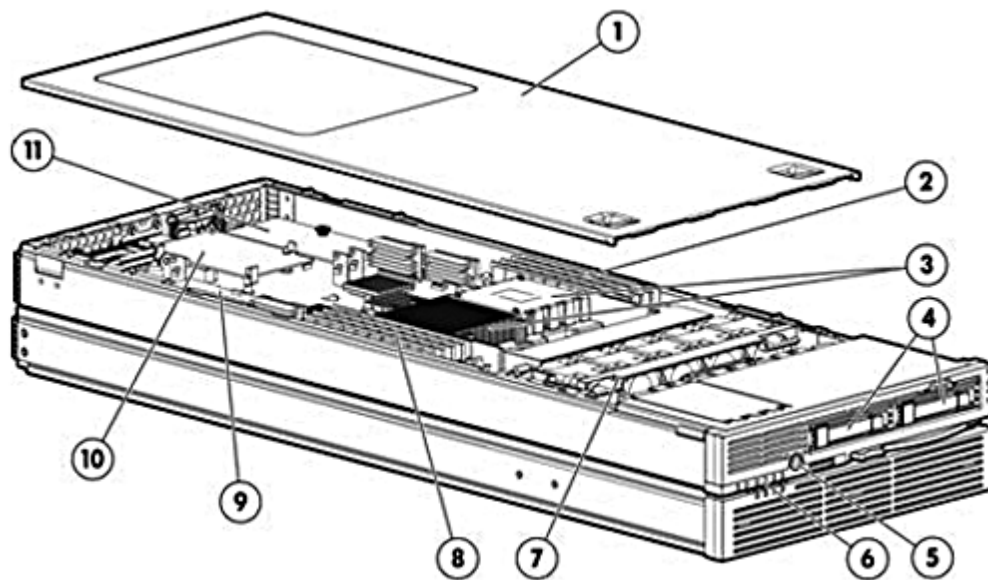


Overview

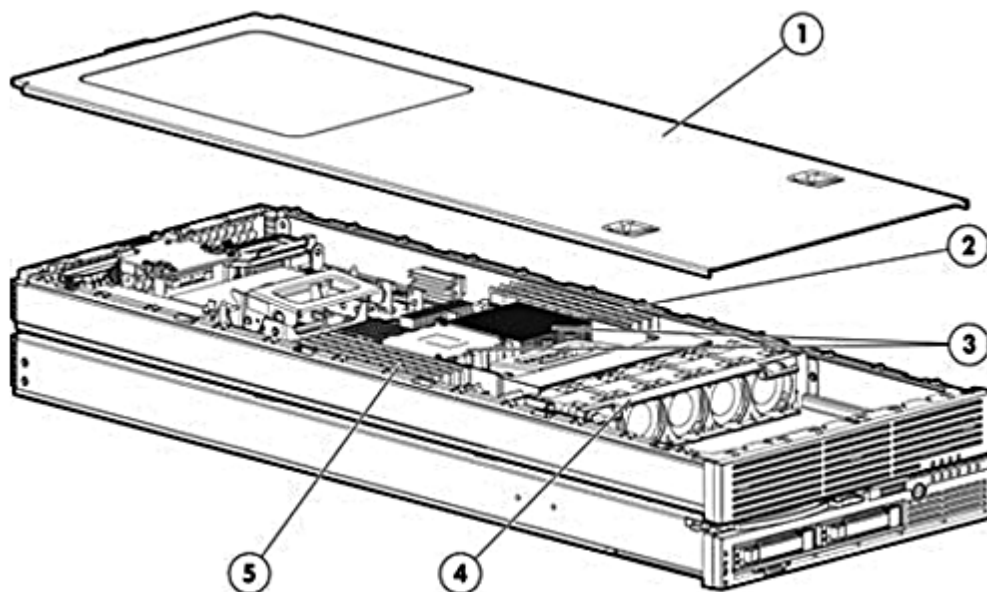
Primary Side – HP ProLiant BL45p G2 Server Blade



1. Primary Side Access Panel
2. Processor 3 Memory Banks E and F
3. Primary Side: Up to two AMD Opteron™ 8000 Series processors (shown with Processor 1 installed, two additional processors on Secondary Side)
4. Up to 2 small form factor (SFF) SAS or SATA hot-plug hard disk drives (optional)
5. Power On/Standby Button
6. Front panel LEDs
7. Redundant Fan Module
8. Processor 1 Memory Banks A and B
9. Smart Array E200i Controller cache module
10. Optional Dual Port Fibre Channel Adapter (QLogic-based or Emulex-based)
11. Optional NIC Adapter (single function or multifunction Gigabit)

Overview

Secondary Side – HP ProLiant BL45p G2 Server Blade



1. Secondary Side Access Panel
2. Processor 2 Memory Banks C and D
3. Up to two AMD Opteron™ 8000 Series processors (shown with Processor 2 installed, two additional processors on Primary Side)
4. Redundant Fan Module
5. Processor 4 Memory Banks G and H

Other features on Secondary Side include an additional connector for an optional single or multifunction Gigabit NIC server adapter, and a connector for an optional Dual Port Fibre Channel adapter (QLogic-based or Emulex-based.)

At A Glance

This document covers the HP ProLiant BL45p G2 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_div/12330_div.HTML and

HP BladeSystem p-Class Interconnect Components QuickSpecs:

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

The HP ProLiant BL45p Generation 2 server blade delivers maximum quad-processor performance, enterprise manageability and availability, and superior expansion capabilities to the datacenter.

