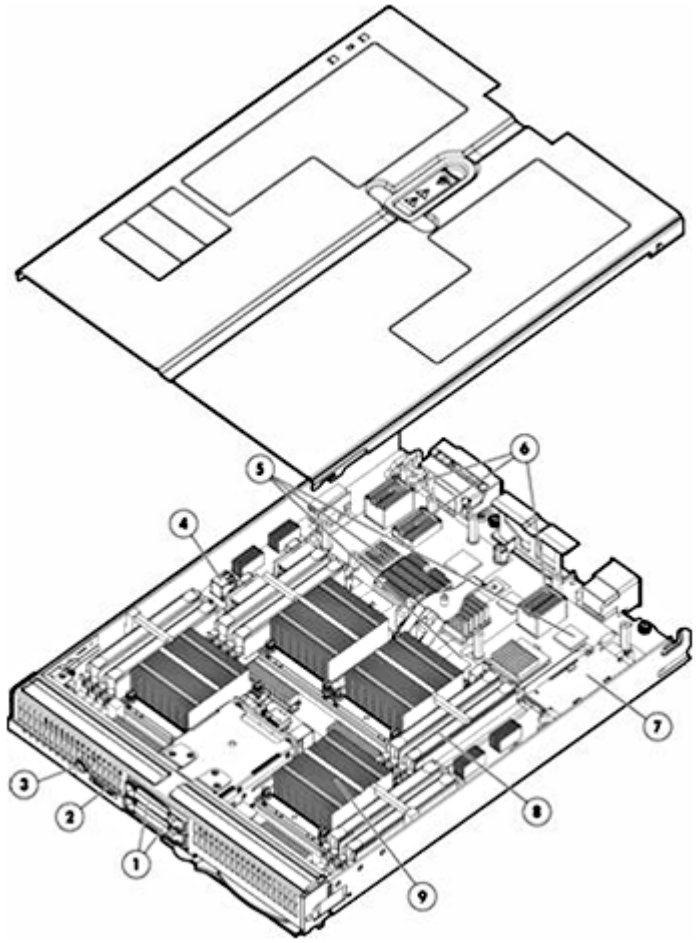
**RETIRED:** This document has been officially retired, and the base products listed herein are now considered obsolete and are no longer available for sale. Consequently, the information contained within may no longer be current. This document is provided exclusively for reference and informational purposes.

# QuickSpecs

## HP ProLiant BL685c Generation 5 (G5) Server Blade

*Overview*




1. Two small form factor (SFF) hot-plug hard drive bays
2. Local I/O connector
3. System power LED
4. Internal USB connector
5. Four Gigabit Ethernet network adapters ports, two are multifunction
6. Three mezzanine I/O expansion slots
7. Smart Array E200i storage controller (optional battery-backed write cache)
8. Sixteen PC2-5300 Registered DIMM (DDR2-667) or PC2-6400 Registered DIMM (DDR2-800) memory slots
9. Up to four AMD Opteron™ 8300 series processors

## What's New

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

## At A Glance

This document covers the HP ProLiant BL685c Generation 5 (G5) server blade only. For more information on HP BladeSystem c-Class Enclosures and HP BladeSystem c-Class Interconnects, please see the following QuickSpecs:

*Overview*

- 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 BL685c G5 delivers no-compromise performance and expansion in the densest 4P server blade form-factor available to handle your most demanding applications.
HP ProLiant BL685c G5 server blade includes:

- Processor:
  - Up to four Quad-Core AMD Opteron™ 8300 Series processors
  - Supports up to 2.7 GHz, 1 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
  - nVidia CK8-04, IO-04 chipsets
- Memory:
  - Up to128 GB of memory, supported by (16) slots of PC2-5300 Registered DIMMs at 667 MHz or 64 GB of memory, supported by (16) 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 or SATA solid state drives
- Network Controller:
  - Four (4) integrated network adapters:
    - One (1) embedded NC326i Dual Port Gigabit Ethernet Server Adapter
    - Two (2) embedded NC373i Multifunction Gigabit Ethernet Server Adapters
  - One (1) additional embedded 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:
  - Three (3) I/O expansion mezzanine slots.
  - Supports up to (3) mezzanine cards
    - Dual-Port Fibre Channel Mezzanine (4-Gb) 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:
  - One (1) internal USB 2.0 connector for security key devices and USB drive key
- Form Factor:
  - HP ProLiant BL685c G5 server blade plugs into the BladeSystem c3000 and c7000 enclosures
- Infrastructure Management:
  - HP ProLiant Onboard Administrator (powered by the HP Integrated Lights-Out 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, Linux, VMware ESX, and 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 8 ProLiant BL685c G5 servers plugged vertically.
    - The HP BladeSystem c3000 rack enclosure is 6U high and holds up to 4 HP ProLiant BL685c G5 servers plugged horizontally.
    - The HP BladeSystem c3000 tower enclosure is designed with casters for sites without racks and holds up to 4 HP ProLiant BL685c 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** | AMD Opteron™ processor Model 8384 (2.7 GHz, 6 MB L3 Cache, 75W ACP)<br>AMD Opteron processor Model 8382 (2.6 GHz, 6 MB L3 Cache, 75W ACP)<br>AMD Opteron processor Model 8356 (2.3 GHz, 2 MB L3 Cache, 75W ACP)<br>AMD Opteron processor Model 8354 (2.2 GHz, 2 MB L3 Cache, 75W ACP)<br>Low Power AMD Opteron processor Model 8376 HE (2.3 GHz, 6 MB L3 Cache, 55W ACP)<br>NOTE: Offered through Configure-To-Order process only. See Factory Integration Models section for more details.<br>Low Power AMD Opteron processor Model 8347 HE (1.9 GHz, 2 MB L3 Cache, 55W ACP)<br>NOTE: Offered through Configure-To-Order process only. See Factory Integration Models section for more details.<br>NOTE: AMD Opteron 8300 series processors are 64-bit, quad-core, and support AMD Virtualization™.<br>NOTE: Processor wattage references reflect Average CPU Power (ACP). For more information on ACP visit: http://www.amd.com/powernow. |
| **Upgradeability** | Upgradeable to quad (4) processors<br>NOTE: The HP ProLiant BL685c G5 only supports 2 and 4 processor configurations. |
| **Cache Memory** | 512 KB Level 2 cache memory per core<br>2 MB or 6 MB Level 3 cache memory |
| **Chipset** | nVidia CK8-04, IO-04 |

