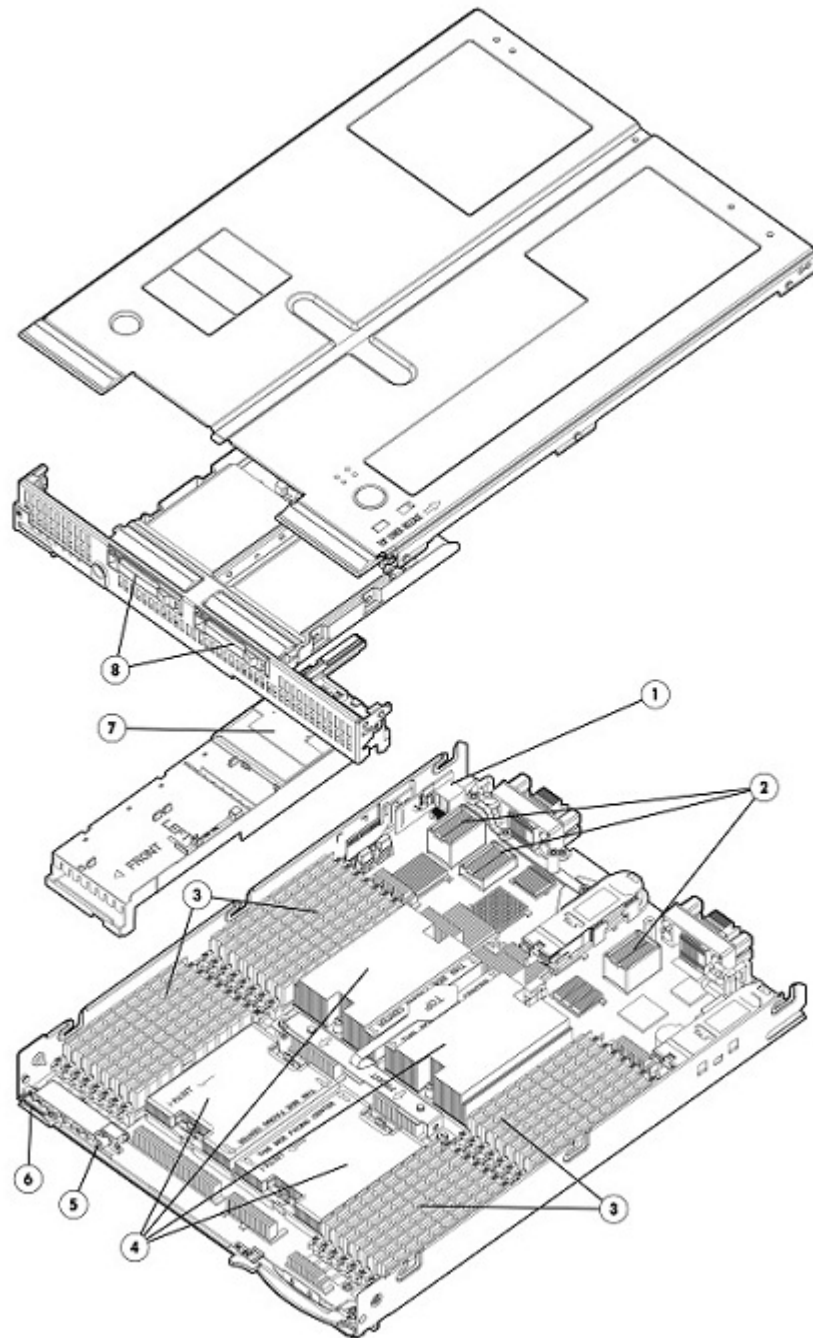


Overview



HP ProLiant BL685c G7 Server Blade

- | | |
|--|--------------------------------|
| 1. Internal USB connector/ Internal MicroSD card slot | 5. System power button and LED |
| 2. Three (3) mezzanine I/O expansion slots | 6. Local I/O Connector |

Overview

3. Thirty-two (32) DDR3 DIMM memory slots
4. Up to four (4) Multi-Core AMD Opteron™ 6200 or 6300 Series processors
7. Smart Array P410i storage controller (available as an option in factory integrated models)
8. Two (2) small form factor (SFF) hot plug drive bays

What's New

- Support for AMD Opteron™ 6300 Series Processors

At A Glance

This document covers the HP ProLiant BL685c G7 server blade only. For more information on HP BladeSystem c-Class Enclosures and HP BladeSystem c-Class Interconnect and Mezzanine Components, please see the following:

- HP BladeSystem c3000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12790_na/12790_na.html
- HP BladeSystem c7000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12810_na/12810_na.html
- HP BladeSystem c-Class Interconnect and Mezzanine Components:
<http://h18004.www1.hp.com/products/blades/components/c-class-interconnects.html>
<http://h18004.www1.hp.com/products/blades/components/c-class-adapters.html>

The BL685c G7 helps simplify network connections, lower infrastructure costs, and delivers cost-effective, scalable, dense four-processor performance for virtualization and compute-intensive database applications.

HP ProLiant BL685c G7 server blade includes:

- **Processor:**
 - Up to four (4) Multi-Core AMD Opteron™ 6300 or 6200 Series processors
 - Sixteen-Core supports up to 2.5 GHz; 16 MB Level 3 cache
 - Twelve-Core supports up to 2.8 GHz; 16 MB Level 3 cache
 - Eight-Core supports up to 3.2 GHz; 16 MB Level 3 cache
 - Four-Core supports up to 3.5 GHz; 16MB Level 3 cache
 - AMD SR5690 and SP5100 chipsets
- **Memory:**
 - Thirty-two (32) DIMM slots
 - Up to 1TB of PC3L-8500R DDR3 Registered (RDIMM) memory, operating at 1066 MHz or at 800 MHz when fully populated at 2 DIMMs per channel in 32 slots
 - Up to 512GB of PC3-10600 DDR3 Registered (RDIMM) memory, operating at 1333 MHz when fully populated at 2 DIMMs per channel in 32 slots
 - Up to 512GB of PC3-12800 DDR3 Registered (RDIMM) memory, operating at 1600 MHz when fully populated at 2 DIMMs per channel in 32 slots
 - Supporting memory interleaving (2:1)
NOTE: Depending on the memory configuration, the memory speed may run at 1600MHz, 1333MHz, 1066MHz, or 800MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator.
- **Storage Controller:**
 - Smart Array P410i RAID controller with 1GB flash backed write cache (FBWC). Supports RAID 0,1.
NOTE: The HP Smart Array P410i controller is required for all blades that support hot plug drives. See Factory Integrated Models section for more information.

Overview

- **Internal Drive Support:**
 - Up to two (2) small form factor (SFF) SAS or SATA hot plug hard disk drives or SATA solid state drives
NOTE: SAS, SATA, and/or SSD drives cannot be mixed within the server.
- **Network Controller:**
 - Two (2) integrated NC551i Dual Port FlexFabric 10Gb Converged Network Adapters supporting stateless TCP/IP offload, TCP Offload Engine (TOE), Fibre Channel over Ethernet (FCoE) and iSCSI protocols
NOTE: Flex-10 capability requires the use of an HP Virtual Connect Flex-10 10Gb Ethernet module. Learn more at: www.hp.com/go/virtualconnect.
NOTE: Fibre Channel over Ethernet (FCoE) capability requires the use of an HP Virtual Connect FlexFabric 10GB/24-port Module, HP 10GbE Pass-Thru Module or the HP 6120XG with the CEE option installed.
NOTE: Each port is autosensing 1 Gb / 10 Gb, and can interoperate with 1 Gb HP BladeSystem c-Class interconnect components. Both ports will operate at the same speed.
 - One (1) additional embedded 10/100 network adapter dedicated to iLO 3 management
- **Mezzanine Support:**
 - Three (3) I/O expansion mezzanine slots.
 - Supports up to three (3) mezzanine cards
 - Dual-Port FlexFabric Adapter mezzanine option
 - Dual-Port Fibre Channel Mezzanine (4-Gb or 8-Gb) options for SAN connectivity
 - Dual-Port FlexFabric Converged Network Adapter
 - Ethernet server adapter mezzanine options for additional network ports
 - InfiniBand (IB) Mezzanine options for low latency server interconnectivity
 - I/O Accelerator mezzanine options for high transaction rate local storage
 - SAS mezzanine option for external direct attach and shared SAS storage
- **Expansion Blade Support:**
 - Supports up to two (2) optional storage, tape, or PCI expansion blades
NOTE: In a c3000 rack enclosure two half-height expansion blades may be installed above the full-height BL685c G7 in the two slots created by the mini divider in the top half of the c3000 enclosure. A mixture of half height and full height blades is not supported in the lower half of the c3000 enclosure. For more information, please see the HP BladeSystem c3000 Enclosure QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12790_na/12790_na.html
- **Internal Media Support:**
 - One (1) internal USB 2.0 connector for security key devices and USB drive key
 - One (1) internal MicroSD-HC card slot
- **Trusted Platform Module:**
 - One (1) internal TPM 1.2 module connector
- **Form Factor:**
 - HP ProLiant BL685c G7 server blade plugs into the BladeSystem c3000 and c7000 enclosures
- **Infrastructure Management:**
 - This server blade requires the latest version of the Onboard Administrator firmware. This firmware release may also require other subsystem firmware upgrades. For information on the latest firmware versions, please see the Blades Firmware Maintenance website at: <http://h18004.www1.hp.com/products/ blades/ components/ c-class- compmatrix.html>
 - HP Integrated Lights-Out 3 (iLO 3) 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, monitor, control and optimize your IT infrastructure through a single, simple management console. Insight Control supports Windows-based central management servers.
 - HP Matrix Operating Environment 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:**

Overview

- Supports Windows, RHEL, SLES, Oracle Solaris, Oracle Linux Unbreakable Enterprise Kernel, VMware and 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/ossupport>

- **Enclosures:**

- HP offers two (2) different c-Class server blade enclosures to meet your individual needs:
 - The HP BladeSystem c7000 rack enclosure is 10U high and holds up to eight (8) ProLiant BL685c G7 servers plugged vertically.
 - The HP BladeSystem c3000 rack enclosure is 6U high and holds up to four (4) HP ProLiant BL685c G7 servers plugged horizontally.
- 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>.
NOTE: For optimal cooling and system performance the BL685c G7 requires the c7000 enclosure to be configured with 10 fans and the c3000 enclosure to be configured with 6 fans.