- **Processor:**
 - Up to four AMD Opteron™ 8000 series processors
 - Supports up to four AMD Opteron processors Model 8218 (2.6 GHz) featuring 1MB Level 2 cache memory per core
 - Processors are connected through 1 GHz HyperTransport™ links
 - ServerWorks HT-1000 and HT-2100 chipsets
- **Memory:**
 - Up to 64 GB of memory, PC2-5300 Registered DDR2 (667 MHz) memory, 16 DIMM slots
 - Advanced ECC memory support
 - Supports 2:1 memory interleaving
- **Storage Controller:**
 - Integrated Smart Array E200i controller with 64 MB cache
 - Supports RAID 0, 1
 - Optional 128MB battery-backed write cache (BBWC) module for internal storage data protection

Overview

- **Internal Drive Support:**
 - Up to 2 small form factor (SFF) SAS or SATA hot-plug hard disk drives (support for SATA hard drives via Factory Integration only)
- **Network Controller:**
 - Two (2) embedded NC373i Multifunction Gigabit Network Adapters with TCP/IP Offload Engine, including support for Accelerated iSCSI through an optional ProLiant Essentials Licensing Kit
 - One (1) embedded NC324i Dual Port Gigabit Network Adapter for HP BladeSystem
 - One (1) additional 10/100 NIC dedicated to iLO 2 management
- **Optional Mezzanine Card support:**
 - Supports (2) Fibre Channel Adapters
 - Dual-Port Fibre Channel Mezzanine (2-Gb) options for SAN connectivity (Choice of Emulex or QLogic)
 - Supports (2) networking cards for four (4) additional Ethernet network ports, choose from the following:
 - HP NC374m PCI Express Dual Port Multifunction Gigabit Server Adapter for HP BladeSystem with TCP/IP Offload Engine, including support for Accelerated iSCSI through an optional ProLiant Essentials Licensing Kit or
 - HP NC320m PCI Express Dual Port Gigabit Server Adapter for HP BladeSystem
- **USB Ports:**
 - One (1) internal USB 2.0 connector for security key devices and USB drive keys
 - I/O cable with two (2) USB 2.0 ports, one (1) video port, one (1) iLO 2 port and one (1) kernel debug port. The cable was specifically designed to aid in initial server image deployment and ships with every HP BladeSystem p-Class server blade enclosure
- **Redundancy:**
 - The HP BL45p G2 server features ten (10) integrated fans for sufficient cooling. The redundant fan design allows for uninterrupted server operations
- **Operating Systems:**
 - Supports Windows, Linux, Solaris, and VMware ESX Server
- **Form Factor:**
 - The HP ProLiant BL45p G2 server blade plugs vertically into an HP BladeSystem p-Class server blade enclosure
 - HP BladeSystem p-Class server blade enclosures with enhanced backplane components might be required depending on which HP ProLiant server blade model is selected.
- **Management:**
 - Integrated Lights-Out 2 (iLO 2) Standard Blade Edition (includes virtual KVM and graphical remote console at no additional cost)
- **Enclosures:**
 - The HP BladeSystem p-Class server blade enclosure is 6U (10.5-inches) in height, 19-inches wide and holds up to 4 HP ProLiant BL45p G2 server blades plugged vertically
- **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

Processor	AMD Opteron™ processor Model 8218 (2.6GHz)
NOTE: Support for two or four processor configurations only	AMD Opteron processor Model 8216 (2.4GHz) AMD Opteron processor Model 8214 (2.2GHz) AMD Opteron processor Model 8212 (2.0GHz)*
	NOTE: AMD Opteron™ 8000 Series processors are 64-bit, dual-core, and support AMD Virtualization™ and DDR2 memory technology. AMD Opteron 8000 Series processors are connected through 1 GHz HyperTransport™ links.
	NOTE: *Offered via Factory Integration (North America) or Specials (EMEA and APJ) only.
Upgradeability	Upgradeable to quad processing (4 processors)
Cache Memory	1MB Level 2 cache memory per core
Chipset	ServerWorks HT-1000 and HT-2100
Memory	Type PC2-5300 Registered DDR2 DIMMs (667 MHz) Standard 4 GB (4 x 1 GB) Maximum 64 GB (16 x 4 GB) NOTE: Memory must be installed in pairs. For additional memory configuration guidelines, see "Memory" section of this HP BL45p G2 QuickSpecs.
Network Controller	Two (2) embedded NC373i Multifunction Gigabit Network Adapters for HP BladeSystem One (1) embedded NC324i Dual Port Gigabit Network Adapter One (1) additional 10/100 NIC dedicated to iLO 2 Management NOTE: Must use a HP BladeSystem p-Class server blade enclosure with enhanced backplane components to utilize all four possible NIC's (HP P/N's 281404-B22, 243564-B22 or 380625-B22).
Expansion Slots	No PCI slots; all features are integrated. Additional network and fibre channel connectivity is available via optional mezzanine cards. I/O cable connectors: (2)USB 2.0 ports, (1) video port, (1) iLO 2 port and (1) kernel debug port (2) I/O cables ship with every HP BladeSystem p-Class 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 (integrated on motherboard)
Storage Controller	Smart Array E200i Controller <ul style="list-style-type: none">• 64MB memory module supports RAID 1, 0• Supports SAS and SATA disk drives• Available upgrades: 128MB battery-backed write cache (BBWC) module

Standard Features

Maximum Internal Storage	Hot-plug Serial Attach SCSI (SAS)	292GB SAS	2 x 146GB Serial SCSI
	Hot-plug Serial ATA (SATA)	120GB SATA	2 x 60GB Serial ATA

Graphics	Integrated ATI Rage XL Video Controller with 8-MB SDRAM Video Memory
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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
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Fiber Channel on the HP ProLiant BL45p G2 server blade

The HP ProLiant BL45p G2 supports two (2) optional, dual port fiber channel adapters for SAN connectivity and redundancy. Customers are offered a choice of either QLogic-based or Emulex-based fiber channel adapters. Both adapters are mezzanine circuit boards which connect directly to the server blade system board. These fiber channel adapters are available via option kits and must be ordered separately.