**Memory**

| | |
|---|---|
| Type | PC2-5300 DDR2 Registered DIMMs at 667 MHz<br>PC2-6400 DDR2 Registered DIMMs at 800 MHz |
| Standard | 8 GB (4 x 2 GB) |
| Maximum | 128 GB (16 x 8 GB) at 667 MHz<br>64 GB (16 x 4 GB) at 800 MHz |

NOTE: Memory must be installed in pairs.
NOTE: DIMMs must be installed in decreasing capacity with the largest DIMMs installed in the banks furthest away from each processor.
NOTE: PC2-6400 DDR2 DIMMs are only supported with the AMD Opteron processor Models 8376 HE, 8382, and 8384.
NOTE: PC2-5300 DDR2 DIMMs in 8 GB capacities are supported with the AMD Opteron processor Models 8347 HE, 8354, 8356, 8376 HE, 8382, and 8384.
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 8347 HE, 8354, and 8356.

*Standard Features*

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|---|---|
| Network Controller | Four (4) embedded NIC ports, plus one (1) additional management NIC port consisting of:<br>One (1) embedded NC326i Dual Port Gigabit Ethernet Server Adapter<br>Two (2) embedded NC373i Multifunction Gigabit Ethernet Server Adapters with TCP/IP Offload Engine, iSCSI boot, and optional accelerated iSCSI<br>One (1) additional 10/100 network adapter dedicated to iLO 2 Management<br>NOTE: The Gigabit Ethernet adapters transmit from the server only 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.<br>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 |
| Multifunction Networking | The embedded multifunction NC373i combines standard Gigabit Ethernet networking, TCP/IP offload engine (TOE) acceleration, iSCSI boot, and optional iSCSI acceleration into a single adapter.<br>• 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 NC373i offers TOE for Microsoft® Windows 2003 environments.<br>• The iSCSI network boot (iSCSI boot) allows the BL685c 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 BL685c G5 uses an iSCSI firmware image (iSCSI boot option ROM) making the remote disk drive appear as a local, bootable C: drive. The BL685c 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 | Three I/O expansion mezzanine slots (All x8 PCI Express) |
| Integrated Manageability | Integrated Lights-Out 2 (iLO 2) Standard Blade Edition (integrated on motherboard) |
| Storage Controller | Smart Array E200i Controller — 64MB memory module supports RAID 0,1<br>Available upgrades: 128MB with Battery-backed write cache |
| Maximum Internal Storage | Hot Plug SAS — 1TB SAS — 2 x 500GB Serial SCSI<br>Hot Plug SATA — 1TB SATA — 2 x 500GB Serial ATA |
| Graphics | Integrated ATI RN-50 1280 x 1024 x 16M color (32 MB DDR memory) |

*Standard Features*

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|---|---|---|
| Graphics Resolution Supported | Resolution Color Depths | Depths 1280 x 1024, 16.7M , 64k, 256,16<br>1024 x 768, 16.7M, 64k, 256, 16<br>800 x 600, 16.7M, 64k, 256, 16<br>640 x 480, 16.7M, 64k, 256, 16 |

**Fibre Channel Support**

Four optional 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
  Emulex LPe 1205-HP 8Gb FC HBA (456972-B21)

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)
- 8/4/2Gb/s auto negotiation speeds (8Gb 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

**Compatible SAN**

HP ProLiant BL685c G5 server blades are optimized for HP StorageWorks MSA, EVA, and XP
HP ProLiant BL685c G5 server blades are compatible with select third 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: www.hp.com/go/foundation.<br><br>The foundation pack includes:<br><br>• HP SmartStart<br>• HP Management<br>• HP ProLiant Firmware Maintenance<br><br>SmartStart version supported (minimum): SmartStart 8.0<br>http://www.hp.com/servers/smartstart |
| ProLiant Onboard Administrator | HP ProLiant Onboard Administrator (powered by the HP Integrated Lights-Out 2 management processor) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP ProLiant Onboard Administrator functions without additional software, and can be accessed from any location via a web browser. It works hand-in-hand with HP Systems Insight Manager, Insight Control suites, and the Insight Dynamics for ProLiant helping customers unlock the value of the ProLiant platform and deliver the highest possible quality of IT service to the business. See www.hp.com/go/ProLiantOA |
| 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.<br><br>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<br><br>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 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 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, please visit our Support Matrix at: http://www.hp.com/go/supportos and our driver download page: http://www.hp.com/support/BL685cG5

**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 for your specific server model please contact your sales representative or go to: http://www.hp.com/go/factory-express.

