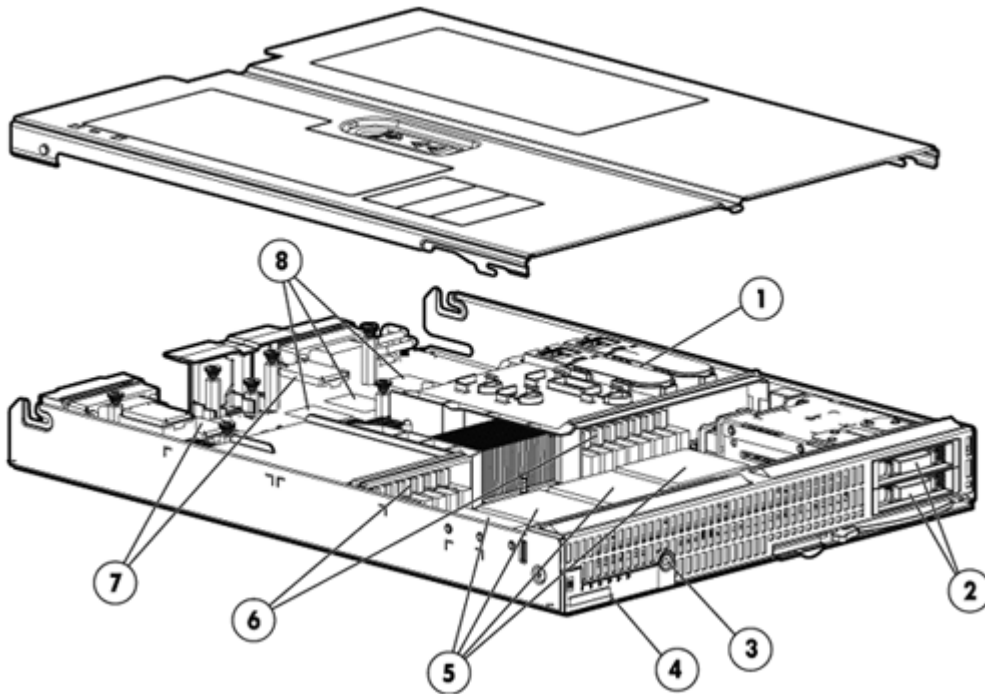


Overview



HP ProLiant BL680c Generation 5 (G5) Server Blade

Front view image

- | | |
|--|--|
| 1. Cache battery modules | 5. Two or four Intel® Xeon® 7300 or 7400 Series processors |
| 2. Two small form factor (SFF) hot-plug drive bays | 6. Up to 128 GB PC2-5300, DDR2 FB DIMMs |
| 3. Power button | 7. Three I/O expansion mezzanine slots |
| 4. Local I/O connector | 8. Four embedded Gigabit Ethernet adapter ports |

What's New

- Support for the Hot Plug SAS Enterprise 300GB 3G SAS 10K SFF DP ENT Hard Drive increasing the maximum internal storage to 600GB

At A Glance

This document covers the HP ProLiant BL680c G5 server blade only. For more information on the HP BladeSystem c-Class Enclosure and HP BladeSystem c-Class Interconnects, please see the following QuickSpecs:

HP BladeSystem c3000 Enclosure QuickSpecs:

http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html

HP BladeSystem c7000 Enclosure QuickSpecs:

http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html

HP BladeSystem c-Class Interconnect Components QuickSpecs:

http://h18000.www1.hp.com/products/quickspecs/12524_div/12524_div.html

- The HP ProLiant BL680c G5 Server Blade, delivers no-compromise performance and expansion for a 4-Core to 6-Core 4P BladeSystem Server. With two or four Intel Xeon 7300 or 7400 Series processors, 128 GB of fully buffered memory, two hot-

Overview

plug serial attached SCSI (SAS) or serial ATA (SATA) hard drives, four embedded Gigabit Ethernet adapters and three I/O expansion slots, the HP ProLiant BL680c G5 delivers the density you want with the performance you need to handle the most demanding enterprise class applications. The HP ProLiant BL680c G5 server blade includes:

- **Processor:**
 - Two or four 4-Core or 6-Core Intel® Xeon® 7400 Series processors
 - Two or four Quad-Core Intel® Xeon® 7300 Series processors
 - NOTE: The BL680 G5 supports either two or four processors. One and three processors are not supported.
 - NOTE: All processors within the server must be identical.
 - Intel 7300 chipset supporting a 1066 MT/s Dedicated High-Speed Interconnect (DHSI)
 - Demand Based Switching (DBS) with Enhanced Intel SpeedStep® Technology on select models
 - Up to 8 MB (2x4 MB) L2 cache (7300 Series) and 16 MB of L3 cache (7400 Series)
 - Intel® Virtualization Technology
- **Memory:**
 - Up to 128 GB of memory supported by sixteen (16) PC2-5300, fully-buffered DIMMs at 667 MHz
 - Low power DIMM memory support
 - Advanced ECC memory support
 - Memory interleaving (2 x 1), memory mirroring, and online spare capacity
- **Storage Controller:**
 - Integrated HP Smart Array P400i Controller with 256 MB cache, RAID 0/1, and optional battery-backed write cache upgrades
- **Internal Drive Support:**
 - Up to two (2) small form factor (SFF) SAS or SATA hot-plug hard drives
- **Network Controller:**
 - Four (4) embedded network adapter ports, plus one (1) additional management network adapter port:
 - Two (2) embedded NC373i Multifunction Gigabit Server Adapters with TCP/IP offload engine for Microsoft Windows iSCSI boot, and optional accelerated iSCSI
 - One (1) NC326i Dual Port Gigabit Server Adapter
 - 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:**
 - Three (3) mezzanine expansion slots for additional I/O mezzanine including:
 - Dual Port 4Gb Fibre Channel for SAN connectivity (choice of Emulex or QLogic)
 - Multiple dual port 10 Gb Ethernet adapter options for high bandwidth network connectivity
 - Multiple dual and quad port Gigabit Ethernet network adapter options for increased bandwidth and additional network ports
 - Dual port 20Gb 4X DDR InfiniBand for low latency server interconnectivity
- **Internal USB Support:**
 - One (1) internal USB 2.0 connector for security key devices and USB drive keys
- **VMware ESX Server 3i and Citrix XenServer virtualization technology**
 - Integrated Hypervisors (Optional)
 - VMware ESX Server 3i virtualization technology
 - Citrix XenServer virtualization technology
- **Form Factor:**
 - The HP ProLiant BL680c G5 server blade plugs vertically into the HP BladeSystem c3000 and c7000 enclosures
- **Management:**
 - HP Integrated Lights-Out 2 (iLO 2) Standard Blade Edition with virtual KVM graphical remote console, with the option to upgrade to the iLO Advanced for BladeSystem.. iLO Advanced for BladeSystem is a no installation upgrade offering automatic video footage of the events leading up to the server event (like bluescreens), automatic video footage of the server blade's last boot sequence, on-demand video record and playback for training videos, team collaboration features for up to four users on a single iLO session, and much more. Learn more at: www.hp.com/go/iLO
- **Enclosures:**

