	403621-B21
	QLogic QMH2462 4Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem	403619-B21
HP Memory	Registered DIMMs (RDIMMs)	
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500656-B21
	HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500658-B21
	HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	593339-B21
	HP 4GB (1x4GB) Quad Rank x8 PC3-8500 (DDR3-1066) Registered CAS-7 Low Power Memory Kit	500660-B21
	HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit NOTE: Low Voltage DIMMs can only be used with Intel Xeon 5600 series processors.	604504-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit NOTE: Low Voltage DIMMs can only be used with Intel Xeon 5600 series processors.	604506-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	516423-B21
	HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21
	Unbuffered with ECC DIMMs (UDIMMs)	
	HP 1GB (1x1GB) Single Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500668-B21
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500670-B21
	HP 4GB (1x4GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500672-B21
	NOTE: All DDR3 memory option kits consist of one DIMM per kit. NOTE: Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: www.hp.com/go/proliant-energy-efficient. NOTE: PC3L is a low voltage memory.	

Core Options

HP Hard Drive	NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components. NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.	
	SATA Non-Hot Plug Solid State Drive (SSD)	
	HP 64GB 1.5G SATA SFF (2.5-inch) Non-hot Plug Entry 3yr Warranty Solid State Drive	461203-B21
	HP 32GB 1.5G SATA SFF (2.5-inch) Non-hot Plug Entry 3yr Warranty Solid State Drive	461201-B21
	NOTE: One per server node.	
	SATA Non-Hot Plug SFF (2.5-inch) Entry (ETY) Drives	
	HP 250GB 3G SATA 5.4K rpm SFF (2.5-inch) Non-hot Plug Entry 1yr Warranty Hard Drive	460357-B21
	HP 120GB 1.5G SATA 5.4K rpm SFF (2.5-inch) Non-hot Plug Entry 1yr Warranty Hard Drive	459357-B21
	NOTE: One per server node.	

Additional Options

HP Insight software	HP Insight Control	
	HP Insight Control including 1yr 24x7 Technical Support and Updates Electronic License	T9074BAE
	NOTE: Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key. NOTE: Electronic software is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent. NOTE: Customer will receive a license entitlement certificate. 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: Licenses ship without media. The Insight Software Media Kit can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightcontrol (click on Download button). NOTE: For additional license options please see the Insight Control QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html	
	HP Insight Software Media Kit	436222-B21
	NOTE: Insight Software DVD media without licenses. Contains Insight software licensed by Insight Control and Insight Dynamics. Uses an integrated installer to perform quick and accurate software installation and updates.	
	HP Insight Control for Linux	
	HP Insight Control for Linux including 1yr 24x7 Support Electronic License NOTE: This part number can be purchased as a single license or as multiple licenses with a single activation key. Customer will receive a license entitlement certificate via e-mail. 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: Electronic LTUs are only available through limited points of sales; if not available, order a printed license entitlement certificate instead.	TC213AAE
	HP Insight Control for Linux including 1yr 24x7 Support Single Server License	TC209A
	HP Insight Control for Linux Media Kit NOTE: This optional Media pack DVD contains the ISO image for HP Insight Control for Linux, HP Systems Insight Manager, HP Insight Control power management, HP Insight Control virtual machine management, and an integrated installer. Servers must be acquired separately. NOTE: This Media pack is optional because the latest ISO image and latest updates may be downloaded at no cost from: http://www.hp.com/go/ic-linux (click on Download button). NOTE: Media pack DVD contains the ISO image for HP Insight Control for Linux, HP Systems Insight Manager, HP Insight Control power management, HP Insight Control virtual machine management, and an integrated installer. Servers must be acquired separately.	TC208A
	NOTE: Licenses ship without media. The Media Kit for Insight Control for Linux can be ordered separately, or can be downloaded at: http://www.hp.com/go/ic-linux (click on Download button). NOTE: Electronic software is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent. NOTE: Electronic and Flexible-Quantity licenses can be used to purchase multiple	

licenses with a single set of activation keys.
NOTE: For additional License Kits, including electronic licensing options, please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/13019_div/13019_div.html

