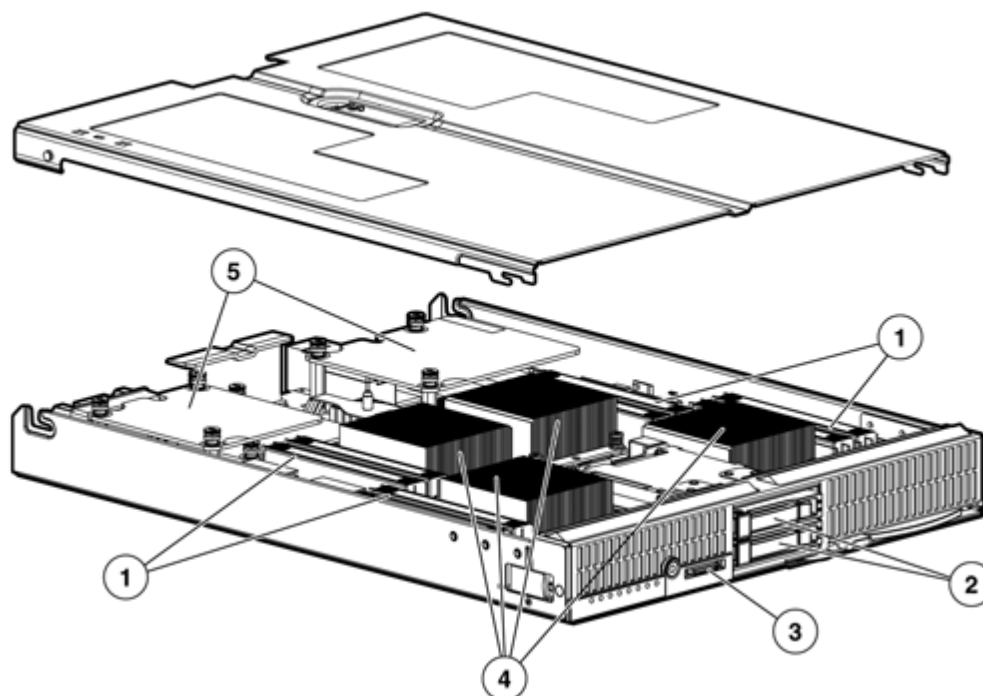


### Overview

HP ProLiant BL685c Server Blade



- |   |   |
|---|---|
| 1. Up to 64 GB PC2-5300, DDR2-667 memory (16 DIMMs) | 4. Up to four AMD Opteron™ 8000 series processors |
| 2. Two small form factor (SFF) hot-plug drive bays  | 5. Three Mezzanine slots                          |
| 3. Local I/O connector                              |   |

### At A Glance

This document covers the HP ProLiant BL685c server blade only. For more information on HP BladeSystem c-Class Infrastructure and HP BladeSystem c-Class Interconnects, please see the following QuickSpecs:

- HP BladeSystem c-Class Infrastructure QuickSpecs:  
[http://h18000.www1.hp.com/products/quickspecs/12517\\_div/12517\\_div.HTML](http://h18000.www1.hp.com/products/quickspecs/12517_div/12517_div.HTML)
- HP BladeSystem c-Class Interconnect Components QuickSpecs:  
[http://h18000.www1.hp.com/products/quickspecs/12524\\_div/12524\\_div.HTML](http://h18000.www1.hp.com/products/quickspecs/12524_div/12524_div.HTML)

The HP ProLiant BL685c delivers more performance and expansion than any other four processor x86 server blade to handle the most demanding applications

HP ProLiant BL685c server blade includes:

- **Processor:**
  - Up to four AMD Opteron™ 8000 Series processors
- **Memory:**
  - Up to 64 GB of memory. Supporting (16) DDR2-667 memory DIMMS
- **Storage Controller:**
  - Embedded Smart Array E200i Controller integrated on system board
  - Standard RAID 0/1 controller with optional BBWC
- **Internal Drive Support:**
  - Supports up to (2) two small form factor (SFF) SAS or SATA hot plug hard drives

### Overview

- **Network Controller:**
  - 4 integrated NICs:
    - Two (2) Embedded Standard Gigabit NICs
    - Two (2) Embedded Multifunction Gigabit Network Adapters
    - Plus one (1) additional 10/100 NIC dedicated to iLO 2 Management
- **Mezzanine Support:**
  - Three (3) additional I/O expansion slots via mezzanine cards.
  - Supports up to (3) mezzanine cards
    - Dual-Port Fibre Channel Mezzanine (4-Gb) options for SAN connectivity (Choice of Emulex or QLogic).
    - Ethernet NIC Mezzanine options for additional network ports
      - HP NC325m PCI Express Quad Port 1Gb server Adapter for c-Class BladeSystem
      - HP NC326m PCI Express Dual Port 1Gb Server Adapter for c-Class BladeSystem
      - HP NC373m PCI Express Dual Port Multifunction Gigabit Server Adapter for c-Class BladeSystem
      - 4X DDR InfiniBand (IB) Mezzanine (20 Gb/s) options for low latency server interconnectivity (based on Mellanox technology)
      - 10GbE planned for future support
- **Internal USB Support:**
  - One (1) internal USB 2.0 connector for security key devices and USB drive keys
- **Management:**
  - Integrated Lights Out 2 Standard Blade Edition
- **Form Factor:**
  - HP ProLiant BL685c server blade plugs vertically into the BladeSystem c7000 enclosure, 8 server blades supported per 10U enclosure
- **Warranty:**
  - Protected by HP Services and a worldwide network of resellers and service providers. Three-year parts, 3 Year Labor and 3 Year on-site limited global warranty. Certain restrictions and exclusions apply. Pre-Failure Notification on processors, memory, and SAS hard drives

