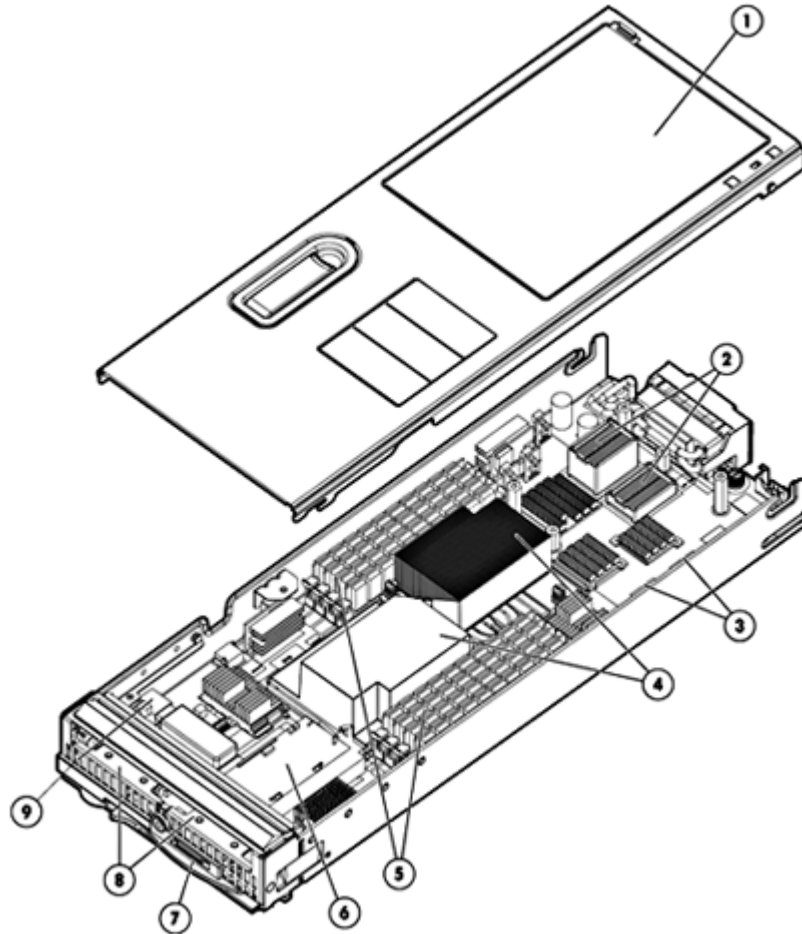


Overview



HP ProLiant BL465c Generation 5 (G5) Server Blade

- | | |
|--|---|
| 1. Access panel | 6. Smart Array E200i storage controller (optional battery-backed write cache) |
| 2. Two (2) mezzanine I/O expansion slots | 7. Local I/O connector |
| 3. Two (2) multifunction Gigabit Ethernet network adapter ports | 8. Two (2) small form factor (SFF) hot-plug hard drive bays |
| 4. Up to two (2) AMD Opteron™ 2300 Series processors | 9. Internal USB connector |
| 5. Eight (8) PC2-5300 Registered DIMM (DDR2-667) or PC2-6400 Registered DIMM (DDR2-800) memory slots | |

What's New

- Support for hot plug 120GB and 60GB SATA 3G 2.5in MDL

At A Glance

This document covers the HP ProLiant BL465c G5 server blade only. For more information on HP BladeSystem c-Class Enclosures and HP BladeSystem c-Class Interconnect and Mezzanine Components, please see the following:

HP BladeSystem c3000 Enclosure QuickSpecs:



Overview

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

HP BladeSystem c7000 Enclosure QuickSpecs:

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

HP BladeSystem c-Class Interconnect and Mezzanine Components:

<http://h18004.www1.hp.com/products/blades/components/c-class-interconnects.html>

<http://h18004.www1.hp.com/products/blades/components/c-class-adapters.html>

The HP ProLiant BL465c G5 delivers uncompromising performance and expandability, industry-leading management tools, and the latest technologies for dense compute environments.

HP ProLiant BL465c G5 server blade includes:

- **Processor:**
 - Up to two (2) Quad-Core AMD Opteron™ 2300 series processors
 - Supports up to 2.9 GHz, 2.2 GHz HyperTransport™; 512 KB Level 2 cache memory per core; 6 MB Level 3 cache
 - Supports up to 2.3 GHz, 1 GHz HyperTransport™; 512 KB Level 2 cache memory per core; 2 MB Level 3 cache
 - AMD Dual Dynamic Power Management™ for optimum performance and reduced power consumption
 - ServerWorks HT-1000 and HT-2100 chipsets
- **Memory:**
 - Up to 64 GB of memory, supported by eight (8) slots of PC2-5300 Registered DIMMs at 667 MHz or 32 GB of memory, supported by eight (8) slots of PC2-6400 Registered DIMMs at 800 MHz
 - Supporting memory interleaving (2:1)
- **Storage Controller:**
 - Integrated Smart Array E200i RAID controller with 64 MB cache (with optional battery-backed write cache with an upgrade to 128 MB cache (BBWC)). Supports RAID 0, 1.
- **Internal Drive Support:**
 - Up to two (2) small form factor (SFF) SAS or SATA hot plug hard disk drives
- **Network Controller:**
 - Two (2) embedded NC370i Multifunction Gigabit Ethernet Server Adapters
 - One (1) additional 10/100 network adapter dedicated to iLO 2 Management

NOTE: The Gigabit Ethernet adapters transmit from the server only at 2000 Mbps, full duplex per port. For more information, see the "Network Controller" item in Standards Features section.
- **Mezzanine Support:**
 - Two (2) I/O expansion mezzanine slots
 - Supports up to (2) mezzanine cards
 - Dual-Port Fibre Channel Mezzanine (4-Gb or 8-Gb) options for SAN connectivity
 - iSCSI Ethernet mezzanine option for optimized iSCSI connectivity
 - Ethernet server adapter mezzanine options for additional network ports
 - 4X DDR InfiniBand (IB) Mezzanine (20 Gb/s) options for low latency server interconnectivity (based on Mellanox technology)
 - I/O Accelerator mezzanine options for high transaction rate local storage
- **Internal USB Support:**
 - Up to two (2) small form factor (SFF) SAS or SATA hot plug hard disk drives
- **Form Factor:**
 - HP ProLiant BL465c G5 server blade plugs into the BladeSystem c3000 and c7000 enclosures
- **Infrastructure Management:**
 - This server blade requires the latest version of the Onboard Administrator firmware. This firmware release may also require other subsystem firmware upgrades. For information on the latest firmware versions, please see the Blades Firmware Maintenance website at: <http://h18004.www1.hp.com/products/blades/components/c-class-compmatrix.html>
 - HP Integrated Lights-Out 2 (iLO 2) management processor for simplified server setup, health monitoring and recovery, power and thermal control, and lights-out remote administration.



