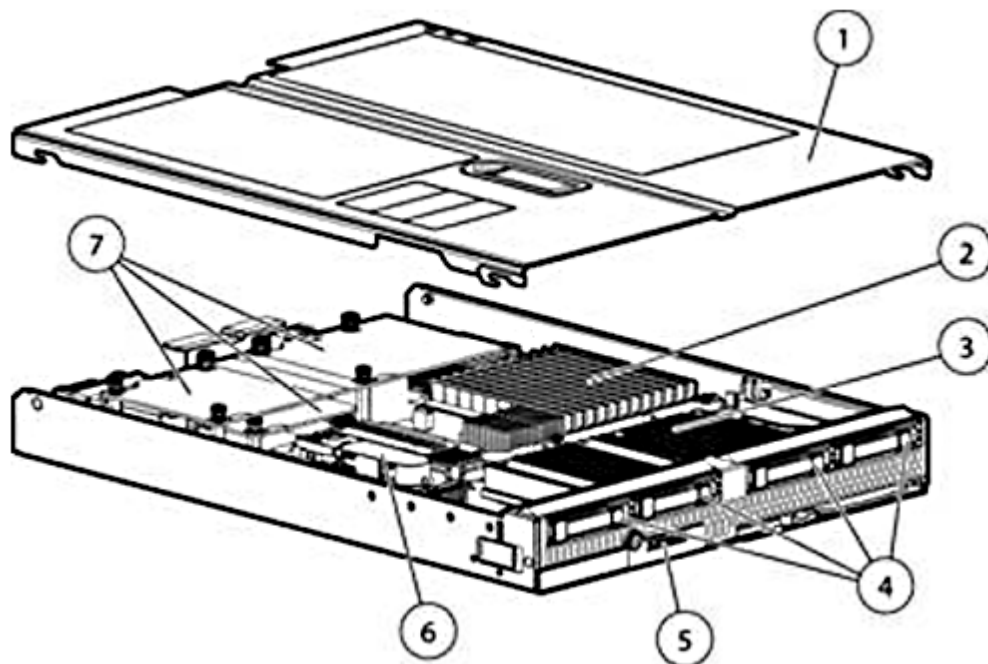


Overview

HP ProLiant BL480c Server Blade



- | | |
|---|--|
| 1. Access panel | 5. Local I/O connector |
| 2. Up to 48 GB PC2-5300, FBD DDR2-667 memory (12 DIMMs) | 6. Smart Array P400i Controller (optional battery-backed write cache)(BBWC)) |
| 3. Up to two Dual-Core Intel® Xeon® processors | 7. Three Mezzanine slots |
| 4. Four small form factor (SFF) hot-plug drive bays | |

What's New

The BL480c offers dual core processors including the following:

- Dual-Core Intel® Xeon® Processor 5110 (1.6 GHz, 1x4MB L2 Cache)
- Dual-Core Intel® Xeon® Processor 5140 (2.33 GHz, 1x4MB L2 Cache)
- Dual-Core Intel® Xeon® Processor 5150 (2.66 GHz, 1x4MB L2 Cache)
- Dual-Core Intel® Xeon® Processor 5160 (3.0 GHz, 1x4MB L2 Cache)

The BL480c supports up to 48 GB of memory with the new 8 GB FBD PC2-5300 2x4GB Memory Kit.

Overview

At A Glance

This document covers the HP ProLiant BL480c server blade only. For more information on HP BladeSystems c-Class Infrastructure and HP BladeSystem c-Class Interconnects, please see the following QuickSpecs:

HP BladeSystem c-Class Infrastructure QuickSpecs:

http://h18000.www1.hp.com/products/quickspecs/12517_na/12517_na.HTML

and HP BladeSystem c-Class Interconnect Components QuickSpecs:

http://h18000.www1.hp.com/products/quickspecs/12524_na/12524_na.HTML

- The HP ProLiant BL480c delivers more performance and expansion than any other 2P x86 server blade to handle the most demanding applications. The HP ProLiant BL480c server blade includes:
 - **Processor:**
 - Up to two Dual-Core Intel® Xeon® 5000 or 5100 Sequence processors
 - Intel 5000P chipset supporting up to a 1333MHz front-side bus (FSB)
 - **Memory:**
 - Up to 48 GB of memory supported by twelve (12) PC2-5300, Fully-Buffered DIMMs at 667 MHz
 - Supports memory interleaving (2 x 1), memory mirroring, and online spare capacity
 - **Storage Controller:**
 - Integrated Smart Array P400i RAID controller with 256MB cache (with optional battery-backed write cache) supports RAID 0/1/5.
 - **Internal Drive Support:**
 - Up to four (4) small form factor (SFF) SAS or SATA hot-plug hard drives
 - **Network Controller:**
 - Four (4) embedded NIC ports, plus one (1) additional management NIC port:
 - One (1) embedded NC326i Dual Port Gigabit Server Adapter
 - Two (2) embedded NC373i Multifunction Gigabit Server Adapters
 - One (1) additional embedded 10/100 NIC dedicated to iLO 2 management
 - **Mezzanine Support:**
 - Three (3) additional I/O expansion slots via mezzanine card.
 - Supports up to (3) mezzanine cards
 - Dual-Port Fibre Channel Mezzanine (4-Gb) options for SAN connectivity (Choice of Emulex or QLogic).
 - Ethernet NIC Mezzanine options for additional network ports
 - HP NC326m PCI Express Dual Port 1Gb Server Adapter for c-Class BladeSystem
 - HP NC373m PCI Express Dual Port Multifunction Gigabit Server Adapter
 - Infiniband (IB) and 10GbE planned for future support
 - **Internal USB Support:**
 - One (1) internal USB 2.0 connector for security key devices and USB drive keys
 - **Form Factor:**
 - HP ProLiant BL480c server blade plugs vertically into the HP BladeSystem c7000 enclosure
 - **Operating Systems:**
 - Supports Windows and Linux Operating Systems
 - **Management:**
 - Integrated Lights-Out 2 Standard Blade Edition (includes virtual KVM graphical remote console at no additional cost)
 - **Warranty:**
 - Protected by HP Services and a worldwide network of resellers and service providers. Three-year parts, 3 Year Labor and 3 Year on-site limited global warranty. Certain restrictions and exclusions apply. Pre-Failure Notification on processors, memory and SAS hard drives. SATA hard drives have a one year warranty.