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**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.

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

*Models*

## Quad-Core Models

| | | |
|---|---|---|
| **HP ProLiant BL685c G5 8384 QC 8G (2P)**<br>494266-B21<br><br>**HP ProLiant BL685c G5 8382 QC 8G (2P)**<br>516049-B21 | **Processor(s)**<br>One of the following depending on model | (2) AMD Opteron™ processor Model 8384 (2.7 GHz)<br>(2) AMD Opteron processor Model 8382 (2.6 GHz) |
| | **Cache Memory** | 512 KB Level 2 cache memory per core<br>6 MB Level 3 cache memory |
| | **Memory** | 8 GB (4 x 2 GB) PC2-6400, Registered DDR2-800 |
| | **Network Adapter** | One (1) embedded NC326i Dual Port Gigabit Ethernet Server Adapter, Two (2) embedded NC370i Multifunction Gigabit Ethernet Server Adapters and one (1) additional 10/100 network adapter dedicated to iLO 2 management |
| | **Storage Controller** | Smart Array E200i Controller with 64MB (optional battery-backed write cache) |
| | **Hard Drives** | No drives included; (2) SFF SAS/SATA drive bays |
| | **Internal Storage** | Up to 1TB SAS<br>Up to 1TB SATA |
| | **Optical Drive** | None |
| | **Form Factor** | Up to 4 full-height blades supported in the HP BladeSystem c3000 Enclosure<br>Up to 8 full-height blades supported in HP BladeSystem c7000 Enclosure |

| | | |
|---|---|---|
| **HP ProLiant BL685c G5 8356 QC 8G (2P)**<br>447966-xx1<br><br>**HP ProLiant BL685c G5 8354 QC 8G (2P)**<br>447967-B21 | **Processor(s)**<br>One of the following depending on model | (2) AMD Opteron processor Model 8356 (2.3 GHz)<br>(2) AMD Opteron processors Model 8354 (2.2 GHz) |
| | **Cache Memory** | 512 KB Level 2 cache memory per core<br>2 MB Level 3 cache memory |
| | **Memory** | 8 GB (4 x 2 GB) PC2-5300, Registered DDR2-667 |
| | **Network Adapter** | One (1) embedded NC326i Dual Port Gigabit Ethernet Server Adapter, Two (2) embedded NC370i Multifunction Gigabit Ethernet Server Adapters and one (1) additional 10/100 network adapter dedicated to iLO 2 management |
| | **Storage Controller** | Smart Array E200i Controller with 64MB (optional battery-backed write cache) |
| | **Hard Drives** | No drives included; (2) SFF SAS/SATA drive bays |
| | **Internal Storage** | Up to 1TB SAS<br>Up to 1TB SATA |
| | **Optical Drive** | None |
| | **Form Factor** | Up to 4 full-height blades supported in the HP BladeSystem c3000 Enclosure<br>Up to 8 full-height blades supported in HP BladeSystem c7000 Enclosure |

| | | |
|---|---|---|
| **Country Code Key** | xx=B2 | Worldwide |
| | xx=20 | Brazil |

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 available only as a Factory Installable Option.

## Step 1: Base Server Blade Configuration

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|---|---|---|
| Models | HP ProLiant BL685c G5 CTO Blade (North America) | 454624-B21 |
| | One (1) embedded NC326i Dual Port Gigabit Ethernet Server Adapter, two (2) embedded NC373i Multifunction Gigabit Ethernet Server Adapters, and one (1) additional 10/100 network adapter dedicated to iLO 2 Management | |
| | Integrated Smart Array E200i RAID controller<br>NOTE: Controller cache module selection is required. Select either the standard 64 MB module or the optional 128 MB module in step 2 below. | |
| | Two small form factor (SFF) SAS/SATA hot plug hard drive bays | |
| | Integrated Lights-Out 2 Standard Blade Edition | |