Overview

- HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, control and optimize your IT infrastructure through a single, simple management console. Insight Control supports both Windows and Linux-based central management servers.
- HP Insight Dynamics for ProLiant, a product option, is an integrated command center that enables IT Staff personnel to continuously analyze and optimize a converged infrastructure, while automating and reducing the cost of common data center tasks by as much as 40 percent. This ultimately enables them to dynamically keep pace with the organization's changing business requirements.
- **Operating Systems and Virtualization Software:**
 - Supports Windows, RHEL, SLES, OEL, Solaris, VMware ESX, Citrix XenServer
- **Enclosures:**
 - HP offers three different c-Class server blade enclosures to meet your individual needs:
 - The HP BladeSystem c7000 rack enclosure is 10U high and holds up to sixteen (16) ProLiant BL465c G5 servers plugged vertically.
 - The HP BladeSystem c3000 rack enclosure is 6U high and holds up to eight (8) HP ProLiant BL465c G5 servers plugged horizontally.
 - The HP BladeSystem c3000 tower enclosure is designed with casters for sites without racks and holds up to eight (8) HP ProLiant BL465c G5 servers plugged vertically.
 - Server blades, storage blades, and interconnect modules are all designed to fit into the c7000 and c3000 enclosures.
 - For additional enclosure information, please see <http://h18004.www1.hp.com/products/blades/components/enclosures/c-class/index.html>.
- **Warranty:**
 - This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty; refer to specific hard drive QuickSpecs for details.
NOTE: Server warranty includes 3-year Parts, 3- year Labor, 3-year on-site support. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at: <http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>



Standard Features

NOTE: For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

Processor

Quad-Core Processors

AMD Opteron™ processor Model 2389 (2.9 GHz, 6 MB L3 Cache, 75W ACP)

AMD Opteron processor Model 2387 (2.8 GHz, 6 MB L3 Cache, 75W ACP)

NOTE: Offered through Configure-To-Order process only. See Factory Integration Models section for more details.

AMD Opteron processor Model 2384 (2.7 GHz, 6 MB L3 Cache, 75W ACP)

AMD Opteron processor Model 2382 (2.6 GHz, 6 MB L3 Cache, 75W ACP)

AMD Opteron processor Model 2378 (2.4 GHz, 6 MB L3 Cache, 75W ACP)

AMD Opteron processor Model 2356 (2.3 GHz, 2 MB L3 Cache, 75W ACP)

AMD Opteron processor Model 2354 (2.2 GHz, 2 MB L3 Cache, 75W ACP)

NOTE: Offered through Configure-To-Order process only. See Factory Integration Models section for more details.

AMD Opteron processor Model 2352 (2.1 GHz, 2 MB L3 Cache, 75W ACP)

Low Power AMD Opteron processor Model 2381 HE (2.5 GHz, 6 MB L3 Cache, 55W ACP)

Low Power AMD Opteron processor Model 2376 HE (2.3 GHz, 6 MB L3 Cache, 55W ACP)

Low Power AMD Opteron processor Model 2372 HE (2.1 GHz, 6 MB L3 Cache, 55W ACP)

NOTE: Offered through Configure-To-Order process only. See Factory Integration Models section for more details.

Low Power AMD Opteron processor Model 2347 HE (1.9 GHz, 2 MB L3 Cache, 55W ACP)

NOTE: AMD Opteron 2300 series processors are 64-bit, quad-core, and support AMD Virtualization™.

NOTE: Processor wattage references reflect Average CPU Power (ACP). For more information on ACP visit: <http://www.amd.com/powernow>.

Upgradeability

Upgradeable to dual (2) processors

Cache Memory

512 KB Level 2 cache memory per core

2 MB or 6 MB Level 3 cache memory

Chipset

ServerWorks HT-1000 and HT-2100



Standard Features

Memory	Type	PC2-5300 DDR2 Registered DIMMs at 667 MHz PC2-6400 DDR2 Registered DIMMs at 800 MHz
	Standard	2 GB (2 x 1 GB)
	Maximum	64 GB (8 x 8 GB) at 667 MHz 32 GB (8 x 4 GB) at 800 MHz

NOTE: Memory must be installed in pairs.

NOTE: PC2-6400 DDR2 DIMMs are only supported with the AMD Opteron processor Models 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.

NOTE: PC2-5300 DDR2 DIMMs in 8 GB capacities are supported with the AMD Opteron processor Models 2347 HE, 2352, 2354, 2356, 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.

NOTE: PC2-5300 DDR2 DIMMs in 512 MB, 1 GB, 2 GB, and 4 GB capacities are only supported with the AMD Opteron processor Models 2347 HE, 2352, 2354 and 2356.

Network Controller	Two (2) embedded NC370i Multifunction Gigabit Ethernet Server Adapters with TCP/IP Offload Engine, iSCSI boot, and optional accelerated iSCSI One (1) additional 10/100 network adapter dedicated to iLO 2 management
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NOTE: The Gigabit Ethernet adapters transmit from the server at 2000 Mbps, full duplex per port.

NOTE: The iSCSI offload feature of the embedded multifunction adapter requires the HP Accelerated iSCSI Pack. For more information, please see the QuickSpecs at

http://h18000.www1.hp.com/products/quickspecs/12466_na/12466_na.html

Multifunction Networking	The embedded multifunction NC370i combines standard Gigabit Ethernet networking, TCP/IP offload engine (TOE) acceleration, iSCSI boot, and optional accelerated iSCSI into a single adapter.
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- TOE moves the processing of data in the TCP protocol stack from the server CPU to the network card, freeing CPU cycles for other activities. With TOE, network communications are improved, and server efficiency is increased. The NC370i offers TOE for Microsoft® Windows 2000 and 2003 environments.
- The iSCSI network boot (iSCSI boot) allows the BL465c G5 to boot from a remote operating system (OS) image located on a storage area network (SAN) within a Red Hat or SUSE Linux environment. The BL465c G5 uses an iSCSI firmware image (iSCSI boot option ROM) making the remote disk drive appear as a local, bootable C: drive. The BL465c G5 is configured to connect to and boot from the iSCSI target disk on the network and download the OS image from the iSCSI target disk. The iSCSI boot option ROM is supplied by HP at no cost. The additional cost and mezzanine slot usage of an add-in iSCSI HBA card is not required. Additionally, the HP iSCSI boot solution includes scripts to significantly simplify the installation process.

I/O Expansion Slots	Two I/O expansion mezzanine slots (One x8 and one x4 PCI Express)
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Integrated Manageability	HP Integrated Lights-Out 2 (iLO 2) management processor
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Standard Features

Storage Controller	Smart Array E200i Controller	64 MB memory module supports RAID 0,1 Available upgrades: 128 MB with Battery-backed write cache	
Maximum Internal Storage	Hot Plug SAS Hot Plug SATA	1TB SAS 1TB SATA	2 x 500GB Serial SCSI 2 x 500GB Serial ATA
Graphics	Integrated ATI RN-50 1280 x 1024 x 16M color (32 MB DDR1 memory)		
Graphics Resolution Supported	Resolution Color Depths	1280 x 1024, 16.7M, 64k, 256, 16 1024 x 768, 16.7M, 64k, 256, 16 800 x 600, 16.7M, 64k, 256, 16 640 x 480, 16.7M, 64k, 256, 16	
Fibre Channel Support	Two (2) optional dual-port Fibre Channel HBAs are supported by the HP ProLiant BL465c G5. Each mezzanine circuit board connects directly to the server blade system board. These Fibre Channel HBAs are available via option kits and must be ordered separately. HBA mezzanine card option kits: Emulex LPe1105 4Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem (PN 403621-B21) <ul style="list-style-type: none">● Based on the same field-proven ASIC, firmware, and driver technology as Emulex's renowned LPe1150 HBA, the Emulex LPe1105-HP is fully driver compatible with all Emulex HBAs QLogic QMH2462 4Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem (PN 403619-B21) <ul style="list-style-type: none">● Uses common drivers which means that customers can standardize on one QLogic driver whether they are using the QMH2462 or other HBAs powered by QLogic Emulex and QLogic Fibre Channel HBAs for HP BladeSystem c-Class feature: <ul style="list-style-type: none">● Optimal performance utilizing PCI Express● 4/2/1Gb/s auto negotiating speeds (4Gb HBAs)● Dual-ports for redundant path connections● Up to two FC HBAs per server blade providing redundant FC HBA support● Optimized for HP StorageWorks and supported by third party SAN vendors● Support for Microsoft® Windows® and Linux operating system environments		



Standard Features

Compatible SAN

HP ProLiant BL465c G5 server blades are optimized for HP StorageWorks MSA, EVA, and XP. HP ProLiant BL465c G5 server blades are compatible with select 3rd party SANs (please see blade storage page for more details): <http://h18004.www1.hp.com/products/blades/components/c-class-sans.html>

HP Virtual Connect

HP Virtual Connect simplifies server connectivity to LANs and SANs, and reduces costs. Unique HP Flex-10 technology makes maximum use of 10Gb Ethernet bandwidth by allowing multiple ports within a single Industry Standard connection that can be dynamically tuned to meet individual server requirements. HP Virtual Connect Enterprise Manager (VCEM) provides a central console to administer connections and workloads for thousands of servers. For more information on Virtual Connect Ethernet, Fibre Channel and management options see: www.hp.com/go/virtualconnect

HP Insight management software

HP Insight Foundation

Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex Datacenters.