HP iLO Advanced for BladeSystem

HP iLO Advanced for BladeSystem including 1yr 24x7 Support Electronic License — TA851AAE

NOTE: This license allows 1 server to be managed via HP iLO Advanced for BladeSystem. Customer will receive a license entitlement certificate via email. 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 license kits, including electronic delivery options, please see the ProLiant iLO QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12362_div/12362_div.html

HP Insight Control server deployment

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

NOTE: Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key.
NOTE: Electronic software is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.
NOTE: Customer will receive a license entitlement certificate. 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: Licenses ship without media. The Insight Software Media Kit can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightcontrol (click on Download button).
NOTE: For additional license options please see the Insight Control QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html

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

NOTE: This license allows 1 server to be deployed. 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 Service.

NOTE: For additional license kits including electronic delivery options, please see the Insight Rapid Deployment software QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/11053_div/11053_div.html

Additional Options

High Performance Clusters	**HP Cluster Management Utility**	
	HP Cluster Management Utility Compute Node Flexible License NOTE: This part number can be used to purchase one certificate for multiple licenses 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.	436284-B21
	HP Cluster Management Utility License and Media NOTE: Order a minimum of one license per cluster to purchase media including software and documentation, which will be delivered to the customer, and also licenses CMU management. No license key is delivered or required. NOTE: For additional license kits please see the QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12612_div/12612_div.html	433257-B21
	HP HPC Linux Value Pack	
	HP High Performance Computing Linux Value Pack 1 Processor Flexible License NOTE: This part number can be used to purchase one certificate for multiple licenses with a single activation key. Each license is for one socket (a.k.a. processor). 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.	TC293A
	HP High Performance Computing Linux Value Pack Media Kit NOTE: This part number can be used to purchase media including software and documentation, which will be delivered to the customer. NOTE: For additional license kits please see the QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/13485_div/13485_div.html	TC294A
HP Storage Controllers	**HP Smart Array P700 Controller**	
	HP Smart Array P700m/256 4-ports Ext PCIe x8 SAS Controller	507925-B21
	HP Smart Array P700m/512 4-ports Ext PCIe x8 SAS Controller	508226-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13175_div/13175_div.html	
HP I/O Expansion Options	HP StorageWorks 80GB IO Accelerator for BladeSystem c-Class	AJ876A
	HP StorageWorks 160GB IO Accelerator for BladeSystem c-Class	AJ877A
	HP StorageWorks 320GB IO Accelerator for BladeSystem c-Class	AJ878A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13220_div/13220_div.html	

Additional Options

HP c-Class Mezzanine Options	HP 4X DDR IB Dual Port Mezzanine HCA for HP BladeSystem c-Class NOTE: Only a single port can be used on the BL2x220c.	448262-B21
	HP BLc QLogic 4X QDR IB Mezz HCA	583210-B21
	HP 4X QDR IB CX-2 Dual Port Mezz HCA for HP BladeSystem c-Class	592519-B21
HP USB and SD Options	HP 4GB SD Flash Media NOTE: Blank SD media devices are supported for use with ProLiant iVirtualization. SD media must be installed in the internal slot of the ProLiant server. Learn more at: http://www.hp.com/go/proliantvirtualization	580387-B21
	HP 2GB USB Flash Media Drive Key NOTE: HP qualified blank USB key for use with HP ProLiant servers that support the VMware virtualization environment and other HP value-add software like SmartStart. 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.	608447-B21
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 Year, Electronic	UK144E
	4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Year, Electronic	UK145E
	6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Year, Electronic	UK146E

Memory

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

Memory Population Guidelines

Some DIMM installation guidelines are summarized below:

- For the HP ProLiant BL2x220c G6 server with six (6) memory slots per node:
  - There are three (3) channels per processor; six (6) channels per server node.
  - There is one (1) DIMM slot for each memory channel; six (6) total slots per node.
  - Memory channel 1 consists of one (1) DIMM that is closest to the processor
  - Memory channel 3 consists of the one (1) DIMM that is furthest from the processor
- BL2x220c G6 requires a minimum 2 DIMMs per cpu (4 per server node) to be populated when using 80W, 60W or 40W processors. 3 DIMMs per cpu must be populated when using 95W processors (6 per server node).
- Do not mix Unbuffered memory (UDIMMs) with Registered memory (RDIMMs).
- Do not install DIMMs if the corresponding processor is not installed
- To maximize performance, balance the total memory capacity between all installed processors
- It is not required, but it is recommended to load the channels similarly if possible
- For memory mirroring mode, channel 3 must be unpopulated. Channels 1 and 2 are populated identically
- For lock-step mode, channel 3 must be unpopulated.
- Low Voltage DIMMs can only be used with Intel Xeon 5600 series processors.
- If mixing DIMM voltage is a requirement, please note that the DIMMs will run at 1.5V since all 1.35V are capable of supporting 1.5V operations

DIMM slot/capacity/populated speed table										
DIMM Type	Registered DIMMS (RDIMMs)							Unbuffered with ECC DIMMs (UDIMMs)		
DIMM Rank	Single Rank (1R)	Dual Rank (2R)				Quad Rank (4R)		Single Rank (1R)	Dual Rank (2R)	
DIMM Capacity	4GB	2GB	4GB	8GB	8GB	4GB	16GB	1GB	2GB	4GB
DIMM Native Speed (MHz)	1333	1333	1333	1066	1333	1066	1066	1333	1333	1333
Voltage	LV/Reg	Reg	Reg	Reg	LV/Reg	Reg	Reg	Reg	Reg	Reg
	SLOTS THAT CAN BE POPULATED									
6 slot servers	6	6	6	6	6	6	6	6	6	6
	MAXIMUM CAPACITY (GB)									
	24	12	24	48	48	24	96	6	12	24
	POPULATED DIMM SPEED (MHz)									
1 DIMM Per Channel	1333	1333	1333	1066	1333	1066	1066	1333	1333	1333

NOTES:

- Mixing DIMM speeds is allowed, but the system processor speed rules always override the DIMM capabilities
- DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed
- If you do mix DIMM speeds, the memory bus will default to the minimum clock rate of all DIMMs in the system - even if the slower DIMM is on the other processor
- If you install 1x 1066MHz DIMM in channel 1 and 1x 1333MHz DIMM in channel 2, you still run at 1066MHz
- If you install 1x 1066MHz DIMM in channel 1 and 2x 1333MHz DIMMs with 1 DIMM Per Channel (DPC) in each of the other channels, you run at 1066MHz

Memory

- Maximum memory speed will also depend on the processor installed
- References to the above MHz speeds are for the various speeds of DDR3 DIMMs; 1333 refers to DDR3-1333, etc.

HP ProLiant BL2x220cc G6 Server Blade DIMM slot and configuration diagrams

Basic memory slot and population diagram

- Population order; start with "A" first, "B" second, "C" third, etc.
- NOTE: BL2x220c G6 requires a minimum 2 DIMMs per cpu (4 per server node) to be populated

6 DIMM SLOTS per node (3 per CPU)					
	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	A	1	A	Chnl 1
Chnl 2	2	B	2	B	Chnl 2
Chnl 3	3	C	3	C	Chnl 3

HP ProLiant BL2x220c G6 Server Blade

Standard memory configuration (2 CPU model)

- 24GB (6 x 4GB) of PC3-10600 (DDR3-1333) RDIMMs

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	A: 4GB DIMM	1	A: 4GB DIMM	Chnl 1
Chnl 2	2	B: 4GB DIMM	2	B: 4GB DIMM	Chnl 2
Chnl 3	3	C: 4GB DIMM	3	C: 4GB DIMM	Chnl 3

RDIMM maximum configuration (2 CPU model)

- 96GB, consisting of twelve (6) 16GB quad-rank PC3-8500 RDIMMs

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	A: 16GB DIMM	1	A: 16GB DIMM	Chnl 1
Chnl 2	2	B: 16GB DIMM	2	B: 16GB DIMM	Chnl 2
Chnl 3	3	C: 16GB DIMM	3	C: 16GB DIMM	Chnl 3

UDIMM maximum configuration (2 CPU model)

- 24GB, consisting of six (6) 2GB dual-rank PC3-10600 UDIMMs

Memory

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	A: 4GB DIMM	1	A: 4GB DIMM	Chnl 1
Chnl 2	2	B: 4GB DIMM	2	B: 4GB DIMM	Chnl 2
Chnl 3	3	C: 4GB DIMM	3	C: 4GB DIMM	Chnl 3

NOTE: Capacity references are rounded to the common Gigabyte values.