- QLogic-based
 - Utilizes a QLogic ISP2312 chipset
 - The HP QLogic-based dual port Fibre Channel Adapter (P/N 361426-B21) is compatible with the HP ProLiant BL20p G3, BL20p G4, BL25p G2, and BL45p G2 server blades. It cannot be used with HP ProLiant BL25p G1, BL35p, or BL45p G1 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 HP Emulex-based dual port fibre channel HBA (P/N 394757-B21) is compatible with the HP ProLiant BL20p G3, BL20p G4, BL25p G2, and BL45p G2 server blades. It cannot be used with HP ProLiant BL25p G1, BL35p, or BL45p G1 server blades
 - There are no SFPs 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

Compatible SAN

HP ProLiant BL45p G2 server blades are optimized for StorageWorks MSA, EVA, and XP arrays.

HP ProLiant BL45p G2 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 Manger	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.
	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		Subscriber's Choice Driver and Support Alerts/Notifications is a web-based email subscription service that provides software and driver change notifications for ProLiant products. Sign up at http://www.hp.com/go/subscriberschoice and customize your profile to receive various new alerts as they become available, on a weekly or monthly basis.
ProLiant Support Packs and ROMPaq, software		The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options, available through ProLiant Support Packs the ProLiant Essentials Rapid Deployment Pack, SmartStart or downloaded from Software and Drivers download pages website at http://www.hp.com/go/support .

Standard Features

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
- Insight Control Data Center Edition v1.0 is delivered with HP BladeSystem enclosures in either evaluation of fully licensed packs, and is also available as a software option. 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>
- 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
- Performance Management Pack – detects, analyzes, and explains hardware bottlenecks on HP ProLiant servers, HP Integrity servers and shared storage
- 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
- 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
- RDMA Pack enables Remote Direct Memory Access (RDMA) on an HP Multifunction server adapter. RDMA is a communications protocol that provides direct transmission of data from the memory of one computer to the memory of another with minimal demands on the host CPU. RDMA provides a high-speed, high-performance connection between servers on the same network. RDMA Pack licenses are port-based; the licensed seats are available to individual ports on the Multifunction server adapter.
- 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 – integrates and simplifies the assessment and remediation of operating system vulnerabilities into HP Systems Insight Manager for Windows and Linux 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 to <http://www.hp.com/servers/proliantessentials> or the various ProLiant Essentials Value Pack product QuickSpecs for more information.

Standard Features

SmartStart SmartStart is a tool that simplifies single server setup, providing a rapid way to deploy reliable and consistent server configurations. SmartStart can now deploy the ProLiant BL45p G2 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 7.60

OS Support

Windows Server 2003, Web edition
Windows Server 2003, Server/Standard edition (32 & 64 bit editions)
Windows Server 2003, Enterprise edition (32 & 64 bit editions)
Red Hat Enterprise Linux 4 (32 & 64 bit editions)
Red Hat Enterprise Linux 3 (32 & 64 bit editions)
SUSE LINUX Enterprise Server 9 (32 & 64 bit editions)
SUSE LINUX Enterprise Server 10 (32 & 64 bit editions)
Solaris 10 (32 & 64 bit editions)
VMware ESX Server 3

NOTE: For a 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 HP ProLiant BL p-Class, please see: <http://h18004.www1.hp.com/support/files/server/us/family/model/5342.html>.

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

Supported Software Options

VMware Virtualization Software

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>

Intelligent Manageability

- Integrated Lights-Out 2 Standard Blade Edition (iLO 2) features include:
- Virtual KVM (Text and Graphical modes)
- Virtual Media (CD ROM ,floppy and 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 Event Logging

Upgrade to HP ProLiant Essentials Integrated Lights-Out Select Pack

NOTE: Advanced features such as Graphical Remote Console and browser accessible Virtual Media are included with the HP BL45p G2 server blade.

Automatic Server Recovery-2 (ASR-2)

Insight Manager 7

HP Systems Insight Manager

Standard Features

Redundant ROM
Remote Flash ROM
ROM Based Setup Utility (RBSU)
Advanced Configuration and Power Interface Specification Ready (ACPI)
Server and Interconnect Switch Health Logs
Redundant Power Supply Utility
Pre-Failure Warranty (covers processors, as well as hard drives and memory)
Integrated Management Log (IML)
Dynamic sector repairing and drive parameter tracking (with Smart Array controllers)
Network adapter teaming set-up utility

Availability

- Dual Port Fibre Channel Mezzanine Card (optional) for redundant SAN connection
- Two hot-plug SAS/SATA hard drive bays and integrated RAID (Smart Array E200i) controller on every server blade (Battery-backed write cache is optional)
- Redundant ROM on every server blade
Advanced ECC Memory support on every server blade - Advanced ECC can actually correct a multi-bit error (up to 4 bits) that occurs within one memory chip
- Redundant fan design on every server blade - The HP BL45p G2 server features ten (10) integrated fans for sufficient cooling. A single fan on each side of the server can fail without interrupting server operations indefinitely
- Network adapter teaming (network fault tolerance, transmit load balancing, switch-assisted load balancing)

Security

- Power-on password
- Administrator's password One (1) internal USB 2.0 connector for security key devices and USB drive keys
- 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 for 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.

Service and Support

This product is covered by a global limited warranty and supported by HP Services and a worldwide



Standard Features

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 35p 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 3 year Parts, 3 year Labor, 3-year on-site support.