Standard Features (Server Blade)

Processor	Dual-core Intel Xeon Processor 5160 (3.00 GHz, 1333 MHz FSB) Dual-core Intel Xeon Processor 5150 (2.66 GHz, 1333 MHz FSB) Dual-core Intel Xeon Processor 5140 (2.33 GHz, 1333 MHz FSB) Dual-core Intel Xeon Processor 5130 (2.00 GHz, 1333 MHz FSB)* Dual-core Intel Xeon Processor 5120 (1.86 GHz, 1066 MHz FSB)* Dual-core Intel Xeon Processor 5110 (1.60 GHz, 1066 MHz FSB) Dual-core Intel Xeon Processor 5080 (3.73 GHz, 1066 MHz FSB) Dual-core Intel Xeon Processor 5063 (3.2 GHz 1066 MHz FSB) Mid-Voltage (MV)* Dual-core Intel Xeon Processor 5060 (3.2 GHz, 1066 MHz FSB) Dual-core Intel Xeon Processor 5050 (3.0 GHz, 667 MHz FSB)* NOTE: Intel 5000 and 5100 Sequence processors are 64-bit, dual-core, and support Intel VT. Intel 5000 Sequence processors support Hyper Threading. NOTE: *Offered through CTO only.
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Upgradeability	Upgradeable to dual processors
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Cache Memory	2x2MB Level 2 cache memory (5000 Sequence) 1x4MB Level 2 cache memory (5100 Sequence)
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Chipset	Intel® 5000P Chipset
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Memory	Type PC2-5300 Fully Buffered DIMMs running at 667 MHz
	Standard 2 GB (2 x 1 GB) 4 GB (4 x 1 GB)
	Maximum 48 GB (12 x 4 GB)
	NOTE: Memory must be installed in pairs.

Network Controller	Four (4) embedded NIC ports, plus one (1) additional management NIC port: <ul style="list-style-type: none">• One (1) embedded NC326i Dual Port Gigabit Server Adapter• Two (2) embedded NC373i Multifunction Gigabit Server Adapters• One (1) additional embedded 10/100 NIC dedicated to iLO 2 management
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Expansion Slots	Three Mezzanine slots (Two x8 and one x4)
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Integrated Manageability	Integrated Lights-Out 2 (iLO 2) Standard Blade Edition (integrated on motherboard)
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Standard Features (Server Blade)

Storage Controller	Smart Array P400i Controller	256MB memory module supports RAID 0/1/5 Available upgrades: Battery-backed write cache (BBWC) or 512MB memory module with battery-backed write cache (BBWC) (both upgrades support RAID 0/1/5/6)
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Maximum Internal Storage	Hot Plug Serial Attach SCSI (SAS)	288GB SAS	4 x 72GB Serial SCSI
	Hot Plug Serial ATA (SATA)	240GB SATA	4 x 60GB Serial ATA

Graphics	Integrated ATI RN-50 1280 x 1024 x 16M color (32 MB DDR1 memory)
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Graphics Resolution Supported	Resolution	1280 x 1024, 16.7M, 64k, 256, 16
	Color	1024 x 768, 16.7M, 64k, 256, 16
	Depths	800 x 600, 16.7M, 64k, 256, 16
		640 x 480, 16.7M, 64k, 256, 16

Fibre Channel on the HP ProLiant BL480c server blade

Two optional Fibre Channel HBAs are supported by the HP ProLiant BL480c. Both mezzanine circuit boards connect directly to the server blade system board. These Fibre Channel HBAs are available via option kits ordered separately.

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

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

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

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

Emulex and QLogic Fibre Channel HBAs feature:

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

Compatible SAN

HP ProLiant BL480c server blades are optimized for HP StorageWorks MSA, EVA, and XP

HP ProLiant 480c 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

Insight Control Data Center Edition

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

Installs the following components by default using the wizard-based integrated installer:

- HP Systems Insight Manager
- Rapid Deployment Pack
- Performance Management Pack
- Vulnerability and Patch Management Pack

Additional ProLiant Essentials software and management tools included on the Insight Control Data Center Edition DVD can be installed manually.

- Virtualization Management Suite
- Workload Management Pack
- HP Open Service Event Manager
- HP Instant Support Enterprise Edition

NOTE: For Licensing and Packaging Options please see the options section of this QuickSpecs.

NOTE: Insight Control Data Center Edition is delivered with HP BladeSystem c-Class enclosures with either 16-server licenses or 8-server evaluation licenses (30-days). For additional information on HP c-Class Infrastructure please visit: [HP BladeSystem c-Class Infrastructure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12330_na/12330_na.HTML](http://h18000.www1.hp.com/products/quickspecs/12330_na/12330_na.HTML)

NOTE: For additional product and licensing information about Insight Control Data Center Edition, HP Systems Insight Manager and Essentials software refer to <http://www.hp.com/servers/proliantessentials>.

Unified Foundation Management and Essentials Software Plugins

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 Performance Management Pack	ProLiant Essentials Performance Management Pack detects, analyzes, and explains hardware bottlenecks on HP ProLiant servers, HP Integrity servers and shared storage.
The Vulnerability and Patch Management Pack	The Vulnerability and Patch Management Pack integrates and simplifies the assessment and remediation of operating system vulnerabilities into HP Systems Insight Manager for Windows and Linux platforms.

Standard Features

Insight Management Agents	<p>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.</p> <p>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</p> <p>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.</p>
Subscriber's Choice	<p>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.</p>
ProLiant Support Packs and ROMPaq, software	<p>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.</p>

Optional ProLiant Essentials Value Packs

Optional software offerings that selectively extend the functionality of an Adaptive Infrastructure to address specific business problems and needs:

- Accelerated iSCSI Pack - enables the embedded Multifunction network controller to serve as both a NIC and an iSCSI HBA providing access to SAN storage over the same connection used for networking. Processing of the protocol stack is offloaded to the NIC reducing CPU utilization and greatly improving the speed with which the requests are processed and sent to the network.
- Integrated Lights-Out Select Pack - upgrades the Integrated Lights-Out processor with scripted and command line virtual media, Power Regulator reporting and enterprise security
- Intelligent Networking Pack - detects and analyzes network bottlenecks or broken network linkages and steers traffic to the optimum route based on network conditions, plus it provides an extra layer of protection. The virus throttle feature of the solution slows the propagation of fast spreading virus.
- Server Migration Pack - P2P Edition: Upgrading or replacing your existing server? Effortlessly transition to new servers with automated, accurate and affordable migration of OS, application and data.
- Virtualization Management Software - 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.
- Workload Management Pack - provides easier management of complex environments, improving overall server utilization and enabling Windows® 2000 customers for the first time to confidently deploy multiple applications on a single multiprocessor ProLiant Server.