### Standard Features (Server Blade)

<b>Processor</b>	AMD Opteron™ processor Model 8218 (2.6GHz) AMD Opteron™ processor Model 8216 (2.4GHz) AMD Opteron™ processor Model 8214 (2.2GHz)		
<b>Upgradeability</b>	Upgradeable to quad (4) processors <b>NOTE:</b> The HP ProLiant BL685c only supports 2 and 4 processor configurations.		
<b>Cache Memory</b>	1MB per Core Level 2 cache memory		
<b>Chipset</b>	nVidia CK8-04, IO-04		
<b>Memory</b>	Type	PC2-5300 DDR2 DIMMs (DDR2-667)	
	Standard	4 GB (4 x 1 GB)	
	Maximum	64 GB (16 x 4 GB)	
	<b>NOTE:</b> Memory must be installed in pairs.		
	<b>NOTE:</b> DIMMs must be installed in decreasing capacity with the largest DIMMs installed in the banks furthest away from each processor.		
<b>Network Adapter</b>	Four (4) embedded NIC ports, plus one (1) additional management NIC port: One (1) NC326i Dual Port Gigabit NIC Two (2) NC373i Multifunction Gigabit Network Adapters One (1) additional 10/100 NIC dedicated to iLO 2 Management		
<b>Expansion Slots</b>	Three Mezzanine slots (all x8)		
<b>Integrated Manageability</b>	Integrated Lights-Out 2 (iLO 2) Standard Blade Edition (integrated on motherboard)		
<b>Storage Controller</b>	Smart Array E200i Controller	64MB memory module supports RAID 0,1 Available upgrades: 128MB with Battery-backed write cache	
<b>Maximum Internal Storage</b>	Hot Plug Serial Attach SCSI (SAS)	292GB SAS	2 x 146GB Serial SCSI
	Hot Plug Serial ATA (SATA)	120GB SATA	2 x 60GB Serial ATA

### Standard Features (Server Blade)

**Graphics** Integrated ATI RN-50 1280 x 1024 x 16M color (32 MB DDR memory)

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**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

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**Fiber Channel on the HP ProLiant BL685c server blade** Two optional Fibre Channel HBAs are supported by the HP ProLiant BL685c. Both mezzanine circuit boards connect directly to the server blade system board. These Fibre Channel HBAs are available via option kits ordered separately.

Two option kits

Emulex LPe1105-HP 4Gb FC HBA for HP c-Class BladeSystem (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 for HP c-Class BladeSystem (403619-B21)

- Uses common drivers which means that customers can standardize on one QLogic driver whether they are using the QMH2462 or other 4Gb and 2Gb HBAs powered by QLogic

Emulex and QLogic Fibre Channel HBAs feature

- Optimal performance utilizing PCI Express
  - 4/2/1Gb/s auto negotiating speeds
  - 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 systems environments
- 

**Compatible SAN** HP ProLiant BL685c server blades are optimized for HP StorageWorks MSA, EVA, and XP

HP ProLiant BL685c server blades are compatible with select third party SANs (please see blade storage page for more details: <http://h18000.www1.hp.com/products/servers/proliant-bl/c-Class/storage.html>)

### Standard Features

#### Insight Control Data Center Edition

Insight Control Data Center Edition delivers foundation management for HP BladeSystem lifecycles, including hardware resource deployment, health monitoring, software version control, performance monitoring, vulnerability scanning and patch management.

Installs the following components by default using the wizard-based integrated installer:

- HP Systems Insight Manager
- Rapid Deployment Pack
- Performance Management Pack
- Vulnerability and Patch Management Pack

Additional ProLiant Essentials software and management tools included on the Insight Control Data Center Edition DVD can be installed manually.

- Virtualization Management Suite
- Workload Management Pack
- HP Open Service Event Manager
- HP Instant Support Enterprise Edition

**NOTE:** For Licensing and Packaging Options please see the options section of this QuickSpecs.

**NOTE:** Insight Control Data Center Edition can be delivered with HP BladeSystem c-Class enclosures with either 8-free evaluation licenses (30-days) or full purchased licenses for 8 or 16 blade servers. For additional information on HP c-Class Infrastructure please visit: HP BladeSystem c-Class Infrastructure QuickSpecs:

[http://h18000.www1.hp.com/products/quickspecs/12517\\_div/12517\\_div.HTML](http://h18000.www1.hp.com/products/quickspecs/12517_div/12517_div.HTML)

**NOTE:** For additional product and licensing information about Insight Control Data Center Edition, HP Systems Insight Manager and Essentials software refer to <http://www.hp.com/servers/proliantessentials>.

#### Unified Foundation Management and Essentials Software Plugins

HP Systems Insight Manger	HP Systems Insight Manager (HP SIM) provides a unified, secure and extensible environment to centrally manage servers, storage and other infrastructure devices across multiple operating system platforms.
ProLiant Essentials Rapid Deployment Pack	Rapid Deployment Pack (RDP) extends HP Systems Insight Manager with a complete deployment solution for HP ProLiant blade servers. RDP provides a central location to configure server hardware, deploy Windows, Linux and VMware ESX operating environments and install HP ProLiant Support Pack drivers using images and scripted profiles.
ProLiant Essentials Performance Management Pack	ProLiant Essentials Performance Management Pack detects, analyzes, and explains hardware bottlenecks on HP ProLiant servers, HP Integrity servers and shared storage.
The Vulnerability and Patch Management Pack	The Vulnerability and Patch Management Pack integrates and simplifies the assessment and remediation of operating system vulnerabilities into HP Systems Insight Manager for Windows and Linux platforms.

### Standard Features

Insight Management Agents	<p>The Insight Management Agents should be installed on all HP servers to present system instrumentation, health and configuration information into HP Systems Insight Manager and the HP System Management Homepage. The HP System Management Homepage aggregates systems data from Insight Management Agents and other HP management tools, providing a consolidated browser-based interface for managing individual servers.</p> <p>Insight Management Agents and The HP System Management Homepage are included on ProLiant Support Packs, and can also be installed using the server profiles provided with the ProLiant Essentials Rapid Deployment Pack</p> <p>For additional information about the Management Agents and the HP System Management Homepage please visit the management Web site at <a href="http://www.hp.com/servers/manage">http://www.hp.com/servers/manage</a>.</p>
Subscriber's Choice	<p>Subscriber's Choice Driver and Support Alerts/Notifications is a web-based email subscription service that provides software and driver change notifications for ProLiant products. Sign up at <a href="http://www.hp.com/go/subscriberschoice">http://www.hp.com/go/subscriberschoice</a> and customize your profile to receive various new alerts as they become available, on a weekly or monthly basis.</p>
ProLiant Support Packs and ROMPaq, software	<p>The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options, available through ProLiant Support Packs the ProLiant Essentials Rapid Deployment Pack, SmartStart or downloaded from Software and Drivers download pages website at <a href="http://www.hp.com/go/support">http://www.hp.com/go/support</a>.</p>