NOTE: The p-Class SAN switch limited warranty is unique to the SAN switch which includes 1 year warranty that is upgradeable to 3 years via Care Pack

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 ProLiant 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 ProLiant 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

Dual-Core Models

HP BL45P G2 8218 4GB (2P) 408669-B21	Processor(s)	(2) AMD Opteron™ processors Model 8218 (2.6 GHz, 95W) (2) AMD Opteron processors Model 8216 (2.4 GHz, 95W) (2) AMD Opteron processors Model 8214 (2.2 GHz, 95W)
HP BL45P G2 8216 4GB (2P) 408668-B21	Cache Memory	1MB Level 2 cache memory per core
	Memory	4 GB (4 x 1 GB) PC2-5300, Registered DDR2-667
	Network Adapter	Two (2) embedded NC373i Multifunction Gigabit Network Adapters One (1) embedded NC324i Dual Port Gigabit Network Adapter Plus one (1) additional 10/100 NIC dedicated to iLO 2 management
HP BL45P G2 8214 4GB (2P) 408667-B21	Storage Controller	Smart Array E200i Controller with 64MB (optional 128MB battery-backed write cache module available)
	Hard Drives	(2) SFF SAS/SATA drive bays; no hard drives ship standard
	Internal Storage	Up to 292GB SFF SAS (with optional hot-plug hard disk drives) Up to 120GB SFF SATA (with optional hot-plug hard disk drives)
	Optical Drive	None
	Form Factor	Up to 4 HP BL45p G2 server blades plug vertically in an HP BladeSystem p-Class server blade enclosure

NOTE: HP BladeSystem p-Class server blade enclosures with enhanced backplane components might be required depending on which HP ProLiant server blade model is selected. Please visit the enclosure compatibility matrix at <http://www.hp.com/go/bladesystem/enclosure/compatibility>.

Configuration Information - Factory Integrated Models (North America only)

NOTE: For Configure to Order requirements within EMEA region, please consult local Sales Contact.

NOTE: HP does not allow factory integration of options into standard models listed above.

Configure-to-order servers must start with a CTO Chassis.

NOTE: This product offering does not support HP Factory Express Server Configuration Level 1.

NOTE: FIO indicates that this option only available as a Factory Installable Option.

Step 1: Base Server Blade Configuration

Models	HP ProLiant BL45p MOD-FX (US)	404840-B21
	Configurable Model ships with:	
	Four embedded Gigabit Ethernet NIC ports:	
	<ul style="list-style-type: none"> Two (2) embedded NC373i Multifunction Gigabit Network Adapters One (1) embedded NC324i Dual Port Gigabit Network Adapter 	
	Plus (1) additional 10/100 NIC dedicated to iLO 2 management.	
	Integrated Smart Array E200i controller	
	NOTE: Controller cache module selection is required. Select either the standard 64 MB module or the optional 128 MB module in step 2 below.	
	Two 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	For dual (2) processor configurations choose (ONE of the following):	
	AMD Opteron™ processor Model 8218 (2.6GHz, 95W) Option Kit, FIO Base	409390-L21
	AMD Opteron processor Model 8216 (2.4GHz, 95W) Option Kit, FIO Base	409391-L21
	AMD Opteron processor Model 8214 (2.2GHz, 95W) Option Kit, FIO Base	409392-L21
	AMD Opteron processor Model 8212 (2.0GHz, 95W) Option Kit, FIO Base	415666-L21
	OR	
	For quad (4) processor configurations choose (ONE of the following):	
	AMD Opteron processor Model 8218 (2.6GHz, 95W) Option Kit, FIO Base	409390-L21
	AMD Opteron processor Model 8216 (2.4GHz, 95W) Option Kit, FIO Base	409391-L21
	AMD Opteron processor Model 8214 (2.2GHz, 95W) Option Kit, FIO Base	409392-L21
	AMD Opteron processor Model 8212 (2.0GHz, 95W) Option Kit, FIO Base	415666-L21
	Plus (ONE of the following):	
	AMD Opteron processor Model 8218 (2.6 GHz, 95W) Option Kit, FIO Base	409390-B21
	AMD Opteron processor Model 8216 (2.4GHz, 95W) Option Kit, FIO Base	409391-B21
	AMD Opteron processor Model 8214 (2.2GHz, 95W) Option Kit, FIO Base	409392-B21
	AMD Opteron processor Model 8212 (2.0GHz, 95W) Option Kit, FIO Base	415666-B21
	NOTE: HP ProLiant BL45p G2 processor option kits (-B21 and -L21) contain two processors.	
	NOTE: The HP ProLiant BL45p G2 only supports 2 and 4 processor configurations.	

Configuration Information - Factory Integrated Models (North America only)

Memory	HP 1GB REG PC2-5300 2x512MB 1RANK Kit	408850-B21
	HP 2GB REG PC2-5300 2x1GB 1RANK Kit	408851-B21
	HP 4GB REG PC2-5300 2x2GB 2RANK Kit	408853-B21
	HP 8GB REG PC2-5300 2x4GB 2RANK Kit	408854-B21
NOTE: Must be installed in pairs. For additional memory configuration guidelines, see "Memory" section of this HP BL45p G2 QuickSpecs.		
Controller Cache	64 MB Cache – FIO Only	405102-B21
	128 MB Battery-Backed Cache Enabler	346914-B21
	NOTE: Supports the Smart Array E200i Controller.	

