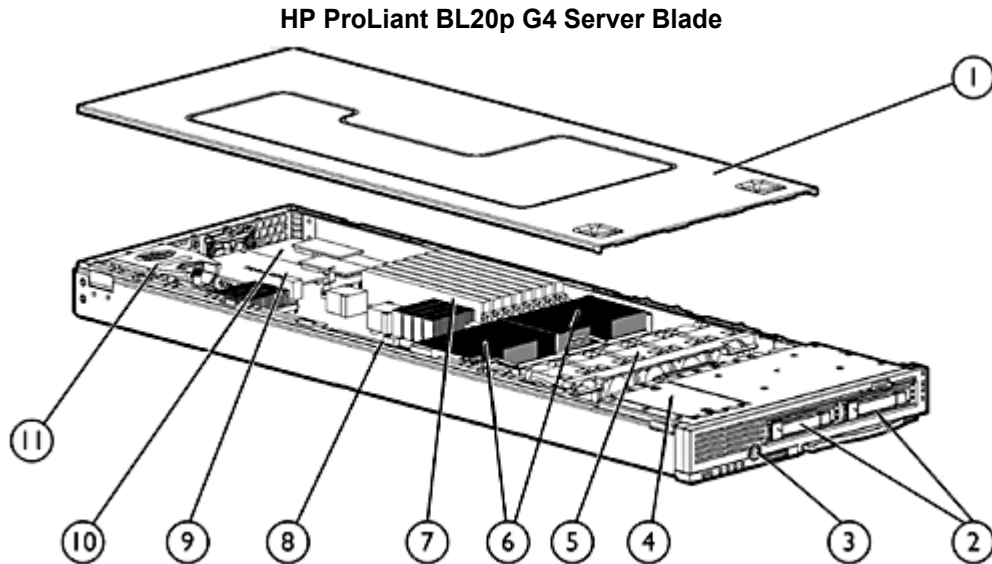


Overview



1. Access Panel
2. Support for up to two SFF SAS/SATA hard drives
3. Power On/Standby button
4. Optional 128MB battery-back write cache and internal USB connector
5. Fan Assembly for chassis cooling
6. Up to 2 Dual-Core Intel Xeon 5100 Sequence Processors
7. Eight (8) PC2-5300 Fully Buffered DIMMs (DDR2-667) Memory Slots
8. Smart Array E200i SAS RAID Controller
9. Fibre-channel mezzanine card (optional)
10. NIC Mezzanine card (optional)
11. Power converter modules

What's New

- One year of 24 x 7 HP Software Technical Support and Update Service included with Insight Control management suites and select ProLiant Essentials Licenses.

At A Glance

This document covers the HP ProLiant BL20p G4 server blade only. For more information on HP BladeSystems p-Class Infrastructure and HP BladeSystem p-Class Interconnect Components, please see the following QuickSpecs:

HP BladeSystem p-Class Infrastructure QuickSpecs:

http://h18000.www1.hp.com/products/quickspecs/12330_na/12330_na.HTML

and HP BladeSystem p-Class Interconnect Components QuickSpecs:

http://h18000.www1.hp.com/products/quickspecs/12331_na/12331_na.HTML

- Performance dual processor server blade designed with enterprise availability
- HP ProLiant BL20p Generation 4 server blade includes:
 - **Processors:**
 - Up to two Quad-Core Intel® Xeon™ processors 5300 Sequence
 - Intel 5000p Chipset
 - **Memory:**
 - 1048 MB or 2048 MB PC2-5300 Fully Buffered DIMMs (DDR2-667) (at 533 MHz on processors with 1066 MHz Front Side Bus (FSB) memory standard, (2 x 1 Interleaved Memory), 8 DIMM slots, expandable to 32 GB

Overview

maximum with optional Online Spare and memory mirroring support.

- **Storage Controller:**
 - Smart Array E200i SAS RAID Controller (with optional battery-backed write cache) with RAID 0, 1 and 0+1 support
- **Internal Drive Support:**
 - Supports up to two SFF SAS hot plug hard drives. (Support for SATA hard drives via Factory Integration Only)
- **Network Controller:**
 - Two embedded NC373i Multifunction Gigabit Server Adapters with TCP/IP Offload Engine
- **Expansion Slots:**
 - Two additional ports available with one of two optional mezzanine cards:
 - NC320m Dual Port PCI Express Gigabit Server Adapter
 - NC374m Dual Port PCI Express Multifunction Gigabit Server Adapter with TCP/IP Offload Engine
 - Dual-Port Fibre Channel Adapter (2-Gb) option for SAN connectivity
 - Emulex-based or QLogic based Fibre Channel Mezzanine card for HP p-Class BladeSystem
 - One additional 10/100 NIC dedicated to iLO2 Management
- **USB Ports:**
 - I/O cable with two USB ports, one video port, one iLO2 port and kernel debug port. The cable was specifically designed to aid in initial server image deployment.
- **Redundancy:**
 - Five fans for sufficient cooling
- **Form Factor:**
 - HP ProLiant BL20p G4 server blade plugs vertically into 6U enclosure
- **Management:**
 - Integrated Lights-Out 2 featuring Integrated Remote console with high-performance Virtual KVM and embedded system health
 - New Power Regulator for ProLiant delivering server level, policy based power management with industry leading energy efficiency and savings on system power and cooling costs.
 - Deployment/Serviceability:
 - Integrated Access Tool for blade management and enhanced server blade documentation including Best Practices and Common Procedures guides
- **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 SCSI hard drives

Standard Features (Server Blade)

NOTE: For a brief, printer friendly data sheet that describes this product and informs you of the essential capabilities and specifications, please visit: <http://h71028.www7.hp.com/ERC/downloads/4AA0-5754ENW.pdf>

Processor	Quad-Core Intel Xeon process X5355 (2.66 GHz, 1333 FSB)
	Quad-Core Intel Xeon process E5345 (2.33 GHz, 1333 FSB)
	Quad-Core Intel Xeon processor E5320 (1.86 GHz, 1066 FSB)
	Quad-Core Intel Xeon processor E5310 (1.60 GHz, 1066 FSB)
	Dual-Core Intel Xeon processor 5160 (3.00 GHz, 1333 FSB)
	Dual Core Intel Xeon processor 5150 (2.66 GHz, 1333 FSB)
	Dual Core Intel Xeon processor 5148 (2.33 GHz LV, 1333 FSB)
	Dual-Core Intel Xeon processor 5140 (2.33 GHz, 1333 FSB)
	Dual-Core Intel Xeon processor 5130 (2.00 GHz, 1333 FSB)
	Dual-Core Intel Xeon processor 5120 (1.86 GHz, 1066 FSB)
	Dual-Core Intel Xeon processor 5110 (1.60 GHz, 1066 FSB)
	Dual-Core Intel Xeon processor 5080 (3.73 GHz, 1066 FSB)
	Dual-Core Intel Xeon processor 5060 (3.2 GHz, 1066 FSB)
	Dual-Core Intel Xeon processor 5050 (3.0 GHz, 667 FSB)