HP provides management solutions that are designed to simplify a server's installation, configuration and maintenance throughout the entire server lifecycle. This provides the customer with higher levels of operational efficiency and highly reliable systems: <http://www.hp.com/go/foundation>.

The foundation pack includes:

- HP SmartStart
 - HP Management DVD
 - HP ProLiant Smart Firmware DVD
 - SmartStart version supported (minimum): SmartStart 8.0.
- <http://www.hp.com/servers/smartstart>

NOTE: In an effort to support reducing our environmental impact, the HP Insight Foundation Suite for ProLiant media will be available as a selectable option for this server at time of order of a CTO SKU. This will allow customers to order the number of media kits that best meet their needs and eliminate receiving unnecessary duplicate media.

HP Integrated Lights-Out (iLO)

HP Integrated Lights-Out (iLO) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP iLO functions without additional software and can be accessed from any location via a web browser. HP iLO works hand-in-hand with HP Systems Insight Manager, Insight Control suites, and Insight Dynamics for ProLiant, helping customers unleash the value of the ProLiant platform and deliver the highest possible quality of IT service. For more information, visit: www.hp.com/go/iLO

HP Insight Control

HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console.

Two versions of Insight Control are available, to serve environments requiring



Standard Features

either a Linux-based or a Windows-based central management server: HP Insight Control for Linux, and HP Insight Control. See www.hp.com/go/insightcontrol

HP Insight Dynamics for ProLiant

HP Insight Control includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: <http://www.hp.com/services/insight>.

HP Insight Dynamics for ProLiant, a product option, is an integrated command center that enables IT Staff personnel to continuously analyze and optimize a converged infrastructure, while automating and reducing the cost of common data center tasks by as much as 40 percent. As a powerfully integrated by design toolkit to accelerate complex technology projects and simplify daily operations that ultimately enable IT Staff personnel to dynamically keep pace with the organizations changing business requirements. It enables them to plan capacity and power continuously, balance across physical and virtual resources, and ensure cost-effective high availability. It also enables IT organizations to provision infrastructure consistently and automatically from pools of shared resources using a self-service portal. Resources provisioned can range from a single virtual machine to complex multi-tier environments and their associated physical and virtual resource requirements. In addition to the previous functional benefits, it also provides a cost-effective disaster recovery for physical and virtual environments that works with HP StorageWorks Continuous Access software for both the Enterprise Virtual Array and the XP storage array allowing application environments to be reactivated in minutes with the touch of a button to a remote location.

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

High Performance Clusters

HP Cluster Platforms

HP Cluster Platforms are specifically engineered, factory-integrated large-scale ProLiant clusters optimized for High Performance Computing, with a choice of servers, networks and software. Operating system options include specially priced offerings for Red Hat Enterprise Linux and Novell SLES, as well as Microsoft Windows HPC Server. A Cluster Platform Configurator simplifies ordering. <http://www.hp.com/go/clusters>

HP HPC Interconnects

High Performance Computing (HPC) interconnect technologies are available for this server as part of the HP Cluster Platform portfolio. These high-speed InfiniBand and Gigabit interconnects are fully supported by HP when integrated within an HP cluster. Flexible, validated solutions can be defined with the help of configuration tools. <http://www.hp.com/techservers/clusters/ucp/index.html>

HP Cluster Management Utility

HP Cluster Management Utility (CMU) is an HP-licensed and HP-supported suite of tools that are used to manage large-scale Linux ProLiant systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective. <http://www.hp.com/go/cmu>



Standard Features

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

Operating Systems and Virtualization Software

[Microsoft Windows Server](#)
[Microsoft Windows Server Hyper-V](#)
[Red Hat Enterprise Linux \(RHEL\)](#)
[SUSE Linux Enterprise Server \(SLES\)](#)
[Oracle Enterprise Linux \(OEL\)](#)
[Solaris 10 for x86/x64 based Systems](#)
[VMware ESX](#)
[Citrix XenServer](#)

NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, including how to purchase from HP, please visit our OS Support Site at: <http://www.hp.com/go/supportos> and our driver download page: <http://www.hp.com/support/BL465cG5>

Availability

Dual-Port Fibre Channel Mezzanine Card for redundant SAN connection
Two embedded Gigabit Ethernet adapters for redundant LAN connections
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 each server blade
Multiple mezzanine I/O expansion
ECC Memory
Network adapter teaming (network fault tolerance, transmit load balancing, switch-assisted load balancing)

Industry Standard Compliance

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

Security

Power-on password
Administrator's password
Integrated Lights-Out 2 has 12 customizable user accounts and SSL encryption
Integrated Lights-Out 2 can be disabled via a Global Setting



Standard Features

Factory Express Portfolio for Servers and Storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSAxxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.

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

HP Enterprise Configurator

The HP eConfigure Enterprise Configurator now provides factory default racking for our HP hardware portfolio. This approach is aligned with our strategic direction to meet the needs and expectations of our valued customers. If you require "custom" rack configuration, please contact HP's Customer Business Center or an Authorized Partner for assistance. <http://www.hp.com/products/configurator>.



Service and Support

Service and Support

HP Care Pack Services: Packaged server and storage services for increased uptime, productivity and ROI

When you buy HP server and storage products and solutions, it's also a good time to think about what levels of support you may need. Our portfolio of service options reduce deployment and management worries while helping you get the most out of your server and storage investments. We take a holistic approach to your environment, bridging servers, blades, storage, software and network infrastructures with our packaged HP Care Pack Services for servers and storage.

Protect your business beyond warranty

When it comes to robustness and reliability, standard computing equipment warranties have matured along with technology. Good news that can also create problems stemming from depending on standard warranties designed to only protect against product defects and some downtime causes. Using a standard approach to warranty uplifts, such as HP Care Pack Services, helps reduce downtime risks and provides operational consistency for mission-critical and standard business computing.

HP Care Pack Services: Upgrading or extending standard server and storage warranties cost effectively

HP Care Pack Services offer a standard reactive hardware and software support services suite sold separately, or combined with our Support Plus and Support Plus 24 services. The portfolio also provides a combination of integrated proactive and reactive services, such as Proactive 24 Service and Critical Service. In addition with HP Proactive Select, you can acquire the specific proactive constancy and technical services. HP Proactive Select menu offers a broad set of service options that you can mix and match depending on your specific requirements. Proactive service options include offers for server, storage, network, SAN device, software, environment and education services.

HP server and storage lifecycle support services offers a full spectrum of customer care-from technology support to complex migrations to complete managed services. HP Factory Express provides customization, integration and deployment services for turnkey solutions. HP Education Services offer flexible, comprehensive training on to help your IT staff get the most out of your server and storage investments. HP Financial solutions extend innovative financing and cost-effective asset management programs-from purchase to equipment retirement.