NOTE: Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer

Standard Features

to <http://www.hp.com/servers/proliantessentials> or the various ProLiant Essentials Value Pack product QuickSpecs for more information.

SmartStart

SmartStart is a tool that simplifies single server setup, providing a rapid way to deploy reliable and consistent server configurations. SmartStart 7.50 and later can now deploy the HP ProLiant BL480c 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 Web site at <http://www.hp.com/servers/smartstart>.

OS Support

Microsoft Windows 2000 Server
Microsoft Windows 2000 Advanced Server
Microsoft Windows Server 2003, Standard Edition
Microsoft Windows Server 2003 R2, Standard Edition
Microsoft Windows Server 2003, Standard x64 Edition
Microsoft Windows Server 2003 R2, Standard x64 Edition
Microsoft Windows Server 2003, Web Edition
Microsoft Windows Server 2003 R2, Web Edition
Microsoft Windows Server 2003, Enterprise Edition
Microsoft Windows Server 2003 R2, Enterprise Edition
Microsoft Windows Server 2003, Enterprise x64 Edition
Microsoft Windows Server 2003 R2, Enterprise x64 Edition
Red Hat Enterprise Linux 3
Red Hat Enterprise Linux 4
SUSE LINUX Enterprise Server 9
SUSE LINUX Enterprise Server 10

NOTE: For a more complete and up-to-date listing of supported OSs and versions, please visit our OS Support Matrix at: <http://www.hp.com/go/supportos>.

NOTE: For an up-to-date listing of the latest drivers available for the ProLiant BL c-Class, please see: <http://www.compaq.com/support/files/server/us/index.html>.

NOTE: For a more complete and up-to-date information on Linux support, please visit HP Linux website at: <http://h18000.www1.hp.com/products/servers/linux/hpLinuxcert.html>.

Supported Software Options

VMware Virtualization Software
Red Hat Enterprise Linux and management bundle for HP BladeSystems

NOTE: For more information on HP's Certified and Supported HP ProLiant Servers, please visit the VMware Server Support Matrix at:

<http://h18004.www1.hp.com/products/servers/software/vmware/hpvmwarecert.html>

NOTE: For a more complete and up-to-date information on Linux for HP BladeSystems support, please visit HP Linux website at:

http://h18000.www1.hp.com/products/quickspecs/12321_na/12321_na.HTML

Standard Features

Intelligent Manageability

Integrated Lights-Out 2 Standard Blade Edition (iLO 2) features include:

- Virtual KVM (Text and Graphical Modes)
- Virtual Media (CD-ROM, floppy, USB flash drive)
- Virtual Power Button Control
- Integrated Remote Console
- Embedded system health
- Blade power consumption reading
- Browser, command line and scripted access
- Dedicated LAN Connectivity
- Automatic IP Configuration via DHCP/DNS/WINS
- Industry Standard RC4, 128-bit Secure Sockets Layer (SSL) and Secure Shell (SSH) Security
- IML and iLO 2 Event Logging
- Support for 12 user accounts with customizable access privileges

Upgrade to HP ProLiant Essentials Integrated Light-Out Select Pack

NOTE: Advanced features such as [Graphical Remote Console](#) and [browser accessible Virtual Floppy/CD-ROM](#) are included with the BL c-Class server.

Availability

Dual-Port Fibre Channel Mezzanine Card for redundant SAN connection
Four (4) hot-plug SAS/SATA hard drive bays and integrated RAID (Smart Array P400i) controller on every server blade (battery-backed write cache is optional.)
Redundant ROM on each server blade
ECC Memory

Memory Mirroring

Memory Online Spare Capacity
Network adapter teaming (network fault tolerance, transmit load balancing, switch-assisted load balancing)

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 MSA1000, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.

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

Standard Features

RoHS Compliant

For Resellers with RoHS legislation (see NOTE)

The use of the noted material in a solution and subsequent resale of that solution will result in the solution no longer meeting the requirements of RoHS legislation.

NOTE: Directive 2002/95/EC restricts the use of lead, mercury, cadmium, hexavalent chromium, PBBs and PBDEs in electronic products. References to 'RoHS legislation' mean requirements of Directive 2002/95/EC or to similar substance restriction legislation is met.

Service and Support

This product is covered by a global limited warranty and supported by HP Services and a worldwide network of resellers and service providers. 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.

NOTE: Server Blade Limited Warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

NOTE: Server Blade Enclosure Limited Warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

NOTE: Server Blade Interconnect Limited Warranty includes 1 year Parts, 1 year Labor, 1-year on-site support.

Care Pack services provide a range of life cycle support options that let you choose the service levels that meet your business requirements, from basic to mission-critical.

A full range of HP Care Pack hardware and software services are available including:

- Installation and start up
- Education courses
- Extended onsite hardware coverage hours from same business day 13 hours, 5 day to 24 hours, 7 days call window with options including 4-hour response or 6-hour Call To Repair
- Comprehensive range of software technical support for Microsoft, Linux, ProLiant Essentials and VMware-based IT solutions helping to deliver high level of application availability. Response times range from 30 mins for critical problems to 2 hours.
- System Management, Performance Services and Mission Critical Support Solution

HP has introduced a new building block approach which allows customers to purchase the right coverage at the right time whether purchasing an initial server blade plus enclosure or purchasing additional ProLiant server blades over time. HP will offer two sets of Care Pack services, one designed to support the server blade and one designed to support the enclosure.

HP Care Pack services for HP ProLiant 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.

HP Care Pack services for the c7000 Enclosure cover the enclosure, power supplies and fans. HP qualified rack options are covered by these services when installed within the same rack. HP Supported Ethernet devices covered include the Ethernet Pass-Through Module, Fibre Channel Pass-Through Module, Cisco Catalyst 3020 Blade Switch and GbE2c Ethernet Blade Switch.