Overview

- 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 8 HP ProLiant BL680c servers plugged vertically.
 - The HP BladeSystem c3000 rack enclosure is 6U high and holds up to 4 HP ProLiant BL680c servers plugged horizontally.
 - The HP BladeSystem c3000 tower enclosure is designed with casters for sites without racks and holds up to 4 HP ProLiant BL680c servers plugged vertically.
- Server blades, storage blades, and interconnect modules are all designed to fit into the c7000 and c3000 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 resellers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. SATA hard drives have a one-year warranty. SAS Enterprise drives have a 3 year warranty.
 - **NOTE:** Server warranty includes 3 year Parts, 3 year Labor, 3-year on-site support. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at:
<http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>

Standard Features

Processor	<p>6-Core Intel® Xeon® Processor E7450 (2.40 GHz, 12 MB L3, 90W) 4-Core Intel® Xeon® Processor E7440 (2.40 GHz, 16 MB L3, 90W) 4-Core Intel® Xeon® Processor E7430 (2.13 GHz, 12 MB L3, 90W) 4-Core Intel® Xeon® Processor E7420 (2.13 GHz, 8 MB L3, 90W) 6-Core Intel® Xeon® Processor L7455 (2.13 GHz, 12 MB L3, 65W)* 4-Core Intel® Xeon® Processor L7445 (2.13 GHz, 12 MB L3, 50W) Quad-Core Intel® Xeon® Processor E7340 (2.40 GHz, 2x4 MB L2 Cache, 80W) Quad-Core Intel® Xeon® Processor E7330 (2.40 GHz, 2x3 MB L2 Cache, 80W) Quad-Core Intel® Xeon® Processor E7320 (2.13 GHz, 2x2 MB L2 Cache, 80W) Quad-Core Intel® Xeon® Processor E7310 (1.60 GHz, 2x2 MB L2 Cache, 80W) Quad-Core Intel® Xeon® Processor L7345 (1.86 GHz, 2x4 MB L2 Cache, 50W)* Dual-Core Intel® Xeon® Processor E7220 (2.93 GHz, 2x4 MB L2 Cache, 80W)*</p> <p>NOTE: All processors within the server must be identical. NOTE: The BL680 G5 supports either two or four processors. One and three processors are not supported. NOTE: For the Intel 7300 and 7400 Series, the letter preceding the model number indicates the performance/wattage of the processor. The "E" denotes enterprise performance/wattage (mainstream); and "L" denotes lower wattage. *Offered through Configure-To-Order only. See Factory Integrated Models section for more details.</p>
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Upgradeability	<p>Upgradeable to four processors NOTE: The BL680 G5 supports either two or four processors. One and three processors are not supported. NOTE: All processors within the server must be identical.</p>
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Cache Memory One of the following depending on Model	<p>Up to 8 MB (2x4 MB) level 2 cache memory (7300 Series) Up to 16 MB level 3 cache memory (7400 Series)</p>
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Chipset	Intel® 7300 chipset
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Memory	Type	PC2-5300 Fully Buffered DIMMs operating at 667 MHz
	Standard	8 GB (4 x 2 GB) (7300 Series) 8 GB (2 x 4 GB) (7400 Series) 8 GB Low Power (2 x 4 GB) (7400 Low Power Series)
	Maximum	128 GB (16 x 8 GB)
	NOTE: See the "DIMM installation guidelines" section for memory installation rules.	

Standard Features

Network Controllers

Four (4) embedded Gigabit Ethernet network adapter ports, plus (1) additional management network adapter port:

- Two (2) embedded NC373i Multifunction Gigabit Server Adapters with TCP/IP offload engine for Microsoft Windows, iSCSI boot, and optional accelerated iSCSI
- One (1) NC326i Dual Port Gigabit Server Adapter
- 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. 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.

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 speeds.

Multifunction Networking

The embedded multifunction NC373i combines standard Gigabit Ethernet networking, TCP/IP offload engine (TOE) acceleration for Windows, iSCSI boot, and optional accelerated iSCSI 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.
- The iSCSI boot allows the BL680c G5 to boot from a remote operating system (OS) image located on a storage area network (SAN) within a Red Hat or SUSE Linux environment. The BL680c G5 uses an iSCSI firmware image (iSCSI boot option ROM) making the remote disk drive appear as a local, bootable C: drive. The BL680c G5 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.

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.

For the KX4 NC512m 10 Gigabit Ethernet adapter, the signal is transmitted 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 uplinks supporting 10/100/1000 BASE-T, 10/100/1000 SFP, 1000 SX fiber, and 10GbE KX-4.

I/O Expansion Slots

Three I/O expansion mezzanine slots (two PCI Express x8 and one x4)

Standard Features

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

Storage Controller	HP Smart Array P400i Controller	256 MB memory module supports RAID 0/1 Available upgrades Battery-backed write cache, or 512 MB cache with battery-backed write cache
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Maximum Internal Storage	Hot Plug Serial Attach SCSI (SAS)	600GB SAS	2 x 300GB Serial SCSI
	Hot Plug Serial Attach (SATA)	500GB SATA	2 x 250GB SATA

Graphics Integrated ATI RN-50 1280 x 1024 x 16M color (32 MB DDR1 memory)

Graphics Resolution	Resolution Color Depths	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

Fibre Channel Two optional 4 Gb Fibre Channel HBA mezzanines are supported ordered separately:

- Emulex LPe1105-HP 4Gb FC HBA for HP c-Class BladeSystem (403621-B21)
- QLogic QMH2462 4Gb FC HBA for HP c-Class BladeSystem (403619-B21)

NOTE: For additional information on the optional 4 Gb Fibre Channel HBA mezzanines, see: <http://h18004.www1.hp.com/products/ blades/ components/ c-class-interconnects.html>

Compatible SAN HP ProLiant BL680c G5 server blades are optimized for HP StorageWorks MSA, EVA, and XP
HP ProLiant BL680c G5 server blades are compatible with select third 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 Insight Control Environment Management Suite

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.