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

| | | |
|---|---|---|
| Processors | For dual (2) processor configurations choose (one of the following): | |
| | AMD Opteron™ processor Model 8384 (2.7 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit, FIO Base<br>NOTE: If 4 processors are desired, select one 494267-L21 and one 494267-B21. | 494267-L21 |
| | AMD Opteron processor Model 8382 (2.6 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit, FIO Base<br>NOTE: If 4 processors are desired, select one 516050-L21 and one 516050-B21. | 516050-L21 |
| | AMD Opteron processor Model 8356 (2.3 GHz, 2 MB L3 Cache, 75W ACP) Processor Option Kit, FIO Base<br>NOTE: If 4 processors are desired, select one 447977-L21 and one 447977-B21. | 447977-L21 |
| | AMD Opteron processor Model 8354 (2.2 GHz, 2 MB L3 Cache, 75W ACP) Processor Option Kit, FIO Base<br>NOTE: If 4 processors are desired, select one 447978-L21 and one 447978-B21. | 447978-L21 |
| | Low Power AMD Opteron processor Model 8376 HE (2.5 GHz, 6 MB L3 Cache, 55W ACP) Processor Option Kit, FIO Base<br>NOTE: If 4 processors are desired, select one 516052-L21 and one 516052-B21. | 516052-L21 |
| | Low Power AMD Opteron processor Model 8347 HE (1.9 GHz, 2 MB L3 Cache, 55W ACP) Processor Option Kit<br>NOTE: If 4 processors are desired, select one 456908-L21 and one 456908-B21. | 456908-L21 |
| | NOTE: All HP ProLiant BL685c G5 processor option kits contain two processors. | |
| | NOTE: The HP ProLiant BL685c G5 only supports 2 and 4 processor configurations. | |
| Memory | 1 GB REG PC2-5300 DDR2 2 x 512 MB Single Rank Kit<br>NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, and 8356. | 408850-B21 |

| | | |
|---|---|---|
| | 2 GB REG PC2-6400 DDR2 2 x 1 GB Kit<br>NOTE: Compatible with the AMD Opteron processor Models 8376 HE, 8382, and 8384. | 497763-B21 |
| | 2 GB REG PC2-5300 DDR2 2 x 1 GB Low Power Single Rank Kit<br>NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, and 8356. | 483399-B21 |
| | 2 GB REG PC2-5300 DDR2 2 x 1 GB Single Rank Kit<br>NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, and 8356. | 408851-B21 |
| | 4 GB REG PC2-6400 DDR2 2 x 2 GB Kit<br>NOTE: Compatible with the AMD Opteron processor Models 8376 HE, 8382, and 8384. | 497765-B21 |
| | 4 GB REG PC2-5300 DDR2 2 x 2 GB Dual Rank Kit<br>NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, and 8356. | 408853-B21 |
| | 4 GB REG PC2-5300 DDR2 2 x 2 GB Low Power Single Rank Kit<br>NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, and 8356. | 483401-B21 |
| | 8 GB REG PC2-6400 DDR2 2 x 4 GB Kit<br>NOTE: Compatible with the AMD Opteron processor Models 8376 HE, 8382, and 8384. | 497767-B21 |
| | 8 GB REG PC2-6400 DDR2 2 x 4 GB Low Power Kit<br>NOTE: Compatible with the AMD Opteron processor Models 8384, 8382, and 8376 HE. | 504351-B21 |
| | 8 GB REG PC2-5300 DDR2 2 x 4 GB Dual Rank Kit<br>NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, and 8356. | 408854-B21 |
| | 8 GB REG PC2-5300 DDR2 2 x 4 GB Kit Low Power Dual Rank Kit<br>NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, and 8356. | 483403-B21 |
| | 16 GB REG PC2-5300 DDR2 2 x 8 GB Dual Rank Kit<br>NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, 8356, 8376 HE, 8382, and 8384. | 408855-B21 |
| | 64 GB REG PC2-5300 DDR2 8 x 8 GB Dual Rank Kit<br>NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, 8356, 8376 HE, 8382, and 8384.<br>NOTE: Must be installed in pairs.<br>NOTE: DIMMs must be installed in decreasing capacity with the largest DIMMs installed in the banks furthest away from each processor. | 495605-B21 |
| Storage Controller Cache | 64 MB Cache - FIO Only | 405102-B21 |
| | 128 MB Battery-Backed Cache Enabler<br>NOTE: Supports the Smart Array E200i Controller, Smart Array 641 Controller, and Smart Array 642 Controller. | 351580-B21 |

## Step 3: Choose Additional Options for Factory Integration

NOTE: For additional options, please refer to the "Core Options" and "Additional Options" section below. For options including server blade enclosures interconnect options and power subsystem options; please see the following 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*

| | | |
|---|---|---|
| Ethernet Mezzanine Options | **Gigabit Ethernet Mezzanines** | |
| | HP NC325m PCI Express Quad Port 1Gb Server Adapter for c-Class BladeSystem | 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 | 447883-B21 |
| | HP NC382m Dual Port 1GbE Multifunction BL-c Adapter | 453246-B21 |
| | HP BLc QLogic iSCSI Dual Port Adapter | 488074-B22 |
| | NOTE: The Gigabit Ethernet adapters 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. | |
| | **10 Gigabit Ethernet Mezzanines** | |
| | HP NC522m Dual Port Flex-10 10GbE Multifunction BL-c Adapter<br>NOTE: The NC522m requires a minimum of 2 GB of server memory.<br>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 | 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. | |