NOTE: For more information regarding the Blade service portfolio visit our worldwide web site on the internet at: <http://h20219.www2.hp.com/services/cache/81725-0-0-225-121.html>

NOTE: For more information on HP Care Pack services, contact any of our worldwide sales offices or resellers or visit our worldwide Web site on the internet at: <http://www.hp.com/hps/carepack>

NOTE: For more complete information on HP Services offerings, customers and resellers, please visit us

Standard Features

at: <http://www.hp.com/hps>

NOTE: Additional information regarding worldwide limited warranty and technical support is available

at: <http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>

Models

Dual-Core Models

HP ProLiant BL480c 5160 DC 4GB (2P) 416669-B21	Processor(s) One of the following depending on model	(2) Dual-core Intel Xeon Processor 5160 (3.00 GHz, 1333 FSB) (2) Dual-core Intel Xeon Processor 5150 (2.66 GHz, 1333 FSB) (1) Dual-core Intel Xeon Processor 5140 (2.33 GHz, 1333 FSB) (1) Dual-core Intel Xeon Processor 5110 (1.60 GHz, 1066 FSB) (2) Dual-core Intel Xeon Processor 5060 (3.2 GHz, 1066 FSB)
HP ProLiant BL480c 5150 DC 4GB (2P) 416668-B21	Cache Memory	2x2MB Level 2 cache memory (5000 Sequence) 1x4MB Level 2 cache memory (5100 Sequence)
HP ProLiant BL480c 5140 DC 2GB (1P) 416667-B21	Memory One of the following depending on model	4 GB (4 x 1 GB) PC2-5300, FBD DDR2-667 2 GB (2 x 1 GB) PC2-5300, FBD DDR2-667
HP ProLiant BL480c 5110 DC 2GB (1P) 416666-B21	Network Controller	Four (4) embedded NIC ports, plus one (1) additional management NIC port: <ul style="list-style-type: none">• Two (2) embedded NC373i Multifunction Gigabit Server Adapters• One (1) embedded NC326i Dual Port Gigabit Server Adapter;• One (1) additional embedded 10/100 NIC dedicated to iLO 2 management
HP ProLiant BL480c 5060 DC 4GB (2P) 404704-B21	Storage Controller	Smart Array P400i Controller with 256MB (optional battery-backed write cache)
	Hard Drives	No drives included; four (4) SFF SAS/SATA drive bays
	Internal Storage	288GB SAS 240GB SATA
	Optical Drive	None
	Form Factor	Up to 8 full-height blades supported in HP BladeSystem c7000 Enclosure

Configuration Information - Factory Integrated Models

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 BL480c CTO Blade	404707-B21
	Configurable Model ships with:	
	Four (4) embedded NIC ports plus (1) additional management NIC port:	
	One (1) embedded NC326i Dual Port Gigabit Server Adapter	
	Two (2) embedded NC373i Multifunction Gigabit Server Adapters	
	One (1) additional embedded 10/100 NIC dedicated to iLO 2 management	
	Integrated Smart Array P400i RAID controller with 256MB cache	
	NOTE: Controller cache module selection is required. Select either the standard 256 MB module, the optional BBWC module, or the 512 MB module with BBWC upgrade in step 2 below.	
	Four (4) 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	Dual-Core Intel Xeon Processor 5160 (3.00 GHz, 1333 MHz FSB) Processor Option Kit, FIO Base	416673-L21
	NOTE: If 2 processors are desired, select one 416673-L21 and one 416673-B21.	
	Dual-Core Intel Xeon Processor 5150 (2.66 GHz, 1333 MHz FSB) Processor Option Kit, FIO Base	416672-L21
	NOTE: If 2 processors are desired, select one 416672-L21 and one 416672-B21.	
	Dual-Core Intel Xeon Processor 5140 (2.33 GHz, 1333 MHz FSB) Processor Option Kit, FIO Base	416671-L21
	NOTE: If 2 processors are desired, select one 416671-L21 and one 416671-B21.	
	Dual-Core Intel Xeon Processor 5130 (2.00 GHz, 1333 MHz FSB) Processor Option Kit, FIO Base	419742-L21
	NOTE: If 2 processors are desired, select one 419742-L21 and one 419742-B21.	
	Dual-Core Intel Xeon Processor 5120 (1.86 GHz, 1066 MHz FSB) Processor Option Kit, FIO Base	419741-L21
	NOTE: If 2 processors are desired, select one 419741-L21 and one 419741-B21.	
	Dual-Core Intel Xeon Processor 5110 (1.60 GHz, 1066 MHz FSB) Processor Option Kit, FIO Base	416670-L21
	NOTE: If 2 processors are desired, select one 416670-L21 and one 416670-B21.	
	Dual-Core Intel Xeon Processor 5080 (3.73 GHz, 1066 MHz FSB) Processor Option Kit, FIO Base	409607-L21
	NOTE: If 2 processors are desired, select one 409607-L21 and one 409607-B21.	
	Dual-Core Intel Xeon Processor 5063 (3.2 GHz MV, 1066 MHz FSB) (Mid-Voltage) Processor Option Kit, FIO Base	409606-L21
	NOTE: If 2 processors are desired, select one 409606-L21 and one 409606-B21.	
	Dual-Core Intel Xeon Processor 5060 (3.2 GHz, 1066 MHz FSB) Processor Option Kit, FIO Base	409605-L21
	NOTE: If 2 processors are desired, select one 409605-L21 and one 409605-B21.	

Configuration Information - Factory Integrated Models

	Dual-Core Intel Xeon Processor 5050 (3.0 GHz, 667 MHz FSB) Processor Option Kit, FIO Base	409604-L21
	NOTE: If 2 processors are desired, select one 409604-L21 and one 409604-B21.	
Memory	1 GB FBD PC2-5300 2 x 512 MB Kit	397409-B21
	2 GB FBD PC2-5300 2 x 1 GB Kit	397411-B21
	4 GB FBD PC2-5300 2 x 2 GB Kit	397413-B21
	NOTE: Two-way memory interleaving is enabled when an identical pair of DIMMs is installed.	
Smart Array P400i upgrade options	P400i 256MB Cache	405139-B21
	P400i 512MB and Battery-backed write cache upgrade	405148-B21

Step 3: Choose Additional Options for Factory Integration

Fibre Channel 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
Communications	HP NC373m PCI Express Dual Port Multifunction Gigabit Server Adapter for c-Class BladeSystem	406770-B21
	HP NC326m PCI Express Dual Port 1Gb Server Adapter for c-Class BladeSystem	406771-B21
	NOTE: Supports HP c-Class BladeSystems.	