- **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 the specific hard drive QuickSpecs for details.
NOTE: Server Warranty includes 3 year Parts, 3 year Labor, 3-year on-site support. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at:
<http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>

Standard Features

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

Processor

One of the following depending on Model

Sixteen-Core Processors

AMD Opteron™ 6380 (2.5GHz/ 16-core/16MB/115W) Processor
 AMD Opteron™ 6378 (2.4GHz 16-core/16MB/115W) Processor
 AMD Opteron™ 6278 (2.4GHz/16-core/16MB/115W) Processor
 AMD Opteron™ 6376 (2.3GHz 16-core/16MB/115W) Processor

AMD Opteron™ 6276 (2.3GHz/16-core/16MB/115W) Processor
 AMD Opteron™ 6274 (2.2GHz/16-core/16MB/115W) Processor
 AMD Opteron™ 6272 (2.1GHz/16-core/16MB/115W) Processor
 Low Power AMD Opteron™ 6366HE (1.8GHz 16-core/16MB/85W) Processor
 Low Power AMD Opteron™ 6262HE (1.6GHz/16-core/16MB/85W) Processor

Twelve-Core Processors

AMD Opteron™ 6348 (2.8GHz/12-core/16MB/115W) Processor
 AMD Opteron™ 6344 (2.6GHz/ 12-core/ 16MB/115W) Processor
 AMD Opteron™ 6238 (2.6GHz/12-core/16MB/115W) Processor
 AMD Opteron™ 6234 (2.4GHz/12-core/16MB/115W) Processor

Eight-Core Processors

AMD Opteron™ 6328 (3.2GHz/ 8-core/ 16MB/115W) Processor
 AMD Opteron™ 6220 (3.0GHz/8-core/16MB/115W) Processor
 AMD Opteron™ 6320 (2.8GHz/ 8-core/ 16MB/115W) Processor
 AMD Opteron™ 6140 (2.6GHz/8-core/12MB/115W) Processor

Quad-Core Processors

AMD Opteron™ 6308 (3.5GHz/ 4-core/ 16MB/115W) Processor
 AMD Opteron™ 6204 (3.3GHz/4-core/16MB/115W) Processor

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

Upgradeability

Upgradeable to quad (4) processors

NOTE: The HP ProLiant BL685c G7 only supports two (2) and four (4) processor configurations.

Cache Memory

16 MB Level 3 cache memory

Chipset

AMD SR5690 and SP5100

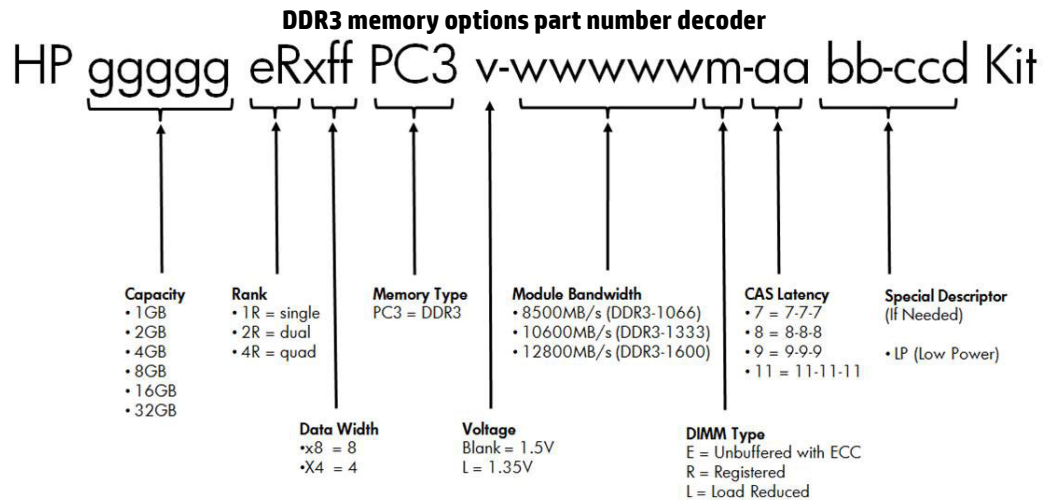
Standard Features

Memory

| | |
|----------------------------------|---|
| Type | DDR3 Registered (RDIMM) |
| Standard (depending on model) | 64GB (16 x 4GB) |
| Maximum (RDIMM) | 1TB (32 x 32GB) at 1066 MHz or at 800 MHz |

NOTE: Depending on the memory configuration, the memory speed may run at 1600MHz, 1333MHz, 1066MHz, or 800MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator

NOTE: Kits described as PC3L include Low Voltage DIMMs. For more information on ProLiant Energy Efficient Features, see: www.hp.com/go/ddr3memory-configurator



Network Controller

Two (2) integrated NC551i Dual Port FlexFabric 10Gb Converged Network Adapters

NOTE: Flex-10 capability requires the use of an HP Virtual Connect Flex-10 10Gb Ethernet module. Learn more at: www.hp.com/go/virtualconnect.

NOTE: Fibre Channel over Ethernet (FCoE) capability requires the use of an HP Virtual Connect FlexFabric 10GB/24-port Module or HP 10GbE Pass-Thru Module.

One (1) additional 10/100 network adapter dedicated to iLO 3 Management

I/O Expansion Slots

Three (3) I/O expansion mezzanine slots (All x8 PCIe 2.0)

Integrated Manageability

HP Integrated Lights-Out 3 (iLO 3)

Storage Controller

HP Smart Array P410i Controller 1GB memory module with flash backed write cache (FBWC). Supports RAID 0,1.

NOTE: The HP Smart Array P410i controller is required for all blades that support hot plug drives. See Factory Integrated Models section for more information.

Standard Features

Maximum Internal Storage

One of the following depending on Model

| | |
|-------------------|---|
| Hot Plug SAS | 2TB SAS (2 x 1TB) Serial SCSI |
| Hot Plug SATA | 2TB SATA (2 x 1TB) Serial ATA |
| Hot Plug SATA SSD | 800GB SATA SSD (2 x 400GB) Serial ATA SSD |
| Hot Plug SAS SSD | 1.6TB SAS SSD (2 x 800GB) Serial SCSI |

NOTE: SAS, SATA, and/or SSD drives cannot be mixed within the server.

Graphics

Integrated ATI RN-50 1280 x 1024 x 16M color

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

Fibre Channel Support

Three (3) optional dual-port Fibre Channel HBAs are supported by the HP ProLiant BL685c G7. Each mezzanine circuit board connects directly to the server blade system board. These Fibre Channel HBAs are available via option kits and must be ordered separately.

HBA mezzanine card option kits:

Emulex LPe1105 4Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem (PN 403621-B21)

Field-proven reliability and performance for a broad range of applications using drivers and management tools that are fully compatible with all Emulex HBAs

Emulex LPe1205 8Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem (PN 456972-B21)

- Exceptional performance, enhanced security, and scalable management for virtual server and enterprise-class applications

QLogic QMH2462 4Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem (PN 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

QLogic QMH2562 8Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem (PN 451871-B21)

- Provides a first step into the 8Gb future, advanced, embedded support for virtualized environments and reduced power consumption

HP BLc Brocade 804 8Gb Fibre Channel Host Bus Adapter (PN 590647-B21)

- Application oriented Quality of Service (AQoS) providing the ability to configure, prioritize, and optimize traffic flows from virtual machines and/or applications to the target port

Brocade, 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

Standard Features

- Up to two FC HBAs per server blade providing redundant FC HBA support
- Optimized for HP Storage products and supported by third party SAN vendors
- Support for Microsoft® Windows®, Linux, VMware ESX and Citrix XenServer™ operating system environments

Compatible SAN

HP ProLiant BL685c G7 server blades are optimized for HP MSA, EVA, and XP
HP ProLiant BL685c G7 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 is an interconnect option for BladeSystem c-Class that simplifies server connectivity to data and storage networks, and reduces costs. Unique HP Flex-10 technology makes maximum use of network bandwidths, provide dynamic tuning and enable extreme flexibility to meet individual server and infrastructure requirements by allocating up to 4 network connections per server port. Virtual Connect FlexFabric modules extend those capabilities to allocate one function per port to storage connections. HP Virtual Connect Enterprise Manager (VCEM) provides server management software with a central console to administer network connections and workloads for thousands of servers. For more information on Virtual Connect Enterprise Manager see: www.hp.com/go/vcem. For more information on Virtual Connect Ethernet, Fibre Channel, Converged Network and management options see:

www.hp.com/go/virtualconnect

HP Insight management software

HP Service Pack for ProLiant

HP Service Pack for ProLiant is an enhanced, re-packaging of ProLiant systems software and firmware, but is still based on the rich legacy of ProLiant Support Packs (PSPs) and HP Smart Update Firmware DVD that are originally found in the Insight Foundation suite for ProLiant. It is a comprehensive systems software and firmware release offered as a tested solution on all ProLiant servers supported by Insight Foundation version 8.70. It evolves beyond separate installation of HP PSPs and the HP Smart Update Firmware DVD by providing a single image that combines both of these products. It offers combined firmware and systems software packaging and improved processes for drivers, utilities, agents, non agents, and other utilities that are required to keep pace in today's rapidly expanding technology infrastructure.

Main or base releases for HP Service Pack for ProLiant are planned approximately 3 times a year, but look for interim update releases that will capture hot fixes released between main releases. HP Service Pack for ProLiant is supported on all HP ProLiant SL/ML/DL 100, 300, 500, 700, and 900 servers and BladeSystems series servers that are supported with Insight Foundation version 8.70 and will supersede and replace Insight Foundation. It is downloadable from: www.hp.com/go/server/service_packs/updates as a web only release and is not available on media.