### Optional ProLiant Essentials Value Packs

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

- Accelerated iSCSI Pack - enables the embedded Multifunction network controller to serve as both a NIC and an iSCSI HBA providing access to SAN storage over the same connection used for networking. Processing of the protocol stack is offloaded to the NIC reducing CPU utilization and greatly improving the speed with which the requests are processed and sent to the network.
- Integrated Lights-Out Select Pack - upgrades the Integrated Lights-Out processor with scripted and command line virtual media, Power Regulator reporting and enterprise security.
- Intelligent Networking Pack - detects and analyzes network bottlenecks or broken network linkages and steers traffic to the optimum route based on network conditions, plus it provides an extra layer of protection. The virus throttle feature of the solution slows the propagation of fast spreading virus.
- The HP ProLiant Essentials RDMA Pack enables Remote Direct Memory Access (RDMA) on an HP Multifunction server adapter. RDMA is a communications protocol that provides direct transmission of data from the memory of one computer to the memory of another with minimal demands on the host CPU. RDMA provides a high-speed, high-performance connection between servers on the same network. RDMA Pack licenses are port-based; the licensed seats are available to individual ports on the Multifunction server adapter.
- Server Migration Pack - P2P Edition: Upgrading or replacing your existing server? Effortlessly transition to new servers with automated, accurate and affordable migration of OS, application and data.
- Virtualization Management Software - Get the most out of server virtualization by unifying the management of physical and virtual servers in HP Systems Insight Manager. The Virtual Machine Management Pack plug-in provides central management and control of VMware and Microsoft virtual machines and provides physical host to virtual machine association. The Server Migration Pack plug-in automates the manual task of migrating servers between physical or virtual

### Standard Features

platforms.

- Workload Management Pack - provides easier management of complex environments, improving overall server utilization and enabling Windows® 2000 customers for the first time to confidently deploy multiple applications on a single multiprocessor ProLiant Server.

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

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### SmartStart

SmartStart is a tool that simplifies single server setup, providing a rapid way to deploy reliable and consistent server configurations. SmartStart 7.60 and later can now deploy the HP ProLiant BL685c using the I/O port with an attached USB CD-ROM device. To obtain a copy of SmartStart for your blade server order or download your copy from the SmartStart web site. For more information, please visit the SmartStart Web site at <http://www.hp.com/servers/smartstart>.

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### OS Support

Microsoft Windows Server 2003, Standard Edition  
Microsoft Windows Server 2003 R2, Standard Edition  
Microsoft Windows Server 2003, Standard x64 Edition  
Microsoft Windows Server 2003 R2, Standard x64 Edition  
Microsoft Windows Server 2003, Web Edition  
Microsoft Windows Server 2003 R2, Web Edition  
Microsoft Windows Server 2003, Enterprise Edition  
Microsoft Windows Server 2003 R2, Enterprise Edition  
Microsoft Windows Server 2003, Enterprise x64 Edition  
Microsoft Windows Server 2003 R2, Enterprise x64 Edition  
Red Hat Enterprise Linux 3  
Red Hat Enterprise Linux 4  
SUSE LINUX Enterprise Server 9  
SUSE LINUX Enterprise Server 10  
Solaris 10 (32 and 64-bit)  
VMware ESX 3.0.1

**NOTE:** For a more complete and up-to-date listing of supported OSs and versions, please visit our OS Support Matrix at: <http://www.hp.com/go/supportos>.

**NOTE:** For an up-to-date listing of the latest drivers available for the ProLiant BL c-Class, please see: <http://www.compaq.com/support/files/server/us/index.html>.

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

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### Supported Software Options

VMware Virtualization Software

**NOTE:** For more information on HP's Certified and Supported HP ProLiant Servers, please visit the VMware Server Support Matrix at: <http://h18004.www1.hp.com/products/servers/software/vmware/hpvmwarecert.html>

### Standard Features

**Intelligent Manageability** Integrated Lights-Out 2 Standard Blade Edition (iLO 2)  
Virtual KVM (Text and Graphical Modes)  
Virtual Media (CD-ROM, floppy, USB flash drive)  
Virtual Power Button Control  
Integrated Remote Console Embedded system health Blade power consumption reading Browser, command line and scripted access Dedicated LAN Connectivity  
Automatic IP Configuration via DHCP/DNS/WINS  
Industry Standard RC4, 128-bit Secure Sockets Layer (SSL) and Secure Shell (SSH) Security  
IML and iLO 2 Event Logging  
Support for 12 user accounts with customizable access privileges  
Upgrade to HP ProLiant Essentials Integrated Light-Out2 Select Pack

**NOTE:** Advanced features such as Graphical Remote Console and browser accessible Virtual Floppy/CD-ROM are included with the BL685c server blade.

**Availability** Dual-Port Fibre Channel Mezzanine Card for redundant SAN connection  
Two hot-plug SAS/SATA hard drive bays and integrated RAID (Smart Array E200i) controller on every server blade (Battery-backed write cache is optional.)  
Redundant ROM on each server blade ECC Memory  
Network adapter teaming (network fault tolerance, transmit load balancing, switch-assisted load balancing)

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

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

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSA1000, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.

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

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

**Service and Support** This product is covered by a global limited warranty and supported by HP Services and a worldwide network of resellers and service providers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of

### Standard Features

purchase. Additional support may be covered under the warranty or available for an additional fee. Enhancements to warranty services are available through HP Care Pack services or customized service agreements.

**NOTE:** Server Warranty includes 3 year Parts, 3 year Labor, 3-year on-site support. Additional information regarding worldwide limited warranty and technical support is available at: <http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>

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.