Upgradeability	Upgradeable to dual processing (2 Processors)
-----------------------	---

Cache Memory	2x4MB Level 2 Cache memory (5300 Sequence)
	1x4MB Level 2 cache memory (5100 Sequence)
	1x4MB Level 2 cache memory (5100 Sequence)

Chipset	Intel 5000p chipset
	NOTE: For more information regarding Intel chipsets, please see the following URL: http://www.intel.com/products/server/chipsets/

Memory Protection	Advanced ECC (multi-bit error protection)
	Online spare and Mirroring
	2-way interleaving

Memory	Type	PC2-5300 Fully Buffered DIMMs DDR2-667 (at 533MHz on processors with 1066 MHz FSB)
	Standard	1024 MB or 2048 MB (Depending on model)
	Maximum	32 GB (8x4GB)

Standard Features (Server Blade)

Network Adapter	Five network adapters total: Two NC373i PCI-X Gigabit Multifunction NICs (embedded) with WOL and PXE One 10/100 iLO2 NIC dedicated to management NOTE: Must use HP BladeSystem p-class server blade enclosure with enhanced backplane to utilize all four NIC's (281404-B22).		
Expansion Slots	No PCI slots all features are integrated I/O cable connectors: (2)USB ports, (1) video port, (1) iLO port and (1) kernel debug port (2) I/O cable ships with every server blade enclosure Tested USB devices (keyboard, mouse, floppy) are listed in the "Options" section of this QuickSpecs		
Integrated Manageability	Integrated Lights-Out 2 (iLO 2) Standard Blade Edition (includes virtual KVM and graphical remote console at no additional cost)		
Internal Storage	Hard Drives	None ship standard	
Maximum Internal Storage	SAS	292GB (internal drive cage)	(2 x 146GB SAS SFF, drives)
	SATA	240GB (internal drive cage)	(2x120GB SATA SSF drives)
Graphics	Integrated ATI Rage XL Video Controller with 8-MB SDRAM Video Memory		
Graphics Resolution Supported	Resolution Color Depths	Depths 1280 x 1024, 64k, 256, 16 1024 x 768, 16.7M, 64k, 256, 16 800 x 600, 16.7M, 64k, 256, 16 640 x 480, 16.7M, 64k, 256, 16	

Standard Features (Server Blade)

- Fiber Channel on the HP ProLiant BL20p G4 server blade** Two optional fiber channel adapters are supported by the HP ProLiant BL20p G4. Both adapters are mezzanine circuit boards which connect directly to the server blade system board. These optional fiber channel adapters are available via option kits and must be ordered separately
- QLogic based
 - Utilizes a QLogic ISP2312 chipset
 - The Qlogic BL20pG4 dual-port Fibre Channel Adapter (P/N 361426-B21) is compatible with the HP ProLiant BL20p G4 server blade. Cannot be used for HP ProLiant BL20p G2 or HP ProLiant BL25p/30p/35p/40p/45p server blades)
 - Includes two small form factor pluggable transceivers with LC connectors for installation into the Patch Panel 2, CGESM or GbE2 Interconnect Switch (with the Storage Connectivity Kit)
 - Emulex-based
 - Utilizes an Emulex Thor chipset
 - The Emulex based HP ProLiant 20p G4 Dual Port Fibre Channel HBA (P/N 394757-B21) is compatible with the HP ProLiant BL20p, server blade. It cannot be used with HP ProLiant BL25p/30p/35p/40p/45p server blades.
 - There are no SFP's included in the Emulex mezzanine kit for use with ProLiant BL p-Class Fibre Channel pass-through interconnects. If you require SFPs for use with an Emulex mezzanine and a FC pass through interconnect please order an SFP option kit (P/N 397577-B21) which will provide 2 FC SFPs per option kit.
 - Two ports on each Dual-port Fibre Channel Mezzanine Card provide a redundant Fibre Channel connection to each server blade
 - Supports up to 2 Gb/s Fibre Channel equipment
 - The HP ProLiant BL20p G4 server blade can be ordered with the Dual-port Fibre Channel Adapter installed or the Dual-port Fibre Channel Adapter Option Kit can be ordered separately.

Compatible SAN

HP ProLiant BL20p G4 server blades are optimized for StorageWorks arrays

- HSG80 (MA8000, EMA12000, EMA16000); EVA5000; EVA3000; XP48, XP128, XP512, XP1024; HP StorageWorks Modular Smart Array 1000

HP ProLiant 20p G4 server blades are compatible with select 3rd party SANs (please see blade storage page for more details: <http://h18000.www1.hp.com/products/servers/proliant-bl/p-class/storage.html>)

Standard Features

ProLiant Essentials Foundation Pack Software for the ProLiant BL Server

HP Systems Insight Manager

HP Systems Insight Manager (HP SIM) help maximize system uptime and performance and reduce system maintenance costs by providing proactive notification of problems before those problems result in unplanned downtime or reduced productivity. HP SIM is easy to set up to work with the Insight Management Agents, integrated Light-Out and Remote Insight Light-Out Edition, and Version Control Agents to deliver robust fault, configuration, and asset management as well as remote administration. With HP Systems Insight Manager customers will also be able to take advantage of role-based security; the ability to manage ProLiant, Integrity, and HP9000 systems; and plug-ins for storage, client, printer, and power management as well as server rapid deployment, performance management, and workload management. For more details on HP Systems Insight Manager visit <http://www.hp.com/go/hpsim>.

ProLiant Essentials Rapid Deployment Pack

Rapid Deployment Pack (RDP) is an automated deployment and provisioning solution for all ProLiant servers. RDP includes the Altiris Deployment Solution and ProLiant Integration Module featuring ProLiant server pre-configured events for OS installation, and optimized software drivers, firmware and management agents. Every RDP CD includes 10-node trial licenses for evaluation purposes. RDP requires a license for each server deployed and is available for purchase with blade servers. For more information, visit <http://www.hp.com/servers/rdp>.