The first release of HP Service Pack for ProLiant is Version 2011.06.0. It contains the first comprehensive collection of firmware and system software components, all tested together that include drivers, agents, non-agents, utilities, firmware packages for servers, controllers, storage, blades, enclosures, and all components and options supported by HP ProLiant Support Packs for Windows and Linux version 8.70. Additionally, VMware

Standard Features

| | |
|---------------------------------|---|
| | <p>offline firmware updates will be included.</p> <p>More information can be found at this link for HP Service Pack for ProLiant: www.hp.com/go/server/service_packs</p> |
| HP Insight Foundation | <p>Insight Foundation is being baselined at version v8.70 which means the following:</p> <ul style="list-style-type: none">• Its Media Kit (contains 2 SmartStart CDs, the Firmware DVD, and the Management DVD) will continue to ship with all supported ProLiant G7 or earlier BTO servers until the last supported server is no longer shipping.• The Media Kit will not be updated past version 8.70.• ProLiant G7 or earlier CTO servers are able to order the Media Kit with the understanding that the media is not updated. Please check specific server QuickSpecs for availability of CTO Kit.• PSP and Firmware DVD downloads will be updated through 2Q 2012 at the HP Insight Foundation Suite for ProLiant downloads tab: http://www.hp.com/go/foundation <p>Customers are urged to use the replacement product, HP Service Pack for ProLiant, instead of Insight Foundation Suite which is found at these location:</p> <ul style="list-style-type: none">• www.hp.com/go/spp• www.hp.com/go/spp/download |
| HP Integrated Lights-Out (iLO) | <p>HP Integrated Lights-Out (iLO) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP iLO functions without additional software and can be accessed from any location via a web browser. HP iLO works hand-in-hand with HP Systems Insight Manager, Insight Control suites, and Matrix Operating Environment for ProLiant, helping customers unleash the value of the ProLiant platform and deliver the highest possible quality of IT service. For more information, visit: www.hp.com/go/iLO</p> |
| HP Insight Control | <p>HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. For more information about this service, please visit: http://www.hp.com/services/insight.</p> <p>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.</p> |
| HP Matrix Operating Environment | <p>The HP Matrix Operating Environment (Matrix OE) for ProLiant and Integrity servers is an integrated command center that helps you instantly adjust to dynamic business demands. This advanced infrastructure management software lets you reduce the cost of common data center tasks by up to 40 percent while keeping pace with your changing business.</p> <p>The HP Matrix OE includes the automated provisioning, optimization, and recovery management capabilities for HP CloudSystem Matrix, the ideal</p> |

Standard Features

platform for private cloud and Infrastructure as a Service (IaaS). For more information, see <http://www.hp.com/go/matrixoe>.

High Performance Clusters

HP Cluster Platforms

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

HP HPC Interconnects

High Performance Computing (HPC) interconnect technologies are available for this server as part of the HP Cluster Platform portfolio. These high-speed InfiniBand and Gigabit interconnects are fully supported by HP when integrated within an HP cluster. Flexible, validated solutions can be defined with the help of configuration tools.

<http://www.hp.com/techservers/clusters/ucp/index.html>

HP Insight Cluster Management Utility

HP Insight Cluster Management Utility (CMU) is an HP-licensed and HP-supported suite of tools that are used for lifecycle management of hyperscale clusters of Linux ProLiant systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective.

<http://www.hp.com/go/cmu>

HP HPC Linux Value Pack

HP HPC Linux Value Pack (Value Pack) is an HP-licensed and HP-supported option to HP Insight CMU, for the development and deployment of applications on HPC Cluster Platforms. Value Pack includes the Platform LSF workload scheduler and Platform Application Center, as well as the HP-MPI parallelization library. [HP HPC Linux Value Pack](#)

Operating Systems and Virtualization Software

[Microsoft Windows Server](#)

[Red Hat Enterprise Linux \(RHEL\)](#)

[SUSE Linux Enterprise Server \(SLES\)](#)

[Oracle Solaris](#)

[VMware](#)

[Citrix XenServer](#)

NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, including how to purchase from HP, please visit our OS Support Site at: <http://www.hp.com/go/ossupport> and our driver download page: <http://www.hp.com/support/BL685cG7>.

Standard Features

Availability

Dual-Port Fibre Channel Mezzanine Card for redundant SAN connection
Two (2) embedded dual-port 10Gb Converged Network Adapters for redundant LAN connections
Two (2) hot-plug SAS/SATA/SSD drive bays and integrated RAID (Smart Array P410i) controller with flash backed write cache
Redundant ROM on each server blade
Multiple mezzanine I/O expansion
Advanced ECC Memory
Online memory spare
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 3 with:
 - 12 customizable user accounts
 - SSL encryption
 - Secure Shell version 2
 - Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser, CLP and XML scripting interface
 - AES and RC4 encryption of video
 - Disable via a global setting
 - Keyboard password
 - External USB port enable/disable
 - Network server mode
 - Serial interface control
 - TPM (Trusted Platform Module) 1.2 option
-

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>.

Standard Features

HP Simple Configurator

SCE is a guided self service tool to help sales and non technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes. If you require "custom" rack configuration or configuration for products not available in SCE, please contact HP's Customer Business Center or an Authorized Partner for assistance. <http://www.hp.com/products/configurator>

Service and Support

Service and Support

HP Technology Services for Industry Standard Servers and BladeSystem

Capitalizing on HP ProLiant server and HP BladeSystem capabilities requires a service partner who understands your increasingly complex business technology environment. That's why it makes sense to team up with the people who know HP infrastructure hardware and software best - the experienced professionals at HP Services.

What HP ProLiant and BladeSystem Services can do for you

HP ProLiant and BladeSystem Services can help you design, deploy, test, integrate, support, and manage IT and infrastructure solutions. This way, HP proposes services solutions that include more than just uplift of base warranty. You can get the support you need by choosing from one of a number of service packaged solutions we have designed to address wider set of customer support needs.

HP Technology Services meets business challenges with services offered in three packages -

Optimized Care Package, Standard Care Package, and Basic Care Package - available for each product group. Such packaged solutions enable customers to optimize technology operations, minimize risk and drive better business outcomes with easy-to-buy, easy-to-use scalable support packages for servers, storage, networking and software.

Optimized Care Package Supports maintaining servers at optimum performance availability

HP Installation and Startup Service for HP BladeSystem c-Class Infrastructure for c3000/c7000 enclosure

Provides for the installation and startup of a BladeSystem c3000 Infrastructure in a single blade enclosure including hardware and software, including deployment of OS, HP SIM, RDP, PMP and VPM
<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA0-5964ENW.pdf>

3-Year HP Critical Advantage L3 for c3000/c7000 enclosure + 3-Year HP Critical Advantage L3 for Blade server

Provides end-to-end infrastructure support solution for business critical applications running on virtualized/x86 infrastructures, enabling the customers to cost effectively build, operate, and continuously improve their IT environment
<http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=4AA3-1772ENW.pdf>

HP Installation and Startup Service for HP BladeSystem c-Class Enhanced Network

HP Provides for the configuration and testing of BladeSystem Ethernet interconnect switches to facilitate proper implementation of network protocols and access to advanced features.
<http://h20195.www2.hp.com/V2/GetPDF.aspx/4aa0-5969ENW.pdf>

Additional Services: Virtualization Services - Strategy, Design, Transition, Operation, Continual Service Improvement.

Service and Support

Standard Care Package

Package that maintains high level of server availability

HP Installation and Startup Service for HP BladeSystem c-Class Infrastructure for c3000/c7000 enclosure

Provides for the installation and startup of a BladeSystem c3000 Infrastructure in a single blade enclosure including hardware and software, including deployment of OS, HP SIM, RDP, PMP and VPM

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA0-5964ENW.pdf>

HP Installation and Startup Service for HP BladeSystem c-Class Enhanced Network

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

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

3-Year, HP 6 hour Hardware Support Onsite Call-to-Repair Service for c3000/c7000 enclosure + 3-Year, HP 6 hour Hardware Support Onsite Call-to-Repair Service for Blade server

Provides an IT manager with a team of support specialists who will quickly begin troubleshooting the system to help return the hardware to operating condition within 6 hours of the initial service request to the HP Global Solution Center

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

3-Year , HP 24x7 Software Support for Insight Control

Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6645EEE.pdf>

1-Year HP Proactive Select 30 Credit

Provides a flexible way to purchase HP best-in-class consultancy and technical services

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-3842ENN.pdf>

Additional Services: Software OS (Microsoft, Linux (SUSE/Red Hat) & VMware Installation & Start Up and Software Support); Microsoft or Linux or VMware education courses; +60 Proactive Select Credits, Factory Express.

Service and Support

Basic Care Package

Delivers minimum recommended support service level

HP Installation and Startup Service for HP BladeSystem c-Class Infrastructure for c3000/c7000 enclosure

Provides for the installation and startup of a BladeSystem c3000 Infrastructure in a single blade enclosure including hardware and software, including deployment of OS, HP SIM, RDP, PMP and VPM

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA0-5964ENW.pdf>

3-Year, HP 24x7 4 hour Response, Hardware Support Onsite Service for c3000/c7000 enclosure + 3-Year, HP 24x7 4 hour Response, Hardware Support Onsite Service for Blade server

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

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

3-Year , HP 24x7 Software Support for Insight Control

Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6645EEE.pdf>

1-Year HP Proactive Select 10 Credit

Provides a flexible way to purchase HP best-in-class consultancy and technical services

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-3842ENN.pdf>

Additional Services: Startup Blade System c-Class Enhanced Network Service; Software OS (Microsoft, Linux (SUSE/Red Hat) & VMware Installation & Start Up and Software Support); +30 Proactive Select Credits, Factory Express

Insight Remote Support

The packages include HP Insight Remote Support that uses proven technology to deliver secure, reliable 24x7 remote monitoring, diagnoses, and problem resolution. It is available at no additional cost to all warranty, HP Care Pack Service, and service agreement customers.

For more information

To learn more on HP ProLiant servers and HP BladeSystem servers, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: www.hp.com/services/bladeSystem

Models

Sixteen-Core Models

| | | |
|---|--|---|
| HP ProLiant BL685c G7 6380 4P 64GB-R P410i/1GB FBWC Server 699066-B21 | Processor(s) | (4) AMD Opteron™ 6380 (2.5GHz/16-core/16MB/115W) Processor (4) AMD Opteron™ 6276 (2.30GHz/16-core/16MB/115W) Processor |
| | One of the following depending on Model | |
| HP ProLiant BL685c G7 6276 4P 64GB-R Hot Plug SFF Server 654799-B21 | Cache Memory | 16 MB Level 3 cache memory |
| | Memory | 64 GB (16 x 4 GB) PC3-10600, Registered DDR3-1333 NOTE: Total of 32 DIMM slots. |
| | Network Adapter | Two (2) embedded HP NC551i Dual Port FlexFabric 10Gb Converged Network Adapters |
| | Storage Controller | Smart Array P410i RAID controller with 1 GB cache flash-backed write cache (FBWC) |
| | Hard Drives | None ships standard; (2) SFF SAS/SATA/SSD drive bays |
| | Internal Storage One of the following depending on Model | Up to 2TB SAS Up to 2TB SATA Up to 800GB SATA SSD Up to 1.6TB SAS SSD |
| | Optical Drive | None ships standard |
| | Form Factor | Up to four (4) full-height blades supported in the HP BladeSystem c3000 Enclosure Up to eight (8) full-height blades supported in HP BladeSystem c7000 Enclosure |