HP Care Pack services for the c7000 Enclosure cover the enclosure, power supplies and fans. HP qualified rack options are covered by these services when installed within the same rack. HP Supported Ethernet devices covered include the Ethernet Pass-Through Module, Fibre Channel Pass-Through Module and GbE2c Ethernet Blade Switch and Cisco Catalyst 3020 Blade Switch.

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

To fully capitalizing 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.

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

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

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

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

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

- *Support Plus 24 - Onsite HW support 24x7, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays.*

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

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

For a complete listing of service offerings and information visit:

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

### Models

#### Dual-Core Models

HP ProLiant BL685c 8214 4 GB (2P) 405659-B21	Processor(s) <a href="#">One of the following depending on model</a>	Two AMD Opteron™ Processors Model 8218 (2.6 GHz) Two AMD Opteron™ Processors Model 8216 (2.4 GHz) Two AMD Opteron™ Processors Model 8214 (2.2 GHz)
HP ProLiant BL685c 8216 DC 4 GB (2P) 405660-B21	Cache Memory Memory Network Adapter	1MB per Core Level 2 cache memory 4 GB (4 x 1 GB) PC2-5300, DDR2-667 4 Embedded NICs: Dual NC373i Multifunction Gigabit NICs and Embedded NC326i Dual Port Gigabit NIC plus (1) additional 10/100 NIC dedicated to iLO 2 Management
HP ProLiant BL685c 8218 DC 4 GB (2P) 405661-B21	Storage Controller  Hard Drives Internal Storage  Optical Drive Form Factor	Smart Array E200i Controller with 64MB (optional battery-backed write cache)  No drives included; (2) SFF SAS/SATA drive bays 292GB SAS 120GB SATA  None Up to 8 supported in HP BladeSystem c7000 Enclosure

## Configuration Information - Factory Integrated Models (North America only)

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

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

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

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

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

### Step 1: Base Server Blade Configuration

Models	HP ProLiant BL685c CTO Blade (North America)	405024-B21
	<b>Configurable Model ships with:</b>	
	Four embedded Gigabit Ethernet NIC ports plus (1) additional 10/100 NIC dedicated to iLO 2 Management	
	One (1) NC326i Dual Port Gigabit NIC	
	Two (2) NC373i Multifunction Gigabit Network Adapters plus one (1) additional 10/100 NIC dedicated to iLO 2 Management	
	Integrated Smart Array E200i RAID controller	
	Two small form factor (SFF) SAS/SATA hot plug hard drive bays	
	Integrated Lights-Out 2 Standard Blade Edition	

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

Processors	For dual (2) processor configurations choose (one of the following):	
	AMD Opteron™ Processor Model 8218 (2.6 GHz) Option Kit, FIO Base	409613-L21
	AMD Opteron™ Processor Model 8216 (2.4GHz) Option Kit, FIO Base	409612-L21
	AMD Opteron™ Processor Model 8214 (2.2GHz) Option Kit, FIO Base	409611-L21
	<b>OR</b>	
	For quad (4) processor configurations choose (one of the following):	
	AMD Opteron™ Processor Model 8218 (2.6 GHz) Option Kit, FIO Base	409613-L21
	AMD Opteron™ Processor Model 8216 (2.4GHz) Option Kit, FIO Base	409612-L21
	AMD Opteron™ Processor Model 8214 (2.2GHz) Option Kit, FIO Base	409611-L21
	<b>Plus (one of the following):</b>	
	AMD Opteron™ Processor Model 8218 (2.6 GHz) Option Kit	409613-B21
	AMD Opteron™ Processor Model 8216 (2.4GHz) Option Kit	409612-B21
	AMD Opteron™ Processor Model 8214 (2.2GHz) Option Kit	409611-B21
	<b>NOTE:</b> HP ProLiant BL685c processor option kits (-B21 and -L21) contain two processors.	
	<b>NOTE:</b> The HP ProLiant BL685c only supports 2 and 4 processor configurations.	
Memory	HP 1 GB REG PC2-5300 2x512MB 1RANK Kit	408850-B21
	HP 2GB REG PC2-5300 2x1GB 1RANK Kit	408851-B21
	HP 4GB REG PC2-5300 2x2GB 2RANK Kit	408853-B21
	HP 8GB REG PC2-5300 2x4GB 2RANK Kit	408854-B21
	<b>NOTE:</b> Must be installed in pairs.	
	<b>NOTE:</b> DIMMs must be installed in decreasing capacity with the largest DIMMs installed in the banks furthest away from each processor.	

## Configuration Information - Factory Integrated Models (North America only)

Smart Array E200i	64 MB Cache - FIO Only	405102-B21
Upgrade Options	128MB Battery-Backed Cache Enabler	351580-B21
	<b>NOTE:</b> Supports the Smart Array E200 Controller.	

### Step 3: Choose Additional Options for Factory Integration

Fibre Channel Mezzanine Options	Emulex LPe 1105 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
Hard Drives	<b>Serial Attached SCSI (SAS) SFF Hot Plug</b>	
	HP 36GB 3G SAS 10K SFF SP HDD	375859-B21
	HP 72GB 3G SAS 10K SFF SP HDD	375861-B21
	HP 146GB 3G SAS 10K SFF HDD	431958-B21
	<b>SFF SATA Hot Plug</b>	
	HP 60GB 1.5G SATA 5.4K SFF HDD	379306-B21
Ethernet Mezzanine Options	HP NC325m PCI Express Quad Port 1Gb Server Adapter for c-Class BladeSystem	416584-B21
	HP NC326m PCI Express Dual Port 1Gb Server Adapter for c-Class BladeSystem	406771-B21
	HP NC373m PCI Express Dual Port Multifunction Gigabit Server Adapter for c-Class BladeSystem	406770-B21

### Step 4: Choose Additional Options for Factory Integration

**NOTE:** For additional options, including server blade enclosure with enhanced backplanes, interconnect options and power subsystem options; please refer to the "Options" section below.