Management Agents

The Management Agents form the foundation for HP's Intelligent Manageability strategy. They provide direct, browser-based access to in-depth instrumentation built into HP servers, workstations, desktops, and portables, and send alerts to HP Systems Insight Manager and other enterprise management applications in case of subsystem or environmental failures. For additional information about the Management Agents and other management products from HP, 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.

ROMPaq, support software, and configuration utilities

The latest drivers and firmware fully optimized and tested for your ProLiant server and options, available on the RDP Media kit, SmartStart or downloadable from Software and Drivers download pages, linked from the SmartStart website at <http://www.hp.com/go/support>

Insight Diagnostics Online Edition

The most advanced configuration analysis, reporting and troubleshooting utilities used by HP and at your fingertips, available in SmartStart.

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

Standard Features

Optional ProLiant Essentials Value Packs Starting July 9, 2007, HP Insight Control management suites and most HP ProLiant Essentials will include one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: <http://www.hp.com/services/insight>.

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

- **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
- **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.
- **Server Migration Pack** - The Server Migration Pack automates the manual processes required for migrating servers between physical or virtual platforms (P2V, V2P, and V2V).
- **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.
- **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.

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.

Optional Remote Management

- **Insight Control Environment for BladeSystem** - is based on HP Systems Insight Manager and ProLiant Essentials software, and brings the value of Insight Control to ProLiant customers by delivering comprehensive health and performance monitoring, remote control, vulnerability scanning and patch management as well as flexible deployment and power management through an integrated installation package and streamlined licensing. For more information, visit: <http://www.hp.com/go/ice>
- **Integrated Lights-Out Select Pack** - upgrades the iLO 2 processor with enhanced console sharing and replay, virtual media (floppy, CD/DVD, USB key), virtual folders, historical power reporting, power capping and enterprise security (directory services and two-factor authentication) for servers managed using remote consoles available in iLO 2 Standard and iLO 2 Standard Blade Edition.

Standard Features

SmartStart

SmartStart is a tool that simplifies single server setup, providing a rapid way to deploy reliable and consistent server configurations. SmartStart 7.00 and later can now deploy the HP ProLiant BL20P G4 and HP ProLiant BL40P server blades, using the I/O port with an attached USB CD-ROM device. To obtain a copy of SmartStart for your blade server, redeem the coupon that is included with your Blade server or order your copy from the SmartStart web site. For more information, please visit the SmartStart Web site at <http://www.hp.com/servers/smartstart>. SmartStart version supported (minimum): SmartStart 7.51

OS Support

Microsoft Windows 2000 Server
Microsoft Windows 2000 Advanced Server
Windows Server 2003, Standard Edition
Windows Server 2003, Enterprise Edition
Red Hat Enterprise Linux
SUSE Linux Enterprise Server

NOTE: For a more complete and up-to-date listing of supported RoHS 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 p-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>.

NOTE: For more Linux OS support & certification information, please visit our the ProLiant & Bladesystem Server Linux matrix

<http://h18004.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 (iLO2) 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
- Dedicated network connectivity
- Embedded system health
- 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)
- OS independent hardware health status
- IML and iLO Event Logging
- Support for 12 user accounts with customizable access privilege
- Single sign-on from HP BladeSystem Onboard Administrator

Availability

Dual-Port Fibre Channel Mezzanine Card for redundant SAN connection

Two hot-plug SAS hard drive bays and a Smart Array E200i SAS RAID Controller on every server (Battery-backed write cache is optional.)

Redundant ROM on each server blade

ECC Memory

Network adapter teaming (network fault tolerance, transmit load balancing, switch-assisted load balancing)

Security

Power-on password

Administrator's password

Integrated Lights-Out has 12 customizable user accounts and SSL encryption

Integrated Lights-Out 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>.

HP Enterprise Configurator

The HP eCo-Enterprise Configurator now provides factory default racking for our HP hardware portfolio. This approach is aligned with our strategic direction to meet the needs and expectations of our valued customers. If you require "custom" rack configuration, please contact HP's Customer Business Center or an Authorized Partner for assistance.

Standard Features

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 Warranty includes 3 year Parts, 3 year Labor, 3-year on-site support. Additional information regarding worldwide limited warranty and technical support is available at:

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

NOTE: Server Blade Limited Warranty includes 3 year Parts, 1 year Labor, 1-year on-site support. This warranty supports the HP ProLiant BL30p and HP ProLiant BL35p Server Blades.

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

The HP Care Pack service part numbers below for ProLiant BL p-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.

HP Care Pack services for HP BladeSystem p-Class server blade enclosure covers the enclosure including patch panels, HP supported Ethernet interconnects, power enclosure with power supplies and power distribution.

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

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 vendor support solutions provides a range of support services designed to meet the varying needs of business. Whether an SMB or large global corporation HP has a HP BladeSystem server support offer to help you speedily deploy and maximize system uptime.

Enhanced Care - Minimum recommended service support offer designed to ensure customers have access to expert assistance, whenever they need it.

- *4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years.*

Continuance Care - Recommended service delivering cost-effective support options designed to extend HP Services committed response and guaranteed fix times, designed to speed problem identification and resolution.

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

Total Care - Highest HP Support service level recommend to help increase IT performance and availability with comprehensive, integrated hardware and software services

- *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.*

Deployment Services - HP Installation and Start Up services designed to take time, risk, and worry out of the deployment of HP BladeSystem servers - and free customers IT support staff to focus on what they do best, their business.

Standard Features

- *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, excl. HP holidays*

For a complete listing of service offerings and information visit:

<http://www.hp.com/services/bladeSystemservices>

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

Models

Quad-Core Models

<p>HP BL20pG4 X5355 2GB (1P) 435553-B21</p> <p>HP ProLiant BL20pG4 E5345 2GB (1P) 435552-B21</p> <p>HP ProLiant BL20pG4 E5320 2GB (1P) 435551-B21</p> <p>HP ProLiant BL20pG4 E5310 1GB (1P) 435550-B21</p>	<p>Processor(s)</p> <p>Cache Memory</p> <p>Memory</p> <p>Network Adapter</p> <p>Storage Controller</p> <p>Hard Drives</p> <p>Internal Storage</p> <p>Optical Drive</p> <p>Form Factor</p>	<p>(1) Quad-Core Intel Xeon process X5355 (2.66 GHz, 1333 FSB) (Up to 2 supported)</p> <p>(1) Quad-Core Intel Xeon process E5345 (2.33 GHz, 1333 FSB) (Up to 2 supported)</p> <p>(1)Quad-Core Intel Xeon processor E5320 (1.86 GHz, 1066 FSB) (Up to 2 supported)</p> <p>(1) Quad-Core Intel Xeon processor E5310 (1.60 GHz, 1066 FSB) (up to 2 supported)</p> <p>2x4MB Level 2 cache</p> <p>2GB (2x1GB of 2-way interleaved PC2-5300 Fully Buffered DIMMs DDR2-667 (at 533 MHz on processors with 1066 MHz FSB) with Advanced ECC, mirrored and online spare memory capabilities</p> <p>1GB (2x512MB of 2-way interleaved PC2-5300 Fully Buffered DIMMs DDR2-667 (at 533 MHz on processors with 1066 MHz FSB) with Advanced ECC, mirrored and online spare memory capabilities</p> <p>Two Embedded HP NC373i PCI express Multifunction Gigabit Server Adapter</p> <p>Smart Array E200i SAS RAID Controller</p> <p>None ship standard</p> <p>Up to 292GB maximum (with optional hard drives)</p> <p>None</p> <p>Plugs vertically into ProLiant BL p-Class Server Blade Enclosure</p>
--	--	--

Dual-Core Models

<p>HP ProLiant BL20p G4 5160, 2GB (1P) 416782-B21</p> <p>HP ProLiant BL20p G4 5150, 2GB (1P) 416781-B21</p> <p>HP ProLiant BL20p G4 5148, 2GB (1P)</p> <p>HP ProLiant BL20p G4 5140, 2GB (1P) 416780-B21</p> <p>HP ProLiant BL20p G4 5110, 1GB (1P) 416779-B21</p> <p>HP ProLiant BL20p G4 5060, 2GB (1P) 408745-201</p>	<p>Processor(s)</p> <p>Cache Memory</p> <p>Memory</p> <p>Network Adapter</p>	<p>(1) Dual-Core Intel Xeon processor 5160 (3.0 GHz/1333 FSB) (up to 2 supported)</p> <p>(1) Dual-Core Intel Xeon processor 5150 (2.66 GHz, 1333 FSB) (up to 2 supported)</p> <p>(1) Dual-Core Intel Xeon processor 5148 (2.33 GHz, 1333 FSB) (Up to 2 supported)</p> <p>(1) Dual-Core Intel Xeon processor 5140 (2.33 GHz, 1333 FSB) (up to 2 supported)</p> <p>(1) Dual-Core Intel Xeon processor 5110 (1.60 GHz/1066 FSB) (up to 2 supported)</p> <p>(1) Dual-Core Intel Xeon processor 5060 (3.2 GHz, 1066 FSB) (up to 2 supported)</p> <p>2x2MB Level 2 cache memory (5000 Sequence)</p> <p>1x4MB Level 2 cache memory (5100 Sequence)</p> <p>2GB (2x1GB of 2-way interleaved PC2-5300 Fully Buffered DIMMs DDR2-667 (at 533 MHz on processors with 1066 MHz FSB) with Advanced ECC, mirrored and online spare memory capabilities</p> <p>1GB (2x512MB of 2-way interleaved PC2-5300 Fully Buffered DIMMs DDR2-667 (at 533 MHz on processors with 1066 MHz FSB) with Advanced ECC, mirrored and online spare memory capabilities</p> <p>Two Embedded HP NC373i PCI express Multifunction Gigabit Server Adapters</p>
--	--	---

Models

Storage Controller	Smart Array E200i SAS RAID Controller
Hard Drives	None ship standard
Internal Storage	Up to 292GB maximum (with optional hard drives)
Optical Drive	None
Form Factor	Plugs vertically into ProLiant BL p-Class Server Blade 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 only available as a Factory Installable Option.

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 additional information.

Step 1: Base Server Blade Configuration

Models	HP ProLiant BL20p G4 CTO Blade	405912-B21
	Configurable Model ships with:	
	Two embedded HP NC374i PCI express Multifunction Gigabit Server Adapter	
	One additional 10/100 NIC dedicated to iLO 2 Management	
	Smart Array E200i SAS RAID Controller	

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

Processors	Quad-Core Process Option Kits	
	Quad-Core Intel Xeon process X5355 (2.66 GHz, 1333 FSB) Option Kit FIO BASE	435571-L21
	Quad-Core Intel Xeon process E5345 (2.33 GHz, 1333 FSB) Option Kit FIO BASE	435570-L21
	Quad-Core Intel Xeon processor E5320 (1.86 GHz, 1066 FSB) Option Kit FIO BASE	435569-L21
	Quad-Core Intel Xeon processor E5310 (1.60 GHz, 1066 FSB) Option Kit FIO BASE	435568-L21
	Dual-Core Process Option Kits	
	Dual Core Intel Xeon processor 5160 (3.0 GHz, 1333 FSB) Option Kit FIO BASE	416835-L21
	Dual Core Intel Xeon processor 5150 (2.66 GHz, 1333 FSB) Option Kit FIO BASE	416834-L21
	Dual Core Intel Xeon processor 5148 (2.33 GHz, 1333 FSB) Option Kit FIO BASE	432345-L21
	Dual Core Intel Xeon processor 5140 (2.33 GHz, 1333 FSB) Option Kit FIO BASE	417139-L21
	Dual Core Intel Xeon processor 5130 (2.00 GHz MV, 1333 FSB) Option Kit FIO BASE	416832-L21
	Dual Core Intel Xeon processor 5120 (1.86 GHz, 1066 FSB) Option Kit FIO BASE	416788-L21
	Dual Core Intel Xeon processor 5110 (1.60 GHz, 1066 FSB) Option Kit FIO BASE	416787-L21
	Dual Core Intel Xeon processor 5080 (3.73 GHz, 1066 FSB) Option Kit FIO BASE	405039-L21
	Dual Core Intel Xeon processor 5060 (3.2 GHz, 1066 FSB) Option Kit FIO BASE	405037-L21
	Dual Core Intel Xeon processor 5050 (3.0 GHz, 667 FSB) Option Kit FIO BASE	405040-L21

Configuration Information Factory Integrated Models

Memory	1GB 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	397415-B21
Controller Cache	HP Smart Array E200 64MB FIO Cache	405102-B21
	128MB Battery-Backed Write Cache with Battery Housing	346914-B21

Step 3: Choose Additional Options for Factory Integration

NOTE: For additional options, including server blade enclosure with enhanced backplanes, interconnect options and power subsystem options, please refer to the "Options" section below. Some options may not be available for factory integration. Please contact an HP sales representative for additional information.