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.

- Server Migration Pack - Universal Pack
NOTE: HP Server Migration Pack - Universal Edition is licensed separately from the Insight Control Environment Suite.
- HP Open Service Event Manager
- HP Instant Support Enterprise Edition

NOTE: Server Migration Pack - Universal Edition can be installed from the SMP-P2P CD included in the Insight Control Management media kit.

NOTE: Insight Control Environment for BladeSystems 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 Enclosures QuickSpecs](#):

HP BladeSystem c3000 Enclosure QuickSpecs:

http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html

HP BladeSystem c7000 Enclosure QuickSpecs:

http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html

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.

iLO Power Management Pack for BladeSystem 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.

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

Standard Features

delivery of software updates. For more information about this service, please visit:
<http://www.hp.com/services/insight>.

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>

Server Management Standalone 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.
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.
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: <ul style="list-style-type: none">● physical to ProLiant● physical to virtual● virtual to virtual● virtual to ProLiant
ProLiant Essentials Performance Management Pack	NOTE: For more information, visit: http://www.hp.com/go/migrate . 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.
iLO Advanced for BladeSystem	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 Blade Edition.
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.
HP Insight Dynamics - VSE	Introducing HP Insight Dynamics - VSE, the world's first software integrated by design to let IT professionals analyze and optimize their virtual & physical environments in the same way. It combines the best of the industry-leading HP infrastructure management portfolio-including HP Systems Insight Manager, HP Insight Control and HP Virtual Server Environment-into one integrated offering for HP BladeSystem, ProLiant and Integrity servers.

Standard Features

Virtual Machine Management Pack

NOTE: For more information, visit: <http://www.hp.com/go/insightdynamics>

Get the most out of server virtualization by unifying the management of physical and virtual servers in HP Systems Insight Manager. The Virtual Machine Management Pack plug-in provides central management and control of VMware and Microsoft virtual machines and provides physical host to virtual machine association. The Server Migration Pack plug-in automates the manual task of migrating servers between physical or virtual platforms.

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: 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>.

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.

Core Infrastructure Management

SmartStart

SmartStart is a tool that simplifies single server setup, providing a rapid way to deploy reliable and consistent server configurations. SmartStart 7.60 and later can now deploy the HP ProLiant BL680c G5 using the I/O port with an attached USB CD-ROM device. To obtain a copy of SmartStart for your blade server order or download your copy from the SmartStart web site. For more information, please visit the SmartStart website 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.

Standard Features

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>.

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 Datasheet, 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 BladeSystem to Superdome
 - HP ProLiant BladeSystem p-Class & c-Class
 - HP ProLiant DL
 - HP ProLiant ML
 - IBM System x
 - Dell PowerEdge
 - Sun x64
 - Fujitsu Siemens PRIMERGY
- Supported Virtual Machines
 - SG/LX in HP Integrity Virtual Machines guests
 - SG/LX in VMware ESX guests
 - SG/LX in Red Hat and SUSE Xen hosts (DOM0)
- Application Integration Toolkits
 - HP Serviceguard for Linux Oracle Database Toolkit
 - HP Serviceguard Extension for SAP on Linux (SGeSAP/LX)
 - Free Application Integration Toolkits:
 - Apache
 - MySQL
 - NFS
 - PostgreSQL
 - Samba
 - Tomcat
 - Sendmail
- Disaster Tolerant Solutions
 - HP 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

Standard Features

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>.

OS Support

Microsoft Windows Server 2003 R2
Microsoft Windows 2008
Microsoft Windows Small Business Server 2008
Microsoft Windows Essential Server 2008
Oracle Enterprise Linux (OEL)
Red Hat Enterprise Linux
SUSE Linux Enterprise Server
Sun Solaris for x64/x86-based Systems
Citrix XenServer
VMware

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

Integrated Manageability

- Integrated Lights-Out 2 (iLO 2) Standard Blade Edition (integrated on motherboard)
- 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
- Four (4) embedded Gigabit Ethernet adapters for redundant LAN connections
- Multiple mezzanine I/O expansion
- Four (4) hot-plug SAS/SATA hard drive bays and integrated RAID (HP Smart Array P400i) controller on every server blade (battery-backed write cache is optional)
- Redundant ROM
- Advanced ECC Memory - can correct a multi-bit error (up to 4 bits) that occurs within one memory chip
- Memory mirroring with memory online spare capacity
- Network adapter teaming (network fault tolerance, transmit load balancing, switch-assisted load balancing)

Industry Standard Compliance

ACPI 2.0 Compliant
PCI 2.2 Compliant
WOL Support
Microsoft® Logo certifications
USB 2.0 Support
PXE 2.1
IEEE (see the Technical Specifications section)

Security

- One (1) internal USB 2.0 connector for security key devices and USB drive keys
- 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

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 MSAxxx, 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.

Standard Features

Service and Support

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.

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, a service partner is required 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 BladeSystem server support offer to help you speedily deploy and maximize system uptime.

NOTE: SAN/Fabric switches for the HP c-Class BladeSystem are not covered under the c7000 and c3000 enclosure Care Packs, SAN/Fabric switches carry separate Care Packs. SAN/Fabric Switch Care Pack service level support should always be uplifted to match existing storage or server service level.

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 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/bladestystemsolutions>