## Options

### ProLiant Essentials Value Pack Software

#### ProLiant Essentials Accelerated iSCSI Pack for Embedded Multifunction Gigabit Server Adapters

ProLiant Essentials Accelerated iSCSI Pack, 1 License 407484-B22

**NOTE:** For additional ProLiant Accelerated iSCSI Pack License Kits- please see the QuickSpecs at:

[http://h18000.www1.hp.com/products/quickspecs/12466\\_div/12466\\_div.HTML](http://h18000.www1.hp.com/products/quickspecs/12466_div/12466_div.HTML)

#### ProLiant Essentials Integrated Lights-Out 2 Select Pack

ProLiant Essentials Integrated Lights-Out2 Select Pack, 1 server License 413119-B21

ProLiant Essentials Integrated Lights-Out2 Select Pack 8-server License 413122-B21

**Featuring:** sophisticated remote control and security features for HP BladeSystem servers and ProLiant ML/DL servers in text console environments.

**NOTE:** For additional ProLiant Essentials Integrated Lights-Out Packs please see the QuickSpecs at:

[http://h18000.www1.hp.com/products/quickspecs/12362\\_div/12362\\_div.HTML](http://h18000.www1.hp.com/products/quickspecs/12362_div/12362_div.HTML)

#### ProLiant Essentials Intelligent Networking Pack Windows Edition and Linux Edition

ProLiant Essentials Intelligent Networking Pack - Windows Edition, Single Server License 436225-B21

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

ProLiant Essentials Intelligent Networking Pack Linux Edition, Single Server License 436229-B21

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

**NOTE:** For additional ProLiant Intelligent Networking Pack License Kits-Windows Edition please see the QuickSpecs at:

[http://h18000.www1.hp.com/products/quickspecs/12062\\_div/12062\\_div.HTML](http://h18000.www1.hp.com/products/quickspecs/12062_div/12062_div.HTML)

**NOTE:** For additional ProLiant Intelligent Networking Pack License Kits-Linux Edition please see the QuickSpecs at:

[http://h18000.www1.hp.com/products/quickspecs/12327\\_div/12327\\_div.HTML](http://h18000.www1.hp.com/products/quickspecs/12327_div/12327_div.HTML)

#### HP ProLiant Essentials Remote Directory Memory Access (RDMA) Pack for Embedded Multifunction Gigabit Server Adapters

HP Remote Directory Memory Access (RDMA) Embedded Multifunction Pack, 1 License 407478-B22

**NOTE:** For additional ProLiant RDMA Multifunction Pack License Kits- please see the QuickSpecs at:

[http://h18000.www1.hp.com/products/quickspecs/12573\\_div/12573\\_div.HTML](http://h18000.www1.hp.com/products/quickspecs/12573_div/12573_div.HTML)

#### ProLiant Essentials Server Migration Pack

ProLiant Essentials Server Migration Pack, Single-Migration License 435663-B21

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

**NOTE:** This license allows 1 server to be migrated from a physical server to a virtual machine. Or this license can be used to migrate a virtual machine from one virtualization layer i.e. VMware GSX to a different virtualization layer such as VMware ESX or Microsoft Virtual Server 2005.

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

[http://h18000.www1.hp.com/products/quickspecs/12328\\_div/12328\\_div.HTML](http://h18000.www1.hp.com/products/quickspecs/12328_div/12328_div.HTML)

#### ProLiant Essentials Server Migration Pack - Physical to ProLiant Edition

## Options

ProLiant Essentials Server Migration Pack - Physical to ProLiant Edition, Single-Migration License 412978-B21

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

[http://h18000.www1.hp.com/products/quickspecs/12467\\_div/12467\\_div.HTML](http://h18000.www1.hp.com/products/quickspecs/12467_div/12467_div.HTML)

### ProLiant Essentials Workload Management Pack

ProLiant Essentials Workload Management Pack, Single Server License 303284-B21

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

[http://h18000.www1.hp.com/products/quickspecs/11452\\_div/11452\\_div.HTML](http://h18000.www1.hp.com/products/quickspecs/11452_div/11452_div.HTML)

### ProLiant Essentials Virtual Machine Management Pack

ProLiant Essentials Virtual Machine Management Pack, Single-Server License 435661-B21

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

**NOTE:** For additional ProLiant Virtual Machine Management Pack License Kits please see the QuickSpecs at:

[http://h18000.www1.hp.com/products/quickspecs/12328\\_div/12328\\_div.HTML](http://h18000.www1.hp.com/products/quickspecs/12328_div/12328_div.HTML)

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

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

## HP Control Tower BladeSystem p-class Management Software

HP Insight Control Linux Edition - MEDIA KIT 412956-B22

**NOTE:** This optional Media pack CD contains the ISO image for the HP Insight Control Linux Edition management appliance (see support servers below under "Management appliance (host) supported servers"). Servers must be acquired separately. For information on HP ProLiant Servers please visit:

<http://h18000.www1.hp.com/products/quickspecs/Division/11070.html>

**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/controltower> (click on Download button from this page).

HP Insight Control Linux Edition 1.5 -No Media, -1 License 412957-B22

**NOTE:** This license allows one (1) server blade to be deployed and managed via HP Insight Control Linux Edition.

HP Insight Control Linux Edition 1.5-No Media -8 License 412958-B22

**NOTE:** This license allows eight (8) server blades to be deployed and managed via HP Insight Control Linux Edition.

HP Insight Control Linux Edition 1.5 -No Media -Flex License 412959-B22

**NOTE:** For use with multiple servers (minimum of 5). This part number allows you to specify the license quantity. When ordering this part number, the quantity ordered will be the number of licenses embedded in a single activation key. A single kit containing that key is then delivered to you.