| | | |
|---|---|---|
| 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 |

## Core Options

| | | |
|---|---|---|
| Processors | AMD Opteron™ processor Model 8384 (2.7 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit | 494267-B21 |
| | AMD Opteron processor Model 8382 (2.6 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit | 516050-B21 |
| | AMD Opteron processor Model 8356 (2.3 GHz, 2 MB L3 Cache, 75W ACP) Processor Option Kit | 447977-B21 |
| | AMD Opteron processor Model 8354 (2.2 GHz, 2 MB L3 Cache, 75W ACP) Processor Option Kit | 447978-B21 |
| | Low Power AMD Opteron processor Model 8376 HE (2.5 GHz, 6 MB L3 Cache, 55W) Option Kit | 516052-B21 |
| | Low Power AMD Opteron processor Model 8347 HE (1.9 GHz, 2 MB L3 Cache, 55W ACP) Processor Option Kit | 456908-B21 |
| | NOTE: HP ProLiant BL685c G5 processor option kits contain two processors. | |
| | NOTE: The ProLiant BL685c G5 only supports 2 and 4 processor configurations. | |
| Memory | 1 GB REG PC2-5300 DDR2 2 x 512 MB Single Rank Kit | 408850-B21 |
| | NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, and 8356. | |
| | 2 GB REG PC2-6400 DDR2 2 x 1 GB Kit | 497763-B21 |
| | NOTE: Compatible with the AMD Opteron processor Models 8376 HE, 8382, and 8384. | |
| | 2 GB REG PC2-5300 DDR2 2 x 1 GB Low Power Single Rank Kit | 483399-B21 |
| | NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, and 8356. | |
| | 2 GB REG PC2-5300 DDR2 2 x 1 GB Single Rank Kit | 408851-B21 |
| | NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, and 8356. | |
| | 4 GB REG PC2-6400 DDR2 2 x 2 GB Kit | 497765-B21 |
| | NOTE: Compatible with the AMD Opteron processor Models 8376 HE, 8382, and 8384. | |
| | 4 GB REG PC2-5300 DDR2 2 x 2 GB Dual Rank Kit | 408853-B21 |
| | NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, and 8356. | |
| | 4 GB REG PC2-5300 DDR2 2 x 2 GB Low Power Single Rank Kit | 483401-B21 |
| | NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, and 8356. | |
| | 8 GB REG PC2-6400 DDR2 2 x 4 GB Kit | 497767-B21 |
| | NOTE: Compatible with the AMD Opteron processor Models 8376 HE, 8382, and 8384. | |
| | 8 GB REG PC2-6400 DDR2 2 x 4 GB Low Power Kit | 504351-B21 |
| | NOTE: Compatible with the AMD Opteron processor Models 8376 HE, 8382, and 8384. | |
| | 8 GB REG PC2-5300 DDR2 2 x 4 GB Dual Rank Kit | 408854-B21 |
| | NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, and 8356. | |

*Core Options*

| | | |
|---|---|---|
| | 8 GB REG PC2-5300 DDR2 2 x 4 GB Low Power Dual Rank Kit<br>NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, and 8356. | 483403-B21 |
| | 16 GB REG PC2-5300 DDR2 2 x 8 GB Dual Rank Kit<br>NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, 8356, 8376 HE, 8382, and 8384. | 408855-B21 |
| | 64 GB REG PC2-5300 DDR2 8 x 8 GB Dual Rank Kit<br>NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, 8356, 8376 HE, 8382, and 8384. | 495605-B21 |
| | NOTE: Must be installed in pairs. | |
| | NOTE: DIMMs must be installed in decreasing capacity with the largest DIMMs installed in the banks furthest away from each processor. | |
| 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.<br>NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details. | |
| | SAS Hot Plug Enterprise (ENT) Drives | |
| | HP 300GB 6G SAS 10K SFF DP ENT HDD | 507127-B21 |
| | HP 146GB 6G SAS 15K SFF DP ENT HDD | 512547-B21 |
| | HP 146GB 6G SAS 10K SFF DP ENT HDD | 507125-B21 |
| | HP 72GB 6G SAS 15K SFF DP ENT HDD | 512545-B21 |
| | HP 300GB 3G SAS 10K SFF DP HDD | 492620-B21 |
| | HP 146GB 3G SAS 10K SFF DP HDD | 418367-B21 |
| | HP 146GB 3G SAS 10K SFF HDD | 431958-B21 |
| | HP 146GB 3G SAS 15K SFF DP ENT HDD | 504062-B21 |
| | HP 72GB 3G SAS 15K SFF DP HDD | 418371-B21 |
| | SAS Hot Plug SFF Midline (MDL) Drives | |
| | HP 500GB 6G SAS 7.2K SFF DP MDL HDD | 507610-B21 |
| | NOTE: Please see the for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html (Worldwide) | |
| | SATA Hot Plug Midline (MDL) Solid State Drives | |
| | HP 60GB 3G SATA 2.5in MDL 1y Wty SSD | 572071-B21 |
| | HP 120GB 3G SATA 2.5in MDL 1y Wty SSD | 572073-B21 |
| | SATA Hot Plug SFF Midline (MDL) Drives | |
| | HP 500GB 3G SATA 7.2K 2.5in MDL HDD | 507750-B21 |
| | HP 160GB 3G SATA 7.2K 2.5in MDL HDD | 530888-B21 |
| | SATA Hot Plug SFF Entry (ETY) Drives | |
| | HP 250GB 3G SATA 5.4K SFF ETY HDD | 460355-B21 |
| | HP 120GB 1.5G SATA 5.4K SFF ETY HDD | 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 |
| | HP Insight Software Media Kit<br>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.<br>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.<br>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.<br>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.<br>NOTE: For additional license kits, including bundles with HP BladeSystem enclosures, please see the Insight Control QuickSpecs at:<br>http://h18004.www1.hp.com/products/quickspecs/12631_div/12631_div.html | 436222-B21 |
| | HP Insight Control for Linux | |
| | HP Insight Control for Linux, 1-server license, including one year of 24x7 Technical Support and Updates, Electronic | T9084BAE |
| | HP Insight Control for Linux, No Media, 1-Server license, including one year of 24x7 Technical Support and Updates | 464423-B22 |
| | HP Insight Control for Linux, Media pack (DVD) - No licenses included<br>NOTE: Media pack DVD contains HP Insight Control for Linux, HP Systems Insight Manager, HP Insight Control power management, HP Insight Control virtual machine management, and an integrated installer. Licenses must be acquired separately.<br>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).<br>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.<br>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.<br>NOTE: For additional License Kits, including electronic licensing options, please see the QuickSpecs at:<br>http://h18000.www1.hp.com/products/quickspecs/13019_div/13019_div.html | 464422-B22 |
| | HP iLO Advanced for BladeSystem | |
| | HP Integrated Lights-Out Advanced for BladeSystem, No Media, Electronic License, including 1 year of 24x7 Technical Support and Updates | TA851AAE |
| | HP Integrated Lights-Out Advanced for BladeSystem, No Media, 1-Server License, 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.<br>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.<br>NOTE: For additional license kits please see the HP ProLiant Onboard Administrator (OA), powered by the Integrated Lights-Out 2 QuickSpecs at:<br>http://h18000.www1.hp.com/products/quickspecs/12362_div/12362_div.html | |
| | HP Insight Rapid Deployment software | |
| | HP Insight Rapid Deployment software 1-Server License including 1 year 24x7 Technical Support and Updates<br>NOTE: This license allows 1 server to be deployed and. Customer will receive a printed license entitlement certificate via physical shipment. 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 Service.<br>NOTE: For additional license kits please see the Insight Rapid Deployment software QuickSpecs at:<br>http://h18000.www1.hp.com/products/quickspecs/11053_div/11053_div.html | 452151-B21 |
| Storage Controller | 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 configuration information at:<br>http://h18000.www1.hp.com/products/quickspecs/13175_div/13175_div.html (Worldwide) | |
| | Optional Upgrade | |
| | 128MB Battery-Backed Cache Enabler<br>NOTE: Supports the Smart Array E200 Controller. | 351580-B21 |
| I/O Accelerator Mezzanine 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:<br>http://h18000.www1.hp.com/products/quickspecs/13220_div/13220_div.html | |
| HP InfiniBand Mezzanine Options | HP 4X DDR IB Dual Port Mezzanine HCA for HP BladeSystem c-Class | 448262-B21 |