- 1GB = 1024MB
- 2GB = 2048MB
- 4GB = 4096MB
- 8GB = 8192MB
- 16GB = 16384MB

Following are memory options available from HP:

HP Memory	Registered DIMMs (RDIMMs)	
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500656-B21
	HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500658-B21
	HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	593339-B21
	HP 4GB (1x4GB) Quad Rank x8 PC3-8500 (DDR3-1066) Registered CAS-7 Low Power Memory Kit	500660-B21
	HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit NOTE: Low Voltage DIMMs can only be used with Intel Xeon 5600 series processors.	604504-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit NOTE: Low Voltage DIMMs can only be used with Intel Xeon 5600 series processors.	604506-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	516423-B21
	HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21
	Unbuffered with ECC DIMMs (UDIMMs)	
	HP 1GB (1x1GB) Single Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500668-B21
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500670-B21
	HP 4GB (1x4GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500672-B21

Memory

NOTE: All DDR3 memory option kits consist of one DIMM per kit.
NOTE: PC3L is alow voltage memory.

HP ProLiant BL2x220c Server Blade

The BL2x220c Blade has a different I/O mapping for server I/O ports to expansion bays than existing half-height servers. The BL2x220c contains 2 server nodes that share a single half-height bay. Each server has 2x 1-Gbit Ethernet ports, so each half-height bay must therefore support 4 1Gbit Ethernet connections to the Interconnect bays. Full access to all embedded Ethernet ports therefore requires 64 Ethernet connections in the HP BladeSystem c7000 Enclosure. Single server half-height devices, such as the HP ProLiant BL460c and HP ProLiant BL465c Server Blades, only require 32 connections (c7000)

As each Ethernet Interconnect device only supports 16 downlinks to the servers it is necessary to dedicate additional bays to Ethernet. To gain access to all embedded Ethernet connections users must install 4 Ethernet Interconnects in Bays 1,2,3,4 for the c7000 enclosure.

When installing a BL2x220c into an existing enclosure the following rules must be followed otherwise the Blade will not boot due to an e-keying error.