<http://www.hp.com/go/proliant/carepack>

Models

4 or 6-Core 7400 Series Models

<p>HP ProLiant BL680c G5 E7450 6C 8G (2P) 492334-xx1</p> <p>HP ProLiant BL680c G5 L7445 6C 8G LV (2P) 492338-B21</p> <p>HP ProLiant BL680c G5 E7440 4C 8G (2P) 492335-B21</p> <p>HP ProLiant BL680c G5 E7430 4C 8G (2P) 492336-xx1</p> <p>HP ProLiant BL680c G5 E7420 4C 2P 8G (2P) 492337-B21</p>	<p>Processor(s) One of the following depending on model</p> <p>Cache Memory One of the following depending on model</p> <p>Memory</p> <p>Network Controllers</p> <p>Storage Controller</p> <p>Hard Drives</p> <p>Internal Storage</p> <p>Optical Drive</p> <p>Form Factor</p>	<p>6-Core Intel® Xeon® Processor E7450 (2.40 GHz, 12 MB L3, 90W) 4-Core Intel® Xeon® Processor E7440 (2.40 GHz, 16 MB L3, 90W) 4-Core Intel® Xeon® Processor E7430 (2.13 GHz, 12 MB L3, 90W) 4-Core Intel® Xeon® Processor E7420 (2.13 GHz, 8 MB L3, 90W) 4-Core Intel® Xeon® Processor L7445 (2.13 GHz, 12 MB L3, 50W)</p> <p>16 MB Level 3 cache memory 12 MB Level 3 cache memory 8 MB Level 3 cache memory 6 MB Level 3 cache memory</p> <p>8 GB (2x4 GB) PC2-5300, FBD DDR2-667 (E Models) 8 GB (2x4 GB) PC2-5300, FBD DDR2-667 Low Power (LV Models)</p> <p>Four (4) embedded Gigabit Ethernet network adapter ports, plus one (1) additional management network adapter port:</p> <ul style="list-style-type: none"> • Two (2) embedded NC373i Multifunction Gigabit Server Adapters with TCP/IP offload engine for Microsoft Windows, iSCSI boot, and optional accelerated iSCSI • One (1) NC326i Dual Port Gigabit Server Adapter • One (1) additional embedded 10/100 network adapter dedicated to iLO 2 management <p>Integrated HP Smart Array P400i Controller with 256 MB cache, RAID 0/1, and optional battery-backed write cache upgrades</p> <p>No drives included; two (2) SFF SAS/SATA drive bays</p> <p>SAS: 600GB SATA: 500GB</p> <p>None</p> <p>Up to 4 full-height blades supported in the HP BladeSystem c3000 enclosure Up to 8 full-height blades supported in the HP BladeSystem c7000 enclosure</p>
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Quad-Core 7300 Series Models

<p>HP ProLiant BL680c G5 2.4/2x4M,80W (2P) 443528-xx1</p> <p>HP ProLiant BL680c G5 2.4/2x3M, 80W (2P) 449316-xx1</p> <p>HP ProLiant BL680c G5 2.13/2x2M,80W (2P) 443529-xx1</p> <p>HP ProLiant BL680c G5 1.6/2x2M,80W (2P) 443530-xx1</p>	<p>Processor(s) One of the following depending on model</p> <p>Cache Memory One of the following depending on model</p> <p>Memory</p> <p>Network Controllers</p>	<p>(2) Quad-Core Intel® Xeon® Processor E7340 (2.40 GHz, 2x4 MB, 80W) (2) Quad-Core Intel® Xeon® Processor E7330 (2.40 GHz, 2x3 MB, 80W) (2) Quad-Core Intel® Xeon® Processor E7320 (2.13 GHz, 2x2 MB, 80W) (2) Quad-Core Intel® Xeon® Processor E7310 (1.60 GHz, 2x2 MB 80W)</p> <p>2x4 MB Level 2 cache memory 2x3 MB Level 2 cache memory 2x2 MB Level 2 Cache memory</p> <p>8 GB (4x2 GB) PC2-5300, FBD DDR2-667</p> <p>Four (4) embedded Gigabit Ethernet network adapter ports, plus one (1) additional management network adapter port:</p> <ul style="list-style-type: none"> • Two (2) embedded NC373i Multifunction Gigabit Server Adapters with TCP/IP offload engine for Microsoft Windows, iSCSI boot, and optional accelerated iSCSI • One (1) NC326i Dual Port Gigabit Server Adapter
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Models

	<ul style="list-style-type: none">• One (1) additional embedded 10/100 network adapter dedicated to iLO 2 management
Storage Controller	Integrated HP Smart Array P400i Controller with 256 MB cache, RAID 0/1, and optional battery-backed write cache upgrades
Hard Drives	No drives included; two (2) SFF SAS/SATA drive bays
Internal Storage	SAS: 600GB SATA: 500GB
Optical Drive	None
Form Factor	Up to 4 full-height blades supported in the HP BladeSystem c3000 enclosure Up to 8 full-height blades supported in the HP BladeSystem c7000 enclosure

Country Code Key	XX=B2	Worldwide
	XX=20	Brazil

Configuration Information - Factory Integrated Models

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 servers 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 BL680c G5 CTO Blade	443527-B21
	Configurable Model ships with:	
	Four (4) embedded Gigabit Ethernet network adapter ports, plus one (1) additional management network adapter port:	
	<ul style="list-style-type: none"> • Two (2) embedded NC373i Multifunction Gigabit Server Adapters with TCP/IP offload engine for Microsoft Windows, iSCSI boot, and optional accelerated iSCSI • One (1) NC326i Dual Port Gigabit Server Adapter • One (1) additional embedded 10/100 network adapter dedicated to iLO 2 management 	
	Integrated HP Smart Array P400i Controller with 256 MB cache and RAID 0/1	
	NOTE: Controller cache module selection is required. Select either the standard 256 MB module or the 512 MB module with BBWC upgrade in step 2 below.	
	Two (2) small form factor (SFF) SAS/SATA hot-plug hard drive bays	
	Integrated Lights-Out 2 Standard Blade Edition	

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

Processors	<p>NOTE: The BL680 G5 supports either two or four processors. One and three processors are not supported.</p> <p>NOTE: All processors within the server must be identical.</p>	
	6-Core Intel® Xeon® Processor E7450 (2.40 GHz, 12 MB L3, 90W, 2P), FIO Base	492344-L21
	NOTE: If 4 processors are desired, select one 492344-L21 and one 492344-B21	
	4-Core Intel® Xeon® Processor E7440 (2.40 GHz, 16 MB L3, 90W, 2P), FIO Base	492345-L21
	NOTE: If 4 processors are desired, select one 492345-L21 and one 492345-B21	
	4-Core Intel® Xeon® Processor E7430 (2.13 GHz, 12 MB L3, 90W, 2P), FIO Base	492346-L21
	NOTE: If 4 processors are desired, select one 492346-L21 and one 492346-B21	
	4-Core Intel® Xeon® Processor E7420 (2.13 GHz, 8 MB L3, 90W, 2P), FIO Base	492347-L21
	NOTE: If 4 processors are desired, select one 492347-L21 and one 492347-B21	
	6-Core Intel® Xeon® Processor L7455 (2.13 GHz, 12 MB L3, 65W, 2P), FIO Base	492348-L21
	NOTE: If 4 processors are desired, select one 492348-L21 and one 492348-B21	
	4-Core Intel® Xeon® Processor L7445 (2.13 GHz, 12 MB L3, 50W, 2P), FIO Base	493577-L21
	NOTE: If 4 processors are desired, select one 493577-L21 and one 493577-B21	
	Quad-Core Intel® Xeon® Processor E7340 (2.40 GHz, 2x4 MB, 80W, 2P kit), FIO Base	443691-L21
	NOTE: If 4 processors are desired, select one 443691-L21 and one 443691-B21	