Twelve-Core Models

| | | |
|---|--|---|
| HP ProLiant BL685c G7 6344 4P 64GB-R P410i/1GB FBWC Server 708924-B21 | Processor(s) | (4) AMD Opteron™ 6344 (2.6GHz/12-core/16MB/115W) Processor (4) AMD Opteron™ 6238 (2.60GHz/12-core/16MB/115W) Processor |
| | One of the following depending on Model | |
| HP ProLiant BL685c G7 6238 4P 64GB-R Hot Plug SFF Server 654800-B21 | Cache Memory | 16 MB Level 3 cache memory |
| | Memory | 64 GB (16 x 4 GB) PC3-10600, Registered DDR3-1333 NOTE: Total of 32 DIMM slots. |
| | Network Adapter | Two (2) embedded HP NC551i Dual Port FlexFabric 10Gb Converged Network Adapters |
| | Storage Controller | Smart Array P410i RAID controller with 1 GB cache flash-backed write cache (FBWC) |
| | Hard Drives | None ships standard; (2) SFF SAS/SATA/SSD drive bays |
| | Internal Storage One of the following depending on Model | Up to 2TB SAS Up to 2TB SATA Up to 800GB SATA SSD Up to 1.6TB SAS SSD |
| | Optical Drive | None ships standard |
| | Form Factor | Up to four (4) full-height blades supported in the HP BladeSystem c3000 Enclosure Up to eight (8) full-height blades supported in HP BladeSystem c7000 Enclosure |

Models

Eight-Core Models

| | | |
|---|--|---|
| HP ProLiant BL685c G7 6328 4P 64GB-R P410i/1GB FBWC Server 699068-B21 | Processor(s) | (4) AMD Opteron™ 6328 (3.2GHz/8-core/16MB/115W) Processor |
| | Cache Memory | 16 MB Level 3 cache memory |
| | Memory | 64 GB (16 x 4 GB) PC3-10600, Registered DDR3-1333 NOTE: Total of 32 DIMM slots. |
| | Network Adapter | Two (2) embedded HP NC551i Dual Port FlexFabric 10Gb Converged Network Adapters |
| | Storage Controller | Smart Array P410i RAID controller with 1 GB cache flash backed write cache (FBWC) |
| | Hard Drives | None ships standard; (2) SFF SAS/SATA/SSD drive bays |
| | Internal Storage | Up to 2TB SAS |
| | One of the following depending on Model | Up to 2TB SATA |
| | | Up to 800GB SATA SSD |
| | | Up to 1.6TB SAS SSD |
| | Optical Drive | None ships standard |
| | Form Factor | Up to four (4) full-height blades supported in the HP BladeSystem c3000 Enclosure |
| | | Up to eight (8) full-height blades supported in HP BladeSystem c7000 Enclosure |

Configuration Information - Factory Integrated Models

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

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

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

NOTE: FIO indicates that this option is available only as a factory installable option.

Step 1: Base Server Blade Configuration

| | | |
|---------------|--|------------|
| Models | HP ProLiant BL685c G7 Configure-to-order Server | 518878-B21 |
| | Two (2) integrated HP NC551i Dual Port FlexFabric 10Gb Converged Network Adapters and one (1) additional 10/100 server adapter dedicated to iLO 3 management | |
| | Two (2) small form factor (SFF) SAS/SATA/SSD hot plug drive bays | |
| | HP Integrated Lights-Out 3 (iLO 3) | |

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

HP Processors

For dual (2) processor configurations choose (one of the following):

NOTE: If four (4) processors are desired, select one xxxxxx-L21 and one xxxxxx-B21.

Sixteen-Core Processors

| | |
|---|------------|
| HP BL685c G7 AMD Opteron™ 6380 (2.5GHz/16-core/16MB/115W) FIO 2-processor Kit | 699069-L21 |
| HP BL685c G7 AMD Opteron™ 6378 (2.4GHz/16-core/16MB/115W) FIO 2-processor Kit | 699070-L21 |
| HP BL685c G7 AMD Opteron™ 6376 (2.3GHz/16-core/16MB/115W) FIO 2-processor Kit | 699071-L21 |
| HP BL685c G7 AMD Opteron™ 6366HE (1.8GHz/16-core/16MB/85W) FIO 2-processor Kit | 699077-L21 |
| HP BL685c G7 AMD Opteron™ 6278 (2.4GHz/16-core/16MB/115W) FIO Processor Kit | 686865-L21 |
| HP BL685c G7 AMD Opteron™ 6276 (2.30GHz/16-core/16MB/115W) FIO 2-processor Kit | 654805-L21 |
| HP BL685c G7 AMD Opteron™ 6274 (2.20GHz/16-core/16MB/115W) FIO 2-processor Kit | 654803-L21 |
| HP BL685c G7 AMD Opteron™ 6272 (2.10GHz/16-core/16MB/115W) FIO 2-processor Kit | 654802-L21 |
| HP BL685c G7 AMD Opteron™ 6262HE (1.60GHz/16-core/16MB/85W) FIO 2-processor Kit | 654808-L21 |

Twelve-Core Processors

| | |
|--|------------|
| HP BL685c G7 AMD Opteron™ 6348 (2.8GHz/12-core/16MB/115W) FIO 2-processor Kit | 699072-L21 |
| HP BL685c G7 AMD Opteron™ 6344 (2.6GHz/12-core/16MB/115W) FIO 2-processor Kit | 699073-L21 |
| HP BL685c G7 AMD Opteron™ 6238 (2.60GHz/12-core/16MB/115W) FIO 2-processor Kit | 654806-L21 |
| HP BL685c G7 AMD Opteron™ 6234 (2.40GHz/12-core/16MB/115W) FIO 2-processor Kit | 654804-L21 |

Eight-Core Processors

| | |
|--|------------|
| HP BL685c G7 AMD Opteron™ 6328 (3.2GHz/8-core/16MB/115W) FIO 2-processor Kit | 699074-L21 |
| HP BL685c G7 AMD Opteron™ 6320 (2.8GHz/8-core/16MB/115W) FIO 2-processor Kit | 699075-L21 |
| HP BL685c G7 AMD Opteron™ 6220 (3.0GHz/8-core/16MB/115W) FIO 2-processor Kit | 654807-L21 |
| HP BL685c G7 AMD Opteron™ 6212 (2.60GHz/8-core/16MB/115W) FIO Processor Kit | 654801-L21 |

Quad-Core Processors

| | |
|--|------------|
| HP BL685c G7 AMD Opteron™ 6308 (3.5GHz/4-core/16MB/115W) FIO 2-processor Kit | 699076-L21 |
|--|------------|

Configuration Information - Factory Integrated Models

HP Memory

HP BL685c G7 AMD Opteron™ 6204 (3.30GHz/4-core/16MB/115W) FIO Processor Kit 672514-L21

Registered DIMMs (RDIMMs)

HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit 593907-B21

HP 4GB (1x4GB) Single Rank x4 PC3-12800 (DDR3-1600) Registered CAS-11 Memory Kit 676331-B21

HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit 593911-B21

HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit 604500-B21

HP 8GB (1x8GB) Single Rank x4 PC3-12800 (DDR3-1600) Registered CAS-11 Memory Kit 676333-B21

HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit 593913-B21

HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit 604502-B21

HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit 593915-B21

HP 16GB (1x16GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 LP Memory Kit 627808-B21

HP 16GB (1x16GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit 684066-B21

HP 32GB (1x32GB) Quad Rank x4 PC3L-8500 (DDR3-1066) Registered CAS-7 LP Memory Kit 627810-B21

NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator

NOTE: A minimum of one (1) DIMM per processor is required.

NOTE: Kits described as PC3L include Low Voltage DIMMs. For more information on ProLiant Energy Efficient Features, see: www.hp.com/go/proliant-energy-efficient.

NOTE: Depending on the memory configuration, the memory speed may run at 1600MHz, 1333MHz, 1066MHz, or 800MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator.

Step 3: Choose Additional Factory Integration Options

HP Insight Software

HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO License 582765-B21

Configuration Information - Factory Integrated Models

Step 4: Choose Additional Options for Factory Integration

HP Storage Controller HP Smart Array P410i/1G FBWC 2-ports Int PCIe x8 SAS Controller 588184-B22

NOTE: Includes 1 GB cache with flash-backed write cache (FBWC).

NOTE: The Smart Array P410i controller is required for all blades that support hot plug drives.

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

HP BladeSystem c3000 Enclosure QuickSpecs:

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

HP BladeSystem c7000 Enclosure QuickSpecs:

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

and HP BladeSystem c-Class Interconnect and Mezzanine Components:

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

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

Core Options

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

Ethernet Mezzanine Options

Gigabit Ethernet Mezzanines

| | |
|--|------------|
| HP NC325m PCI Express Quad Port Gigabit Server Adapter | 416585-B21 |
| HP NC360m Dual Port 1GbE BL-c Adapter | 445978-B21 |
| HP NC364m Quad Port 1GbE BL-c Adapter | 447883-B21 |
| HP NC382m PCI Express Dual Port Multifunction Gigabit Server Adapter | 453246-B21 |

10 Gigabit Ethernet Mezzanines

NOTE: A 10 Gigabit Ethernet adapter is required for each server blade connecting to a 10Gb interconnect in bays 3-8 (HP BladeSystem c7000 Enclosure) or bays 2-4 (HP BladeSystem c3000 Enclosure).

NOTE: Each 10 Gigabit Ethernet adapter requires a minimum of 2GB of server memory.

NOTE: Only (2) 10 Gigabit Ethernet mezzanine cards can be installed in the BL685c G7 at the same time.

NOTE: Each 10 Gigabit Ethernet adapter 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.