Options

Communications	HP ProLiant BL20p Dual NC320m Gigabit Network Adapter	405095-B21
	HP ProLiant BL20p Dual NC374m Multifunction Network Adapter NOTE: Accelerated iSCSI is not yet supported for Linux environments, and RDMA is not yet supported for Windows or Linux environments.	405094-B21
HP ProLiant BL20p G4 - Fibre Channel Adapter	Emulex based BL20p Dual Port Fibre Channel HBA	394757-B21
	Dual port Fibre Channel Adapter (2-Gb) for ProLiant BL20p G4*	361426-B21
	HP 2-2Gb SFP for Fibre Channel pass through kit	397577-B21
	NOTE: Must select if SFP for use with pass through SAN switches is required when ordering Emulex based Fibre Channel Mezzanine card for HP p-Class BladeSystem (p/N 394757-B21). *NOTE: When using this card, the Patch Panel 2 , CGESM or GbE2 Interconnect Switch (with Storage Connectivity Kit) must be used to provide the Fibre Channel pass through). *NOTE: The HP ProLiant BL20p G2 dual-port Fibre Channel adapter is not compatible with the HP ProLiant BL20p G4.	
ProLiant Essentials Value Pack Software	ProLiant Essentials Rapid Deployment Pack	
	ProLiant Essentials Rapid Deployment Pack No Media 1-Server License including 1 year of 24x7 Technical Support and Updates NOTE: This license allows 1 server to be deployed and managed via RDP. NOTE: For additional ProLiant Essentials Rapid Deployment Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11053_na/11053_na.HTML	452151-B21
	ProLiant Essentials Server Migration Pack	
	ProLiant Essentials Server Migration Pack, Single-Migration License NOTE: Contains one license, enabling 1 server migration, with a unique license activation key and documentation. NOTE: This license allows 1 P2V, V2P, or V2V migration. Contains one license with a unique license activation key and documentation NOTE: For additional ProLiant Server Migration Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12328_na/12238_na.HTML	435663-B21
	ProLiant Essentials Virtual Machine Management Pack	
	ProLiant Essentials Virtual Machine Management Pack, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates 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/12238_na.HTML NOTE: For additional ProLiant Vulnerability and Patch Management Pack License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12111_na/12111_na.HTML	452153-B21

Options

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>.

Remote Management	<p>HP Insight Control Environment for BladeSystems</p> <p>HP Insight Control Environment for BladeSystem, No Media 1-Server License including 1 year of 24x7 Technical Support and Updates 413122-B21</p> <p>NOTE: Contains 1 license for each of RDP, PMP, VPM, IPM and iLO Select. Includes one year of 24 x 7 HP Software Technical Support and Update Service.</p> <p>NOTE: For additional HP Insight Control Environment License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12631_na/12631_na.HTML</p> <p>ProLiant Essentials Integrated Lights-Out Select Pack</p> <p>ProLiant Essentials Integrated Lights-Out Select Pack, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates 452158-B21</p> <p>Integrated Lights-Out Pack 8-Blade License 452161-B21</p> <p>Featuring: sophisticated remote control and security features for HP BladeSystem servers and ProLiant ML/DL servers.</p> <p>NOTE: For additional ProLiant Essentials Integrated Lights-Out Value Packs License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12362_na/12362_na.HTML</p>
<hr/>	
HP Insight Control Linux Edition for HP BladeSystem	<p>HP Insight Control Linux Edition 1.6 -No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates 452155-B21</p> <p>NOTE: This license allows one (1) server blade to be deployed and managed via HP Insight Control Linux Edition.</p> <p>HP Insight Control Linux Edition 1.6, No Media, 8-Server License, including 1 year of 24x7 Technical Support and Updates 452156-B21</p> <p>NOTE: This license allows eight (8) server blades to be deployed and managed via HP Insight Control Linux Edition.</p> <p>HP Insight Control Linux Edition 1.6, No Media, Flexible-Quantity License, including 1 year of 24x7 Technical Support and Updates 452157-B21</p> <p>NOTE: For use with multiple servers (minimum of 5). This part number allows you to specify the license quantity. When ordering this part number, the quantity ordered will be the number of licenses embedded in a single activation key. A single kit containing that key is then delivered to you.</p> <p>NOTE: For additional HP Insight Control Linux Edition License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12431_na/12431_na.HTML</p>

Options

Processor	<p>Quad-Core Process Option Kits</p> <p>Quad-Core Intel Xeon process X5355 (2.66 GHz, 1333 FSB) Option Kit 435571-B21</p> <p>Quad-Core Intel Xeon process X5345 (2.33 GHz, 1333 FSB) Option Kit 435570-B21</p> <p>Quad-Core Intel Xeon processor E5320 (1.86 GHz, 1066 FSB) Option Kit 435569-B21</p> <p>Quad-Core Intel Xeon processor E5310 (1.60 GHz, 1066 FSB) Option Kit 435568-B21</p> <p>Dual-Core Process Option Kits</p> <p>Dual Core Intel Xeon processor 5160 (3.0 GHz, 1333 FSB) Option Kit 416835-B21</p> <p>Dual Core Intel Xeon processor 5150 (2.66 GHz, 1333 FSB) Option Kit 416834-B21</p> <p>Dual Core Intel Xeon processor 5148 (2.33 GHz, 1333 FSB) Option Kit 416833-B21</p> <p>Dual Core Intel Xeon processor 5140 (2.33 GHz, 1333 FSB) Option Kit 417139-B21</p> <p>Dual Core Intel Xeon processor 5130 (2.00 GHz, 1333 FSB) Option Kit 416832-B21</p> <p>Dual Core Intel Xeon processor 5120 (1.86 GHz, 1066 FSB) Option Kit 416788-B21</p> <p>Dual Core Intel Xeon processor 5110 (1.60 GHz, 1066 FSB) Option Kit 416787-B21</p> <p>Dual Core Intel Xeon processor 5080 (3.73 GHz, 1066 FSB) Option Kit 405039-B21</p> <p>Dual Core Intel Xeon processor 5060 (3.2 GHz, 1066 FSB) Option Kit 405037-B21</p> <p>Dual Core Intel Xeon processor 5050 (3.0 GHz, 667 FSB) Option Kit 405040-B21</p>
Memory (SDRAM DIMMs)	<p>1GB FBD PC2-5300 2X512MB Kit 397409-B21</p> <p>2GB FBD PC2-5300 2X1GB Kit 397411-B21</p> <p>4GB FBD PC2-5300 2x2GB Kit 397413-B21</p> <p>8GB FBD PC2-5300 2x4GB 397415-B21</p>
Hard Drives	<p>Serial Attached SCSI (SAS) Hot Plug</p> <p>HP 72GB 3G SAS 15K SFF SP HDD 431935-B21</p> <p>HP 36GB 3G SAS 15K SFF SP HDD 431933-B21</p> <p>HP 146GB 3G SAS 10K SFF HDD 431958-B21</p> <p>HP 72GB 3G SAS 10K SFF SP HDD 375861-B21</p> <p>HP 36GB 3G SAS 10K SFF SP HDD 375859-B21</p> <p>NOTE: All SFF SAS Universal Hard Drives are supported ONLY by SAS models.</p> <p>NOTE: Please see the SFF 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>
Storage Controllers	<p>128MB Battery-Backed Write Cache with Battery Housing 346914-B21</p> <p>NOTE: Please see the following Controller QuickSpecs for Technical Specifications such as PCI Bus, PCI Peak Data Transfer Rate, SCSI Protocols supported, SCSI Peak Data Transfer Rate, Channels, SCSI Ports, Drives supported, Cache, RAID support, and additional information: http://h18000.www1.hp.com/products/quickspecs/12030_na/12030_na.HTML (Smart Array E200)</p>