Configuration Information - Factory Integrated Models

	Quad-Core Intel® Xeon® Processor E7330 (2.40 GHz, 2x3 MB, 80W, 2P kit), FIO Base	449321-L21
	NOTE: If 4 processors are desired, select one 449321-L21 and one 449321-B21	
	Quad-Core Intel® Xeon® Processor E7320 (2.13 GHz, 2x2 MB, 80W, 2P kit), FIO Base	443692-L21
	NOTE: If 4 processors are desired, select one 443692-L21 and one 443692-B21	
	Quad-Core Intel® Xeon® Processor E7310 (1.86 GHz, 2x2 MB, 80W, 2P kit), FIO Base	443693-L21
	NOTE: If 4 processors are desired, select one 443693-L21 and one 443693-B21	
	Quad-Core Intel® Xeon® Processor L7345 (1.86 GHz, 2x4 MB, 50W, 2P kit), FIO Base	450963-L21
	NOTE: If 4 processors are desired, select one 450963-L21 and one 450963-B21	
	Dual-Core Intel® Xeon® Processor E7220 (2.93 GHz, 2x4 MB, 80W, 2P kit), FIO Base	450961-L21
	NOTE: If 4 processors are desired, select one 450961-L21 and one 450961-B21	
Memory	2 GB FBD PC2-5300 2 x 1 GB Kit	397411-B21
	2 GB FBD PC2-5300 2 x 1 GB Low Power Kit	461826-B21
	4 GB FBD PC2-5300 2 x 2 GB Kit	397413-B21
	4 GB FBD PC2-5300 2 x 2 GB Low Power Kit	461828-B21
	8 GB FBD PC2-5300 2 x 4 GB Kit	397415-B21
	8 GB FBD PC2-5300 2 x 4 GB Low Power Kit	466440-B21
	16 GB FBD PC2-5300 2 x 8 GB Kit	413015-B21
	64 GB FBD PC2-5300 8x 8 GB Kit	495604-B21
	NOTE: For more information low power memory option kits and other ProLiant Energy Efficient Features, see:	
	http://h18004.www1.hp.com/products/servers/platforms/energyefficient/	
NOTE: Two-way memory interleaving is enabled when an identical pair of DIMMs is installed.		
Smart Array P400i upgrade options	HP Smart Array P400i 256 MB cache	405139-B21
	HP Smart Array P400i 512 MB and battery-backed write cache upgrade	405148-B21

Step 3: Choose Additional Factory Integratable Options

VMware ESX Server 3i integrated hypervisor	integrated VMware ESX Server 3i 4P FIO	480100-B21
	integrated VMware ESX Server 3i Enterprise 4P FIO	464670-B21
	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/12307_div/12307_div.html (Worldwide)	
	NOTE: For additional information and option kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/13018_div/13018_div.html (Worldwide)	

Configuration Information - Factory Integrated Models

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 following QuickSpecs:

HP BladeSystem c-Class Enclosures QuickSpecs:

HP BladeSystem c3000 Enclosure QuickSpecs:

http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html

HP BladeSystem c7000 Enclosure QuickSpecs:

http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html

HP BladeSystem c-Class Interconnect Components QuickSpecs:

http://h18000.www1.hp.com/products/quickspecs/12524_div/12524_div.html

Options

Ethernet Mezzanine Options	HP NC325m PCI Express Quad Port 1Gb Server Adapter for c-Class BladeSystem	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	447883-B21
	HP NC373m PCI Express Dual Port Multifunction Gigabit Server Adapter for c-Class BladeSystem	406770-B21
	HP NC382m Dual Port 1GbE Multifunction BL-c Adapter	453246-B21
	QLogic QMH4062 1GbE iSCSI Adapter for HP BladeSystem c-Class	488074-B21
	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.	
	HP NC512m Dual Port 10GbE Multifunction BL-c Adapter	440910-B21
	NOTE: The NC512m is supported in type II x8 PCI Express mezzanine slots; maximum two adapters per server. For more information, see the Mezzanine Slot Compatibility matrix within the HP NC512m Dual Port 10GbE Multifunction BL-c Adapter QuickSpecs: http://h18004.www1.hp.com/products/servers/networking/nc512m/index.html NOTE: A minimum of 2 GB of server memory is required per NC512m and supports a maximum of 32 GB for Windows and 64 GB for Linux. NOTE: The NC512m adapter transmits from the server only at 20 Gbps, full duplex per port.	
HP NC532m Dual Port Flex-10 10GbE Multifunction BL-c Adapter	467799-B21	
NOTE: The NC532m network adapter card is required for each server blade connecting to a 10Gb interconnect in bays 3-8 (HP BladeSystem c7000 Enclosure) or bays 3-4 (HP BladeSystem c3000 Enclosure). NOTE: The NC532m requires a minimum of 2 GB of server memory. NOTE: The NC532m will downspeed to 1Gb if paired with a 1Gb interconnect.		
Fibre 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
c-Class Mezzanines	HP PCI Express Mezzanine Pass-Thru Card for HP BladeSystem c-Class NOTE: Required to support the HP StorageWorks SB40c Storage Blade (P/N 411243-B21) with HP c-Class BladeSystem full-height server blades.	431643-B21

Options

HP StorageWorks SB40c Storage Blade	HP StorageWorks SB40c Storage Blade NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12587_div/12587_div.html (Worldwide) NOTE: The HP PCI Express Mezzanine Pass-Thru Card for HP BladeSystem c-Class (P/N 431643-B21) is required to support the HP StorageWorks SB40c Storage Blade with HP c-Class BladeSystem full-height server blades.	411243-B21
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 QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12753_div/12753_div.html	448018-B21
HP c-Class Tape Blades	HP StorageWorks Ultrium 448c Tape Blade HP StorageWorks SB920c Tape Blade NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12729_div/12729_div.html NOTE: Please visit the BladeSystem c-Class enclosure QuickSpecs for a complete list of recommended data protection solutions for BladeSystem c-Class enclosures: http://www.hp.com/go/blades .	440947-B21 AJ401A
HP Insight Control Environment Management Suite	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. 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. NOTE: For additional License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html HP Insight Control Environment for Linux HP Insight Control Environment for Linux v2.0, Media pack (CD) - No licenses included 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	453484-B21 436222-B21 464422-B21

Options

must be acquired separately. 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/ice-linux> (click on Download button).