Step 3: Choose Additional Factory Integratable Options

Hard Disk Drives	HP Serial Attached (SAS) Hot Plug Hard Drives	
	HP 146GB 3G SAS 10K SFF HDD	431958-B21
	HP 72GB 3G SAS 10K SSF SP HDD	375861-B21
	HP 36GB 3G SAS 10K SSF SP HDD	375859-B21
Communications	NOTE: Up to two optional NIC mezzanine adapters are available. Choose up to 2 of the following:	
	HP NC320m PCI Express Dual Port Gigabit server adapter for HP BladeSystem	405095-B21
	HP NC374m PCI Express Dual Port Multifunction Gigabit server adapter for HP BladeSystem	405094-B21
NOTE: There are four mezzanine adapter card connectors on the HP BL45p G2 motherboards. There are two dedicated networking connectors which support two (2) optional Ethernet NIC mezzanine adapter cards, either the HP NC320m PCI Express Dual Port Gigabit server adapter or the HP NC374m PCI Express Dual Port Multifunction Gigabit server adapter. The other two (2) connectors are dedicated for optional, fibre channel mezzanine card adapters.		
Fibre Channel	NOTE: Up to two optional FC mezzanine adapters are available. Choose up to 2 of the following:	
	HP QLogic-based Fibre Channel Mezzanine HBA for HP p-Class BladeSystem	361426-B21
	NOTE: 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.)	
	OR	
	HP Emulex-based Fibre Channel Mezzanine HBA for HP p-Class BladeSystem	394757-B21
NOTE: SFPs for use with pass through SAN switches not included with the Emulex-based Fibre Channel Adapter. If SFPs are required, please order the SFP option kit (P/N 397577-B21) which includes 2-2Gb SFPs per option kit.		
	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).		

Configuration Information - Factory Integrated Models (North America only)

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 p-Class Infrastructure QuickSpecs:

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

and HP BladeSystem p-Class Interconnect Components QuickSpecs:

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

And/or refer to the "Options" section below.

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, 1 License 407484-B22</p> <p>NOTE: For additional ProLiant Accelerated iSCSI Pack License Kits – please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12466_div/12466_div.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 436225-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 436229-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 please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12062_div/12062_div.HTML http://h18000.www1.hp.com/products/quickspecs/12327_div/12327_div.HTML</p>
<p>ProLiant Essentials Performance Management Pack</p>	<p>ProLiant Essentials Performance Management Pack, single server license (no media) 436770-B21</p> <p>NOTE: For use with a single server. Contains one license with a unique license activation key, HP Management CD and documentation.</p> <p>NOTE: The most recent version of the software can always be downloaded at http://www.hp.com/products/pmp</p> <p>ProLiant Essentials Performance Management Pack, Single-Server License 306696-B21</p> <p>NOTE: For use with a single server. Contains one license with a unique license activation key, HP Management CD and documentation.</p> <p>NOTE: The most recent version of the software can always be downloaded at http://www.hp.com/products/pmp.</p> <p>NOTE: For additional ProLiant Performance Management Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11925_div/11925_div.HTML</p>
<p>ProLiant Essentials Rapid Deployment Pack</p>	<p>Rapid Deployment Pack, Single-Server License, Flatpack 434560-B21</p> <p>Rapid Deployment Pack, Single-Server License 267196-B21</p> <p>NOTE: This license allows 1 server to be deployed and managed via RDP.</p> <p>Rapid Deployment Pack, Single-Server License (Japan) 267196-291</p> <p>NOTE: This license allows 1 server to be deployed and managed via RDP.</p> <p>NOTE: For additional ProLiant Essentials Rapid Deployment Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11053_div/11053_div.HTML</p>
<p>HP ProLiant Essentials RDMA Pack for Embedded Multifunction Gigabit Server Adapters</p>	<p>HP ProLiant Essentials RDMA Pack for Embedded Multifunction Gigabit Server Adapters, 1 License 407478-B22</p> <p>NOTE: For additional ProLiant Essentials RDMA Pack for Embedded Multifunction Gigabit Server Adapter License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12573_div/12573_div.HTML</p>

Options

ProLiant Essentials Server Migration Pack

ProLiant Essentials Server Migration Pack, Single-Migration License

435663-B21

NOTE: Contains one license, enabling 1 server migration, with a unique license activation key and documentation.

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.

NOTE: For additional ProLiant Server Migration Pack License Kits please see the QuickSpecs at:

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

ProLiant Essentials Server Migration Pack – Physical to ProLiant Edition

ProLiant Essentials Server Migration Pack – Physical to ProLiant Edition, Single-Migration License

412978-B21

NOTE: For additional ProLiant Server Migration Pack License Kits please see the QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/12467_div/12467_div.HTML

ProLiant Essentials Workload Management Pack

ProLiant Essentials Workload Management Pack, Single Server License

303284-B21

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

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

ProLiant Essentials Virtual Machine Management Pack

ProLiant Essentials Virtual Machine Management Pack, Single-Server License

435661-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_div/12328_div.HTML

ProLiant Essentials Vulnerability and Patch Management Pack

ProLiant Essentials Vulnerability and Patch Management Pack, Single-Server License

371645-B21

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

NOTE: For additional ProLiant Vulnerability and Patch Management Pack License Kits, please see the QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/12111_div/12111_div.HTML

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

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

Options

Remote Management	ProLiant Essentials Integrated Lights-Out Select Pack	
	ProLiant Essentials Integrated Lights-Out Select Pack, 1 server License	413119-B21
	ProLiant Essentials Integrated Lights-Out Select Pack, 8-server License	413122-B21
	Featuring: sophisticated remote control and security features for HP BladeSystem servers and ProLiant ML/DL servers in text console environments. NOTE: For additional ProLiant Essentials Integrated Lights-Out Packs please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12362_div/12362_div.HTML	
HP Insight Control Linux Edition for HP BladeSystem	HP Insight Control Linux Edition 1.5 -No Media, -1 License	412957-B22
	NOTE: This license allows one (1) server blade to be deployed and managed via HP Insight Control Linux Edition.	
	HP Insight Control Linux Edition 1.5-No Media -8 License	412958-B22
	NOTE: This license allows eight (8) server blades to be deployed and managed via HP Insight Control Linux Edition.	
Processors	HP Insight Control Linux Edition 1.5 -No Media -Flex License	412959-B22
	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.	
	AMD Opteron™ processor Model 8218 (2.6 GHz, 95W) Option Kit	409390-B21
	AMD Opteron processor Model 8216 (2.4GHz, 95W) Option Kit	409391-B21
	AMD Opteron processor Model 8214 (2.2GHz, 95W) Option Kit	409392-B21
	AMD Opteron processor Model 8212 (2.0GHz, 95W) Option Kit	415666-B21
NOTE: AMD Opteron 8000 Series processors are 64-bit, dual-core, and support AMD Virtualization™ and DDR2 memory technology. AMD Opteron 8000 Series processors are connected through 1 GHz HyperTransport™ links. NOTE: HP ProLiant BL45p G2 processor option kits (-B21) contain two processors. NOTE: The HP ProLiant BL45p G2 only supports 2 and 4 processor configurations.		
Memory (SDRAM DIMMs)	HP 1GB REG PC2-5300 2x512MB 1RANK Kit	408850-B21
	HP 2GB REG PC2-5300 2x1GB 1RANK Kit	408851-B21
	HP 4GB REG PC2-5300 2x2GB 2RANK Kit	408853-B21
	HP 8GB REG PC2-5300 2x4GB 2RANK Kit	408854-B21
	NOTE: Must be installed in pairs. For additional memory configuration guidelines, see "Memory" section of this HP BL45p G2 QuickSpecs.	