NOTE: The ROM Based Setup Utility (RBSU) feature allows for the configuring of a FlexFabric Adapter to any of the supported protocols. For example iSCSI to FCoE (Fibre Channel over Ethernet). Note that a HP Virtual Connect profile takes precedence over the setting in this menu. Also, some FlexFabric Adapters may require that network boot be enabled in order to configure the protocol. If the protocol is configured without enabling network boot with certain FlexFabric Adapters, the protocol may not take effect. Once the protocol has taken effect on the first boot after configuring this option, network boot may be disabled if desired.

| | |
|---|------------|
| HP NC532m Dual Port 10GbE Multifunction BL-c Adapter | 467799-B21 |
| HP NC542m Dual Port Flex-10 10GbE BL-c Adapter | 539857-B21 |
| HP NC550m 10Gb 2-port PCIe x8 Flex-10 Ethernet Adapter | 581204-B21 |
| HP BLc NC551m Dual Port FlexFabric 10Gb Converged Network Adapter | 580151-B21 |
| NOTE: Only (2) NC551m (PN 580151-B21) or NC553m (PN613431-B21) mezzanine cards can be installed in the BL685c G7 at the same time. | |
| HP NC552m 10Gb 2-port Flex-10 Ethernet Adapter | 610609-B21 |
| HP NC553m 10Gb 2-port FlexFabric Adapter | 613431-B21 |
| NOTE: Only (2) NC551m (PN 580151-B21) or NC553m (PN613431-B21) mezzanine cards can be installed in the BL685c G7 at the same time. | |

Core Options

HP Fibre Channel Mezzanine Options

4Gb Fibre Channel Mezzanines

| | |
|---|------------|
| Emulex LPe1105 4Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem | 403621-B21 |
| QLogic QMH2462 4Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem | 403619-B21 |

8Gb Fibre Channel Mezzanines

| | |
|---|------------|
| Emulex LPe1205 8Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem | 456972-B21 |
| QLogic QMH2562 8Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem | 451871-B21 |
| HP BLc Brocade 804 8Gb Fibre Channel Host Bus Adapter | 590647-B21 |

HP Processors

Sixteen-Core Processors

| | |
|---|------------|
| HP BL685c G7 AMD Opteron™ 6380 (2.5GHz/16-core/16MB/115W) 2-processor Kit | 699069-B21 |
| HP BL685c G7 AMD Opteron™ 6378 (2.4GHz/16-core/16MB/115W) 2-processor Kit | 699070-B21 |
| HP BL685c G7 AMD Opteron™ 6376 (2.3GHz/16-core/16MB/115W) 2-processor Kit | 699071-B21 |
| HP BL685c G7 AMD Opteron™ 6366HE (1.8GHz/16-core/16MB/85W) 2-processor Kit | 699077-B21 |
| HP BL685c G7 AMD Opteron™ 6278 (2.4GHz/16-core/16MB/115W) Processor Kit | 686865-B21 |
| HP BL685c G7 AMD Opteron™ 6276 (2.30GHz/16-core/16MB/115W) 2-processor Kit | 654805-B21 |
| HP BL685c G7 AMD Opteron™ 6274 (2.20GHz/16-core/16MB/115W) 2-processor Kit | 654803-B21 |
| HP BL685c G7 AMD Opteron™ 6272 (2.10GHz/16-core/16MB/115W) 2-processor Kit | 654802-B21 |
| HP BL685c G7 AMD Opteron™ 6262HE (1.60GHz/16-core/16MB/85W) 2-processor Kit | 654808-B21 |

Twelve-Core Processors

| | |
|--|------------|
| HP BL685c G7 AMD Opteron™ 6348 (2.8GHz/12-core/16MB/115W) 2-processor Kit | 699072-B21 |
| HP BL685c G7 AMD Opteron™ 6344 (2.6GHz/12-core/16MB/115W) 2-processor Kit | 699073-B21 |
| HP BL685c G7 AMD Opteron™ 6238 (2.60GHz/12-core/16MB/115W) 2-processor Kit | 654806-B21 |
| HP BL685c G7 AMD Opteron™ 6234 (2.40GHz/12-core/16MB/115W) 2-processor Kit | 654804-B21 |

Eight-Core Processors

| | |
|--|------------|
| HP BL685c G7 AMD Opteron™ 6328 (3.2GHz/8-core/16MB/115W) 2-processor Kit | 699074-B21 |
| HP BL685c G7 AMD Opteron™ 6320 (2.8GHz/8-core/16MB/115W) 2-processor Kit | 699075-B21 |
| HP BL685c G7 AMD Opteron™ 6220 (3.0GHz/8-core/16MB/115W) 2-processor Kit | 654807-B21 |
| HP BL685c G7 AMD Opteron™ 6212 (2.60GHz/8-core/16MB/115W) Processor Kit | 654801-B21 |

Quad-Core Processors

| | |
|--|------------|
| HP BL685c G7 AMD Opteron™ 6308 (3.5GHz/4-core/16MB/115W) 2-processor Kit | 699076-B21 |
| HP BL685c G7 AMD Opteron™ 6204 (3.30GHz/4-core/16MB/115W) Processor Kit | 672514-B21 |

NOTE: HP ProLiant BL685c G7 processor option kits contain two (2) processors.

NOTE: The ProLiant BL685c G7 only supports two (2) and four (4) processor configurations.

Core Options

HP Memory

Registered DIMMs (RDIMMs)

| | |
|--|------------|
| HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 593907-B21 |
| HP 4GB (1x4GB) Single Rank x4 PC3-12800 (DDR3-1600) Registered CAS-11 Memory Kit | 676331-B21 |
| HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 593911-B21 |
| HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit | 604500-B21 |
| HP 8GB (1x8GB) Single Rank x4 PC3-12800 (DDR3-1600) Registered CAS-11 Memory Kit | 676333-B21 |
| HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 593913-B21 |
| HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit | 604502-B21 |
| HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit | 593915-B21 |
| HP 16GB (1x16GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 LP Memory Kit | 627808-B21 |
| HP 16GB (1x16GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit | 684066-B21 |
| HP 32GB (1x32GB) Quad Rank x4 PC3L-8500 (DDR3-1066) Registered CAS-7 LP Memory Kit | 627810-B21 |

NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator

NOTE: A minimum of two (2) DIMMs per processor are required.

NOTE: Kits described as PC3L include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: www.hp.com/go/proliant-energy-efficient

NOTE: Depending on the memory configuration, the memory speed may run at 1600MHz, 1333MHz, 1066MHz, or 800MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator

HP Hard Drives

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

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

NOTE: SAS, SATA, and/or SSD drives cannot be mixed within the server.

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

| | |
|---|------------|
| HP 1TB 3G SATA 7.2K rpm SFF (2.5-inch) Hot Plug Midline 1yr Warranty Hard Drive | 625609-B21 |
| HP 500GB 3G SATA 7.2K rpm SFF (2.5-inch) Midline 1yr Warranty Hard Drive | 507750-B21 |

NOTE: Please see the for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13021_na/13021_na.html

SATA Hot Plug 2.5" Enterprise Mainstream Solid State Drives

| | |
|--|------------|
| HP 400GB 3G SATA MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive | 636597-B21 |
| HP 200GB 3G SATA MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive | 636595-B21 |



Core Options

HP 100GB 3G SATA MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive 636593-B21

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

http://h18000.www1.hp.com/products/quickspecs/14038_na/14038_na.html

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

HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive 605835-B21

HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive 507610-B21

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

HP 900GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 619291-B21

HP 600GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 581286-B21

HP 450GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 581284-B21

HP 300GB 6G SAS 15K rpm SFF (2.5-inch) Hot Plug Enterprise 3 yr Warranty Hard Drive 627117-B21

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

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

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

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

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

HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive 605835-B21

HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive 507610-B21

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

HP 1TB 3G SATA 7.2K rpm SFF (2.5-inch) Hot Plug Midline 1yr Warranty Hard Drive 625609-B21

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

6G SAS SLC Hot Plug Enterprise Performance Solid State Drives

HP 400GB 6G SAS SLC SFF (2.5-inch) Enterprise Performance 3yr Warranty Solid State Drive 632494-B21

HP 200GB 6G SAS SLC SFF (2.5-inch) Enterprise Performance 3yr Warranty Solid State Drive 632492-B21

6G SAS ME Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives

HP 800GB 6G SAS Mainstream Endurance SFF 2.5-in Enterprise Mainstream 3yr Warranty Solid State Drive 690823-B21

HP 400GB 6G SAS Mainstream Endurance SFF 2.5-in ENT Mainstream 3yr Warranty Solid State Drive 690821-B21

HP 200GB 6G SAS Mainstream Endurance SFF 2.5-in Enterprise Mainstream 3yr Warranty Solid State Drive 690819-B21

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

http://h18000.www1.hp.com/products/quickspecs/14038_na/14038_na.html

SATA Hot Plug 2.5" Enterprise Mainstream Solid State Drives

HP 400GB 3G SATA MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive 636597-B21

HP 200GB 3G SATA MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive 636595-B21

Core Options

HP 100GB 3G SATA MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive

636593-B21

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

http://h18000.www1.hp.com/products/quickspecs/14038_na/14038_na.html

Additional Options

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

| | | |
|--------------------------------|--|------------|
| HP Insight Software | HP Insight Control | |
| | HP Insight Control including 1yr 24x7 Technical Support and Updates Electronic License | T9074BAE |
| | HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Electronic License | TC278AAE |
| | HP Insight Control including 1yr 24x7 Technical Support and Updates Single Server License | 452148-B22 |
| | HP Insight Management Media Kit | 436222-B21 |
| | NOTE: HP Insight Management Media Kit contains DVDs without licenses. Contains HP Systems Insight Manager, HP Insight Control, HP Matrix Operating Environment, and Virtual Connect Enterprise Manager software. Uses an integrated installer to perform quick and accurate software installation and updates. | |
| | NOTE: Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key. | |
| | NOTE: Customer will receive a license entitlement certificate. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. | |
| | NOTE: Licenses ship without media. The HP Insight Management Media Kit can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightupdates . | |
| | HP Insight Control server deployment | |
| | HP Insight Control Server Deployment including 1yr 24x7 Support Electronic License | T9082AAE |
| | HP Insight Control Server Deployment including 1yr 24x7 Support Single Server License | 452151-B21 |
| | NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service. | |
| | NOTE: For additional license kits please see the Insight Control QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12631_na/12631_na.html | |
| HP iLO Advanced License | HP iLO Advanced Blade Electronic License with 3yr 24x7 Tech Support and Updates | BD503AAE |
| | HP iLO Advanced Blade 1 Server License with 3yr 24x7 Tech Support and Updates | BD502A |
| | HP iLO Advanced for BladeSystem including 1yr 24x7 Support Electronic License | TA851AAE |
| | HP iLO Advanced for BladeSystem including 1yr 24x7 Support Single Server License | 512488-B21 |
| | 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 or three year of 24 x 7 HP Software Technical Support Service | |
| | NOTE: For additional license kits, including electronic delivery options, and technical specifications please see the HP Integrated Lights-Out (iLO) QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14276_na/14276_na.html (Worldwide) | |

Additional Options

High Performance Clusters

| | |
|---|--------|
| HP Insight Cluster Management Utility 1yr 24x7 Flexible License | QL803B |
| NOTE: This part number can be used to purchase one certificate for multiple licenses with a single activation key. Each license is for one node (server). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key. NOTE: For additional license kits please see the QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12612_na/12612_na.html | |
| HP Insight Cluster Management Utility 3yr 24x7 Flexible License | BD476A |
| NOTE: These part numbers can be used to purchase one certificate for multiple licenses and support with a single activation key. Each license is for one node (server). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key. Customer also will receive a support agreement. | |
| HP Insight Cluster Management Utility Media | BD477A |
| NOTE: Order a minimum of one license per cluster to purchase media including software and documentation, which will be delivered to the customer, and also licenses CMU management. No license key is delivered or required. NOTE: For additional license kits please see the QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12612_na/12612_na.html | |
| HP High Performance Computing Linux Value Pack 1 Processor Flexible License for ProLiant Servers | TC293B |
| NOTE: This part number can be used to purchase one certificate for multiple licenses with a single activation key. Each license is for one socket (a.k.a. processor). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key. NOTE: For additional license kits please see the QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/13485_na/13485_na.html | |
| HP High Performance Computing Linux Value Pack Media Kit for ProLiant Servers | TC294A |
| NOTE: This part number can be used to purchase media including software and documentation, which will be delivered to the customer. NOTE: For additional license kits please see the QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/13485_na/13485_na.html | |

Additional Options

HP Security

HP Trusted Platform Module Option

488069-B21

NOTE: The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 has not been tampered with while the system was offline.