HP Insight Control Environment for Linux v2.0, No Media, 1-Server license, including One year of 24x7 Technical Support and Updates 464423-B21

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.

NOTE: For additional License Kits, please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/xxxxx_div/xxxxx_div.html

HP iLO Power Management Pack for HP BladeSystem

HP iLO Power Management Pack for BladeSystem, No Media, 1-Server License including 1 year of 24x7 Technical Support and Updates 442937-B21

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.

NOTE: For additional License Kits, please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12632_div/12632_div.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

ProLiant Essentials Rapid Deployment Pack

ProLiant Essentials Rapid Deployment Pack No Media 1-Server License including 1 year of 24x7 Technical Support and Updates 452151-B21

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.

NOTE: For additional License Kits, please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/11053_div/11053_div.html

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 460750-B21

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.

HP Server Migration Pack – Universal Edition, No Media, Physical / Virtual to Virtual Single Migration License, including 1 year of 24x7 Technical Support 460753-B21

Options

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.

HP Server Migration Pack – Universal Edition, No Media, 1-Year Unlimited Migration License, including 1 year of 24x7 Technical Support and Updates 460756-B21

NOTE: This license allows unlimited migrations (physical to ProLiant, physical to 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 and Update Service.

NOTE: For additional License Kits please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12855_div/12855_div.html

Monitor

HP Insight Dynamics-VSE without Insight Control Environment, 1-server license including 1 year of 24x7 Technical Support and Updates 483531-B21

NOTE: This license supports HP ProLiant ML/DL and c-Class Blade servers. Customer will receive via email a receipt and link to a license entitlement certificate.

HP Insight Dynamics-VSE with Insight Control Environment, 1-server license including 1 year of 24x7 Technical Support and Updates 483534-B21

NOTE: This license supports HP ProLiant c-Class Blade servers. Customer will receive a printed license entitlement certificate via physical shipment.

NOTE: For additional License Kits, please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/13050_div/13050_div.html

Control

HP iLO Advanced Pack for BladeSystem

HP ProLiant Essentials Integrated Lights-Out Advanced for BladeSystem, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates 512488-B21

Featuring: Sophisticated remote control and security features for HP BladeSystem servers and ProLiant ML/DL servers.

NOTE: For additional License Kits, please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12362_div/12362_div.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 License Kits, please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12623_div/12623_div.html

ProLiant Essentials Virtual Machine Management Pack

Options

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 License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12328_div/12328_div.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.

Processor	6-Core Intel® Xeon® Processor E7450 (2.40 GHz, 12 MB L3, 90W, 2P)	492344-B21
	4-Core Intel® Xeon® Processor E7440 (2.40 GHz, 16 MB L3, 90W, 2P)	492345-B21
	4-Core Intel® Xeon® Processor E7430 (2.13 GHz, 12 MB L3, 90W, 2P)	492346-B21
	4-Core Intel® Xeon® Processor E7420 (2.13 GHz, 8 MB L3, 90W, 2P)	492347-B21
	6-Core Intel® Xeon® Processor L7455 (2.13 GHz, 12 MB L3, 65W, 2P)	492348-B21
	4-Core Intel® Xeon® Processor L7445 (2.13 GHz, 12 MB L3, 50W), 2P	493577-B21
	Quad-Core Intel® Xeon® Processor E7330 (2.40 GHz, 2x3 MB, 80W, 2P)	449321-B21
	Quad-Core Intel® Xeon® Processor E7320 (2.13 GHz, 2x2 MB, 80W, 2P)	443692-B21
	Quad-Core Intel® Xeon® Processor E7310 (1.60 GHz, 2x2 MB, 80W, 2P)	443693-B21
	Quad-Core Intel® Xeon® Processor L7345 (1.86 GHz, 2x4 MB, 50W, 2P)	450963-B21
	Dual-Core Intel® Xeon® Processor E7220 (2.93 GHz, 2x4 MB, 80W, 2P)	450961-B21
	NOTE: The BL680 G5 supports either two or four processors. One and three processors are not supported.	

Memory	2 GB FBD PC2-5300 2 x 1 GB Kit	397411-B21
	2 GB FBD PC2-5300 2 x 1 GB Low Power Kit	461826-B21
	4 GB FBD PC2-5300 2 x 2 GB Kit	397413-B21
	4 GB FBD PC2-5300 2 x 2 GB Low Power Kit	461828-B21
	8 GB FBD PC2-5300 2 x 4 GB Kit	397415-B21
	8 GB FBD PC2-5300 2 x 4 GB Low Power Kit	466440-B21
	16 GB FBD PC2-5300 2 x 8 GB Kit	413015-B21
	64 GB FBD PC2-5300 8 x 8 GB Kit	495604-B21

Options

Hard Drives

SAS Hot Plug SFF Enterprise (ENT) Drives

HP 300GB 3G SAS 10K SFF DP ENT HDD	492620-B21
HP 146GB 3G SAS 10K SFF DP HDD	418367-B21
HP 146GB 3G SAS 10K SFF HDD	431958-B21
HP 72GB 3G SAS 15K SFF DP HDD	418371-B21
HP 72GB 3G SAS 15K SFF SP HDD	431935-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 15K SFF DP HDD	418369-B21
HP 36GB 3G SAS 15K SFF SP HDD	431933-B21

NOTE: SAS Enterprise drives have a 3 year warranty.

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html
(Worldwide)

SATA SFF Hot Plug Entry (ETY) Drives

HP 250GB 3G SATA 5.4K SFF ETY HDD	460355-B21
HP 120GB 1.5 G SATA 5.4K SFF ETY HDD	458924-B21
HP 120GB 1.5G SATA 5.4K SFF HDD	431786-B21

NOTE: SATA drives have a 1 year warranty. Please see the QuickSpecs for Technical Specifications and additional information:

http://h18000.www1.hp.com/products/quickspecs/11940_div/11940_div.html
(Worldwide)

Storage Controllers

HP Smart Array P700m/256 Controller	507925-B21
HP Smart Array P700m/512 Controller	508226-B21
HP Smart Array P Series Battery Option Kit	452348-B21

High Availability Cluster Options

HP Serviceguard for Linux

HP Serviceguard Linux for HP ProLiant/x86 Servers Licensed per physical server Includes media and One Year 24x7 Software Support & Updates	463831-B21
HP Serviceguard Linux Oracle Database Toolkit for HP ProLiant/x86 Servers Licensed per cluster Includes media and One Year 24x7 Software Support & Updates	463833-B21
HP Serviceguard Extension for SAP on Linux for HP ProLiant/x86 Servers Licensed per physical server Includes media and One Year 24x7 Software Support & Updates	463834-B21
HP Serviceguard Linux Extended Distance Cluster (XDC) for HP ProLiant/x86 Servers Licensed per physical server Includes media and One Year 24x7 Software Support & Updates	463835-B21