*Additional Options*

| | | |
|---|---|---|
| c-Class Mezzanines | HP PCI Express Mezzanine Pass-Thru Card for HP BladeSystem c-Class<br>NOTE: Required to support the HP StorageWorks SB40c Storage Blade HP BladeSystem PCI Expansion Blade, HP StorageWorks Ultrium 448c Tape Blade, and HP StorageWorks SB920c Tape Blade with HP c-Class BladeSystem full-height server blades (e.g. BL480c, BL680c G5, BL685c G5) | 431643-B21 |
| HP Ultrium Tape Blades | HP StorageWorks SB1760c Tape Blade<br>NOTE: LTO-4 Ultrium technology | AQ697A |
| | HP StorageWorks SB920c Tape Blade<br>NOTE: LTO-3 Ultrium technology | AJ401A |
| | 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<br>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<br>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) | 411243-B21 |
| HP PCI Expansion Blade | HP PCI Expansion Blade<br>NOTE: Ships with one pre-installed PCI-X connect board. Also includes one PCIe connect board which requires installation.<br>NOTE: Please see the QuickSpecs for Technical Specifications and additional configuration information at: http://h18000.www1.hp.com/products/quickspecs/12753_div/12753_div.html | 448018-B21 |
| USB Options | HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver) | DC172B |
| | HP 1GB USB 2.0 Floppy Drive Key | 442085-B21 |
| | HP USB 04 Standard Keyboard | DT528A#xxx |
| | 1.44MB External USB Floppy Drive | DC141B |
| | HP 4GB USB Flash Media Key Kit<br>NOTE: Blank USB and SD media devices are supported for use with VMware and Citrix. USB/SD media must be installed in the internal slot of the ProLiant server. Learn more at http://www.hp.com/go/proliantvirtualization | 580385-B21 |

*Additional Options*

**Service and Support Offerings**
(HP Care Pack Services)

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

Hardware Services On-site Service

| | |
|---|---|
| 4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic | UK108E |
| 4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic | UK109E |
| 6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic | UK110E |

*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 8376 HE, 8382, and 8384.
3. Both DIMM slots in a memory bank must be populated.
4. Banks must be populated in sequential alphabetic order, starting with bank A.
5. Both DIMMs in a memory bank must be identical. Install identical DIMMs as pairs only, starting with DIMM socket 1, bank A.
6. Multiple advanced memory protection (AMP) modes are supported, based on DIMM population and RBSU selection. The server blade defaults to Advanced ECC.
7. DIMMs must be installed in decreasing capacity with the largest DIMMs installed in the banks furthest away from each processor.
8. DIMM banks are active only when the corresponding processor socket is populated.