Options

HP BladeSystem Entry Bundle	<p>HP BladeSystem Entry Bundle 390738-B21</p> <p>Bundle Contents:</p> <p>Server Blade Enclosure Server Blade Enclosure with enhanced backplane components</p> <p>Power Subsystem 1U Power Enclosure with 2 power supplies</p> <p>NOTE: This bundle includes the 1U Power Enclosure with 2 power supplies and a server blade enclosure with enhanced backplane components.</p>
------------------------------------	---

Tape Libraries

HP StorageWorks MSL2024 Tape Library

HP StorageWorks MSL2024 1 Ultrium 960 Drive Library	AG115A
HP StorageWorks MSL2024 1 Ultrium 960 4GB FC Library	AG326B
HP StorageWorks MSL2024 1 Ultrium 920 Drive Library	AH169A
HP StorageWorks MSL2024 2 Ultrium 920 Drive Library	AH170A
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 4GB FC Library	AG324A
HP StorageWorks MSL4048 2 Ultrium 960 Drive Library	AG323A
HP StorageWorks MSL4048 2 Ultrium 960 4GB FC Library	AG325A
HP StorageWorks MSL4048 2 Ultrium 920 Tape Library	AH172A

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
HP StorageWorks MSL6030 2 Ultrium 960 Dr FC Library	AD609B

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

NOTE: Please reference the 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 300 Virtual Library System Gateway Base Unit	AH138A
HP StorageWorks 1002i 2TB Virtual Library System	AG124A
HP StorageWorks 6105 Virtual Library System	AF728A
HP StorageWorks 6510 Virtual Library System	AF729A
HP StorageWorks 6840 Virtual Library System	AG051A

Options

HP StorageWorks 6109 Virtual Library System	AG167A
HP StorageWorks 6518 Virtual Library System	AG168A
HP StorageWorks 6870 Virtual Library System	AG169A

NOTE: Please reference the Virtual Library Systems 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
--	------------

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

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

HP Serviceguard for Linux ProLiant Cluster, A.11.18 (2 license version - Red Hat EL 4&5, SUSE SLES9&10)	307754-B27
HP Serviceguard for Linux A.11.16 for SUSE SLES 9 & 10 and Red Hat EL 3 & 4 (single license version)	307754-B26
HP Serviceguard for Linux, A.11.18 (single license version - Red Hat EL 4&5, SUSE SLES9&10)	305199-B27
HP Serviceguard for Linux ProLiant Cluster A.11.16 for SUSE SLES 9 & 10 and Red Hat EL 3 & 4 (2 node license cluster kit)	305199-B26

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

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

USB Options

HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)	DC172B
HP USB 04 Standard Keyboard	DT528A#ABA
USB 2.0 4-port HUB	DG954A
HP 1GB USB 2.0 Floppy Drive Key	442085-B21
HP 256MB USB 2.0 Floppy Drive Key	442084-B21

Options

HP Rack 5000 Series (Graphite Metallic)	HP 5642 Rack - Unassembled NOTE: Please see the HP Rack 5642 QuickSpecs for additional part numbers and Technical Specifications such as height, width, depth, weight, and color: http://h18000.www1.hp.com/products/quickspecs/12074_na/12074_na.HTML NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower .	358254-B21
HP Rack 10000 G2 Series (Graphite Metallic)	10642 G2 (42U) Rack Cabinet - Pallet 10642 G2 (42U) Rack Cabinet - Shock Pallet 10642 G2 (42U) Rack Cabinet - Crated 10642 G2 (42U) Rack Cabinet, with Extension - Shock Pallet 10636 G2 (36U) Rack Cabinet - Shock Pallet 10636 G2 (36U) Rack Cabinet - Crated 10636 G2 (36U) Rack Cabinet, with Extension - Shock Pallet 10636 G2 (36U) Rack Cabinet, without door - Shock Pallet 10622 G2 (22U) Rack Cabinet - Pallet 10622 G2 (22U) Rack Cabinet - Shock Pallet 10842 G2 (42U) 800mm Wide Rack Cabinet - Pallet 10842 G2 (42U) 800mm Wide Rack Cabinet - Shock Pallet 10647 G2 (47U) Rack Cabinet - Pallet	AF001A AF002A AF003A AF004A AF011A AF012A AF013A AF014A AF021A AF022A AF041A AF042A AF031A
Rack 10000 Series (Graphite Metallic)	HP S10614 (14U) Rack Cabinet - Shock Pallet NOTE: xxxxxx-B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels). NOTE: It is mandatory to use a shock pallet in order to ship racks with equipment installed. NOTE: Please see the Rack 10000 QuickSpecs for additional part number and Technical Specifications such as height, width, depth, weight, and color: http://h18000.www1.hp.com/products/quickspecs/10995_na/10995_na.HTML NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower	292302-B22
Monitors and Keyboards	TFT7210R Rack Mounted 17" Monitor TFT7600 Rackmount Keyboard Monitor 1U Rackmount Keyboard with USB NOTE: For additional information regarding Rack Options, please see the following URL: http://www.hp.com/go/rackandpower	348373-B21 AG052A AG072A