NOTE: The above is not a complete list of all HP Serviceguard for Linux product numbers For a detailed list of supported configuration/certification options for HP Serviceguard for Linux please refer to the HP Serviceguard for Linux Configuration &

Options

Ordering Guide available 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 including a complete list of Product Numbers for HP Serviceguard for Linux, please see the following QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/11518_div/11518_div.html
(Worldwide)

USB Options	HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)	DC172B
	HP 1 GB USB 2.0 Floppy Drive Key	442085-B21
	HP 256 MB 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
	HP USB 04 Standard Keyboard	DT528A#xxx

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	UK108E
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UK109E
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UK110E

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
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Memory

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

NOTE: For a specific memory level, the best performance is achieved using a homogenous memory configuration.

DIMM installation guidelines:

1. All DIMMs must be PC2-5300 Fully Buffered DIMMs running 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. Standard memory and lower power DIMMs may be mixed within the same server, but not within the same memory bank (see #4 above).
6. Low power DIMM kits save approximately 2 watts per server DIMM, plus any datacenter power savings resulting from reduced cooling of heat dissipated from the lower server watt usage.
7. Multiple advanced memory protection (AMP) modes are supported based on FB DIMM population and RBSU selection. The server blade defaults to Advanced ECC.

HP ProLiant BL680c Server G5 (7300 Series 2P Models)

Standard Memory

8 GB (4 x 2 GB) of PC2-5300, FBD DDR2-667 ECC DIMMs

Standard Memory Plus Optional Memory

Up to 104 GB of PC2-5300, FBD DDR2-667 DIMM memory is available with the installation of optional PC2-5300, FBD DDR2-667 DIMM memory expansion kits.

or

Up to 56 GB of PC2-5300, FBD DDR2-667 DIMM memory is available with the installation of optional PC2-5300, FBD DDR2-667 Low Power DIMM memory expansion kits.

Standard Memory Replaced with Optional Memory

Up to 128 GB of PC2-5300, FBD DDR2-667 DIMM memory is available with the removal of standard memory and the installation of optional PC2-5300, FBD DDR2-667 DIMM memory expansion kits.

or

Up to 64 GB of PC2-5300, FBD DDR2-667 DIMM memory is available with the removal of standard memory and the installation of optional PC2-5300, FBD DDR2-667 Low Power DIMM memory expansion kits.

Memory		Slot							
		1A	2C	3E	4G	5A	6C	7E	8G
Standard	8 GB	2 GB	Empty	Empty	Empty	2 GB	Empty	Empty	Empty
		9B	10D	11F	12H	13B	14D	15F	16H
		2 GB	Empty	Empty	Empty	2 GB	Empty	Empty	Empty
Optional	104 GB	2 GB	8 GB	8 GB	8 GB	2 GB	8 GB	8 GB	8 GB
		9B	10D	11F	12H	13B	14D	15F	16H
		2 GB	8 GB	8 GB	8 GB	2 GB	8 GB	8 GB	8 GB
Maximum	128 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB
		9B	10D	11F	12H	13B	14D	15F	16H
		8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB

Memory

HP ProLiant BL680c Server G5 (7400 Series 2P Models)

Standard Memory

8 GB (2x4 GB) of PC2-5300, FBD DDR2-667 ECC DIMMs

Standard Memory Plus Optional Memory

Up to 116 GB of PC2-5300, FBD DDR2-667 DIMM 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 128 GB of PC2-5300, FBD DDR2-667 DIMM memory is available with the removal of standard memory and the installation of optional PC2-5300, FBD DDR2-667 DIMM memory expansion kits.

Memory		Slot							
Standard	8 GB	1A	2C	3E	4G	5A	6C	7E	8G
		4 GB	Empty	Empty	Empty	Empty	Empty	Empty	Empty
		9B	10D	11F	12H	13B	14D	15F	16H
		4 GB	Empty	Empty	Empty	Empty	Empty	Empty	Empty
Optional	116 GB	1A	2C	3E	4G	5A	6C	7E	8G
		4 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB
		9B	10D	11F	12H	13B	14D	15F	16H
		4 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB
Maximum	128 GB	1A	2C	3E	4G	5A	6C	7E	8G
		8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB
		9B	10D	11F	12H	13B	14D	15F	16H
		8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB

HP ProLiant BL680c Server G5 (7400 Series 2P Low Power Models)

Standard Memory

8 GB (2x4 GB) of PC2-5300, FBD DDR2-667 ECC Low Power DIMMs

Standard Memory Plus Optional Memory

Up to 48 GB of PC2-5300, FBD DDR2-667 Low Power DIMM memory is available with the installation of optional PC2-5300, FBD DDR2-667 Low Power DIMM memory expansion kits.

Maximum Memory

Up to 64 GB of PC2-5300, FBD DDR2-667 Low Power DIMM memory is available with the installation of optional PC2-5300, FBD DDR2-667 Low Power DIMM memory expansion kits.

Memory

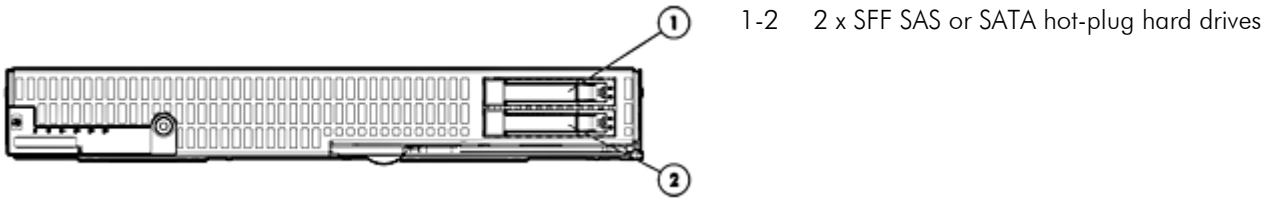
Low Power Memory		Slot							
Standard	8 GB	1A	2C	3E	4G	5A	6C	7E	8G
		4 GB LV	Empty	Empty	Empty	2 GB	Empty	Empty	Empty
		9B	10D	11F	12H	13B	14D	15F	16H
		4 GB LV	Empty	Empty	Empty	2 GB	Empty	Empty	Empty
Maximum	64 GB	1A	2C	3E	4G	5A	6C	7E	8G
		4 GB LV	4 GB LV	4 GB LV	4 GB LV	4 GB LV	4 GB LV	4 GB LV	4 GB LV
		9B	10D	11F	12H	13B	14D	15F	16H
		4 GB LV	4 GB LV	4 GB LV	4 GB LV	4 GB LV	4 GB LV	4 GB LV	4 GB LV