HP ProLiant BL685c G5 Server Blade

Standard Memory

8192 MB (4 x 2048 MB) of PC2-5300, Registered DDR2-667 ECC DIMMs or 8192 MB (4 x 2048 MB) or PC2-6400 Registered DDR2-800 ECC DIMMs.

Standard Memory Plus Optional Memory

Up to 106496 MB of PC2-5300 or 57344 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 131072 MB of PC2-5300 or 65536 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 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Standard | 8192 MB | Processor 1 | | | | Processor 2 | | | |
| | | 1A | 2A | 3B | 4B | 5C | 6C | 7D | 8D |
| | | 2048 MB | 2048 MB | Empty | Empty | 2048 MB | 2048 MB | Empty | Empty |
| | | Processor 3 | | | | Processor 4 | | | |
| | | 9E | 10E | 11F | 12F | 13G | 14G | 15H | 16H |
| | | Empty | Empty | Empty | Empty | Empty | Empty | Empty | Empty |
| Optional | 57344 MB | Processor 1 | | | | Processor 2 | | | |
| | | 1A | 2A | 3B | 4B | 5C | 6C | 7D | 8D |
| | | 4096 MB | 4096 MB | 2048 MB | 4096 MB | 2048 MB | 4096 MB | 4096 MB | 4096 MB |
| | | Processor 3 | | | | Processor 4 | | | |
| | | 9E | 10E | 11F | 12F | 13G | 14G | 15H | 16H |
| | | 4096 MB | 4096 MB | 4096 MB | 4096 MB | 4096 MB | 4096 MB | 4096 MB | 4096 MB |
| Maximum | 65536 MB | Processor 1 | | | | Processor 2 | | | |
| | | 1A | 2A | 3B | 4B | 5C | 6C | 7D | 8D |
| | | 4096 MB | 4096 MB | 4096 MB | 4096 MB | 4096 MB | 4096 MB | 4096 MB | 4096 MB |
| | | Processor 3 | | | | Processor 4 | | | |
| | | 9E | 10E | 11F | 12F | 13G | 14G | 15H | 16H |
| | | 4096 MB | 4096 MB | 4096 MB | 4096 MB | 4096 MB | 4096 MB | 4096 MB | 4096 MB |
| Optional | 106496 MB | Processor 1 | | | | Processor 2 | | | |

*Memory*

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1A | 2A | 3B | 4B | 5C | 6C | 7D | 8D |
| | | 8192 MB | 8192 MB | 2048 MB | 8192 MB | 2048 MB | 8192 MB | 2048 MB | 2048 MB |
| | | Processor 3 | | | | Processor 4 | | | |
| | | 9E | 10E | 11F | 12F | 13G | 14G | 15H | 16H |
| | | 8192 MB | 8192 MB | 8192 MB | 8192 MB | 8192 MB | 8192 MB | 8192 MB | 8192 MB |
| Maximum | 131072 MB | Processor 1 | | | | Processor 2 | | | |
| | | 1A | 2A | 3B | 4B | 5C | 6C | 7D | 8D |
| | | 8192 MB | 8192 MB | 8192 MB | 8192 MB | 8192 MB | 8192 MB | 8192 MB | 8192 MB |
| | | Processor 3 | | | | Processor 4 | | | |
| | | 9E | 10E | 11F | 12F | 13G | 14G | 15H | 16H |
| | | 8192 MB | 8192 MB | 8192 MB | 8192 MB | 8192 MB | 8192 MB | 8192 MB | 8192 MB |

Following are memory options available from HP:

1 GB REG PC2-5300 DDR2 2 x 512 MB Single Rank Kit 408850-B21
NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, and 8356.

2 GB REG PC2-6400 DDR2 2 x 1 GB Kit 497763-B21
NOTE: Compatible with the AMD Opteron processor Models 8376 HE, 8382, and 8384

2 GB REG PC2-5300 DDR2 2 x 1 GB Low Power Single Rank Kit 483399-B21
NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, and 8356.

2 GB REG PC2-5300 DDR2 2 x 1 GB Single Rank Kit 408851-B21
NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, and 8356.

4 GB REG PC2-6400 DDR2 2 x 2 GB Kit 497765-B21
NOTE: Compatible with the AMD Opteron processor Models 8376 HE, 8382, and 8384

4 GB REG PC2-5300 DDR2 2 x 2 GB Dual Rank Kit 408853-B21
NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, and 8356.

4 GB REG PC2-5300 DDR2 2 x 2 GB Low Power Single Rank Kit 483401-B21
NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, and 8356.

8 GB REG PC2-6400 DDR2 2 x 4 GB Kit 497767-B21
NOTE: Compatible with the AMD Opteron processor Models 8376 HE, 8382, and 8384

8 GB REG PC2-6400 DDR2 2 x 4 GB Low Power Kit 504351-B21
NOTE: Compatible with the AMD Opteron processor Models 8376 HE, 8382, and 8384

8 GB REG PC2-5300 DDR2 2 x 4 GB Dual Rank Kit 408854-B21
NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, and 8356.

8 GB REG PC2-5300 DDR2 2 x 4 GB Low Power Dual Rank Kit 483403-B21
NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, and 8356.