NOTE: For more information about TPM, including a white paper, go to:

www.hp.com/go/TPM.

NOTE: ProLiant OS pre-installed units will come with the partition required for TPM deployment.

NOTE: The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.

HP Storage Controller

HP Smart Array P712M Controller

HP Smart Array P712m/256 GB 2-ports Int/2-ports Ext Mezzanine SAS Controller

488348-B21

HP Smart Array P712m/ZM 2-ports Int PCIe x8 SAS Controller

484299-B21

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

http://h18000.www1.hp.com/products/quickspecs/13296_na/13296_na.html

HP Smart Array P711m Controller

HP Smart Array P711m/1GB 6Gb FBWC 4-ports Ext Mezzanine SAS Controller

513778-B21

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

http://h18000.www1.hp.com/products/quickspecs/14035_na/14035_na.html

HP Smart Array P700m Controller

HP Smart Array P700m/512 4-ports Ext PCIe x8 SAS Controller

508226-B21

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

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

NOTE: The BL685c G7 supports a maximum of two array controller batteries. If two Smart Array P700m controllers with cache battery kits are ordered for factory integration, the internal Smart Array P410i cache module capacitor will be removed and shipped with the server for customer installation.

Optional Upgrades

HP Smart Array Cache Battery Kit

383280-B21

NOTE: Supports the HP ProLiant BL2x220c and BL685c G7 server blades.

NOTE: HP Smart Array Cache Battery Kit supports HP P700m Controller.

HP Smart Array Advanced Pack including 1yr 24x7 Technical Support and Updates Single Server License

516471-B21

NOTE: A license key, a minimum of 256MB cache, and battery kit is required to enable Smart Array Advanced Pack features. For more information go to:

<http://www.hp.com/go/saap>

Additional Options

| | | |
|--|---|------------|
| HP InfiniBand Mezzanine Options | HP 4X QDR QLogic InfiniBand Dual Port Mezzanine HCA for c-Class BladeSystem | 583210-B21 |
| | HP 4X QDR InfiniBand ConnectX-2 Dual Port Mezzanine HCA for c-Class BladeSystem | 592519-B21 |
| | NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12586_na/12586_na.html | |
| HP Ultrium Tape Blades | HP LTO-4 SB1760c Tape Blade | AQ697A |
| | NOTE: LTO-4 Ultrium tape technology NOTE: Please see the QuickSpecs for Technical Specifications and additional configuration information at: http://h18000.www1.hp.com/products/quickspecs/12729_na/12729_na.html NOTE: Please visit the BladeSystem c-Class enclosure QuickSpecs for a complete list of recommended data protection solutions for BladeSystem c-Class enclosures: http://www.hp.com/go/blades | |
| HP Storage Blades | HP LTO-5 SB3000c Tape Blade | BS580A |
| | NOTE: Please see the QuickSpecs for Technical Specifications and additional configuration information at: http://h18000.www1.hp.com/products/quickspecs/12729_na/12729_na.html | |
| | HP D2200sb Storage Blade | AP880A |
| | NOTE: Please see the HP D2200sb PCIe Storage Blade QuickSpecs for technical specifications and additional information at: http://h18006.www1.hp.com/storage/bladeSystem/index.html . | |
| HP Expansion Blade | HP BLc PCI Expansion Blade | 448018-B21 |
| | NOTE: Ships with one pre-installed PCI-X connect board. Also includes one PCIe connect board which requires installation. NOTE: Please see the QuickSpecs for Technical Specifications and additional configuration information at: http://h18000.www1.hp.com/products/quickspecs/12753_na/12753_na.html | |

Additional Options

HP USB and SD Options

| | |
|---|------------|
| HP USB 2-Button Optical Scroll Mouse | DC172B |
| HP USB Standard Keyboard | DT528A#ABA |
| HP 2GB USB Flash Media Drive Key Kit | 608447-B21 |
| NOTE: HP qualified blank USB key for use with HP ProLiant servers that support the VMware virtualization environment. HP recommends this industry standard USB flash device for use with VMware ESXi. USB device must be installed in the internal slot of the ProLiant server for use with VMware ESXi. Refer to HP VMware Getting Started Guide for installation instructions. | |
| HP 4GB Micro SDHC Flash Media Kit | 647444-B21 |
| NOTE: Blank SD media devices are supported for use with VMware and Citrix. SD media must be installed in the internal slot of the ProLiant server. Learn more at: http://www.hp.com/go/proliantvirtualization . | |

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

| | |
|---|--------|
| HP 3 year 4 hour 13x5 BL6xxc Server Blade Hardware Support | UK108E |
| HP 3 year 4 hour 24x7 BL6xxc Server Blade Hardware Support | UK109E |
| HP 3 year 6 hour 24x7 Call to Repair BL6xxc Server Blade Hardware Support | UK110E |

Memory

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

DDR3 Memory Population Guidelines

For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool:

www.hp.com/go/ddr3memory-configurator

Some DIMM installation guidelines are summarized below:

- For the HP ProLiant BL685c G7 server blade with thirty-two (32) memory slots:
 - There are four (4) channels per processor; sixteen (16) channels per server
 - There are two (2) DIMM slots for each memory channel; thirty-two (32) total slots.
 - Memory channel 1 consists of the two (2) DIMMs that are furthest from the processor
 - Memory channel 4 consists of the two (2) DIMMs that are closest from the processor
- A minimum of two (2) DIMMs per processor are required
- DIMM slots that are white should be populated first
- Do not install DIMMs if the corresponding processor is not installed
- If only two (2) processors are installed in a four (4) CPU system, only half of the DIMM slots are available
- To maximize performance, balance the total memory capacity between all installed processors
- To maximize performance, balance the total memory capacity on any given processor across the memory channels
- You may only have up to eight (8) ranks installed per channel
- You may install up to two (2) quad-rank DIMMs per channel
- Mixing DIMMs with different voltage levels will result in the higher voltage level being used resulting in higher power consumption. When running virtualization software, a minimum of two (2) DIMMs per processor are required. Populate DIMM sockets 1A and 5B for each processor socket populated.

| DIMM slot/capacity/populated speed table | | | | | | | | | | | |
|--|---------------------------|------|------|----------------|--------|--------|------|----------------|----------------|------------------------------------|-----|
| DIMM Type | Registered DIMMS (RDIMMs) | | | | | | | | | Unbuffered with ECC DIMMs (UDIMMs) | |
| DIMM Rank | Single Rank (1R) | | | Dual Rank (2R) | | | | Quad Rank (4R) | Dual Rank (2R) | | |
| DIMM Capacity | 4GB | 4GB | 8GB | 2GB | 8GB | 16GB | 16GB | 16GB | 32GB | N/A | N/A |
| DIMM Native Speed (MHz) | 1333 | 1600 | 1600 | 1333 | 1333 | 1333 | 1600 | 1066 | 1066 | N/A | N/A |
| DIMM Voltage | LV/Std | Std | Std | Std | LV/Std | LV/Std | Std | Std | LV/Std | N/A | N/A |
| | | | | | | | | | | | |
| SLOTS THAT CAN BE POPULATED | | | | | | | | | | | |
| 32 slot servers | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | N/A | N/A |
| | | | | | | | | | | | |
| MAXIMUM CAPACITY (GB) | | | | | | | | | | | |
| 32 slot servers | 128 | 128 | 256 | 64 | 256 | 512 | 512 | 512 | 1TB | N/A | N/A |
| | | | | | | | | | | | |
| POPULATED DIMM SPEED (MHz) | | | | | | | | | | | |
| 1 DIMM Per Channel | 1333 | 1600 | 1600 | 1333 | 1333 | 1333 | 1600 | 1066 | 1066 | N/A | N/A |
| 2 DIMM Per Channel | 1333 | 1600 | 1600 | 1333 | 1333 | 1333 | 1333 | 1066 | 1066/800 | N/A | N/A |

NOTE: Mixing DIMMs with different voltage levels will result in the higher voltage level being used resulting in higher power consumption.