Learn more: www.hp.com/services/servers and www.hp.com/services/storage

NOTE: Care Pack Services availability may vary by product and country.

HP Care Pack Services are sold by HP and HP Authorized Service Partners:

- Services for customers purchasing from HP or an enterprise reseller are quoted using HP order configuration tools.
- Customers purchasing from a commercial reseller can find HP Care Pack Services at <http://www.hp.com/go/lookuptool>



Service and Support

Recommended HP Care Pack Services for optimal satisfaction with your HP product

Recommended Services **3-Year HP Hardware Support Onsite Call-to-Repair (CTR) Service, 6- or 24-hour**
Provides your IT manager with a team of support specialists who will quickly begin troubleshooting the system to help return the hardware to operating condition within 6 or 24 hours of the initial service request to the HP Global Solution Center.

HP is committed to repairing your hardware within a maximum of six or twenty four hours. The benefits include:

- Improved system uptime
- Predictable repair times
- More effective IT resource planning
- Consistent level of hardware support across your multi-technology systems

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6636ENN>

3-Year HP Hardware Support Onsite Service, 4-hour response, 24x7

Provides you with rapid remote support and if required an HP authorized representative who will arrive on site any time and day of the year to begin hardware maintenance service within 4 hours of the service request being logged.

This service provides a trained HP service specialist to perform an installation that meets HP quality standards, for:

- Help improve or maintain system uptime
- Convenient onsite support
- Committed response time

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EEE>

HP ProLiant Server Hardware Installation

Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner.

- Expedited installation, with all service prerequisites met before the installation is performed
- Installation in accordance with manufacturer's specifications, enhancing the supportability of your HP-installed hardware and software
- Service delivery at a mutually scheduled time
- Allows your IT resources to stay focused on their core tasks and priorities
- Availability of an HP service specialist to answer questions during the onsite delivery of this service

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN>



Service and Support

Optional HP Care Pack Services that will enhance your HP product experience

Optional Services

HP Enhanced Network Installation & Startup for BladeSystem Switches

Provides for the configuration and testing of BladeSystem Ethernet interconnect switches to facilitate proper implementation of network protocols and access to advanced features.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4aa0-5969ENW>

3-Year HP Proactive 24

As an alternative to our recommended support level, for customers who want enhanced operational effectiveness and proactive problem identification:

Provides improved stability, availability and operational effectiveness with an integrated hardware and software support service that combines industry-leading reactive technical assistance with proactive account services, giving your IT manage support from a team of service specialists.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA0-1614ENUC>

HP Proactive Select Service

Customer needs on demand access to consulting, technical proactive services and education courses

Provides a flexible way to purchase HP best-in-class consultancy and technical services. You can buy Proactive Select Service Credits when you purchase your hardware and then use the credits over the next 12 months.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENN>

eSupport

HP eSupport is a portfolio of technology-based services that assist you with managing your business environment - from the desktop to the data center.

Support Portal

The HP support portal provides one-stop access to the information, tools and services you need to manage the daily operations of your IT environment.

Features include:

- Access to self-solve tools (including search technical knowledge base)
- Efficient logging and tracking of support cases
- Collaboration with other business and IT professionals
- Download of patches and drivers
- Access to diagnostic tools
- Proactive notification of relevant information

Access to certain features of the support portal requires an HP service agreement. To access the support portal, visit: <http://www.hp.com/support>

HP Insight Remote Support software delivers secure remote support for your HP Servers and Storage, 24 X 7, so you can spend less time solving problems and more time focused on your business. You can have your systems remotely monitored for hardware failure using secure technology that's been proven at thousands of companies around the world. In many cases, you can avoid problems before they occur.



Service and Support

Customer Technical Training

In today's cost-conscious business environment, IT professionals, developers, consultants and users face an interesting challenge: how to keep up with the latest technologies and expand important skills while delivering profitable results on current projects. To help address this challenge, HP offers innovative training solutions that help keep you up-to-date on virtualization, server, storage, Insight Control, Citrix, Microsoft® and open source/Linux-related topics-while spending less time away from business-critical activities.

HP Services Awards

HP Technology Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and award reflect our services team's dedications, technical expertise, professionalism and uncompromising commitment to customer satisfaction.

Additional Services Information

To learn more on HP ProLiant servers, HP BladeSystem servers and HP StorageWorks storage products, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: www.hp.com/services/proliant or www.hp.com/services/bladepystem or <http://www.hp.com/hps/storage>



Models

Quad-Core Models

HP ProLiant BL465c G5 2389 QC 4G (1P) 519231-B21	Processor(s)	(1) AMD Opteron™ processor Model 2389 (2.9 GHz)
	One of the following depending on model	(1) AMD Opteron processor Model 2384 (2.7 GHz)
		(1) AMD Opteron processor Model 2378 (2.4 GHz)
		(1) Low Power AMD Opteron processor Model 2381 HE (2.5 GHz)
		(1) Low Power AMD Opteron processor Model 2376 HE (2.3 GHz)
HP ProLiant BL465c G5 2384 QC 4G (1P) 494260-B21	Cache Memory	512 KB Level 2 cache memory per core 6 MB Level 3 cache memory
	Memory	4 GB (2 x 2 GB) PC2-6400, Registered DDR2-800
HP ProLiant BL465c G5 2378 QC 4G (1P) 494261-B21	Network Adapter	Two (2) embedded NC370i Multifunction Gigabit Ethernet Server Adapters and one (1) additional 10/100 server adapter dedicated to iLO 2 management
	Storage Controller	Smart Array E200i Controller with 64MB (optional battery-backed write cache)
HP ProLiant BL465c G5 2381HE QC 4G (1P) 519234-B21	Hard Drives	No drives included; (2) SFF SAS/SATA drive bays
	Internal Storage	Up to 1TB SAS Up to 1TB SATA
HP ProLiant BL465c G5 2376 HE QC 4G (1P) 508866-B21	Optical Drive	None
	Form Factor	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure
		Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure



Smart Buys

The ProLiant Smart Buy program offers a collection of promotional server and option products that are configured with SMB in mind, offered at discounted prices, and positioned for quick delivery. Smart Buy server offers are available for a limited time only.

S-Buy BL465c 2352 US Svr 501280-001	Processor(s)	(1) AMD Opteron™ processor Model 2352 (2.1 GHz, 2 MB L3 Cache, 75W ACP)
	Cache Memory	512 KB Level 2 cache memory per core 2 MB Level 3 cache memory
	Memory	4GB Registered PC2-5300 2x2 GB, single rank
	Network Controller	(2) Integrated Gigabit Ethernet NIC ports plus (1) additional 10/100 NIC dedicated to iLO 2 Management
	Storage Controller	Smart Array E200i/128 BBWC Controller with 64MB cache
	Hard Drives	Not Included
	Internal Storage	8TB Maximum
	Optical Drive	Not applicable
	Power Supply	Not applicable
	Fans	Not applicable
	Form Factor	Rack Mount (2U), (3.5 in/8.89 cm)



Configuration Information - Factory Integrated Models

NOTE: This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on CTO product offerings and requirements.

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

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

NOTE: FIO indicates that this option is a Factory Installable Option.