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 Infrastructure QuickSpecs:

http://h18000.www1.hp.com/products/quickspecs/12517_div/12517_div.HTML

and HP BladeSystem c-Class Interconnect Components QuickSpecs:

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

Options

<p>ProLiant Essentials Value Pack Software</p>	<p>ProLiant Essentials Accelerated iSCSI Pack for Embedded Multifunction Gigabit Server Adapters</p> <p>ProLiant Essentials Accelerated iSCSI Pack, Single Server License 407484-B21</p> <p>NOTE: For additional ProLiant Accelerated iSCSI Pack License Kits- please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12466_na/12466_na.HTML</p> <p>ProLiant Essentials Integrated Lights-Out Select Pack</p> <p>ProLiant Essentials Integrated Lights-Out Select Pack, 1 server License 413119-B21</p> <p>ProLiant Essentials Integrated Lights-Out Select Pack 8-server License 413122-B21</p> <p>Featuring: sophisticated remote control and security features for HP BladeSystem servers and ProLiant ML/DL servers in text console environments.</p> <p>NOTE: For additional ProLiant Essentials Integrated Lights-Out Packs please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12362_na/12362_na.HTML</p> <p>ProLiant Essentials Intelligent Networking Pack Windows Edition and Linux Edition</p> <p>ProLiant Essentials Intelligent Networking Pack - Windows Edition, Single Server License 372906-B21</p> <p>NOTE: For use with a single server. Contains one license with a unique license activation key and documentation.</p> <p>ProLiant Essentials Intelligent Networking Pack Linux Edition, Single Server License 397004-B21</p> <p>NOTE: For use with a single server. Contains one license with a unique license activation key and documentation.</p> <p>NOTE: For additional ProLiant Intelligent Networking Pack License Kits-Windows Edition please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12062_na/12062_na.HTML</p> <p>NOTE: For additional ProLiant Intelligent Networking Pack License Kits-Linux Edition please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12327_na/12327_na.HTML</p> <p>ProLiant Essentials Server Migration Pack</p> <p>ProLiant Essentials Server Migration Pack, Single-Migration License 375345-B21</p> <p>NOTE: Contains one license, enabling 1 server migration, with a unique license activation key and documentation.</p> <p>NOTE: This license allows 1 server to be migrated from a physical server to a virtual machine. Or this license can be used to migrate a virtual machine from one virtualization layer i.e. VMware GSX to a different virtualization layer such as VMware ESX or Microsoft Virtual Server 2005.</p> <p>NOTE: For additional ProLiant Server Migration Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12328_na/12328_na.HTML</p> <p>ProLiant Essentials Server Migration Pack - Physical to ProLiant Edition</p> <p>ProLiant Essentials Server Migration Pack - Physical to ProLiant Edition, Single-Migration License 412978-B21</p> <p>NOTE: For additional ProLiant Server Migration Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12467_na/12467_na.HTML</p> <p>ProLiant Essentials Workload Management Pack</p> <p>ProLiant Essentials Workload Management Pack, Single Server License 303284-B21</p>
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Options

NOTE: For additional ProLiant Workload Management Pack License Kits please see the QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/11452_na/11452_na.HTML

ProLiant Essentials Virtual Machine Management Pack

ProLiant Essentials Virtual Machine Management Pack, Single-Server License 372214-B21

NOTE: For use with a single server. Contains one license with a unique license activation key and documentation.

NOTE: For additional ProLiant Virtual Machine Management Pack License Kits please see the QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/12328_na/12328_na.HTML

NOTE: Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to <http://www.hp.com/servers/proliantessentials> or the various ProLiant Essentials Value Pack product QuickSpecs for more information.

NOTE: For more information regarding ProLiant Essentials Software, please see the following URL: <http://www.hp.com/servers/proliantessentials>.

Processors		
	Dual-Core Intel Xeon Processor 5160 (3.00 GHz, 1333 MHz FSB) Processor Option Kit	416673-B21
	Dual-Core Intel Xeon Processor 5150 (2.66 GHz, 1333 MHz FSB) Processor Option Kit	416672-B21
	Dual-Core Intel Xeon Processor 5140 (2.33 GHz, 1333 MHz FSB) Processor Option Kit	416671-B21
	Dual-Core Intel Xeon Processor 5130 (2.00 GHz, 1333 MHz FSB) Processor Option Kit	419742-B21
	Dual-Core Intel Xeon Processor 5120 (1.86 GHz, 1066 MHz FSB) Processor Option Kit	419741-B21
	Dual-Core Intel Xeon Processor 5110 (1.60 GHz, 1066 MHz FSB) Processor Option Kit	416670-B21
	Dual-Core Intel Xeon Processor 5080 (3.73 GHz, 1066 MHz FSB) Processor Option Kit	409607-B21
	Dual-Core Intel Xeon Processor 5063 (3.2 GHz MV, 1066 MHz FSB) (Mid-Voltage) Processor Option Kit	409606-B21
	Dual-Core Intel Xeon Processor 5060 (3.20 GHz, 1066 MHz FSB) Processor Option Kit	409605-B21

Memory		
	1 GB FBD PC2-5300 2 x 512 MB Kit	397409-B21
	2 GB FBD PC2-5300 2 x 1 GB Kit	397411-B21
	4 GB FBD PC2-5300 2 x 2 GB Kit	397413-B21
	8 GB FBD PC2-5300 2 x 4 GB Kit	397415-B21

