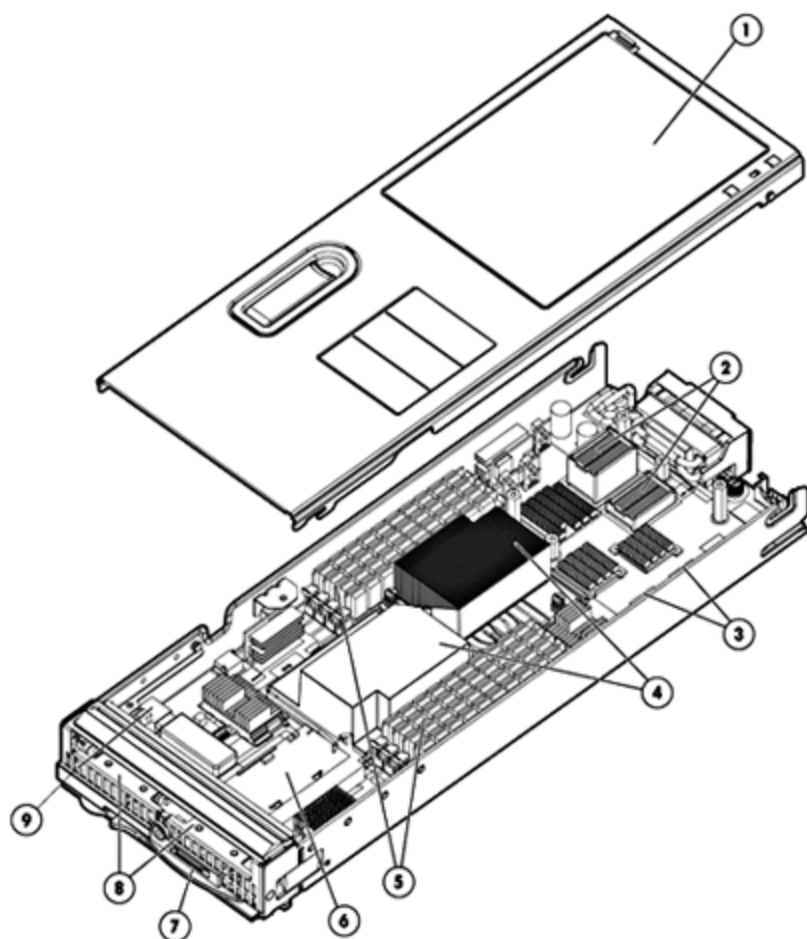


Overview



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 Components, please see the following QuickSpecs:

- HP BladeSystem c3000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html
- HP BladeSystem c7000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html
- HP BladeSystem c-Class Interconnect Components QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12524_div/12524_div.html

The HP ProLiant 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

Overview

- 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 options for SAN connectivity (Choice of Emulex or QLogic)
 - 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:**
 - 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.
 - 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

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

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

NOTE: The Gigabit Ethernet adapters transmit from the server at 2000 Mbps, full duplex per port. However, within a Linux environment, the speed can be reduced or "throttled" using a feature available within the Linux operating system; see the white paper at:

<http://h71028.www7.hp.com/ERC/downloads/4AA1-5513ENW.pdf> for more information.

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_div/12466_div.html

Standard Features

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.

- 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)

Integrated Manageability

HP Integrated Lights-Out 2 (iLO 2) management processor

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	1TB SAS	2 x 500GB Serial SCSI
Hot Plug SATA	1TB SATA	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 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-HP 4Gb FC HBA (403621-B21)

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

QLogic QMH2462 4Gb FC HBA (403619-B21)

- 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:

- 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
- HP ProLiant Firmware Maintenance

SmartStart version supported (minimum): SmartStart 8.0.

<http://www.hp.com/servers/smartstart>

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 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 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

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

Standard Features

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>

Operating Systems and Microsoft Windows Server

Virtualization Software 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, please visit our Support Matrix 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

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>.

Standard Features

Service and Support HP Care Pack services provide total care and support expertise with committed response designed to meet your IT and business needs.