Step 1: Base Server Blade Configuration

HP Models	HP ProLiant BL465c G5 Configure-to-order Blade	454625-B21
	Configurable Model ships with:	
	Two (2) embedded NC370i Multifunction Gigabit Ethernet Servers Adapters and one (1) additional 10/100 network adapter dedicated to iLO 2 management	
	Integrated Smart Array E200i RAID 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 (2) small form factor (SFF) SAS/SATA hot plug hard drive bays	
	HP Integrated Lights-Out 2 management processor	

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

HP Processors	For single processor configuration choose: NOTE: If two (2) processors are desired, select one xxxxx-L21 and one xxxxx-B21.	
	AMD Opteron™ 2389 2.90GHz Quad Core 75 Watts BL465c G5 Factory Integrated Processor Option Kit	519232-L21
	AMD Opteron™ 2387 2.80GHz Quad Core 75 Watts BL465c G5 Factory Integrated Processor Option Kit	532318-L21
	AMD Opteron™ 2384 2.7GHz Quad Core 6MB BL465c G5 Factory Integrated Processor Option Kit	494262-L21
	AMD Opteron™ 2382 2.6GHz Quad Core 6MB BL465c G5 Factory Integrated Processor Option Kit	500025-L21
	AMD Opteron™ 2378 2.4GHz Quad Core 6MB BL465c G5 Factory Integrated Processor Option Kit	494264-L21
	AMD Opteron™ 2381HE 2.50GHz Quad Core 55 Watts BL465c G5 Factory Integrated Processor Option Kit	519235-L21
	AMD Opteron™ 2376 2.3GHz Quad Core 55W BL465c G5 Factory Integrated Processor Option Kit	508867-L21
	AMD Opteron™ 2372 2.1GHz Quad Core 55W BL465c G5 Factory Integrated Processor Option Kit	508869-L21
HP Memory	HP 2GB (2x1GB) Single Rank PC2-6400 (DDR2-800) Registered Memory Kit NOTE: Compatible with the AMD Opteron processor Models 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.	497763-B21
	HP 2GB (2x1GB) Single Rank PC2-5300 (DDR2-667) Registered Memory Kit NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, and 2356.	408851-B21



Configuration Information - Factory Integrated Models

HP 4GB (2x2GB) Single Rank PC2-6400 (DDR2-800) Registered Memory Kit NOTE: Compatible with the AMD Opteron processor Models 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.	497765-B21
HP 4GB (2x2GB) Dual Rank PC2-5300 (DDR2-667) Registered Memory Kit NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, and 2356.	408853-B21
HP 4GB (2x2GB) Single Rank PC2-5300 (DDR2-667) Registered Low Power Memory Kit NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, and 2356.	483401-B21
HP 8GB (2x4GB) Dual Rank PC2-6400 (DDR2-800) Registered Memory Kit NOTE: Compatible with the AMD Opteron processor Models 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.	497767-B21
HP 8GB (2x4GB) Dual Rank x4 PC2-6400 (DDR2-800) Registered Low Power Memory Kit NOTE: Compatible with the AMD Opteron processor Models 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.	504351-B21
HP 8GB (2x4GB) Dual Rank PC2-5300 (DDR2-667) Registered Memory Kit NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, and 2356.	408854-B21
HP 8GB (2x4GB) Dual Rank PC2-5300 (DDR2-667) Registered Low Power Memory Kit NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, and 2356.	483403-B21
HP 16GB (2x8GB) Dual Rank PC2-5300 (DDR2-667) Registered Memory Kit NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, 2356, 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2389, 2425 HE, 2427, and 2435.	408855-B21
HP 64GB (8x8GB) Dual Rank PC2-5300 (DDR2-667) Registered Memory Kit NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, 2356, 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435. NOTE: Must be installed in pairs.	495605-B21
HP Storage Controller Cache HP Smart Array E200/64 2-ports Int PCIe x4 FIO SAS Controller NOTE: For additional Storage Controller Cache Options see Additional Options section of this QuickSpec.	405102-B21

Step 3: Choose Additional Options for Factory Integration

NOTE: For additional Core Options and Additional Options please see options sections below. For additional options, including server blade enclosures interconnect and mezzanine options and power subsystem options; please see the following QuickSpecs:

HP BladeSystem c3000 Enclosure QuickSpecs:

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

HP BladeSystem c7000 Enclosure QuickSpecs:

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

and HP BladeSystem c-Class Interconnect and Mezzanine Components:

<http://h18004.www1.hp.com/products/blades/components/c-class-interconnects.html>

<http://h18004.www1.hp.com/products/blades/components/c-class-adapters.html>



Core Options

NOTE: Some options may not be integrated at the factory. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

HP Ethernet Mezzanine Options	Gigabit Ethernet Mezzanines	
	HP NC325m PCI Express Quad Port 1Gb Server Adapter for c-Class BladeSystem	416585-B21
	NOTE: If the NC325m is installed in mezzanine slot 1 of a half-height server, connectivity will be provided on only 2 of the 4 ports.	
	HP NC326m PCI Express Dual Port 1Gb Server Adapter for c-Class BladeSystem	406771-B21
	HP NC360m Dual Port 1GbE BL-c Adapter	445978-B21
	HP NC364m Quad Port 1GbE BL-c Adapter	447883-B21
	NOTE: If the NC364m is installed in mezzanine slot 1 of a half-height server, connectivity will be provided on only 2 of the 4 ports.	
	HP NC382m Dual Port 1GbE Multifunction BL-c Adapter	453246-B21
	QLogic iSCSI Dual Port Adapter with Virtual Connect for c-Class BladeSystem	488074-B22
	NOTE: The Gigabit Ethernet adapters above transmit from the server at 2000 Mbps, full duplex per port. For more information, see the "Network Controller" segment in the Standards Features section.	
	10 Gigabit Ethernet Mezzanines	
	HP NC522m Dual Port Flex-10 10GbE Multifunction BL-c Adapter	467801-B21
	NOTE: The NC522m requires a minimum of 2 GB of server memory.	
	NOTE: The NC522m supports linking at 1000Mbps or 10000Mbps when not connected to a Flex-10 enabled module and will link with all current 1Gb switches at 1Gb.	
	HP NC532m Dual Port Flex-10 10GbE Multifunction BL-c Adapter	467799-B21
	NOTE: The NC532m network adapter card is required for each server blade connecting to a 10Gb interconnect in bays 3-8 (HP BladeSystem c7000 Enclosure) or bays 3-4 (HP BladeSystem c3000 Enclosure).	
	NOTE: The NC532m requires a minimum of 2 GB of server memory.	
	NOTE: The NC532m supports linking at 1000Mbps or 10000Mbps when not connected to a Flex-10 enabled module and will link with all current 1Gb switches at 1Gb.	

HP Fibre Channel Mezzanine Options	4Gb Fibre Channel Mezzanines	
	Emulex LPe1105 4Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem	403621-B21
	QLogic QMH2462 4Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem	403619-B21



Core Options

HP Processors

HP BL465c G6 AMD Opteron™ 2435 (2.60GHz/6-core/6MB/75W) Processor Kit	539792-B21
HP BL465c G6 AMD Opteron™ 2427 (2.20GHz/6-core/6MB/75W) Processor Kit	539795-B21
HP BL465c G5 AMD Opteron™ 2389 (2.90GHz/4-core/6MB/75W) Processor Kit	519232-B21
HP BL465c G5 AMD Opteron™ 2387 (2.80GHz/4-core/6MB/75W) Processor Kit	532318-B21
HP BL465c G5 AMD Opteron™ 2384 (2.70GHz/4-core/6MB/75W) Processor Kit	494262-B21
HP BL465c G5 AMD Opteron™ 2382 (2.60GHz/4-core/6MB/75W) Processor Kit	500025-B21
HP BL465c G5 AMD Opteron™ 2378 (2.40GHz/4-core/6MB/75W) Processor Kit	494264-B21
HP BL465c G6 AMD Opteron™ 2425HE (2.10GHz/6-core/6MB/55W) Processor Kit	539798-B21
HP BL465c G5 AMD Opteron™ 2381HE (2.50GHz/4-core/6MB/55W) Processor Kit	519235-B21
HP BL465c G5 AMD Opteron™ 2376 (2.30GHz/4-core/6MB/55W) Processor Kit	508867-B21
HP BL465c G5 AMD Opteron™ 2372HE (2.10GHz/4-core/6MB/55W) Processor Kit	508869-B21
HP BL465c G5 AMD Opteron™ 2356 (2.30GHz/4-core/2MB/75W) Processor Kit	445106-B21
HP BL465c G5 AMD Opteron™ 2354 (2.20GHz/4-core/2MB/75W) Processor Kit	446587-B21
HP BL465c G5 AMD Opteron™ 2352 (2.10GHz/4-core/2MB/75W) Processor Kit	445575-B21
HP BL465c G5 AMD Opteron™ 2347HE (1.90GHz/4-core/2MB/55W) Processor Kit	456883-B21