Memory

HP ProLiant BL685 G7 Server Blade DIMM slot and configuration diagrams

Basic memory slot and population diagram

- Population order; start with "A" first, "B" second, "C" third, etc.

| 32 DIMM SLOTS (8 per CPU node) | | | | | |
|--------------------------------|--------|------------------|--------|------------------|--------|
| | CPU1 | | CPU2 | | |
| | slot # | population order | slot # | population order | |
| Chnl 1 | 1 | A | 1 | A | Chnl 1 |
| | 2 | E | 2 | E | |
| Chnl 2 | 3 | C | 3 | C | Chnl 2 |
| | 4 | G | 4 | G | |
| Chnl 3 | 5 | B | 5 | B | Chnl 3 |
| | 6 | F | 6 | F | |
| Chnl 4 | 7 | D | 7 | D | Chnl 4 |
| | 8 | H | 8 | H | |
| | CPU3 | | CPU4 | | |
| | slot # | population order | slot # | population order | |
| Chnl 1 | 1 | A | 1 | A | Chnl 1 |
| | 2 | E | 2 | E | |
| Chnl 2 | 3 | C | 3 | C | Chnl 2 |
| | 4 | G | 4 | G | |
| Chnl 3 | 5 | B | 5 | B | Chnl 3 |
| | 6 | F | 6 | F | |
| Chnl 4 | 7 | D | 7 | D | Chnl 4 |
| | 8 | H | 8 | H | |

HP ProLiant BL685c G7 Server Blade (4P Model)

Standard memory configuration (4 CPU model)

- 32GB, consisting of eight (8) 4GB single-rank PC3-10600 RDIMMs

Memory

| | CPU1 | | CPU2 | | |
|--------|--------|------------------|--------|------------------|--------|
| | slot # | population order | slot # | population order | |
| Chnl 1 | 1 | A: 4GB DIMM | 1 | A: 4GB DIMM | Chnl 1 |
| | 2 | E: empty | 2 | E: empty | |
| Chnl 2 | 3 | C: empty | 3 | C: empty | Chnl 2 |
| | 4 | G: empty | 4 | G: empty | |
| Chnl 3 | 5 | B: 4GB DIMM | 5 | B: 4GB DIMM | Chnl 3 |
| | 6 | F: empty | 6 | F: empty | |
| Chnl 4 | 7 | D: empty | 7 | D: empty | Chnl 4 |
| | 8 | H: empty | 8 | H: empty | |
| | CPU3 | | CPU4 | | |
| | slot # | population order | slot # | population order | |
| Chnl 1 | 1 | A: 4GB DIMM | 1 | A: 4GB DIMM | Chnl 1 |
| | 2 | E: empty | 2 | E: empty | |
| Chnl 2 | 3 | C: empty | 3 | C: empty | Chnl 2 |
| | 4 | G: empty | 4 | G: empty | |
| Chnl 3 | 5 | B: 4GB DIMM | 5 | B: 4GB DIMM | Chnl 3 |
| | 6 | F: empty | 6 | F: empty | |
| Chnl 4 | 7 | D: empty | 7 | D: empty | Chnl 4 |
| | 8 | H: empty | 8 | H: empty | |

Standard memory configuration (4 CPU model)

- 64GB, consisting of sixteen (16) 4GB single-rank PC3-10600 RDIMMs

| | CPU1 | | CPU2 | | |
|--------|--------|------------------|--------|------------------|--------|
| | slot # | population order | slot # | population order | |
| Chnl 1 | 1 | A: 4GB DIMM | 1 | A: 4GB DIMM | Chnl 1 |
| | 2 | E: empty | 2 | E: empty | |
| Chnl 2 | 3 | C: 4GB DIMM | 3 | C: 4GB DIMM | Chnl 2 |
| | 4 | G: empty | 4 | G: empty | |
| Chnl 3 | 5 | B: 4GB DIMM | 5 | B: 4GB DIMM | Chnl 3 |
| | 6 | F: empty | 6 | F: empty | |
| Chnl 4 | 7 | D: 4GB DIMM | 7 | D: 4GB DIMM | Chnl 4 |
| | 8 | H: empty | 8 | H: empty | |
| | CPU3 | | CPU4 | | |
| | slot # | population order | slot # | population order | |

Memory

| | | | | | |
|--------|---|-------------|---|-------------|--------|
| Chnl 1 | 1 | A: 4GB DIMM | 1 | A: 4GB DIMM | Chnl 1 |
| | 2 | E: empty | 2 | E: empty | |
| Chnl 2 | 3 | C: 4GB DIMM | 3 | C: 4GB DIMM | Chnl 2 |
| | 4 | G: empty | 4 | G: empty | |
| Chnl 3 | 5 | B: 4GB DIMM | 5 | B: 4GB DIMM | Chnl 3 |
| | 6 | F: empty | 6 | F: empty | |
| Chnl 4 | 7 | D: 4GB DIMM | 7 | D: 4GB DIMM | Chnl 4 |
| | 8 | H: empty | 8 | H: empty | |

Standard Memory Plus Optional Memory (4 CPU model)

- 416GB, consisting of two (2) 4GB RDIMMs plus six (6) 16GB RDIMMs
 - 8 x 4GB single-rank PC3-10600 RDIMMs
 - 24 x 16GB quad-rank PC3-8500 RDIMMs

| | CPU1 | | CPU2 | | |
|--------|--------|------------------|--------|------------------|--------|
| | slot # | population order | slot # | population order | |
| Chnl 1 | 1 | A: 4GB DIMM | 1 | A: 4GB DIMM | Chnl 1 |
| | 2 | E: 16GB DIMM | 2 | E: 16GB DIMM | |
| | | | | | |
| Chnl 2 | 3 | C: 16GB DIMM | 3 | C: 16GB DIMM | Chnl 2 |
| | 4 | G: 16GB DIMM | 4 | G: 16GB DIMM | |
| | | | | | |
| Chnl 3 | 5 | B: 4GB DIMM | 5 | B: 4GB DIMM | Chnl 3 |
| | 6 | F: 16GB DIMM | 6 | F: 16GB DIMM | |
| | | | | | |
| Chnl 4 | 7 | D: 16GB DIMM | 7 | D: 16GB DIMM | Chnl 4 |
| | 8 | H: 16GB DIMM | 8 | H: 16GB DIMM | |
| | | | | | |
| | CPU3 | | CPU4 | | |
| | slot # | population order | slot # | population order | |
| Chnl 1 | 1 | A: 4GB DIMM | 1 | A: 4GB DIMM | Chnl 1 |
| | 2 | E: 16GB DIMM | 2 | E: 16GB DIMM | |
| | | | | | |
| Chnl 2 | 3 | C: 16GB DIMM | 3 | C: 16GB DIMM | Chnl 2 |
| | 4 | G: 16GB DIMM | 4 | G: 16GB DIMM | |
| | | | | | |
| Chnl 3 | 5 | B: 4GB DIMM | 5 | B: 4GB DIMM | Chnl 3 |
| | 6 | F: 16GB DIMM | 6 | F: 16GB DIMM | |
| | | | | | |
| Chnl 4 | 7 | D: 16GB DIMM | 7 | D: 16GB DIMM | Chnl 4 |
| | 8 | H: 16GB DIMM | 8 | H: 16GB DIMM | |

Memory

Standard Memory Plus Optional Memory (4 CPU model)

- 320GB, consisting of two (2) 4GB RDIMMs plus six (6) 16GB RDIMMs
 - 16 x 4GB single-rank PC3-10600 RDIMMs
 - 16 x 16GB quad-rank PC3-8500 RDIMMs

| | | CPU1 | | CPU2 | | |
|--------|--|--------|------------------|--------|------------------|--------|
| | | slot # | population order | slot # | population order | |
| Chnl 1 | | 1 | A: 4GB DIMM | 1 | A: 4GB DIMM | Chnl 1 |
| | | 2 | E: 16GB DIMM | 2 | E: 16GB DIMM | |
| | | | | | | |
| Chnl 2 | | 3 | C: 4GB DIMM | 3 | C: 4GB DIMM | Chnl 2 |
| | | 4 | G: 16GB DIMM | 4 | G: 16GB DIMM | |
| | | | | | | |
| Chnl 3 | | 5 | B: 4GB DIMM | 5 | B: 4GB DIMM | Chnl 3 |
| | | 6 | F: 16GB DIMM | 6 | F: 16GB DIMM | |
| | | | | | | |
| Chnl 4 | | 7 | D: 4GB DIMM | 7 | D: 4GB DIMM | Chnl 4 |
| | | 8 | H: 16GB DIMM | 8 | H: 16GB DIMM | |
| | | CPU3 | | CPU4 | | |
| | | slot # | population order | slot # | population order | |
| Chnl 1 | | 1 | A: 4GB DIMM | 1 | A: 4GB DIMM | Chnl 1 |
| | | 2 | E: 16GB DIMM | 2 | E: 16GB DIMM | |
| | | | | | | |
| Chnl 2 | | 3 | C: 4GB DIMM | 3 | C: 4GB DIMM | Chnl 2 |
| | | 4 | G: 16GB DIMM | 4 | G: 16GB DIMM | |
| | | | | | | |
| Chnl 3 | | 5 | B: 4GB DIMM | 5 | B: 4GB DIMM | Chnl 3 |
| | | 6 | F: 16GB DIMM | 6 | F: 16GB DIMM | |
| | | | | | | |
| Chnl 4 | | 7 | D: 4GB DIMM | 7 | D: 4GB DIMM | Chnl 4 |
| | | 8 | H: 16GB DIMM | 8 | H: 16GB DIMM | |

Standard Memory Replaced with Optional Memory (4 CPU Model)

RDIMM maximum configuration

- 1TB, consisting of thirty-two (32) 32GB quad-rank PC3L-8500
 - 32 x 32GB quad-rank PC3L-8500 RDIMMs

Memory

| | CPU1 | | CPU2 | | |
|--------|--------|------------------|--------|------------------|--------|
| | slot # | population order | slot # | population order | |
| Chnl 1 | 1 | A: 32GB DIMM | 1 | A: 32GB DIMM | Chnl 1 |
| | 2 | E: 32GB DIMM | 2 | E: 32GB DIMM | |
| Chnl 2 | 3 | C: 32GB DIMM | 3 | C: 32GB DIMM | Chnl 2 |
| | 4 | G: 32GB DIMM | 4 | G: 32GB DIMM | |
| Chnl 3 | 5 | B: 32GB DIMM | 5 | B: 32GB DIMM | Chnl 3 |
| | 6 | F: 32GB DIMM | 6 | F: 32GB DIMM | |
| Chnl 4 | 7 | D: 32GB DIMM | 7 | D: 32GB DIMM | Chnl 4 |
| | 8 | H: 32GB DIMM | 8 | H: 32GB DIMM | |
| | CPU3 | | CPU4 | | |
| | slot # | population order | slot # | population order | |
| Chnl 1 | 1 | A: 32GB DIMM | 1 | A: 32GB DIMM | Chnl 1 |
| | 2 | E: 32GB DIMM | 2 | E: 32GB DIMM | |
| Chnl 2 | 3 | C: 32GB DIMM | 3 | C: 32GB DIMM | Chnl 2 |
| | 4 | G: 32GB DIMM | 4 | G: 32GB DIMM | |
| Chnl 3 | 5 | B: 32GB DIMM | 5 | B: 32GB DIMM | Chnl 3 |
| | 6 | F: 32GB DIMM | 6 | F: 32GB DIMM | |
| Chnl 4 | 7 | D: 32GB DIMM | 7 | D: 32GB DIMM | Chnl 4 |
| | 8 | H: 32GB DIMM | 8 | H: 32GB DIMM | |

NOTE: Capacity references are rounded to the common Gigabyte values.