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

To fully capitalize on your HP BladeSystem servers' capabilities requires a service partner who thoroughly understands your server technology and systems environment. HP Services, an industry leader in provision of multi vender support solutions provides a range of support services designed to meet the varying needs of business. Whether an SMB or large global corporation HP has a HP BladeSystem server support offer to help you speedily deploy and maximize system uptime.

Recommended Service - Simplify ProLiant solution implementation, maintenance and management.

- **Support Service** - 4-Hour Response Coverage, 3-Year, 24 x 7, Same Business Day
- **Deployment Service** - Installation and Start Up for HP BladeSystem Infrastructure

Enhanced Service - Optimize service level to increase IT performance and availability

- **Support Service** - HP Proactive BladeSystem Service, 1-Year
- **Deployment Service** - Enhanced Network Installation and Start-up for HP BladeSystem Switches

Installation & Start-Up service for HP BladeSystem Infrastructure plus HP BladeSystem Enhanced Network Installation and Start-UP as per the Customer Description and/or Data Sheet. To be delivered on a scheduled basis 8am-5pm, M-F, excluding HP holidays.

For a complete listing of service offerings and information visit:

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

<http://h20219.www2.hp.com/services/us/en/warranty/carepack-servers-proliant.html>

Models

Quad-Core Models

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

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 CTO 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	<p>For single processor configuration choose:</p> <p>NOTE: If two (2) processors are desired, select one xxxxxx-L21 and one xxxxxx-B21.</p> <p>AMD Opteron™ processor Model 2389 (2.9 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit, FIO Base</p> <p>AMD Opteron processor Model 2387 (2.8 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit, FIO Base</p> <p>AMD Opteron processor Model 2384 (2.7 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit, FIO Base</p> <p>AMD Opteron processor Model 2382 (2.6 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit, FIO Base</p> <p>AMD Opteron processor Model 2378 (2.4 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit, FIO Base</p> <p>Low Power AMD Opteron processor Model 2381 HE (2.5 GHz, 6 MB L3 Cache, 55W ACP) Processor Option Kit, FIO Base</p> <p>Low Power AMD Opteron processor Model 2376 HE (2.3 GHz, 6 MB L3 Cache, 55W ACP) Processor Option Kit, FIO Base</p> <p>Low Power AMD Opteron processor Model 2372 HE (2.1 GHz, 6 MB L3 Cache, 55W ACP) Processor Option Kit, FIO Base</p>	<p>519232-L21</p> <p>532318-L21</p> <p>494262-L21</p> <p>500025-L21</p> <p>494264-L21</p> <p>519235-L21</p> <p>508867-L21</p> <p>508869-L21</p>
HP Memory	<p>HP 2GB (2x1GB) Single Rank PC2-6400 (DDR2-800) Registered Memory Kit</p> <p>NOTE: Compatible with the AMD Opteron processor Models 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.</p> <p>HP 2GB (2x1GB) Single Rank PC2-5300 (DDR2-667) Registered Memory Kit</p> <p>NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, and 2356.</p> <p>HP 4GB (2x2GB) Single Rank PC2-6400 (DDR2-800) Registered Memory Kit</p> <p>NOTE: Compatible with the AMD Opteron processor Models 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.</p> <p>HP 4GB (2x2GB) Dual Rank PC2-5300 (DDR2-667) Registered Memory Kit</p> <p>NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, and 2356.</p> <p>HP 4GB (2x2GB) Single Rank PC2-5300 (DDR2-667) Registered Low Power Memory Kit</p> <p>NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, and 2356.</p> <p>HP 8GB (2x4GB) Dual Rank PC2-6400 (DDR2-800) Registered Memory Kit</p> <p>NOTE: Compatible with the AMD Opteron processor Models 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.</p> <p>HP 8GB (2x4GB) Dual Rank x4 PC2-6400 (DDR2-800) Registered Low Power Memory Kit</p> <p>NOTE: Compatible with the AMD Opteron processor Models 2372 HE, 2376 HE, 2378, 2381 HE, 2382, 2384, 2387, 2389, 2425 HE, 2427, and 2435.</p> <p>HP 8GB (2x4GB) Dual Rank PC2-5300 (DDR2-667) Registered Memory Kit</p> <p>NOTE: Compatible with the AMD Opteron processor Models 2347 HE, 2352, 2354, and 2356.</p>	<p>497763-B21</p> <p>408851-B21</p> <p>497765-B21</p> <p>408853-B21</p> <p>483401-B21</p> <p>497767-B21</p> <p>504351-B21</p> <p>408854-B21</p>