HP Memory

HP 2GB (2x1GB) Single Rank PC2-6400 (DDR2-800) Registered Memory Kit NOTE: Compatible with the AMD Opteron processor Models 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.	497763-B21
HP 2GB (2x1GB) Single Rank PC2-5300 (DDR2-667) Registered Memory Kit NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, and 2356.	408851-B21
HP 4GB (2x2GB) Single Rank PC2-6400 (DDR2-800) Registered Memory Kit NOTE: Compatible with the AMD Opteron processor Models 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.	497765-B21
HP 4GB (2x2GB) Dual Rank PC2-5300 (DDR2-667) Registered Memory Kit NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, and 2356.	408853-B21
HP 4GB (2x2GB) Single Rank PC2-5300 (DDR2-667) Registered Low Power Memory Kit NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, and 2356.	483401-B21
HP 8GB (2x4GB) Dual Rank PC2-6400 (DDR2-800) Registered Memory Kit NOTE: Compatible with the AMD Opteron processor Models 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.	497767-B21
HP 8GB (2x4GB) Dual Rank x4 PC2-6400 (DDR2-800) Registered Low Power Memory Kit NOTE: Compatible with the AMD Opteron processor Models 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.	504351-B21
HP 8GB (2x4GB) Dual Rank PC2-5300 (DDR2-667) Registered Memory Kit NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, and 2356.	408854-B21



Core Options

HP 8GB (2x4GB) Dual Rank PC2-5300 (DDR2-667) Registered Low Power Memory Kit	483403-B21
NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, and 2356.	
HP 16GB (2x8GB) Dual Rank PC2-5300 (DDR2-667) Registered Memory Kit	408855-B21
NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, 2356, 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.	
HP 64GB (8x8GB) Dual Rank PC2-5300 (DDR2-667) Registered Memory Kit	495605-B21
NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, 2356, 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.	
NOTE: Must be installed in pairs.	

HP Hard Drives

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

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

SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives

HP 300GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	507127-B21
HP 146GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512547-B21
HP 146GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	507125-B21
HP 72GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512545-B21

SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives

HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507610-B21
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NOTE: SAS drives have a 3 year warranty.

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

http://h18000.www1.hp.com/products/quickspecs/12244_na/12244_na.html

SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives

HP 500GB 3G SATA 7.2K rpm SFF (2.5-inch) Midline 1yr Warranty Hard Drive	507750-B21
HP 160GB 3G SATA 7.2K rpm SFF (2.5-inch) Midline 1yr Warranty Hard Drive	530888-B21

SATA Hot Plug SFF Entry (ETY) Drives

HP 250GB 3G SATA 5.4K rpm SFF (2.5-inch) Entry 1yr Warranty Hard Drive	460355-B21
HP 120GB 1.5G SATA 5.4K rpm SFF (2.5-inch) Entry 1yr Warranty Hard Drive	458924-B21

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

http://h18000.www1.hp.com/products/quickspecs/13021_na/13021_na.html



Additional Options

NOTE: Some options may not be integrated at the factory. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

HP Insight software	HP Insight Control	
	HP Insight Control suite, No Media, Electronic License including 1 year of 24x7 Technical Support and Updates	T9074BAE
	HP Insight Control suite, No Media 1-Server License including 1 year of 24x7 Technical Support and Updates	452148-B22
	NOTE: For additional license kits please see the Insight Control QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12631_na/12631_na.html	
	HP Insight Software Media Kit	436222-B21
	NOTE: Insight Software DVD media without licenses. Contains Insight Control, Insight Dynamics and Virtual Connect Enterprise Manager. Uses an integrated installer to perform quick and accurate software installation and updates.	
	NOTE: Licenses ship without media. The HP Insight Control Media Kit can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightupdates .	
	NOTE: Electronic licenses can be used to purchase multiple licenses with a single activation key.	
	NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support & Update Service.	
	NOTE: For additional license kits, including bundles with HP BladeSystem enclosures, please see the Insight Control QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12631_na/12631_na.html	
	HP Insight Control for Linux	
	HP Insight Control for Linux, No Media, 1-Server license, including one year of 24x7 Technical Support and Updates	TC209A
	HP Insight Control for Linux, 1-server license, including one year of 24x7 Technical Support and Updates, Electronic	TC213AAE
	NOTE: This part number can be purchased as a single license or as multiple licenses with a single activation key. Customer will receive a license entitlement certificate via e-mail. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.	
	HP Insight Control for Linux, Media pack (DVD) - No licenses included	TC208A
	NOTE: Media pack DVD contains the ISO image for HP Insight Control for Linux, HP Systems Insight Manager, HP Insight Control power management, HP Insight Control virtual machine management, and an integrated installer. Servers must be acquired separately.	
	NOTE: This Media pack is optional because the latest ISO image and latest updates may be downloaded at no cost from: http://www.hp.com/go/ic-linux (click on Download button).	
	NOTE: Licenses ship without media. The Media Kit for Insight Control for Linux can be ordered separately, or can be downloaded at: http://www.hp.com/go/ic-linux (click on Download button).	
	NOTE: Electronic licenses can be used to purchase multiple licenses with a single activation key.	
	NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes	



Additional Options

one year of 24 x 7 HP Software Technical Support Service.

NOTE: For additional License Kits, including electronic licensing options, please see the QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/13019_na/13019_na.html

HP Integrated Lights-Out (iLO) Advanced for BladeSystem Remote Management

HP Integrated Lights-Out (iLO) Advanced for BladeSystem (1) Server License/(1) Key for BladeSystem, No Media, including 1 year of 24x7 Technical Support and Updates 512488-B21

NOTE: Electronic licenses can be used to purchase multiple licenses with a single activation key.

NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.

NOTE: For additional license kits please see the HP Integrated Lights-Out 2 (iLO 2) QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/12362_na/12362_na.html

HP Insight Control server deployment

HP Insight Control server deployment Electronic License including 1 year 24x7 Technical Support and Updates T9082AAE

HP Insight Control server deployment 1-Server License including 1 year 24x7 Technical Support and Updates 452151-B21

NOTE: Licenses ship without media. The Insight Control Media Kit can be ordered separately, or can be downloaded at: <http://www.hp.com/go/insightupdates>.

NOTE: Electronic licenses can be used to purchase multiple licenses with a single activation key.

NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.

NOTE: For additional license kits please see the Insight Control QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12631_na/12631_na.html

High Performance Clusters

HP Cluster Management Utility

HP Cluster Management Utility Compute Node Flexible License 436284-B21

NOTE: This part number can be used to purchase one certificate for multiple licenses with a single activation key. Each license is for one node (server). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key.