Options

Hard Drives	Serial Attached SCSI (SAS) SFF Hot-plug	
	HP 146GB 3G SAS 10K SFF HDD	431958-B21
	HP 72GB 3G SAS 10K SFF SP HDD	375861-B21
	HP 36GB 3G SAS 10K SFF SP HDD	375859-B21
	NOTE: SAS drives have a 3 year warranty.	
	NOTE: Please see the SAS Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature:	
	http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.HTML (Worldwide)	
	Serial-ATA (SATA) SFF Hot-plug	
	HP 60GB 1.5G SATA 5.4K SFF HDD	379306-B21
	NOTE: SATA drives have a 1 year warranty. Please see the SATA Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature:	
	http://h18000.www1.hp.com/products/quickspecs/12091_div/12091_div.HTML (Worldwide)	
Communications	HP NC320m PCI Express Dual Port Gigabit server adapter for HP BladeSystem	405095-B21
	HP NC374m PCI Express Dual Port Multifunction Gigabit server adapter for HP BladeSystem	405094-B21
	NOTE: There are four mezzanine adapter card connectors on the HP BL45p G2 motherboards. There are two dedicated networking connectors which support two (2) optional Ethernet NIC mezzanine adapter cards, either the HP NC320m PCI Express Dual Port Gigabit server adapter or the HP NC374m PCI Express Dual Port Multifunction Gigabit server adapter. The other two (2) connectors are dedicated for optional, fibre channel mezzanine card adapters.	
Controller Cache	128 MB Battery-Backed Cache Enabler	346914-B21
	NOTE: Supports the Smart Array E200i Controller.	
Fibre Channel Adapters	HP QLogic-based dual port Fibre Channel Adapter	361426-B21
	NOTE: 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.)	
	HP Emulex-based dual port Fibre Channel Adapter	394757-B21
	NOTE: SFPs for use with pass through SAN switches not included with the Emulex-based Fibre Channel Adapter. If SFPs are required, please order the SFP option kit (P/N 397577-B21) which includes 2-2Gb SFPs per option kit.	
	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).	

Options

HP BladeSystem p-Class Other Options	HP BladeSystem p-Class Diagnostic Station NOTE: The Diagnostic Station allows access to the HP ProLiant p-Class server blades and the BL p-Class interconnect switch outside of the server blade enclosure. The option provides power and a data interface so that "offline" upgrade and diagnostic functions may be performed.	230743-B21
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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 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	AG324B
HP StorageWorks MSL4048 2 Ultrium 960 Drive Library	AG323A
HP StorageWorks MSL4048 2 Ultrium 960 4GB FC Library	AG325B

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 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 6105 Virtual Library System	AF728A
HP StorageWorks 6510 Virtual Library System	AF729A
HP StorageWorks 6840 Virtual Library System	AG051A
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 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>

Options

HP StorageWorks Modular Smart Array 1000	HP StorageWorks Modular Smart Array 1000 NOTE: Please see the Modular Smart Array 1000 QuickSpecs for additional options and configuration information at http://h18000.www1.hp.com/products/quickspecs/11033_div/11033_div.HTML (Worldwide)	201723-B22
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HP StorageWorks Modular Smart Array 1500 cs	Modular Smart Array 1500 Controller Shelf NOTE: Please see the StorageWorks Modular SAN Array 1500 cs QuickSpecs for additional options and configuration information at: http://www.hp.com/go/MSA1500cs	AA986A
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Cluster Options	ProLiant Cluster Starter Kit NOTE: For additional information regarding the ProLiant Cluster Starter Kit please see the following QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11935_div/11935_div.html (Worldwide)	364023-B22
	HP HA/F200 for Entry SAN Cluster NOTE: For additional information regarding the ProLiant Cluster for Entry Level SAN please see the following QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11932_div/11932_div.html (Worldwide)	364026-B22
	ProLiant Cluster HA/F500 for the Enterprise SAN 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_div/11933_div.html (Worldwide) NOTE: For configuration/certification options for the HP Parallel Database Cluster for Oracle RAC please go to: http://www.hp.com/solutions/highavailability/oracle	364024-B21
	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
	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 and Red Hat Global File System - 1 year subscription	T2798AA#001
	HP Serviceguard for Linux and Red Hat Global File System - 3 years subscription 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_div/11518_div.html (Worldwide)	T2798AA#003

USB Options	USB 2-Button Optical Mouse (Carbonite)	DC172B
	HP USB 04 Standard Keyboard	DT528A#xxx
	USB 2.0 4-port HUB	DG954A
	HP 1GB Drive Key II- USB 2.0 Flash Drive	AG382AA
	HP 512MB DriveKey II- USB Flash Drive	ED516AA