Configuration Information - Factory Integrated Models

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, 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 Storage Controller 64 MB Cache - FIO Only 405102-B21

Cache 128 MB Battery-Backed Cache Enabler 351580-B21

NOTE: Supports the Smart Array E200i Controller, Smart Array 641 Controller, and Smart Array 642 Controller.

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 options and power subsystem options; please see the following QuickSpecs:

HP BladeSystem c3000 Enclosure QuickSpecs:

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

HP BladeSystem c7000 Enclosure QuickSpecs:

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

and HP BladeSystem c-Class Interconnect Components QuickSpecs:

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

Core Options

HP Ethernet Mezzanine Gigabit Ethernet Mezzanines

Options	HP NC325m PCI Express Quad Port 1Gb Server Adapter for c-Class BladeSystem 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.	416585-B21
	HP NC326m PCI Express Dual Port 1Gb Server Adapter for c-Class BladeSystem	406771-B21
	HP NC360m Dual Port 1GbE BL-c Adapter	445978-B21
	HP NC364m Quad Port 1GbE BL-c Adapter 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.	447883-B21
	HP NC382m Dual Port 1GbE Multifunction BL-c Adapter	453246-B21
	HP BLc QLogic iSCSI Dual Port Adapter 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.	488074-B22
	10 Gigabit Ethernet Mezzanines	
	HP NC522m Dual Port Flex-10 10GbE Multifunction BL-c Adapter 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.	467801-B21
	HP NC532m Dual Port Flex-10 10GbE Multifunction BL-c Adapter 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.	467799-B21

HP Fibre Channel Mezzanine Options

4Gb Fibre Channel Mezzanines

Emulex LPe1105 FC Dual Channel 4Gb, PCI-E-to-Fibre Channel Host Bus Adapter	403621-B21
QLogic QMH2462 4Gb FC HBA for HP c-Class BladeSystem	403619-B21

HP Processors

AMD Opteron™ processor Model 2435 (2.6 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit	539792-B21
AMD Opteron processor Model 2427 (2.2 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit	539795-B21
AMD Opteron processor Model 2389 (2.9 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit	519232-B21
AMD Opteron processor Model 2387 (2.8 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit	532318-B21
AMD Opteron processor Model 2384 (2.7 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit	494262-B21
AMD Opteron processor Model 2382 (2.6 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit	500025-B21
AMD Opteron processor Model 2378 (2.4 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit	494264-B21
Low Power AMD Opteron processor Model 2425 HE (2.1 GHz, 6 MB L3 Cache, 55W ACP) Processor Option Kit	539798-B21
Low Power AMD Opteron processor Model 2381 HE (2.5 GHz, 6 MB L3 Cache, 55W ACP) Processor Option Kit	519235-B21
Low Power AMD Opteron processor Model 2376 HE (2.3 GHz, 6 MB L3 Cache, 55W ACP) Processor Option Kit	508867-B21
Low Power AMD Opteron processor Model 2372 HE (2.1 GHz, 6 MB L3 Cache, 55W ACP) Processor Option Kit	508869-B21
AMD Opteron processor Model 2356 (2.3 GHz, 2 MB L3 Cache, 75W ACP) Processor Option Kit	445106-B21
AMD Opteron processor Model 2354 (2.2 GHz, 2 MB L3 Cache, 75W ACP) Processor Option Kit	446587-B21
AMD Opteron processor Model 2352 (2.1 GHz, 2 MB L3 Cache, 75W ACP) Processor Option Kit	445575-B21

Core Options

Low Power AMD Opteron processor Model 2347 HE (1.9 GHz, 2 MB L3 Cache, 55W ACP) Processor Option Kit 456883-B21

HP Memory

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.