HP Cluster Management Utility License and Media 433257-B21

NOTE: Order a minimum of one license per cluster to purchase media including software and documentation, which will be delivered to the customer, and also licenses CMU management. No license key is delivered or required.

NOTE: For additional license kits please see the QuickSpecs at:

http://h18004.www1.hp.com/products/quickspecs/12612_na/12612_na.html

HP HPC Linux Value Pack



Additional Options

HP High Performance Computing Linux Value Pack 1 Processor Flexible License TC293A

NOTE: This part number can be used to purchase one certificate for multiple licenses with a single activation key. Each license is for one socket (a.k.a. processor).

Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key.

HP High Performance Computing Linux Value Pack Media Kit TC294A

NOTE: This part number can be used to purchase media including software and documentation, which will be delivered to the customer.

NOTE: For additional license kits please see the QuickSpecs at:

http://h18004.www1.hp.com/products/quickspecs/13485_na/13485_na.html

HP Storage Controllers HP Smart Array P700m/512 4-ports Ext PCIe x8 SAS Controller 508226-B21

HP Smart Array P700m/256 4-ports Ext PCIe x8 SAS Controller 507925-B21

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

http://h18000.www1.hp.com/products/quickspecs/13175_na/13175_na.html

Optional Upgrade

HP 128MB SA641/642/E200 Battery Backed Write Cache 351580-B21

NOTE: Supports the Smart Array E200i Controller.

HP I/O Expansion Options HP StorageWorks 80GB IO Accelerator for BladeSystem c-Class AJ876A

HP StorageWorks 160GB IO Accelerator for BladeSystem c-Class AJ877A

HP StorageWorks 320GB IO Accelerator for BladeSystem c-Class AJ878A

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

http://h18000.www1.hp.com/products/quickspecs/13220_na/13220_na.html

HP c-Class Mezzanines HP InfiniBand Mezzanine Options

HP 4X DDR IB Dual Port Mezzanine HCA for HP BladeSystem c-Class 448262-B21



Additional Options

HP Ultrium Tape Blades	HP StorageWorks SB1760c Tape Blade	AQ697A
	NOTE: LTO-4 Ultrium technology	
	HP StorageWorks SB920c Tape Blade	AJ401A
	NOTE: LTO-3 Ultrium technology	
HP StorageWorks Ultrium 448c Tape Blade	HP StorageWorks Ultrium 448c Tape Blade	440947-B21
	NOTE: LTO-2 Ultrium tape technology	
	NOTE: Please see the QuickSpecs for Technical Specifications and additional configuration information at:	
	http://h18000.www1.hp.com/products/quickspecs/12729_na/12729_na.html	
HP StorageWorks Storage Blades	HP StorageWorks SB3000c Tape Blade	BS580A
	NOTE: Please see the for Technical Specifications and additional information at:	
	http://h18000.www1.hp.com/products/quickspecs/12729_na/12729_na.html	
	HP StorageWorks SB40c Storage Blade	411243-B21
HP StorageWorks SB40c Storage Blade and HP LeftHand VSA bundle	HP StorageWorks SB40c Storage Blade and HP LeftHand VSA bundle	AT459A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional configuration information at:	
	http://h18000.www1.hp.com/products/quickspecs/12587_na/12587_na.html	
HP Expansion Blade	HP PCI Expansion Blade	448018-B21
	NOTE: Ships with one pre-installed PCI-X connect board. Also includes one PCIe connect board which requires installation.	
	NOTE: Please see the QuickSpecs Technical Specifications and additional configuration information at:	
	http://h18000.www1.hp.com/products/quickspecs/12753_na/12753_na.html	
HP USB and SD Options	HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)	DC172B
	HP USB 04 Standard Keyboard	DT528A#ABA
	HP 2GB USB Flash Media Drive Key Kit	608447-B21
	NOTE: HP qualified blank USB key for use with HP ProLiant servers that support the VMware virtualization environment and other HP value-add software like SmartStart. HP recommends this industry standard USB flash device for use with VMware ESXi. USB device must be installed in the internal slot of the ProLiant server for use with VMware ESXi. Refer to HP VMware Getting Started Guide for installation instructions.	



Additional Options

HP Care Pack Services

NOTE: The HP Care Pack service part numbers below for ProLiant BL c-Class server blades, cover the server blade and all HP branded hardware options qualified for the server, purchased at the same time or afterwards, internal to the server.

Hardware Services On-site Service

4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	UK065E
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UK066E
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UK067E



Memory

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

DIMM installation guidelines:

1. All DIMMs must be PC2-5300 Registered DDR2 DIMMs (667 MHz) or PC2-6400 Registered DDR2 DIMMs (800 MHz).
2. PC2-6400 DDR2 DIMMs are only supported with the AMD Opteron processor Models 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435
3. Both DIMM slots in a memory bank must be populated.
4. Both DIMMs in a memory bank must be identical.
5. Processor 1 memory bank A must always be populated.
6. DIMM banks are active only when the corresponding processor socket is populated.
7. If installing only one bank on a processor, populate the bank physically farthest from the processor.
8. 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.
9. For optimal performance in most applications, populate the first memory bank for every populated processor socket.

HP ProLiant BL465c G5 Server Blade

Standard Memory

2048 MB (2 x 1024 MB) or 4096 MB (2 x 2048 MB) of PC2-5300, or 4096 MB (2 x 2048 MB) of PC2-6400, Registered DDR2 ECC DIMMs.

Standard Memory Plus Optional Memory

Up to 51200 MB or 53248 of PC2-5300 or 28672 MB PC2-6400, Registered DDR2 ECC DIMMs. Memory is available with the installation of optional PC2-5300 or PC2-6400, Registered DDR2 DIMM memory expansion kits.

Standard Memory Replaced with Optional Memory

Up to 65536 MB of PC2-5300 or 32678 MB PC2-6400, Registered DDR2 ECC DIMMs. Memory is available with the removal of standard memory and the installation of optional PC2-5300 or PC2-6400, Registered DDR2 DIMM memory expansion kits.

Memory		Slot							
		1A	2A	3B	4B	5C	6C	7D	8D
Standard	2048 MB	1024 MB	1024 MB	Empty	Empty	Empty	Empty	Empty	Empty
Standard	4096 MB	2048 MB	2048 MB	Empty	Empty	Empty	Empty	Empty	Empty
Optional	28672 MB	2048 MB	2048 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB
Maximum	32678 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB
Optional	51200 MB	8192 MB	8192 MB	1024 MB	1024 MB	8192 MB	8192 MB	8192 MB	8192 MB
Optional	53248 MB	8192 MB	8192 MB	2048 MB	2048 MB	8192 MB	8192 MB	8192 MB	8192 MB
Maximum	65536 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB



Memory

HP Memory

Following are memory options available from HP:

HP 2GB (2x1GB) Single Rank PC2-6400 (DDR2-800) Registered Memory Kit 497763-B21

NOTE: Compatible with the AMD Opteron processor Models 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.

HP 2GB (2x1GB) Single Rank PC2-5300 (DDR2-667) Registered Memory Kit 408851-B21

NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, and 2356.

HP 4GB (2x2GB) Single Rank PC2-6400 (DDR2-800) Registered Memory Kit 497765-B21

NOTE: Compatible with the AMD Opteron processor Models 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.

HP 4GB (2x2GB) Dual Rank PC2-5300 (DDR2-667) Registered Memory Kit 408853-B21

NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, and 2356.

HP 4GB (2x2GB) Single Rank PC2-5300 (DDR2-667) Registered Low Power Memory Kit 483401-B21

NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, and 2356.

HP 8GB (2x4GB) Dual Rank PC2-6400 (DDR2-800) Registered Memory Kit 497767-B21

NOTE: Compatible with the AMD Opteron processor Models 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.