Options

HP Rack 5000 Series (Metallic Carbonite)	HP5642 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_div/12074_div.HTML (Worldwide) NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower	358254-B21
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HP Rack 10000 G2 Series (Graphite Metallic)	HP Rack 10642 G2 (42U) Cabinet – Pallet HP Rack 10642 G2 (42U) Cabinet – Shock Pallet HP Rack 10642 G2 (42U) Cabinet – Crated HP 10642 G2 (42U) Rack Cabinet, with Extension – Shock Pallet* HP Rack 10636 G2 (36U) Cabinet – Pallet HP Rack 10636 G2 (36U) Cabinet – Shock Pallet HP Rack 10636 G2 (36U) Cabinet – Crate HP 10636 G2 (36U) Rack Cabinet, with Extension – Shock Pallet* NOTE: Please see the Rack 10000 G2 QuickSpecs for additional part numbers and Technical Specifications such as height, width, depth, weight, and color: http://h18000.www1.hp.com/products/quickspecs/12402_div/12402_div.HTML (Worldwide) NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower	AF001A AF002A AF003A AF004A AF011A AF012A AF013A AF014A
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HP Rack 10000 Series (Graphite Metallic)	10642 (42U) Infrastructure Rack (Low Voltage) 10642 (42U) Infrastructure Rack (High Voltage) HP S10614 (14U) Rack Cabinet – Shock Pallet HP Rack 10842 (42U, 800mm wide) Rack Cabinet – Pallet NOTE: Server Blade Enclosures must be field integrated into the 10842 racks. Factory integration of Server Blade Enclosures into the 10842 is not supported. HP Rack 10842 (42U, 800mm wide) Rack Cabinet – Shock Pallet NOTE: Server Blade Enclosures must be field integrated into the 10842 racks. Factory integration of Server Blade Enclosures into the 10842 is not supported. HP 10647 (47U) Rack Cabinet – Pallet HP 10647 (47U) Rack Cabinet – Shock Pallet HP Rack 10622 (22U) Cabinet – Pallet HP Rack 10622 (22U) Cabinet – Shock Pallet HP Rack 10622 (22U) Cabinet – Crated NOTE: xxxxx-B21 (pallet) used to ship empty racks shipped on a truck. xxxxx-B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels). xxxxx-B23 (crated) used for air shipments of empty racks. NOTE: It is mandatory to use a shock pallet in order to ship racks with equipment installed.	379005-001 379006-001 292302-B22 257415-B21 257415-B22 245160-B21 245160-B23 245163-B21 245163-B22 245163-B23

Options

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_div/10995_div.HTML
 (Worldwide)

NOTE: For additional information regarding Rack Cabinets, please see the following URL: <http://www.hp.com/go/rackandpower>.

Monitors and Keyboards	TFT7210R Rack Mounted 17" Monitor	348373-B21
	TFT7600 Rack Mounted 17" Monitor – US	AG052A
	TFT7600 Rack Mounted 17" Monitor – UK	AG053A
	TFT7600 Rack Mounted 17" Monitor – GR	AG054A
	TFT7600 Rack Mounted 17" Monitor – FR	AG055A
	TFT7600 Rack Mounted 17" Monitor – IT	AG056A
	TFT7600 Rack Mounted 17" Monitor – SP	AG057A
	TFT7600 Rack Mounted 17" Monitor – DEN	AG058A
	TFT7600 Rack Mounted 17" Monitor – NOR	AG059A
	TFT7600 Rack Mounted 17" Monitor – SE/FI	AG060A
	TFT7600 Rack Mounted 17" Monitor – SWI	AG061A
	TFT7600 Rack Mounted 17" Monitor – PORT	AG062A
	TFT7600 Rack Mounted 17" Monitor – BEL	AG063A
	TFT7600 Rack Mounted 17" Monitor – JPN2	AG064A
	TFT7600 Rack Mounted 17" Monitor – RUS	AG065A
	TFT7600 Rack Mounted 17" Monitor – INTL	AG066A
	1U Rackmount Keyboard with USB, US	AG072A
	1U Rackmount Keyboard with USB, UK	AG073A
	1U Rackmount Keyboard with USB, GR	AG074A
	1U Rackmount Keyboard with USB, FR	AG075A
	1U Rackmount Keyboard with USB, ITL	AG076A
	1U Rackmount Keyboard with USB, SP	AG077A
	1U Rackmount Keyboard with USB, DEN	AG078A
	1U Rackmount Keyboard with USB, NOR	AG079A
	1U Rackmount Keyboard with USB, SE/FI	AG080A
	1U Rackmount Keyboard with USB, SWI	AG081A
	1U Rackmount Keyboard with USB, PORT	AG082A
	1U Rackmount Keyboard with USB, BEL	AG083A
	1U Rackmount Keyboard with USB, JPN2	AG084A
	1U Rackmount Keyboard with USB, RUS	AG085A
	1U Rackmount Keyboard with USB, INTL	AG086A

NOTE: For additional information regarding Rack Options, please see the following URL: <http://h18000.www1.hp.com/products/servers/proliantstorage/rack-options/index.html>.

Options

HP KVM Switch Options	HP BladeSystem p-class KVM Interface Adapter, 1 pack	AF100A
	HP KVM CAT5 0x1x8 Server Console	336044-B21
	HP KVM CAT5 0x2x16 Server Console Switch	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	373045-B21

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 (worldwide)	AF101A
	HP 48 Port Serial Console Server (worldwide)	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>.

2x1x16 IP Console Switch with Virtual Media	AF601A
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4x1x16 IP Console Switch with Virtual Media	AF602A
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2x16 Server Console Switch with Virtual Media	AF600A
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PS/2 Virtual Media Interface Adapter, 1 pack	AF604A
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NOTE: Requires PS/2 and one USB port on server.

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>.