### Options

Processors	AMD Opteron™ Processor Model 8218 (2.6 GHz) Option Kit	409613-B21
	AMD Opteron™ Processor Model 8216 (2.4GHz) Option Kit	409612-B21
	AMD Opteron™ Processor Model 8214 (2.2GHz) Option Kit	409611-B21
	<p><b>NOTE:</b> HP ProLiant BL685c processor option kits contain two processors.</p> <p><b>NOTE:</b> The ProLiant BL685c only supports 2 and 4 processor configurations.</p>	
Memory	HP 1GB REG PC2-5300 2x512MB 1RANK Kit	408850-B21
	HP 2GB REG PC2-5300 2x1GB 1RANK Kit	408851-B21
	HP 4GB REG PC2-5300 2x2GB 2RANK Kit	408853-B21
	HP 8GB REG PC2-5300 2x4GB 2RANK Kit	408854-B21
	<p><b>NOTE:</b> Must be installed in pairs.</p> <p><b>NOTE:</b> DIMMs must be installed in decreasing capacity with the largest DIMMs installed in the banks furthest away from each processor.</p>	
Hard Drives	<b>Serial Attached SCSI (SAS) SFF Hot Plug</b>	
	HP 36GB 3G SAS 10K SFF SP HDD	375859-B21
	HP 72GB 3G SAS 10K SFF SP HDD	375861-B21
	HP 146GB 3G SAS 10K SFF HDD	431958-B21
	<p><b>NOTE:</b> SAS drives have a 3 year warranty.</p> <p><b>NOTE:</b> Please see the SAS Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature:</p> <p><a href="http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.HTML">http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.HTML</a> (Worldwide)</p>	
	<b>SFF SATA Hot Plug</b>	
	HP 60GB 1.5G SATA 5.4K SFF HDD	379306-B21
<p><b>NOTE:</b> SATA drives have a 1 year warranty. Please see the SATA Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature:</p> <p><a href="http://h18000.www1.hp.com/products/quickspecs/12091_div/12091_div.HTML">http://h18000.www1.hp.com/products/quickspecs/12091_div/12091_div.HTML</a> (Worldwide)</p>		
Storage Controllers	128MB Battery-Backed Cache Enabler	351580-B21
<p><b>NOTE:</b> Supports the Smart Array E200 Controller.</p>		
Ethernet Mezzanine Options	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 NC373m PCI Express Dual Port Multifunction Gigabit Server Adapter for c-Class BladeSystem	406770-B21

### Options

Fibre Channel Mezzanine Options	Emulex LPe 1105 FC Dual Channel 4Gb, PCI-E-to-Fibre Channel Host Bus Adapter	403621-B21
	QLogic QMH2462 4Gb FC HBA for HP c-Class BladeSystem <b>NOTE:</b> Supports HP c-Class BladeSystem server blades	403619-B21
InfiniBand Mezzanine Options	HP 4X DDR IB Mezzanine HCA for HP BladeSystem c-Class	410533-B21
	HP HPCD 4X DDR IB Mezzanine HCA for HP BladeSystem c-Class	409377-B21
HP StorageWorks Modular Smart Array 1000	HP StorageWorks Modular Smart Array 1000 <b>NOTE:</b> Please see the Modular Smart Array 1000 QuickSpecs for additional options and configuration information at <a href="http://h18000.www1.hp.com/products/quickspecs/11033_div/11033_div.HTML">http://h18000.www1.hp.com/products/quickspecs/11033_div/11033_div.HTML</a> (Worldwide)	201723-B22
Cluster Options	<b>NOTE:</b> For configuration/certification options for the HP Parallel Database Cluster for Oracle RAC please go to: <a href="http://www.hp.com/solutions/highavailability/oracle">http://www.hp.com/solutions/highavailability/oracle</a> <b>NOTE:</b> For additional information regarding the HP ProLiant Cluster for HA/F500 please see the following QuickSpecs at: <a href="http://h18000.www1.hp.com/products/quickspecs/10232_div/10232_div.html">http://h18000.www1.hp.com/products/quickspecs/10232_div/10232_div.html</a> (Worldwide)	
	ProLiant Cluster Starter Kit <b>NOTE:</b> For additional information regarding the ProLiant Cluster Starter Kit please see the following QuickSpecs at: <a href="http://h18000.www1.hp.com/products/quickspecs/11935_div/11935_div.html">http://h18000.www1.hp.com/products/quickspecs/11935_div/11935_div.html</a> (Worldwide)	364023-B22
	HP HA/F200 for Entry SAN Cluster	364026-B22
	ProLiant Cluster HA/F500 for the Enterprise SAN <b>NOTE:</b> For additional information regarding the ProLiant Cluster HA/F500 for Enterprise SAN please see the following QuickSpecs at: <a href="http://h18000.www1.hp.com/products/quickspecs/11933_div/11933_div.html">http://h18000.www1.hp.com/products/quickspecs/11933_div/11933_div.html</a> (Worldwide)	364024-B21
	HP Serviceguard for Linux A.11.16 for SUSE SLES 9 & 10 and Red Hat EL 3 & 4 (single license version)	307754-B26
	HP Serviceguard for Linux ProLiant Cluster A.11.16 for SUSE SLES 9 & 10 and Red Hat EL 3 & 4 (2 node license cluster kit)	305199-B26
	HP Serviceguard for Linux and Red Hat Global File System - 1 year subscription	T2798AA#001
	HP Serviceguard for Linux and Red Hat Global File System - 3 years subscription <b>NOTE:</b> For additional information regarding the HP Serviceguard for Linux License, please see the following QuickSpecs at: <a href="http://h18000.www1.hp.com/products/quickspecs/11518_div/11518_div.html">http://h18000.www1.hp.com/products/quickspecs/11518_div/11518_div.html</a> (Worldwide)	T2798AA#003

### Options

USB Options	HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)	DC172B
	512MB HP DriveKey II	ED516AA
	HP 1GB Drive Key II- USB 2.0 Flash Drive	AG382AA
	USB 2.0 4-port Hub	DG954A
	2004 Standard Keyboard USB	DT528A#xxx

### 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 UE458E

4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic UE459E

6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic UE460E

#### Support Plus 24

Onsite HW support 24x7, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic UE473E

**NOTE:** HP Care Pack services for the c7000 Enclosure cover the enclosure, power supplies and fans. HP qualified rack options are covered by these services when installed within the same rack. HP Supported Ethernet devices covered include the Ethernet Pass-Through Module, Fibre Channel Pass-Through Module, Cisco Catalyst 3020 Blade Switch and GbE2c Ethernet Blade Switch.

#### Hardware Services On-site Service

Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic UE477E

4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic UE478E

4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic UE479E

6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic UE480E

Hardware Installation, Electronic U5988E

**NOTE:** The HP Care Pack service part numbers below covers the HP 4Gb, 12 Port SAN Switch & 4Gb, 12 Port SAN Switch Upgrade LTU.