HP 8GB (2x4GB) Dual Rank x4 PC2-6400 (DDR2-800) Registered Low Power Memory Kit 504351-B21

NOTE: Compatible with the AMD Opteron processor Models 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.

HP 8GB (2x4GB) Dual Rank PC2-5300 (DDR2-667) Registered Memory Kit 408854-B21

NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, and 2356.

HP 8GB (2x4GB) Dual Rank PC2-5300 (DDR2-667) Registered Low Power Memory Kit 483403-B21

NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, and 2356.

HP 16GB (2x8GB) Dual Rank PC2-5300 (DDR2-667) Registered Memory Kit 408855-B21

NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, 2356, 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.

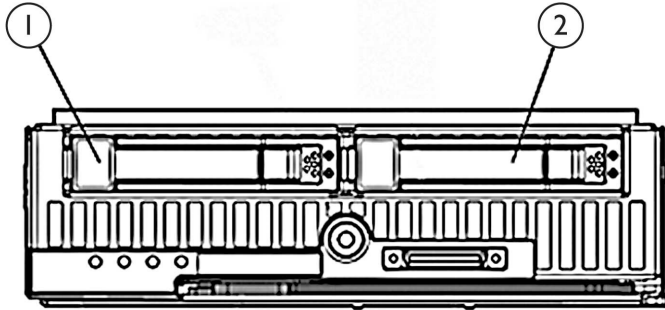
HP 64GB (8x8GB) Dual Rank PC2-5300 (DDR2-667) Registered Memory Kit 495605-B21

NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, 2356, 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.

NOTE: Must be installed in pairs.



Storage



1-2 2 x SFF B or SATA Hot Plug Hard Drives

Hard Drives

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

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

SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives

	Quantity Supported	Position Supported	Controller
300GB 6G SAS 10K DP	2	1-2	HP Smart Array E200i Controller
146GB 6G SAS 15K DP			
146GB 6G SAS 10K DP			
72GB 6G SAS 15K DP			

SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
500GB 6G SAS 7.2K	2	1-2	HP Smart Array E200i Controller

SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
500GB 3G SATA 7.2K	2	1-2	HP Smart Array E200i Controller
160GB 3G SATA 7.2K			

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

	Quantity Supported	Position Supported	Controller
250GB 3G SATA 5.4K	2	1-2	HP Smart Array E200i Controller
120GB 1.5G SATA 5.4K			



Technical Specifications

System Unit	Dimensions (H x W x D)	7.154 x 2.19 x 20.058 in (18.17 x 5.56 x 50.95 cm)	
	Weight (approximate)	Maximum (all hard drives and processors installed)	14.20 lb (6.44 kg)
		Minimum (one hard drive and processor installed)	10.75 lb (4.87 kg)
	Power Specifications	For power specifications including Input Requirements, BTU Rating, and Power Supply Output, please see the HP BladeSystem c-Class Enclosures QuickSpecs located at URL: HP BladeSystem c3000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12790_na/12790_na.html HP BladeSystem c7000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12810_na/12810_na.html To review typical system power ratings use the HP BladeSystem Power Sizer which is available via the online tool located at URL: http://www.hp.com/go/ bladesystem/powercalculator	
System Inlet Temperature		Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).
		Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
Relative Humidity (non-condensing)		Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
		Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
Altitude		Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed.
		Non-operating	Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
Acoustic Noise		For acoustic noise specifications, please see the HP BladeSystem c-Class Enclosures QuickSpecs located at URL: HP BladeSystem c3000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12790_na/12790_na.html	



Technical Specifications

HP BladeSystem c7000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12810_na/12810_na.html

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 2 GB/s maximum bandwidth.
	SAS Speed	x2 3 G SAS provides 600 MB/s maximum bandwidth.
	Cache Memory	40-bit 64 MB or 128 MB cache: ECC protection, battery-backed, and transportable
	Logical Drives Supported	Up to 32 logical volumes
	Maximum Logical Drive Capacity	500 GB (2 x 250 GB)
	Host Memory Addressing	64-bit, supporting greater than 4 GB server memory space
	RAID Support	RAID 1 (Mirroring) RAID 0 (Striping)
Upgradeable Firmware	Upgradeable Firmware	

Embedded NC370i Multifunction Gigabit Ethernet Server Adapter	Network Processor	Broadcom 5706
	Data Transfer Method	100MHz PCI-X
	Network Transfer Rate	2000 Mb/s full duplex NOTE: The Gigabit Ethernet adapters above transmit from the server only at 2000 Mbps, full duplex per port. For more information, see the "Network Controller" segment in the Standards Features section.
	IEEE Compliance	802.1p, 802.1Q, 802.3, 802.3ad, and 802.3x
Standard Features	<ul style="list-style-type: none">● TCP/IP offload engine (TOE) for Microsoft Windows 2003● iSCSI Boot● Optional accelerated iSCSI● 9K Jumbo frames● TCP/IP checksum offload (TCO)● Large send offload (LSO)● Interrupt coalescence● Dual address cycles (DAC)● Wake-on-LAN (WOL)● Pre-boot execution environment (PXE)● ProLiant Teaming including Network Fault Tolerance, Transmit Load Balancing, and Switch-Assisted Load Balancing● IPv6 packet transmit and receive (excluding all offload capabilities); IPv6 aware SNMPv1 agents for Microsoft Windows	



Technical Specifications

HP Integrated Lights-Out 2 (iLO 2) integrated on system board	Architecture	32-bit PCI-based health and remote management ASIC
	Processor	32-bit RISC processor core running at 66MHz
	Upgradeability	Option firmware upgradeable via Flash ROM
	Operating System Support	Microsoft Windows Server 2008 Standard Edition (32bit and 64bit)
		Microsoft Windows Server 2008 Enterprise Edition (32bit and 64bit)
		Microsoft Windows Server 2003 and Windows Server 2003 R2, and Windows Server 2003 for Extended Systems Standard Edition, Enterprise Edition
		Red Hat Enterprise Linux 5.4 (32bit and 64bit)
		SUSE LINUX Enterprise Server 11 (32bit and 64bit)
		SUSE LINUX Enterprise Server 10 (32bit and 64bit)
		VMware ESX 4.0
		VMware ESX 3.5.0
		Microsoft Windows XP Professional Edition
		Microsoft Windows Vista Business and Ultimate Editions
		Red Hat Enterprise Linux Desktop 5.00
		SUSE Linux Enterprise Desktop 11
		SUSE Linux Enterprise Desktop 10
	Client Browser Support	
	Microsoft Internet Explorer 7	
	Microsoft Internet Explorer 6	
	Firefox 3.5 (on supported Windows and Linux systems)	
	Firefox 3.0 (on supported Windows and Linux systems)	
	Command Line Support	
	Telnet, Secure Shell and serial port access	
	Secure Socket Layer	
	Secure Shell version 2 (Password and certificate)	
	Security	
	Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser, CLP and XML scripting interface	
	RC4 encryption of video	
	Directory Support Services	
	Active Directory v1.0 (Windows 2003)	
	Driver Support	
	Health Driver (HP ProLiant iLO 2 Management Controller Driver)	
	iLO Management Channel Interface Driver	
	Management protocols supported	
	SNMP 2, IPMI 2.0 (KCS interface), DMTF Server Management Command Line Protocol Specification (SM CLP), DMTF Web Services Management Specification (WS Management)	



Technical Specifications

Environment-friendly Products and Approach

End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: <http://www.hp.com/go/green>. To recycle your product, please go to: <http://www.hp.com/go/green> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <http://www.hp.com/go/green>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

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