Options

Service and Support Offerings (HP Care Pack Services)

NOTE: The HP Care Pack service part numbers below for HP BladeSystem 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
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	UC905E
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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
HP BladeSystem p-Class Enclosure and Server Blade Hardware Installation, Electronic	UA4971E
Installation and Start-up of Rapid Deployment Pack, Electronic	U5683E

NOTE: Provides for the 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 hours, standard office days.

Provides for the Installation and Start-up of Rapid Deployment Pack Implementation of Rapid Deployment Pack (Basic) (Electronic)	UA042E
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Options

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

Memory

DIMM Installation Rules:

1. All DIMMs must be PC2-5300 Registered DDR2 DIMMs (667 MHz.)
2. Both DIMM slots in a memory bank must be populated.
3. Both DIMMs in a memory bank must be identical.
4. Processor 1 memory bank A must always be populated.
5. DIMM banks are active only when the corresponding processor socket is populated.
6. If installing only one bank on a processor, populate the bank physically farthest from the processor.
7. If mixing DIMM sizes on the same processor, the largest capacity DIMMs must be populated in the bank physically farthest from the processor. The smallest capacity DIMMs must be populated in the bank physically nearest the processor.
8. For optimal performance in most applications, populate the first memory bank for every populated processor socket.

HP ProLiant BL45p G2 Server Blade (2P Model)

Standard Memory

4096-MB (4 x 1024 MB) of PC2-5300, Registered DDR2-667 DIMMs.

Standard Memory Plus Optional Memory

Up to 53,248-MB of PC2-5300, Registered DDR2-667 DIMM memory is available with the installation of optional PC2-5300, Registered DDR2-667 DIMM memory expansion kits.

Standard Memory Replaced with Optional Memory

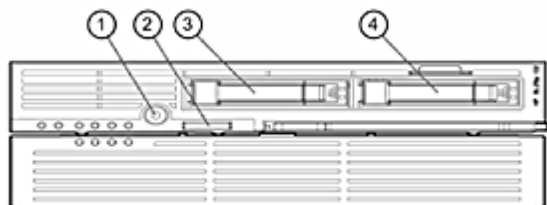
Up to 65,536-MB of PC2-5300, Registered DDR2-667 DIMM memory is available with the removal of standard memory and the installation of optional PC2-5300, Registered DDR2-667 DIMM memory expansion kits.

Memory		Slot							
Standard	4096 MB	1	2	3	4	5	6	7	8
		1024 MB	1024 MB	Empty	Empty	1024 MB	1024 MB	Empty	Empty
		9	10	11	12	13	14	15	16
		Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty
Optional	53,248 MB	1	2	3	4	5	6	7	8
		4096 MB	4096 MB	1024 MB	1024 MB	4096 MB	4096 MB	1024 MB	1024 MB
		9	10	11	12	13	14	15	16
		4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB
Maximum	65,536 MB	1	2	3	4	5	6	7	8
		4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB
		9	10	11	12	13	14	15	16
		4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB

Following are memory options available from HP:

HP 1GB REG PC2-5300 2x512MB 1RANK Kit	408850-B21
HP 2GB REG PC2-5300 2x1GB 1RANK Kit	408851-B21
HP 4GB REG PC2-5300 2x2GB 2RANK Kit	408853-B21
HP 8GB REG PC2-5300 2x4GB 2RANK Kit	408854-B21

Storage



- 1 Power On/Standby button
- 2 Local I/O cable connector*
- 3-4 Two (2) SFF SAS or SATA Hot-plug Hard Drives

NOTE: *The local I/O connector is used with the local I/O cable to perform server blade configuration and diagnostic procedures.

Drive Support

SFF SAS Hard Drives Hot-plug

	Quantity Supported	Position Supported	Controller
146 GB 10 SAS 72GB 10K SAS 36 GB 10K SAS	2	3-4	Integrated Smart Array E200i Controller

SFF SATA Hard Drives Hot-plug

	Quantity Supported	Position Supported	Controller
60 GB 5.4K SATA	2	3-4	Integrated Smart Array E200i Controller

Tape Drives, Tape Autoloaders, and 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/Division/10233.html> (Worldwide)

NOTE: For an up-to-date listing of the latest O/S Support details for each of the Tape Autoloaders and Tape Libraries listed below, please see the following:
<http://h18000.www1.hp.com/products/quickspecs/Division/10809.html> (Worldwide)

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	Controller	Controller/HBA Option Kit Part Number
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)	External	Please consult the EBS connectivity matrix at http://www.hp.com/go/ebs for detailed connectivity information	N/A

Storage

HP StorageWorks Virtual Library Systems	External	Please consult the EBS connectivity matrix at <u>http://www.hp.com/go/ebs</u> for detailed connectivity information.	N/A
6105 VLS			
6109 VLS			
6510 VLS			
6518 VLS			
6840 VLS			
6870 VLS			

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://www.hp.com/go/ bladesystem/powercalculator>

Technical Specifications

System Unit	Dimensions (HxWxD)	3.425 x 10.29 x 28.00 in (8.699 x 26.14 x 71.1 cm)		
	Weight (maximum)	31.40 lb (14.24 kg)		
	Temperature Range*	Operating	50° to 95°F (10° to 35°C)	
		Shipping	-40° to 140°F (-40° to 60°C)	
		Storage	-4° to 140°F (-20° to 60°C)	
		Maximum Wet Bulb Temperature	86°F (30°C)	
	Relative Humidity (non-condensing)**	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 1 RAID 0 (Striping)
Upgradeable Firmware	Upgradeable Firmware	

Two (2) Embedded NC373i Multifunction Gigabit Network Adapters	Network Interface	Blackplane connection
	Data Transfer Method	PCI-Express, four lanes (x4)
	Network Transfer Rate	1000Mbps

Technical Specifications

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