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 300GB 3G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 492620-B21

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

HP 146GB 3G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 504062-B21

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

HP 146GB 3G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 418367-B21

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

HP 72GB 3G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 418371-B21

Core Options

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

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_div/12244_div.html
(Worldwide)

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_div/13021_div.html
(Worldwide)

Additional Options

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_div/12631_div.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, and is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.	
	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_div/12631_div.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.	
	NOTE: Electronic LTUs are only available through limited points of sales; if not available, order a printed license entitlement certificate instead.	
	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, and are available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.	
	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, including electronic licensing options, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/13019_div/13019_div.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, and is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.	
	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_div/12362_div.html	

Additional Options

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, and is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.

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_div/12631_div.html

HP Storage Controllers HP Smart Array P700m/512 Controller 508226-B21
HP Smart Array P700m/256 Controller 507925-B21

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

http://h18000.www1.hp.com/products/quickspecs/13175_div/13175_div.html (Worldwide)

Optional Upgrade

128MB Battery-Backed Cache Enabler 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_div/13220_div.html

HP c-Class Mezzanines HP InfiniBand Mezzanine Options

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

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 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_div/12729_div.html

NOTE: Please visit the BladeSystem c-Class enclosure QuickSpecs for a complete list of recommended data protection solutions for BladeSystem c-Class enclosures:

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

HP StorageWorks SB40c Storage Blade HP StorageWorks SB40c Storage Blade 411243-B21
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_div/12587_div.html (Worldwide)

Additional Options

HP Expansion Blade	<p>HP PCI Expansion Blade 448018-B21</p> <p>NOTE: Ships with one pre-installed PCI-X connect board. Also includes one PCIe connect board which requires installation.</p> <p>NOTE: Please see the QuickSpecs Technical Specifications and additional configuration information at: http://h18000.www1.hp.com/products/quickspecs/12753_div/12753_div.html</p>
<hr/>	
HP USB and SD Options	<p>HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver) DC172B</p> <p>HP USB 04 Standard Keyboard DT528A#ABA</p> <p>HP 2GB USB Flash Media Drive Key Kit 608447-B21</p> <p>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.</p>
<hr/>	
HP Care Pack Services	<p>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.</p> <p>Hardware Services On-site Service</p> <p>4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic UK065E</p> <p>4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic UK066E</p> <p>6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic UK067E</p>

Memory

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

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.	

Memory

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.

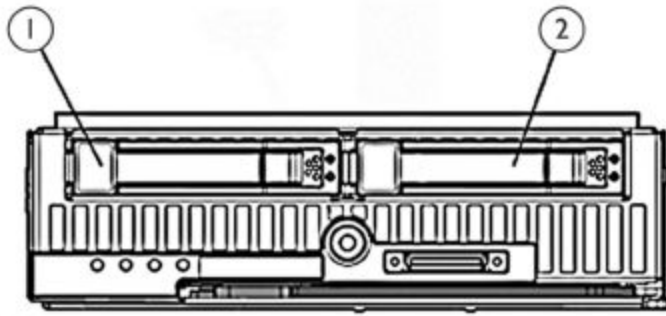
HP 64GB (8x8GB) Dual Rank PC2-5300 (DDR2-667) Registered Memory Kit 495605-B21

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
300GB 3G SAS 10K DP			
146GB 6G SAS 15K DP			
146GB 6G SAS 10K DP			
146GB 3G SAS 15K DP			
146GB 3G SAS 10K DP			
72GB 6G SAS 15K DP			
72GB 3G 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	<p>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_div/12790_div.html HP BladeSystem c7000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html</p> <p>To review typical system power ratings use the HP BladeSystem Power Sizer which is available via the online tool located at URL: http://www.hp.com/go/bladesystem/powercalculator</p>	
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	<p>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_div/12790_div.html HP BladeSystem c7000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html</p>		

Technical Specifications

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 	

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		
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)	

Technical Specifications

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)

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.