Options

Hard Drives	Serial Attached SCSI (SAS) SFF Hot Plug	
	HP 36GB 3G SAS 10K SFF HDD	375859-B21
	HP 72GB 3G SAS 10K SFF HDD	375861-B21
	<p>NOTE: SAS drives have a 3 year warranty. NOTE: Please see the SAS Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature: http://h18000.www1.hp.com/products/quickspecs/12244_na/12244_na.HTML</p>	
SFF SATA Hot Plug	HP 60GB 1.5G SATA 5.4K SFF HDD	379306-B21
	<p>NOTE: SATA drives have a 1 year warranty. Please see the SATA Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature: http://h18000.www1.hp.com/products/quickspecs/12091_na/12091_na.HTML</p>	
Controller Cache	P400i Battery-backed write cache upgrade	383280-B21
	P400i 512MB and Battery-backed write cache upgrade	405148-B21
Network Controller	HP NC373m PCI Express Dual Port Multifunction Gigabit Server Adapter for c-Class BladeSystem	406770-B21
	HP NC326m PCI Express Dual Port 1Gb Server Adapter for c-Class BladeSystem	406771-B21
HP ProLiant BL480c - Fibre Channel Adapter	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
NOTE: Supports HP c-Class BladeSystems		
Tape Libraries	HP StorageWorks MSL2024 Tape Library	
	HP StorageWorks MSL2024 1 Ultrium 960 Drive Library	AG115A
	HP StorageWorks MSL2024 1 Ultrium 960 FC Drive Library	AG326A
	HP StorageWorks MSL2024 1 Ultrium 448 Drive Library	AG116A
	HP StorageWorks MSL2024 2 Ultrium 448 Drive Library	AG117A
	HP StorageWorks MSL4048 Tape Library	
	HP StorageWorks MSL4048 1 Ultrium 448 Drive Library	AG320A
	HP StorageWorks MSL4048 2 Ultrium 448 Drive Library	AG321A
	HP StorageWorks MSL4048 1 Ultrium 960 Drive Library	AG322A
	HP StorageWorks MSL4048 1 Ultrium 960 FC Drive Library	AG324A
	HP StorageWorks MSL4048 2 Ultrium 960 Drive Library	AG323A
	HP StorageWorks MSL4048 2 Ultrium 960 FC Drive Library	AG325A
	HP StorageWorks MSL6000 Tape Library	
	Ultrium 960 technology	
HP StorageWorks MSL6030 1 Ultrium 960 Dr LVDS Library	AD606B	
HP StorageWorks MSL6030 1 Ultrium 960 Dr FC Library	AD608B	
HP StorageWorks MSL6030 2 Ultrium 960 Dr LVDS Library	AD607B	

Options

HP StorageWorks MSL6030 2 Ultrium 960 Dr FC Library	AD609B
HP StorageWorks MSL6060 2 Ultrium 960 Dr LVDS Library	AD610B
HP StorageWorks MSL6060 2 Ultrium 960 Dr FC Library	AD611B

Ultrium 460 technology

HP StorageWorks MSL6030 1 Ultrium 460 Dr LVDS Library	AD598B
HP StorageWorks MSL6030 1 Ultrium 460 Dr FC Library	AD600B
HP StorageWorks MSL6030 2 Ultrium 460 Dr LVDS Library	AD599B
HP StorageWorks MSL6030 2 Ultrium 460 Dr FC Library	AD601B
HP StorageWorks MSL6060 2 Ultrium 460 Dr LVDS Library	AD603B
HP StorageWorks MSL6060 2 Ultrium 460 Dr FC Library	AD604B

NOTE: Please reference the MSL2024, MSL4048 and MSL6000 Tape Library QuickSpecs at <http://www.hp.com/go/automation> for additional information needed to create a complete solution; reference current compatibility information at <http://www.hp.com/go/ebs>

HP StorageWorks Virtual Library Systems

HP StorageWorks 6105 Virtual Library System	AF728A
HP StorageWorks 6109 Virtual Library System	AG167A
HP StorageWorks 6510 Virtual Library System	AF729A
HP StorageWorks 6518 Virtual Library System	AG168A
HP StorageWorks 6840 Virtual Library System	AG051A
HP StorageWorks 6870 Virtual Library System	AG169A

NOTE: Please reference the VLS Tape Libraries QuickSpecs at <http://www.hp.com/go/automation> for additional information needed to create a complete solution. Reference current compatibility information at <http://www.hp.com/go/ebs>

HP StorageWorks Modular Smart Array 1000

HP StorageWorks Modular Smart Array 1000	201723-B22
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NOTE: Please see the Modular Smart Array 1000 QuickSpecs for additional options and configuration information at http://h18000.www1.hp.com/products/quickspecs/11033_na/11033_na.HTML

Options

Cluster Options

NOTE: For configuration/certification options for the HP Parallel Database Cluster for Oracle RAC please go to: <http://www.hp.com/solutions/highavailability/oracle>

NOTE: For additional information regarding the HP ProLiant Cluster for HA/F500 please see the following QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/10232_na/10232_na.html

ProLiant Cluster Starter Kit

364023-B21

NOTE: For additional information regarding the ProLiant Cluster Starter Kit please see the following QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/11935_na/11935_na.html

HP HA/F200 for Entry SAN Cluster

364026-B22

ProLiant Cluster HA/F500 for the Enterprise SAN

364024-B21

NOTE: For additional information regarding the ProLiant Cluster HA/F500 for Enterprise SAN please see the following QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/11933_na/11933_na.html

HP Serviceguard for Linux, A.11.16 (single license version- Red Hat EL 3&4, SUSE SLES9)

307754-B26

HP Serviceguard for Linux ProLiant Cluster, A.11.16 (2 license version - Red Hat EL 3&4, SUSE SLES9)

305199-B26

HP Serviceguard for Linux and Red Hat Global File System - 1 year subscription

T2798AA#001

HP Serviceguard for Linux and Red Hat Global File System - 3 years subscription

T2798AA#003

NOTE: For additional information regarding the HP Serviceguard for Linux License, please see the following QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/11518_na/11518_na.html

USB Options

HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)

DC172B

USB 1.44-MB External Diskette Drive (Carbonite)

DC141B

512MB HP DriveKey II

ED516AA

USB 2.0 4-port Hub

DG954A

2004 Standard Keyboard USB

DT528A#ABA

HP KVM Switch Options

HP BladeSystem Cat 5 KVM Interface Adapter

AF100A

NOTE: Cat5e cables are required to connect Interface Adapters to Consoles Switches. Cat52 cables can be found at the following URL:

<http://www.hp.com/go/kvm>

NOTE: For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL:

<http://www.hp.com/go/kvm>

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

UE458E

4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic

UE459E

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

UE460E

Options

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

NOTE: HP Care Pack services for the c7000 Enclosure cover the enclosure, power supplies and fans. HP qualified rack options are covered by these services when installed within the same rack. HP supported Ethernet devices covered include the Ethernet Pass-Through Module, Fibre Channel Pass-Through Module, Cisco Catalyst 3020 Blade Switch and GbE2c Ethernet Blade Switch.