- 2GB = 2048MB
- 4GB = 4096MB
- 8GB = 8192MB
- 16GB = 16384MB
- 32GB = 32768MB

Memory

HP Memory

Registered DIMMs (RDIMMs)

| | |
|--|------------|
| HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 593907-B21 |
| HP 4GB (1x4GB) Single Rank x4 PC3-12800 (DDR3-1600) Registered CAS-11 Memory Kit | 676331-B21 |
| HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 593911-B21 |
| HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit | 604500-B21 |
| HP 8GB (1x8GB) Single Rank x4 PC3-12800 (DDR3-1600) Registered CAS-11 Memory Kit | 676333-B21 |
| HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 593913-B21 |
| HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit | 604502-B21 |
| HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit | 593915-B21 |
| HP 16GB (1x16GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 LP Memory Kit | 627808-B21 |
| HP 16GB (1x16GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit | 684066-B21 |
| HP 32GB (1x32GB) Quad Rank x4 PC3L-8500 (DDR3-1066) Registered CAS-7 LP Memory Kit | 627810-B21 |

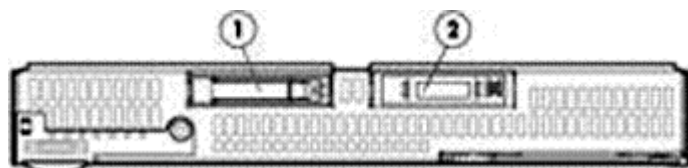
NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator

NOTE: A minimum of two (2) DIMMs per processor are required.

NOTE: Kits described as PC3L include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: www.hp.com/go/proliant-energy-efficient

NOTE: Depending on the memory configuration, the memory speed may run at 1600MHz, 1333MHz, 1066MHz, or 800MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator

Storage



1-2 2 x SFF SAS or SATA Hot Plug Hard Drives, or
2 x SFF SATA Hot Plug SSD Drives

Hard Drives

NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, 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: Simultaneous operation of hot plug hard drives and solid state drives is not supported.

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

NOTE: SAS, SATA, and/or SSD drives cannot be mixed within the server.

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

| | Quantity Supported | Position Supported | Controller |
|--|-----------------------|-----------------------|------------------------------|
| 1TB 3G SATA 7.2K 500GB 3G SATA 7.2K | 2 | 1-2 | Smart Array P410i Controller |

SATA Hot Plug 2.5" Enterprise Mainstream Solid State Drives

| | Quantity Supported | Position Supported | Controller |
|---|-----------------------|-----------------------|------------------------------|
| 400GB 3G SATA MLC SSD 200GB 3G SATA MLC SSD 100GB 3G SATA MLC SSD | 2 | 1-2 | Smart Array P410i Controller |

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

| | Quantity Supported | Position Supported | Controller |
|--------------------------------------|-----------------------|-----------------------|------------------------------|
| 1TB 6G SAS 7.2K 500GB 6G SAS 7.2K | 2 | 1-2 | Smart Array P410i Controller |

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

| | Quantity Supported | Position Supported | Controller |
|--|-----------------------|-----------------------|------------------------------|
| 900GB 6G SAS 10K 600GB 6G SAS 10K 450GB 6G SAS 10K 300GB 6G SAS 15K 300GB 6G SAS 10K 146GB 6G SAS 15K | 2 | 1-2 | Smart Array P410i Controller |

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

Storage

| | Quantity Supported | Position Supported | Controller |
|--------------------------------------|--------------------|--------------------|------------------------------|
| 1TB 6G SAS 7.2K 500GB 6G SAS 7.2K | 2 | 1-2 | Smart Array P410i Controller |

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

| | Quantity Supported | Position Supported | Controller |
|--|--------------------|--------------------|------------------------------|
| 1TB 3G SATA 7.2K 500GB 3G SATA 7.2K | 2 | 1-2 | Smart Array P410i Controller |

6G SAS SLC Hot Plug Enterprise Performance (2.5-inch) Solid State Drives

| | Quantity Supported | Position Supported | Controller |
|--|--------------------|--------------------|------------------------------|
| 400GB 6G SAS SLC SFF 200GB 6G SAS SLC SFF | 2 | 1-2 | Smart Array P410i Controller |

6G SAS ME Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives

| | Quantity Supported | Position Supported | Controller |
|--|--------------------|--------------------|------------------------------|
| 800GB 6G SAS ME 400GB 6G SASME 200GB 6G SAS ME | 2 | 1-2 | Smart Array P410i Controller |

SATA Hot Plug 2.5" Enterprise Mainstream Solid State Drives

| | Quantity Supported | Position Supported | Controller |
|---|--------------------|--------------------|------------------------------|
| 400GB 3G SATA MLC SSD 200GB 3G SATA MLC SSD 100GB 3G SATA MLC SSD | 2 | 1-2 | Smart Array P410i Controller |

Technical Specifications

| | | | |
|--------------------|---|---|--|
| System Unit | Dimensions (H x W x D) | 14.42 x 2.19 x 20.058 (36.63 x 5.56 x 50.95 cm) | |
| | Weight (approximate) | Maximum | 27 lbs (12.25 kg) |
| | | (all hard drives, DIMMs, and processors installed) | |
| | | Minimum | 19.2 lbs (8.71 kg) |
| | (no hard drives, two processors and four DIMMs) | | |
| | 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: HP BladeSystem c3000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12790_na/12790_na.html HP BladeSystem c7000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12810_na/12810_na.html | |
| | | To review typical system power ratings use the HP Power Advisor which is available via the online tool located at: www.hp.com/go/hppoweradvisor | |
| | | NOTE: For optimal cooling and system performance the BL685c G7 requires the c7000 enclosure to be configured with 10 fans and the c3000 enclosure to be configured with 6 fans. | |
| | | | |
| | 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). |

Technical Specifications

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_na/12790_na.html

HP BladeSystem c7000 Enclosure QuickSpecs:

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

HP Smart Array P410i Controller

Disk Drive and Enclosure Interface

6G SAS (Serial Attached SCSI)

3.0 G SATA (Serial Advanced Technology Attachment)

SAS Connectors

2 internal (SFF8484) x4 wide port connectors

Cache Memory Speed

DDR2-533MHz with 40 or 72-bit wide bus provides up to 4.2 GB/s maximum bandwidth.

Server Interface

x4 5G PCIe 2.0 provides 2 GB/s maximum bandwidth.

SAS Speed

x2 6G SAS provides 1.2 GB/s maximum bandwidth.

Cache Memory

72-bit 1GB cache; ECC protection, capacitor-backed

Logical Drives Supported

Up to 32 logical drives

Maximum Logical Drive Capacity

2 TB (2 x 1 TB)

Host Memory Addressing

64-bit, supporting greater than 4 GB server memory space

RAID Support

RAID 1 (Mirroring)

RAID 0 (Striping)

Upgradeable Firmware

Upgradeable Firmware with recovery ROM feature

Integrated HP NC551i Dual Port FlexFabric 10Gb Converged Network Adapter

Type

Integrated dual-port KR 10GbE with FlexFabric (FCoE or iSCSI) capability

Network Processor

Blade Engines 2 (BE2)

Data Transfer Method

x8 PCI Express 2.0

Network Transfer Rate

Two ports, each at 20 Gbps full duplex; 40 Gbps aggregate full duplex theoretical bandwidth

NOTE: Each port is autosensing 1 Gb / 10 Gb, and can interoperate with 1 Gb HP BladeSystem c-Class interconnect components. Both ports will operate at the same speed.

NOTE: Each port on the NC551i adapter transmits from the server at 20 Gbps (theoretical) full duplex.

IEEE Compliance

802.1p QoS, 802.1Q VLAN tagging, 802.3ad link aggregation, 802.3ap 10GBase-KR, and 802.3x flow control

Standard Features

- ProLiant Teaming including Network Fault Tolerance, Transmit Load Balancing, and Switch-Assisted Load Balancing
- 9K Jumbo frames (4K Jumbo frames when in FCoE mode)
- Microsoft Windows Receive Side Scaling (RSS)
- Accelerated FCoE or iSCSI

Technical Specifications

| | | |
|--|---------------------------------------|---|
| HP Integrated Lights-Out 3 (iLO 3) integrated on system board | Architecture | PCI Express based health and remote management ASIC |
| | Processor | PCI Express RISC processor core running at 250MHz |
| | Upgradeability | Option firmware upgradeable via Flash ROM |
| | Video Support | 1600 x 1200 DVR max resolution |
| | Interfaces | One Ethernet network connection (10/100Mb/s) |
| | Memory | 128-MB DDR with ECC |
| | Operating System Support | Microsoft Windows 2008 R2 |
| | | Microsoft Windows 2008 (32 bit and 64 bit) |
| | | Microsoft Windows Server 2008 Standard Edition (32bit and 64bit) |
| | | Microsoft Windows Server 2008 Enterprise Edition (32bit and 64bit) |
| | | Microsoft Windows Server 2003 and Windows Server 2003 R2, and Windows Server 2003 for Extended Systems Standard Edition, Enterprise Edition |
| | | Red Hat Enterprise Linux 5.4 (32 bit and 64 bit) |
| | | SUSE LINUX Enterprise Server 11 (32bit and 64bit) |
| | | SUSE LINUX Enterprise Server 10 (32bit and 64bit) |
| | | VMware ESX 4.0 |
| | | VMware ESX 3.5.0 |
| | Client System Support | Microsoft Windows 7 |
| | | Microsoft Windows XP Professional Edition |
| | | Microsoft Windows Vista Business and Ultimate Editions |
| | | Red Hat Enterprise Desktop 5.00 |
| | | SUSE Linux Enterprise Desktop 11 |
| | Client Browser Support | SUSE Linux Enterprise Desktop 10 |
| | | Microsoft Internet Explorer 8 |
| | | Microsoft Internet Explorer 7 |
| | | Microsoft Internet Explorer 6 |
| | | Firefox 3.5 (on supported Windows and Linux systems) |
| | Command Line Support | Firefox 3.0 (on supported Windows and Linux systems) |
| | | Secure Shell and serial port access |
| | | Secure Socket Layer |
| | Security | Secure Shell version 2 |
| | | Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser, CLP and XML scripting interface |
| | | AES encryption of video |
| | Directory Support Services | RC4 encryption of video |
| | | Active Directory v1.0 (Windows 2003) |
| | Driver Support | HP ProLiant iLO3 Management Controller Driver Package |
| | Management protocols supported | SNMP, IPMI 2.0 (system and LAN interface), DMTF Systems Management Architecture for Server Hardware Command Line Protocol (SMASH CLP), HP RIBCL XML |

Technical Specifications

**Environment-friendly
Products and Approach****End-of-life Management
and Recycling**

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

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

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