#### Hardware Services On-site Service

Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic UC007E

4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic UC008E

4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic UC009E

6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic UC023E

Hardware Installation, Electronic U5988E

**NOTE:** The HP Care Pack service part numbers below covers the Brocade 4/24 SAN Switch.

#### Hardware Services On-site Service

Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic UE436E

4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic UE437E

4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic UE438E

### Options

6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UE439E
Hardware Installation, Electronic	U5988E
<b>NOTE:</b> The HP Care Pack service part numbers below covers the Brocade 4/24 SAN Switch Power Pack.	
<b>Hardware Services On-site Service</b>	
<b>Support Plus</b>	
Onsite HW support, 8am-9pm, M-F, 4hr response and SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excl. HP holidays, Electronic	UE728E
<b>Support Plus 24</b>	
Onsite HW support 24x7, 4hr response and SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	UE729E
<b>Installation &amp; Start-up Services</b>	
HP Installation & Startup Service for HP BladeSystem Infrastructure, Electronic	UE602E
<b>NOTE:</b> Provides for an integrated hardware and software implementation that includes remote service planning, onsite deployment of hardware and software, installation verification testing and customer orientation. Hardware deployment covers the installation of a single BladeSystem enclosure that include server blades (up to 16), Ethernet network interconnect, and power options. Software deployment covers the installation and configuration of HP BladeSystem Essential Insight Control Datacenter Edition which includes Systems Insight Manager (SIM), HP Rapid Deployment Pack (RDP), Vulnerability and Patch Management Pack (VPM) and Performance Management Pack (PMP) and deploy up to two editions of either Windows or Linux, using scripted operating system installation software.	
ProLiant BL c-Class Blade Server Hardware Installation, Electronic	UE493E
ProLiant BL c-Class Enclosure and Server Blade Hardware Installation, Electronic	UE494E
Provides for the Installation and Start-up of ProLiant Essentials Rapid Deployment Pack, Electronic	U5683E
<b>NOTE:</b> Provides installation on a Customer supplied server designated as a Deployment Server. Includes the deployment of a single server. This new server will be deployed using either one of the pre-configured scripts or an image. In addition, the service will provide for the capture and storage of the configuration of the newly deployed server and orientation on product usage. To be delivered during standard office ours, standard office days.	
Provides for the Installation and Start-up of Rapid Deployment Pack Implementation of Rapid Deployment Pack (Basic) (Electronic)	UA042E
HP ProLiant Essentials Vulnerability and Patch Management Pack Installation and Startup Service. (Electronic)	UC929E
<b>NOTE:</b> Service coverage: onsite installation of the Vulnerability and Patch Management (VPM) software on a customer designated server, configuration of the VPM software to acquire security patches, enabling the VPM software to scan up to five (5) systems, applying the security patches to the designated servers, generating a report from VPM that shows the vulnerability assessment results, and providing customer with an orientation to the software.	
Provides for the Installation and Start-up of System Insight Manager (Electronic)	UA041E
Provides for the Installation and Start-up of System Insight Manager (Electronic)	UA040E
<b>NOTE:</b> For more information, customer/resellers can contact <a href="http://www.hp.com/hps/carepack/services/">http://www.hp.com/hps/carepack/services/</a>	

### Options

#### Software Operating Environment Care Packs

Microsoft Software Operating Environment Software Telephone 9x5 - 3 incident (Electronic)	U8169E
Red Hat Software Operating Environment Software Telephone 9x5 - 10 incident (Electronic)	U3402E
SUSE Software Operating Environment Software Telephone 9x5 - 3 incident (Electronic)	U9615E
ProLiant Essentials Operating Environment, - 5 Day, 8x5,1 year, 3 incident (Electronic)	U8222E
ProLiant Essentials Operating Environment, - 5 Day, 24x7,1 year, 3 incident (Electronic)	U8301E
ProLiant Essentials Operating Environment, - 5 Day, 9x5,1 year, 10 incident	UE006E
ProLiant Essentials Operating Environment, - 5 Day, 24x7,1 year, 10 incident	UE116E
ProLiant Essentials Operating Environment, - 5 Day, 9x5,1 year, 25 incident	UE117E
ProLiant Essentials Operating Environment, - 5 Day, 24x7,1 year, 25 incident	UE118E
ProLiant Essentials Operating Environment, - 5 Day, 9x5,1 year, 50 incident	UE119E
ProLiant Essentials Operating Environment, - 5 Day, 24x7,1 year,50 incident	UE120E
ProLiant Essentials Operating Environment, - 5 Day, 9x5,1 year, unlimited SW Tech Support	UE121E
ProLiant Essentials Operating Environment, - 5 Day, 24x7,1 year, unlimited SW Tech Support	UE452E
ProLiant Essentials Operating Environment, - 5 Day, 9x5, 3 year, unlimited SW Tech Support	UE453E
ProLiant Essentials Operating Environment, - 5 Day, 24x7, 3 year, unlimited SW Tech Support	UE454E

**NOTE:** For more information, customer/resellers can contact

<http://www.hp.com/hps/carepack/services/>

## Memory

### DIMM installation guidelines:

1. All DIMMs must be PC2-5300 DIMMs (DDR2-667)
2. Both DIMM slots in a memory bank must be populated.
3. Banks must be populated in sequential alphabetic order, starting with bank A.
4. Both DIMMs in a memory bank must be identical. Install identical DIMMs as pairs only, starting with DIMM socket 1, bank A.
5. Multiple advanced memory protection (AMP) modes are supported, based on DIMM population and RBSU selection. The server blade defaults to Advanced ECC.
6. DIMMs must be installed in decreasing capacity with the largest DIMMs installed in the banks furthest away from each processor.

### HP ProLiant BL685c Server Blade

#### Standard Memory

4GB Registered PC2-5300, DDR2-667 ECC DIMMs (4 x 1 GB)

#### Standard Memory Plus Optional Memory

Up to 52GB of PC2-5300, DDR2-667 DIMMs memory is available with the installation of optional PC2-5300, DDR2-667 DIMM memory expansion kits.

#### Standard Memory Replaced with Optional Memory

Up to 64GB of PC2-5300 DDR2-667 DIMM memory is available with the removal of standard memory and the installation of optional SDRAM DDR DIMM memory expansion kits.