HP ProLiant BL680c G5 memory options:

Following are memory options available from HP:

2 GB FBD PC2-5300 2 X 1 GB Kit	397411-B21
2 GB FBD PC2-5300 2 x 1 GB Low Power Kit	461826-B21
4 GB FBD PC2-5300 2 x 2 GB Kit	397413-B21
4 GB FBD PC2-5300 2 x 2 GB Low Power Kit	461828-B21
8 GB FBD PC2-5300 2 x 4 GB Kit	397415-B21
8 GB FBD PC2-5300 2 x 4 GB Low Power Kit	466440-B21
16 GB FBD PC2-5300 2 x 8 GB Kit	413015-B21
64 GB FBD PC2-5300 8 x 8 GB Kit	495604-B21

Storage



Hard Drives

SAS Hot Plug SFF Enterprise (ENT) Drives

	Quantity Supported	Position Supported	Controller
300GB 3G SAS 10K	2	1-2	Smart Array P400i Controller
146GB 3G SAS 10K			
72GB 3G SAS 10K			
72GB 3G SAS 15K			
36GB 3G SAS 15K			

SATA SFF Hot Plug Entry (ETY) Drives

	Quantity Supported	Position Supported	Controller
250GB 3G SATA 5.4K	2	1-2	Smart Array P400i Controller
120GB 1.5G SATA 5.4K			

Technical Specifications

System Unit	Dimensions (H x W x D)	Full height server blade: 14.42 x 2.03 x 20.06 in (36.17 x 5.16 x 50.95 cm)								
	Weight (approximate)	<table border="0"> <tr> <td style="padding-right: 20px;">Maximum</td> <td>21 lb (9.5 kg)</td> </tr> <tr> <td colspan="2">(all hard drives and processors installed)</td> </tr> <tr> <td style="padding-right: 20px;">Minimum</td> <td>19 lb (8.6 kg)</td> </tr> <tr> <td colspan="2">(one hard drive and processor installed)</td> </tr> </table>	Maximum	21 lb (9.5 kg)	(all hard drives and processors installed)		Minimum	19 lb (8.6 kg)	(one hard drive and processor installed)	
Maximum	21 lb (9.5 kg)									
(all hard drives and processors installed)										
Minimum	19 lb (8.6 kg)									
(one hard drive and processor installed)										
	Power Specifications	<p>For power specifications including input requirements, BTU rating, and power supply output, please see the HP BladeSystem c-Class Enclosures QuickSpecs located at:</p> <p>HP BladeSystem c3000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html</p> <p>HP BladeSystem c7000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html</p> <p>To review typical system power ratings use the HP BladeSystem Power Sizer available at: http://www.hp.com/go/ bladesystem/powercalculator.</p>								
	System Inlet Temperature	<table border="0"> <tr> <td style="padding-right: 20px;">Operating</td> <td>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).</td> </tr> <tr> <td style="padding-right: 20px;">Non-Operating</td> <td>-30° to 60°C (-22° to 140°F), maximum rate of change is 20°C/hr (36°F/hr).</td> </tr> </table>	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).				
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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)	<table border="0"> <tr> <td style="padding-right: 20px;">Operating</td> <td>10 to 85% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.</td> </tr> <tr> <td style="padding-right: 20px;">Non-Operating</td> <td>10 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.</td> </tr> </table>	Operating	10 to 85% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.	Non-Operating	10 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.				
Operating	10 to 85% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.									
Non-Operating	10 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.									
	Altitude	<table border="0"> <tr> <td style="padding-right: 20px;">Operating</td> <td>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).</td> </tr> <tr> <td style="padding-right: 20px;">Non-operating</td> <td>9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).</td> </tr> </table>	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).				
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	<p>For acoustic noise specifications, please see the HP BladeSystem c-Class Enclosures QuickSpecs located at:</p> <p>HP BladeSystem c3000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html</p> <p>HP BladeSystem c7000 Enclosure QuickSpecs:</p>								

Technical Specifications

http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html

Smart Array P400i Controller	Disk Drive and Enclosure Interface	3G SAS (Serial Attached SCSI) 1.5G SATA (Serial Advanced Technology Attachment)
	SAS Connectors	2 internal (SFF8484) x4 wide port connectors
	Cache Memory Speed	DDR2-533MHz with 40 or 72-bit wide bus provides up to 4.2 GB/s maximum bandwidth.
	Server Interface	x8 2.5G PCIe provides 2 GB/s maximum bandwidth.
	SAS Speed	x8 3G SAS provides 2.4 GB/s maximum bandwidth.
	Cache Memory	40-bit 256 MB cache (72-bit 512MB module upgrades available); ECC protection, battery-backed, and transportable
	Logical Drives Supported	Up to 32 logical drives
	Maximum Logical Drive Capacity	584GB (4 x 146 GB) SAS 480GB (4 x 120 GB) SATA
	Host Memory Addressing	64-bit, supporting greater than 4 GB server memory space
	RAID Support	RAID 1 (Mirroring) RAID 0 (Striping)
	Upgradeable Firmware	Upgradeable Firmware with recovery ROM feature

Embedded NC326i Dual Port Gigabit Server Adapter	Network Processor	Broadcom 5715S
	Data Transfer Method	Four lane (x4) PCI Express
	Network Transfer Rate	Two ports, each at 2000 Mb/s full duplex only (theoretical maximum value)
	IEEE Compliance	802.1p, 802.1Q, 802.3, 802.3ad, and 802.3x
	Standard Features	<ul style="list-style-type: none">● 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) v2.1● 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

Technical Specifications

Embedded NC373i Multifunction Gigabit Server Adapters	Network Processor	Broadcom 5708S
	Data Transfer Method	Four lane (x4) PCI Express
	Network Transfer Rate	2000 Mb/s per port full duplex only (theoretical maximum value)
	IEEE Compliance	802.1p, 802.1Q, 802.3, 802.3ad, and 802.3x
	Standard Features	<ul style="list-style-type: none">• TCP/IP offload engine (TOE) for Microsoft Windows• iSCSI boot• Optional accelerated iSCSI• 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) v2.1• 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.
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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.