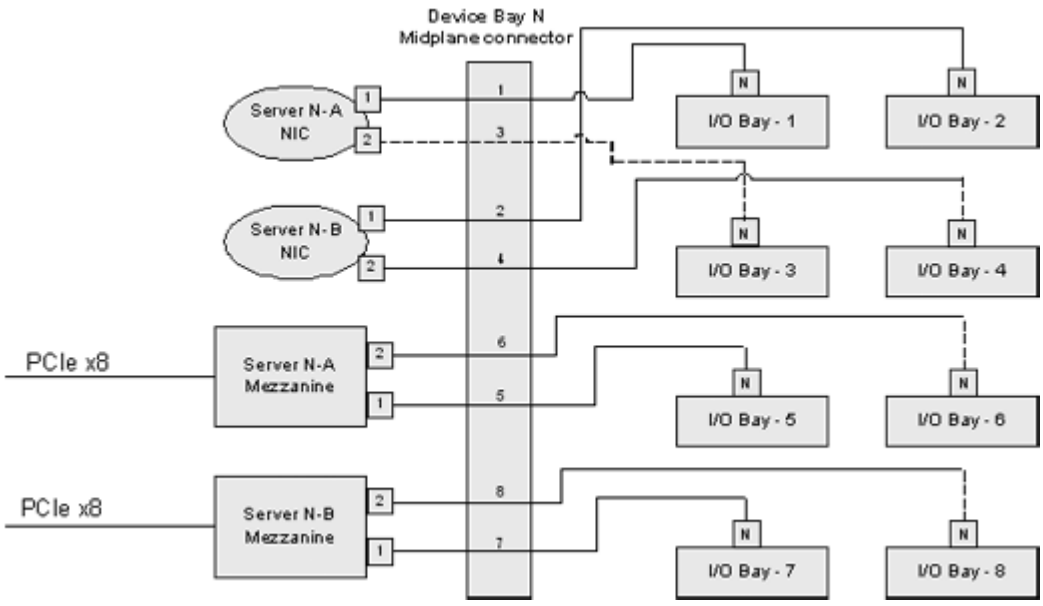
c7000 Enclosure

- Interconnect bays 1,2,3,4 are reserved for Ethernet
- Fibre Channel, InfiniBand or other Interconnects must be placed in bays 5 & 6 and 7 & 8
- Bays 5 & 6 must match the mezzanine type plugged into Server A
- Bays 7 & 8 must match the mezzanine type plugged into Server B

Mixing BL2x220c and other Blades in the same enclosure

Mixing of BL2x220c and other Server Blades in the same enclosure is supported but not recommended. The unique I/O mapping used by the BL2x220c requires that the I/O requirements of other blades in the enclosure conform to the rules defined for the BL2x220c.

HP ProLiant BL2x220c - c7000 I/O Map



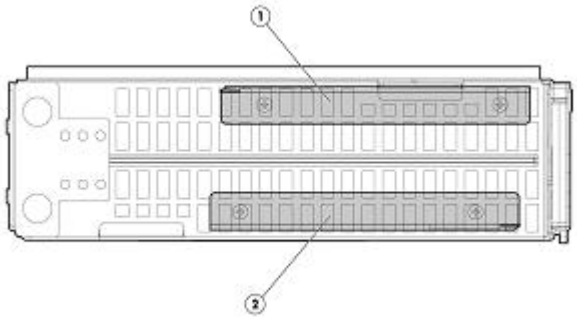
c7000 Enclosure Notes:

- Embedded NIC Port 1 from each server (Server A and Server B) is mapped to Interconnect bays 1 and 2 which support only Ethernet devices

I/O Map

- Embedded NIC Port 2 from each server (Server A and Server B) is mapped to Interconnect bays 3 & 4 which support only Ethernet devices in configurations using the BL2x220
- The BL2x220 mezzanine slots connect to interconnect devices in Interconnect Bays 5 & 6 or 7 & 8
- The BL2x220c G6 is not supported in the c3000 enclosure.

Storage



1 1 x SFF SATA Non-Hot Plug Hard Drives
2 1 x SFF SATA Non-Hot Plug Hard Drives

Hard Drives

SATA Non-Hot Plug Solid State Drive (SSD)

	Quantity Supported	Position Supported	Controller
64GB 1.5G SATA 32GB 1.5G SATA	1 per server node	1	Embedded SATA

SATA Non-Hot Plug SFF (2.5-inch) Entry (ETY) Drives

NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

	Quantity Supported	Position Supported	Controller
250GB 3G SATA 5.4K 120GB 1.5G SATA 5.4K	1 per server node	1	Embedded SATA

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 (Worldwide)

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

Storage

HP StorageWorks Enterprise Virtual Array Family
http://h18006.www1.hp.com/products/quickspecs/12408_div/12408_div.html (Worldwide)

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)	15.5 lbs (7.03 kg)
		Minimum (one hard drive and processor installed)	12.79 lbs (5.8 kg)
	Power Specifications	For power specifications including Input Requirements, BTU Rating, and Power Supply Output, please see the HP BladeSystem c-Class Enclosures QuickSpecs located at URL: HP BladeSystem c-Class c7000 Enclosure QuickSpecs: http://h18004.www1.hp.com/products/quickspecs/12810_div/12810_div.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 Enclosures QuickSpecs located at URL: HP BladeSystem c-Class c7000 Enclosure QuickSpecs: http://h18004.www1.hp.com/products/quickspecs/12810_div/12810_div.html	

Embedded Dual-port NC362i Gigabit Server Adapter	Network Processor	NC362i
	Data Transfer Method	Four lane (x4) PCI Express
	Network Transfer Rate	2000 Mb/s full duplex (theoretical maximum value)
	IEEE Compliance	802.1p, 802.1Q, 802.3, 802.3ad, and 802.3x
	Standard Features	• 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.

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