Options

HP KVM Switch Options	4x1x16 IP Console Switch with Virtual Media	AF602A
	2x1x16 IP Console Switch with Virtual media	AF601A
	0x2x16 Server Console Switch with Virtual Media	AF600A
	PS2 Virtual Media Interface Adapter	AF604A
	Server Console Switch (KVM), 0 x 1 x 8 port	336044-B21
	Server Console Switch (KVM), 0 x 2 x 16 port	336045-B21
	PS/2 Interface Adapter, 1-pack	262588-B21
	PS/2 Interface Adapter, 8-pack	262587-B21
	USB Interface Adapter, 1-pack	336047-B21
	Serial Interface Adapter, 1-pack with power supply	373035-B21
HP BladeSystem p-Class 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>

HP Serial Console Server Options	HP 16 Port Serial Console Server	AF101A
	HP 48 Port Serial Console Server	AF102A
	Serial Adapter, RJ45-DB9 DCE Female, 1 Pack	AF103A
	Serial Adapter, RJ45-DB9 DCE Female, 8 Pack	AF110A

NOTE: Cat5e cables are required to connect Serial Adapters to Serial Console Servers. Additional Serial Adapters and Cat5e 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 p-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	UD187E
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UD188E
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UD189E

NOTE: The HP Care Pack service part numbers below for HP BladeSystem p-Class server blade enclosure covers the enclosure including patch panels, HP supported Ethernet interconnects, power enclosure with power supplies and power distribution.

Hardware Services On-site Service

4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	HC031E
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	HC032E

Options

6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic HC033E

NOTE: The HP Care Pack service part numbers below covers the HP BladeSystem Brocade and McData SAN Switches.

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

Installation & Start-up Services

HP Installation & Startup Service for HP BladeSystem Infrastructure, Electronic UC905E

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 Systems Insight Manager (SIM), HP Rapid Deployment Pack (RDP), and deploy up to two operating system editions of either Windows or Linux, using scripted operating system installation software.

ProLiant BL p-Class Blade Server Hardware Installation, Electronic UA219E

ProLiant BL p-Class Enclosure and Server Blade Hardware Installation, Electronic U4971E

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 (Electronic) UA040E

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

Software Operating Environment Care Packs

Options

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, 8x5, 1 year, 3 incident (Electronic)	U8222E
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 more information, customer/resellers can contact <http://www.hp.com/hps/carepack/services/>

Memory

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

DIMM installation guidelines:

1. All DIMMs must be Fully Buffered DIMMS PC2-5300 at 667 MHz (at 533 MHz for processors with 1066 MHz FSB).
2. Both DIMM slots in a memory bank must be populated.
3. Both DIMMs in a memory bank must be identical. Install identical DIMMs as pairs only, starting with DIMM socket 1, bank A.
4. Populate both slots in a bank at the same time: DIMMs 1 and 2 reside in bank A, and DIMMs 3 and 4 reside in bank B.

HP ProLiant BL20p G4 Server Blade (2048 MB Memory Model)

Standard Memory

2048 MB PC2-5300 ECC DDR2 FBDIMMs installed (2 x 1 GB) (at 533 MHz for processors with 1066 MHz FSB).

Upgrading Memory and Memory Interleaving

When upgrading memory, DIMMs 1A and 3A must match. DIMMs 5B and 7B, DIMMs 2C and 4C and DIMMs 6D and 8 D must match and must be installed as a pair. When DIMMs 1A and 3A are populated the system is automatically configured for 2:1 interleaving. When four or six DIMMs are populated with identical DIMMs the system is automatically configured for bank interleaving.

Standard Memory Plus Optional Memory

Up to 14336 MB ECC DDR2 FBDIMM memory is available with the installation of optional ECC DDR2 FBDIMMs memory expansion kits.

Standard Memory Replaced with Optional Memory

Up to 16384 MB of ECC DDR2 FBDIMM memory is available with the removal of standard memory and the installation of optional ECC DDR2 FBDIMM memory expansion kits.

NOTE: Chart does not represent all possible configurations.

Memory		Slot							
		1	2	3	4	5	6	7	8
Standard	2048 MB	1024 MB	1024 MB	Empty	Empty	Empty	Empty	Empty	Empty
Optional	14336 MB	1024 MB	1024 MB	2048 MB	2048 MB	2048 MB	2048 MB	2048 MB	2048 MB
Maximum	16384 MB	2048 MB	2048 MB	2048 MB	2048 MB	2048 MB	2048 MB	2048 MB	2048 MB

NOTE: In the online spare configuration, the ROM automatically configures the last populated bank as the spare memory. If only banks A and B are populated, bank B is the spare bank. If banks A, B, and C are populated, bank C is the spare bank, Online spare memory is configured through RBSU.

Following are memory options available from HP:

- 1GB 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 397415-B21

Memory

HP ProLiant BL20p G4 Server Blade (1024 MB Memory Model)

Standard Memory

1024 MB PC2-5300 ECC DDR2 FBDIMMs installed (2x512 MB) (at 533 MHz on processors with 1066 MHz FS B)

Upgrading Memory and Memory Interleaving

When upgrading memory, DIMMs 1A and 3A must match. DIMMs 5B and 7B, DIMMs 2C and 4C and 6D and 8D must match and must be installed as a pair. When DIMMs 1A and 3A are populated the system is automatically configured for 2:1 interleaving. When four or six DIMMs are populated with identical DIMMs the system is automatically configured for bank interleaving.

Standard Memory Plus Optional Memory

Up to 13312 MB of ECC DDR2 FBDIMM memory is available with the installation of optional ECC DDR2 FBDIMMs memory expansion kits.

Standard Memory Replaced with Optional Memory

Up to 16384 MB of ECC DDR2 FBDIMM memory is available with the removal of standard memory and the installation of optional ECC DDR2 FBDIMM memory expansion kits.

NOTE: Chart does not represent all possible configurations.

Memory		Slot							
		1	2	3	4	5	6	7	8
Standard	1024 MB	512 MB	512 MB	Empty	Empty	Empty	Empty	Empty	Empty
Optional	13312 MB	512 MB	512 MB	2048 MB	2048 MB	2048 MB	2048 MB	2048 MB	2048 MB
Maximum	16384 MB	2048 MB	2048 MB	2048 MB	2048 MB	2048 MB	2048 MB	2048 MB	2048 MB

NOTE: In the online spare configuration, the ROM automatically configures the last populated bank as the spare memory. If only banks A and B are populated, bank B is the spare bank. If banks A, B, and C are populated, bank C is the spare bank. Online spare memory is configured through RBSU.