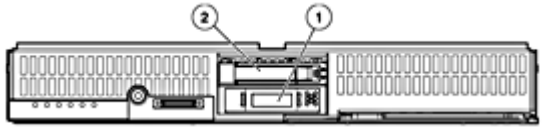
16 GB REG PC2-5300 DDR2 2 x 8 GB Dual Rank Kit 408855-B21
NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, 8356, 8376 HE, 8382, and 8384.

64 GB REG PC2-5300 DDR2 8 x 8 GB Dual Rank Kit 495605-B21
NOTE: Compatible with the AMD Opteron processor Models 8347 HE, 8354, 8356, 8376 HE, 8382, and 8384.

NOTE: Must be installed in pairs.

NOTE: DIMMs must be installed in decreasing capacity with the largest DIMMs installed in the banks furthest away from each processor.

*Storage*




1-2 2 x SFF SAS or SATA Hot Plug 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 Enterprise (ENT) Drives

| | Quantity Supported | Position Supported | Controller |
|---|---|---|---|
| 72GB 3G SAS 15K<br>72GB 6G SAS 15K<br>146GB 3G SAS10K<br>146GB 6G SAS10K<br>146GB 3G SAS15K<br>146GB 6G SAS 15K<br>300GB 3G SAS 10K<br>300GB 6G SAS 10K | 2 | 1-2 | Smart Array E200i Controller |

SAS Hot Plug SFF 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 Midline (MDL) Drives

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

SATA Hot Plug Midline (MDL) Solid State Drives

| | Quantity Supported | Position Supported | Controller |
|---|---|---|---|
| 120GB 3G SATA<br>60GB 3G SATA | 2 | 1-2 | Smart Array E200i Controller |

SATA SFF Hot Plug Entry (ETY) Drives

| | Quantity Supported | Position Supported | Controller |
|---|---|---|---|
| 250GB 3G SATA 5.4K<br>120GB 1.5G SATA 5.4K | 2 | 1-2 | Smart Array E200i Controller |

| | | | |
|---|---|---|---|
| System Unit | Dimensions (H x W x D) | 14.42 x 2.19 x 20.058 (36.63 x 2.19 x 50.95 cm) | |
| | Shipping Dimensions (H x W x D) | 21.50 x 9.94 x 23.13 in (54.61 x 25.25 x 58.75 cm) | |
| | Weight (approximate) | Maximum (all hard drives and processors installed) | 22.8 lbs (10.3 kg) |
| | | Minimum (one hard drive and processor installed) | 19.35 lbs (8.75 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:<br>HP BladeSystem c3000 Enclosure QuickSpecs:<br>http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html<br>HP BladeSystem c7000 Enclosure QuickSpecs:<br>http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html<br><br>To review typical system power ratings use the HP BladeSystem Power Sizer available at:<br>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 | 10 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. Maximum allowable altitude change rate is 457 m/min (1500 ft/min). |
| | | Non-operating | 9144 m (30,000 ft). 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: | |

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

| | | |
|---|---|---|
| Smart Array E200i Controller | Disk Drive and Enclosure Interface | 3G SAS (Serial Attached SCSI)<br>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 3G 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)<br>RAID 0 (Striping) |
| | Upgradeable Firmware | Upgradeable Firmware |

| | | |
|---|---|---|
| Embedded NC326i Dual Port Gigabit Ethernet Server Adapter | Network Processor | Broadcom 5715S |
| | Data Transfer Method | Four lane (x4) PCI Express |
| | Network Transfer Rate | Two ports, each at 2000 Mb/s full duplex<br>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 | • 9K Jumbo frames<br>• TCP/IP checksum offload (TCO)<br>• Large send offload (LSO)<br>• Interrupt coalescence<br>• Dual address cycles (DAC)<br>• Wake-on-LAN (WOL)<br>• Pre-boot execution environment (PXE)<br>• ProLiant Teaming including Network Fault Tolerance, Transmit Load Balancing, and Switch-Assisted Load Balancing<br>• IPv6 packet transmit and receive (excluding all offload capabilities); IPv6 aware SNMPv1 agents for Windows |

*Technical Specifications*

| | | |
|---|---|---|
| Embedded NC373i Multifunction Gigabit Ethernet Server Adapter | Network Processor | Broadcom 5708S |
| | Data Transfer Method | Four lane (x4) PCI Express |
| | Network Transfer Rate | 2000 Mb/s full duplex (theoretical maximum value)<br>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 | • TCP/IP offload engine (TOE) for Microsoft Windows 2003<br>• iSCSI Boot<br>• Optional accelerated iSCSI<br>• 9K Jumbo frames<br>• TCP/IP checksum offload (TCO)<br>• Large send offload (LSO)<br>• Interrupt coalescence<br>• Dual address cycles (DAC)<br>• Wake-on-LAN (WOL)<br>• Pre-boot execution environment (PXE)<br>• ProLiant Teaming including Network Fault Tolerance, Transmit Load Balancing, and Switch-Assisted Load Balancing<br>• IPv6 packet transmit and receive (excluding all offload capabilities); IPv6 aware SNMPv1 agents for Microsoft Windows |

| | | |
|---|---|---|
| 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.<br>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.