Memory		Slot							
Standard	4GB	1	2	3	4	5	6	7	8
		1GB	1GB	Empty	Empty	1GB	1GB	Empty	Empty
		9	10	11	12	13	14	15	16
		Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty
Optional	52GB	1	2	3	4	5	6	7	8
		4GB	4GB	1GB	1GB	4GB	4GB	1GB	1GB
		9	10	11	12	13	14	15	16
		4GB	4GB	4GB	4GB	4GB	4GB	4GB	4GB
Maximum	64GB	1	2	3	4	5	6	7	8
		4GB	4GB	4GB	4GB	4GB	4GB	4GB	4GB
		9	10	11	12	13	14	15	16
		4GB	4GB	4GB	4GB	4GB	4GB	4GB	4GB

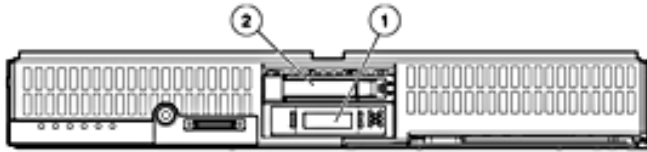
Following are memory options available from HP:

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

**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

### Hard Drives

#### SAS Hard Drive

	Quantity Supported	Position Supported	Controller
146GB 10,000 rpm SAS SFF SP	2	1-2	Smart Array E200i Controller
72GB 10,000 rpm SAS SFF, SP			
36GB 10,000 rpm SAS SFF, SP			

#### Serial-ATA (SATA) Hard Drive

	Quantity Supported	Position Supported	Controller
60 GB 5,400 rpm SATA	2	1-2	Smart Array E200i Controller

### External Storage

	Quantity Supported	Position Supported	Host Controller or Adapter
Modular Smart Array 1000	Please see the <a href="#">Modular Smart Array 1000 QuickSpecs</a> below to determine configuration requirements	External	Please see the Modular Smart Array 1000 QuickSpecs (URL below) for the latest list of supported HBAs

Modular Smart Array 1000:

[http://h18000.www1.hp.com/products/quickspecs/11033\\_div/11033\\_div.HTML](http://h18000.www1.hp.com/products/quickspecs/11033_div/11033_div.HTML)

## Power Specifications

**NOTE:** To review maximum system power ratings for facilities planning purposes use the Active Answers Blade Power Sizer which is available via the online tool located at URL: <http://h71019.www7.hp.com/ActiveAnswers/cache/347628-0-0-0-121.html>

### Technical Specifications

System Unit	Dimensions	Height	14.42 in (36.63 cm)
		Depth	20.02 in (50.85 cm)
		Width	2.03 in (5.16 cm)
	Shipping Dimensions	Height	21.50 in (54.61 cm)
		Depth	23.13 in (58.75 cm)
		Width	9.94 in (25.25 cm)
	Weight	Maximum	22.8 lbs (10.3 kg)
	Temperature Range*	Operating	10° to 35° C (50° to 95° F)
		Non-Operating	-40° to 60° C (-40° to 140° F)
		Storage	-20° to 60° C (-4° to 140° F)
Maximum Wet Bulb Temperature		30° C (86° F)	
Relative Humidity**	Operating	10% to 90%	
	Shipping	10% to 90%	
	Storage	10% to 95%	

\*NOTE: All temperature ratings shown are for sea level. An altitude derating of 1°C per 304.8 m (1.8°F per 1,000 ft) to 3048 m (10,000 ft) is applicable. No direct sunlight allowed. Upper operating limit is 3,048m (10,000 ft) or 70 Kpa/10.1 psia. Upper non-operating limit is 9,144 m (30,000 ft) or 30.3 KPa/4.4 psia.

\*\*NOTE: Storage maximum humidity of 95% is based on a maximum temperature of 45°C (113°F). Altitude maximum for storage corresponds to a pressure minimum of 70 KPa.

Smart Array E200i Controller	Disk Drive and Enclosure Interface	3G SAS (Serial Attached SCSI) 1.5G SATA (Serial Advanced Technology Attachment)
	SAS Connectors	2 internal (SFF8484) x4 wide port connectors
	Cache Memory Speed	DDR-1/266 MHz provides up to 4.2 GB/s maximum bandwidth.
	Server Interface	x8 2.5G PCIe provides 2GB/s maximum bandwidth.
	SAS Speed	x8 3G SAS provides 2.4GB/s maximum bandwidth.
	Cache Memory	40-bit 64MB or 128MB cache: ECC protection, battery-backed, and transportable
	Logical Drives Supported	Up to 32 logical volumes
	Maximum Logical Drive Capacity	292GB (2 x 146GB)
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	RAID Support	RAID 1+0 (Striping & Mirroring)
		RAID 0 (Striping)
	Upgradeable Firmware	Upgradeable Firmware

### Technical Specifications

Embedded Dual NC326i Multifunction Gigabit NICs	<b>Network Interface</b>	1000Base-Sx	
	<b>Compatibility</b>	IEEE 802.3ab 1000Base-Sx	
	<b>Data Transfer Method</b>	PCI Express, four lanes (x4)	
	<b>Network Transfer Rate (Theoretical Maximum Values)</b>	1000Base-SX	2000 Mb/s
	<b>Connector</b>	RJ-45 (at SWM of enclosure)	
	<b>Cable Support</b>	1000 Base-TX	Cable Support 1000 Base-TX Category 5 UTP up to 328 ft (100 m)

Embedded Dual NC373i Multifunction Gigabit NICs	<b>Network Interface</b>	1000Base-Sx	
	<b>Compatibility</b>	IEEE 802.3ab 1000Base-Sx	
	<b>Data Transfer Method</b>	PCI Express, four lanes (x4)	
	<b>Network Transfer Rate (Theoretical Maximum Values)</b>	1000Base-SX (Full-Duplex)	2000 Mb/s
	<b>Connector</b>	RJ-45 (at SWM of enclosure)	
	<b>Cable Support</b>	1000 Base-TX	Cable Support 1000 Base-TX Category 5 UTP up to 328 ft (100 m)

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