Following are memory options available from HP:

- 1GB 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 397415-B21

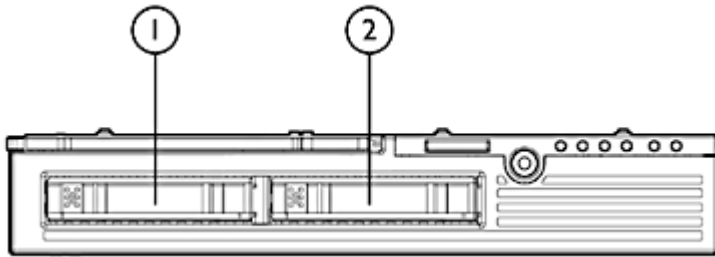
NOTE: Online Spare Memory is not supported when using 2-rank DIMMs. A total of 8 ranks are supported on the HP ProLiant BL20p G4, A maximum of 4, 2-rank DIMMs can be populated. If you plan to mix DIMM types, 2-rank DIMMs must be installed in the first bank, 1 rank DIMMs can then be installed in subsequent banks.

The following is the memory population rules for the HP ProLiant BL20p G4.

Key: S denotes single rank kit, D denotes Dual rank kit, and X denotes no install.

Bank A	Bank B	Bank C	NOTES:
S	X	X	
S	S	X	
S	S	S	
D	X	X	Online spare not supported
D	S	X	Online spare not supported
D	S	S	Online spare not supported
D	D	X	Online spare not supported

Storage



1,2 2 x Small Form Factor Serial Attached SAS Hot Pluggable Hard Drive Bays

Drive Support

SFF SAS Hard Drives Hot Plug

	Quantity Supported	Position Supported	Controller
2.5-inch	2	1-2	Smart Array E200i Controller (with optional battery-backed write cache), RAID 0,1, 0+1 support
72GB 3G SAS SFF SP 15K			
36GB 3G SAS SFF SP 15K			
146GB 3G SAS SP 10K			
72GB 3G SAS SFF SP 10K			
36GB 3G SAS SFF SP 10K			

SFF SATA Hard Drives Hot Plug

	Quantity Supported	Position Supported	Controller
2.5-inch	2	1-2	HP embedded 2 Port SATA Controller with RAID 0/1/0+1 support
120GB 1.5 SATA			
60GB 1.5G SATA			

Maximum Storage Capacity - (SAS drives)

External	4.20TB (1 x (14 x 300 GB (Ultra320 Drives))
Total	4.3 TB

NOTE: In order to implement integrated SATA RAID with Smart Start 7.4 on Windows 2000/2003, the use of a floppy drive is necessary

Maximum Storage Capacity - (SATA Drives)

External	6.00TB (1 x (12 x 500GB 3.5"SATA Drives))
----------	---

Storage

Tape Drives, Tape Autoloaders, & Tape Libraries

NOTE: For an up-to-date listing of the latest O/S Support details for each of the Tape Drives listed below, please see the following:

http://h18000.www1.hp.com/products/quickspecs/North_America/10233.html

NOTE: For an up-to-date listing of the latest O/S Support details for each of the Tape Autoloaders & Tape Libraries listed below, please see the following:

http://h18000.www1.hp.com/products/quickspecs/North_America/10809.html

NOTE: For complete listing of tape drive offerings see

<http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html>

For details on connecting tape drives to this server, see the following:

	Position Supported	Position Controller	Controller/HBA Option Kit Part Number
HP StorageWorks Tape Libraries, External MSL2024 (Ultrium 448, Ultrium 920 and 960-based) MSL4048 (Ultrium 448, Ultrium 920 and 960-based) MSL6000 (Ultrium 960 and 460-based) MSL6000 (SDLT 600-based)	External	Please consult the EBS connectivity matrix at http://www.hp.com/go/ebs for detailed connectivity information	N/A
HP StorageWorks Virtual Library Systems 300 VLS 1002i VLS 6105 VLS 6109 VLS 6515 VLS 6840 VLS 6870 VLS	External	Please consult the EBS connectivity matrix at http://www.hp.com/go/ebs for detailed connectivity information	N/A

Power Specifications

To review typical system power ratings 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>

To drill down to calculators:

- Click on: "ProLiant Servers"
- Click on the Server of interest. Example: BL20p G4
- Click on: "Power Calculator" link. (You may need to scroll down to see it)

Technical Specifications

HP ProLiant BL20p G4 Server Blade	Dimensions	Height	10.29 in (26.14 cm)
		Depth	1.69 in (4.29 cm)
		Width	28 in (71.10 cm)
	Weight	Maximum	20.8 lbs (9.43 kg)
	Temperature Range*	Operating	10°C to 35°C (50°F to 95°F)
		Non-Operating	-40°C to 60°C (-40°F to 140°F)
		Storage	-20°C to 60°C (-4°F to 140°F)
		Maximum Wet Bulb Temperature	-30°C (86°F)
	Relative Humidity**	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 E200i 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	DDR-1/266 MHz provides up to 4.2 GB/s maximum bandwidth.
	Server Interface	x4 2.5G PCIe provides 2GB/s maximum bandwidth.
	SAS Speed	x8 3G SAS provides 2.4GB/s maximum bandwidth.
	Cache Memory	40-bit 64MB or 128MB cache: ECC protection, battery-backed, and transportable
	Logical Volumes Supported	Up to 32 logical volumes
	Maximum Volume Capacity	3TB (6 x 500GB)
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	RAID Support	RAID 5 (Distributed Data Guarding) requires 128MB BBWC option RAID 1, 1+0 (Striping & Mirroring) RAID 0 (Striping)
	Upgradeable Firmware	Upgradeable Firmware

Technical Specifications

One Dual port NC374i PCI-X Multifunction Gigabit NICs (embedded) Server Adapter	Network Interface	10/100/1000-T
	Compatibility	IEEE 802.3 10Base-T
		IEEE 802.3ab
		1000Base-T
		IEEE 802.3u 100Base-TX
	Data Transfer Method	64-bit/133MHz PCI-X
	Network Transfer Rate	10Base-T (Half-Duplex)
10Base-T (Full-Duplex)		20 Mb/s
100Base-TX (Half-Duplex)		100 Mb/s
100Base-TX (Full-Duplex)		200 Mb/s
1000Base-T (Full and Half-Duplex)		2000 Mb/s

© Copyright 2007 Hewlett-Packard Development Company, L.P.

The information contained herein is subject to change without notice.

Microsoft and Windows NT are US registered trademarks of Microsoft Corporation. Intel is a US registered trademark of Intel Corporation.

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

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