Hardware Services On-site Service

Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic UE477E

4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic UE478E

4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic UE479E

6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic UE480E

Hardware Installation, Electronic U5988E

NOTE: The HP Care Pack service part numbers below covers the HP 4Gb, 12 Port SAN Switch & 4Gb, 12 Port SAN Switch Upgrade LTU.

Hardware Services On-site Service

Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic UC007E

4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic UC008E

4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic UC009E

6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic UC023E

Hardware Installation, Electronic U5988E

NOTE: The HP Care Pack service part numbers below covers the Brocade 4/24 SAN Switch.

Hardware Services On-site Service

Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic UE436E

4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic UE437E

4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic UE438E

6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic UE439E

Hardware Installation, Electronic U5988E

NOTE: The HP Care Pack service part numbers below covers the Brocade 4/24 SAN Switch Power Pack.

Hardware Services On-site Service

Support Plus

Onsite HW support, 8am-9pm, M-F, 4hr response and SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excl. HP holidays, Electronic UE728E

Support Plus 24

Onsite HW support 24x7, 4hr response and SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic UE729E

Installation & Start-up Services

Options

HP Installation & Startup Service for HP BladeSystem Infrastructure, Electronic	UE602E
NOTE: Provides for an integrated hardware and software implementation that includes remote service planning, onsite deployment of hardware and software, installation verification testing and customer orientation. Hardware deployment covers the installation of a single BladeSystem enclosure that include server blades (up to 16), Ethernet network interconnect, and power options. Software deployment covers the installation and configuration of HP BladeSystem Essential Insight Control Datacenter Edition which includes Systems Insight Manager (SIM), HP Rapid Deployment Pack (RDP), Vulnerability and Patch Management Pack (VPM) and Performance Management Pack (PMP) and deploy up to two editions of either Windows or Linux, using scripted operating system installation software.	
ProLiant BL c-Class Blade Server Hardware Installation, Electronic	UE493E
ProLiant BL c-Class Enclosure and Server Blade Hardware Installation, Electronic	UE494E
Provides for the Installation and Start-up of ProLiant Essentials Rapid Deployment Pack, Electronic	U5683E
NOTE: Provides installation on a Customer supplied server designated as a Deployment Server. Includes the deployment of a single server. This new server will be deployed using either one of the pre-configured scripts or an image. In addition, the service will provide for the capture and storage of the configuration of the newly deployed server and orientation on product usage. To be delivered during standard office ours, standard office days.	
Provides for the Installation and Start-up of Rapid Deployment Pack Implementation of Rapid Deployment Pack (Basic) (Electronic)	UA042E
HP ProLiant Essentials Vulnerability and Patch Management Pack Installation and Startup Service, Electronic	UC929E
NOTE: Service coverage: onsite installation of the Vulnerability and Patch Management (VPM) software on a customer designated server, configuration of the VPM software to acquire security patches, enabling the VPM software to scan up to five (5) systems, applying the security patches to the designated servers, generating a report from VPM that shows the vulnerability assessment results, and providing customer with an orientation to the software.	
Provides for the Installation and Start-up of System Insight Manager (Electronic)	UA041E
Provides for the Installation and Start-up of System Insight Manager Agents (Electronic)	UA040E
NOTE: For more information, customer/resellers can contact http://www.hp.com/hps/carepack/services/	
Software Operating Environment Care Packs	
Microsoft Software Operating Environment Software Telephone 9x5 - 3 incident (Electronic)	U8169E
Red Hat Software Operating Environment Software Telephone 9x5 - 10 incident (Electronic)	U3402E
SUSE Software Operating Environment Software Telephone 9x5 - 3 incident (Electronic)	U9615E
ProLiant Essentials Operating Environment, - 5 Day, 9x5,1 year, 3 incident (Electronic)	U8222E
ProLiant Essentials Operating Environment, - 5 Day, 24x7,1 year, 3 incident (Electronic)	U8301E
ProLiant Essentials Operating Environment, - 5 Day, 9x5,1 year, 10 incident	UE006E
ProLiant Essentials Operating Environment, - 5 Day, 24x7,1 year, 10 incident	UE116E
ProLiant Essentials Operating Environment, - 5 Day, 9x5,1 year, 25 incident	UE117E
ProLiant Essentials Operating Environment, - 5 Day, 24x7,1 year, 25 incident	UE118E

Options

ProLiant Essentials Operating Environment, - 5 Day, 9x5,1 year, 50 incident	UE119E
ProLiant Essentials Operating Environment, - 5 Day, 24x7,1 year,50 incident	UE120E
ProLiant Essentials Operating Environment, - 5 Day, 9x5,1 year, unlimited SW Tech Support	UE121E
ProLiant Essentials Operating Environment, - 5 Day, 24x7,1 year, unlimited SW Tech Support	UE452E
ProLiant Essentials Operating Environment, - 5 Day, 9x5, 3 year, unlimited SW Tech Support	UE453E
ProLiant Essentials Operating Environment, - 5 Day, 24x7, 3 year, unlimited SW Tech Support	UE454E

NOTE: For more information, customer/resellers can contact
<http://www.hp.com/hps/carepack/services/>

Memory

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. Multiple advanced memory protection (AMP) modes are supported, based on FBDIMM population and RBSU selection. The server blade defaults to Advanced ECC.

HP ProLiant BL480c Server Blade (1P Model)

Standard Memory

2048-MB (2 x 1024 MB) of PC2-5300, FBD DDR2-667 ECC DIMMs

Standard Memory Plus Optional Memory

Up to 43008-MB 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 49152 MB 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											
		1A	2C	3E	4A	5C	6E	7B	8D	9F	10B	11D	12F
Standard	2048 MB	1024 MB	Empty	Empty	1024 MB	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty
Optional	43008 MB	1024 MB	4096 MB	4096 MB	1024 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB
Maximum	49152 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB

HP ProLiant BL480c Server Blade (2P Model)

Standard Memory

4096-MB (4 x 1024 MB) of PC2-5300, FBD DDR2-667 ECC DIMMs

Standard Memory Plus Optional Memory

Up to 36864-MB 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 49152-MB 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											
		1A	2C	3E	4A	5C	6E	7B	8D	9F	10B	11D	12F
Standard	4096 MB	1024 MB	Empty	Empty	1024 MB	Empty	Empty	1024 MB	Empty	Empty	1024 MB	Empty	Empty
Optional	36864 MB	1024 MB	4096 MB	4096 MB	1024 MB	4096 MB	4096 MB	1024 MB	4096 MB	4096 MB	1024 MB	4096 MB	4096 MB
Maximum	49152MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB

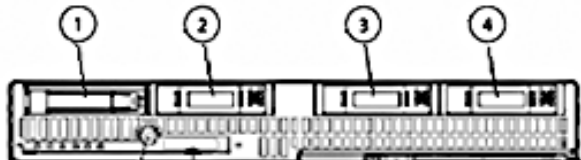
Memory

Following are memory options available from HP:

- 1 GB FBD PC2-5300 2X512MB Kit 397409-B21
- 2GB FBD PC2-5300 2X1GB Kit 397411-B21
- 4GB FBD PC2-5300 2x2GB Kit 397413-B21
- 8GB FBD PC2-5300 2x4GB Kit 397415-B21

Storage

1-4 4 x SFF SAS or SATA hot-plug hard drives



Hard Drives

SAS Hard Drive

	Quantity Supported	Position Supported	Controller
36 GB 10,000 rpm SAS	4	1-4	Smart Array P400i Controller
72 GB 10,000 rpm SAS			

Serial-ATA (SATA) Hard Drive

	Quantity Supported	Position Supported	Controller
60 GB 5,400 rpm SATA	4	1-4	Smart Array P400i Controller

External Storage

	Quantity Supported	Position Supported	Host Controller or Adapter
Modular Smart Array 1000	Please see the Modular Smart Array 1000 QuickSpecs below to determine configuration requirements	External	Please see the Modular Smart Array 1000 QuickSpecs (URL below) for the latest list of supported HBAs

Modular Smart Array 1000:

http://h18000.www1.hp.com/products/quickspecs/11033_na/11033_na.HTML

Storage

Tape Libraries

NOTE: For complete listing of tape library compatibility see <http://www.hp.com/go/ebs>.

	Quantity Supported	Position Supported	Controller
HP StorageWorks Tape Libraries, External MSL2024 (Ultrium 448 and 960-based) MSL4048 (Ultrium 448 and 960-based) MSL6000 (Ultrium 960 and 460-based) MSL6000 (SDLT 600-based)	Please reference the relevant MSL or Tape Library QuickSpecs to determine configuration requirements	External	USB 2.0 port
HP StorageWorks Tape Drives, External DAT 40 DAT 72 Ultrium 232 Ultrium 448 Ultrium 460 DLT VS80 DLT VS160 SDLT 320	Please reference the VLS QuickSpecs to determine configuration requirements	External	64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2

Power Specifications

NOTE: To review maximum system power ratings for facilities planning purposes use the Active Answers Power Calculator which is available via the online tool located at URL: <http://h30099.www3.hp.com/configurator/calc/Power%20Calculator%20Catalog.xls>

Technical Specifications

System Unit	Dimensions	Height	14.42 in (36.63 cm)
		Depth	20.00 in (50.80 cm)
		Width	2.03 in (5.14 cm)
	Weight	Maximum	21.02 lb (9.53 kg)
		Temperature Range*	Operating
	Non-Operating		-40°C to 60°C (-40°F to 140°F)
	Storage		-20°C to 60°C (-4°F to 140°F)
	Relative Humidity**	Maximum Wet Bulb Temperature	-30°C (86°F)
		Operating	10% to 90%
		Shipping	10% to 90%
	Storage	10% to 95%	

*NOTE: All temperature ratings shown are for sea level. An altitude derating of 1°C per 304.8 m (1.8°F per 1,000 ft) to 3048 m (10,000 ft) is applicable. No direct sunlight allowed. Upper operating limit is 3,048m (10,000 ft) or 70 Kpa/10.1 psia. Upper non-operating limit is 9,144 m (30,000 ft) or 30.3 KPa/4.4 psia.

**NOTE: Storage maximum humidity of 95% is based on a maximum temperature of 45°C (113°F). Altitude maximum for storage corresponds to a pressure minimum of 70 KPa.

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 2GB/s maximum bandwidth.
	SAS Speed	x8 3G SAS provides 2.4GB/s maximum bandwidth.
	Cache Memory	40-bit 256MB 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	288 GB (4 x 72GB)
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	RAID Support	RAID 6 with ADG (Advanced Data Guarding) requires Battery Backed Write Cache Upgrade
		RAID 5 (Distributed Data Guarding)
		RAID 1+0 (Striping & Mirroring)
		RAID 0 (Striping)
Upgradeable Firmware	Upgradeable Firmware with recovery ROM feature	

Technical Specifications

Embedded NC326i Dual Port Gigabit Server Adapter	Network Interface	1000Base-T	
	Compatibility	IEEE 802.3ab 1000Base-T	
	Data Transfer Method	PCI Express, four lanes (x4)	
	Network Transfer Rate (Theoretical Maximum Values)	1000Base-TX	2000 Mb/s
	Connector	RJ-45	(via Interconnect switch or pass thru module)
	Cable Support	1000 Base-TX	Cable Support 1000 Base-TX Category 5 UTP up to 328 ft (100 m) (via Interconnect switch or pass thru module)

Embedded Dual NC373i Multifunction Gigabit Server Adapters	Network Interface	1000Base-T	
	Compatibility	IEEE 802.3ab 1000Base-T	
	Data Transfer Method	PCI Express, four lanes (x4)	
	Network Transfer Rate (Theoretical Maximum Values)	1000Base-TX (Full-Duplex)	2000 Mb/s
	Connector	RJ-45	(via Interconnect switch or pass thru module)
	Cable Support	1000 Base-TX	Cable Support 1000 Base-TX Category 5 UTP up to 328 ft (100 m) (via Interconnect switch or pass thru module)

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