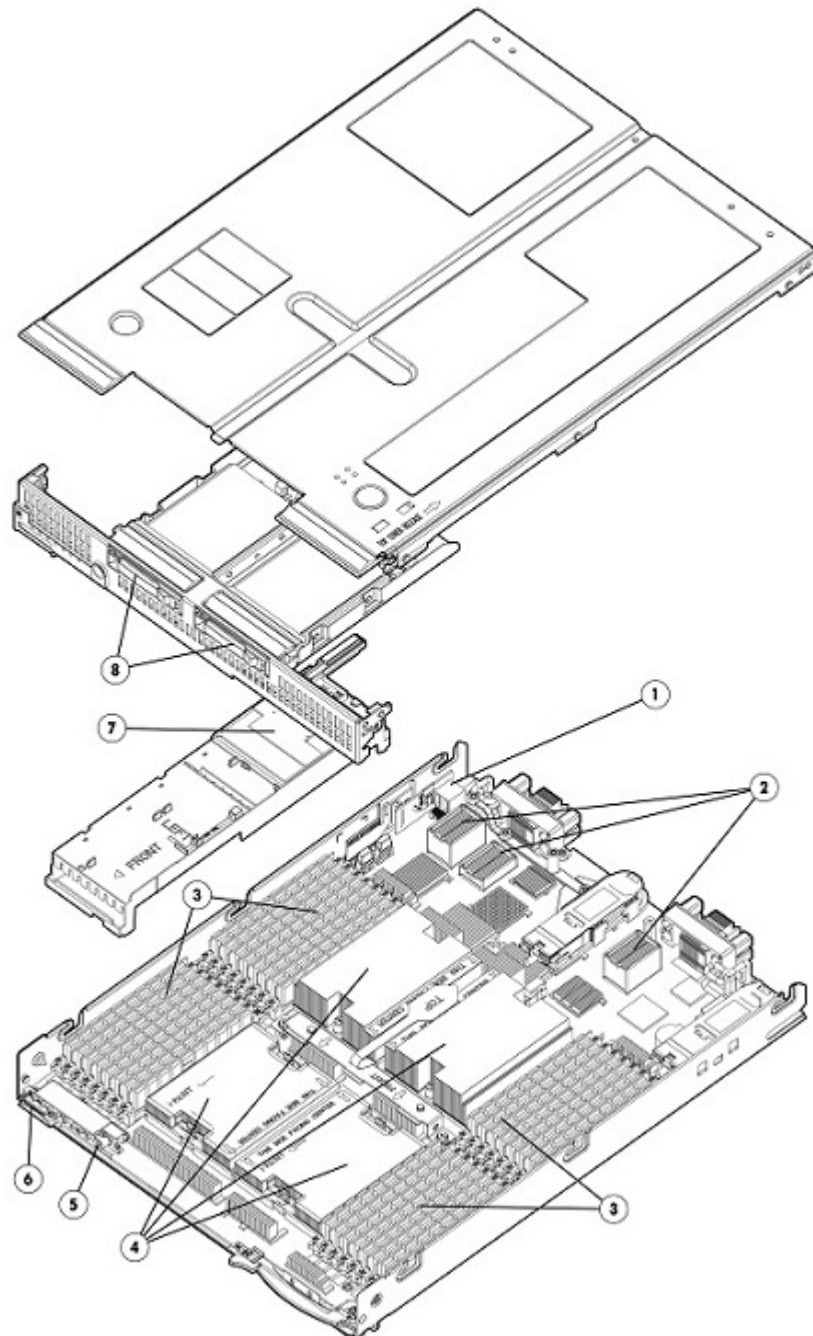


Overview



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 | 7. Smart Array P410i storage controller (available as an option in factory integrated models) |
| 4. Up to four (4) Multi-Core AMD Opteron™ 6100, 6200 or 6300 Series processors | 8. Two (2) small form factor (SFF) hot plug drive bays |
-

What's New

- Support for 6G SATA Hard Drives
-

Standard Features

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
NOTE: The c3000 HP c-Class enclosures have full backwards and forwards compatibility, existing server blades are supported in the new enclosures and any future server blades will be supported in the existing enclosures.
- HP BladeSystem c7000 Platinum Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12810_na/12810_na.html
NOTE: The c7000 HP c-Class enclosures have full backwards and forwards compatibility, existing server blades are supported in the new enclosures and any future server blades will be supported in the existing enclosures.
- 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>

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
AMD Opteron™ 6176 (2.3GHz/12-core/12MB/115W) Processor
AMD Opteron™ 6174 (2.2GHz/12-core/12MB/115W) processor
AMD Opteron™ 6172 (2.1GHz/12-core/12MB/115W) processor
AMD Opteron™ 6166HE (1.8GHz/12-core/12MB/85W) Processor
AMD Opteron™ 6164HE (1.7GHz/12-core/12MB/85W) 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™ 6212 (2.6GHz/8-core/16MB/115W) Processor
AMD Opteron™ 6140 (2.6GHz/8-core/12MB/115W) Processor
AMD Opteron™ 6136 (2.4GHz/8-core/12MB/115W) Processor

Standard Features

AMD Opteron™ 6132HE (2.2GHz/8-core/12MB/85W) Processor

AMD Opteron™ 6128HE (2.0GHz/8-core/12MB/85W) Processor

AMD Opteron™ 6124HE (1.8GHz/8-core/12MB/85W) 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>.

Cache Memory

12MB or 16MB Level 3 cache memory

Chipset

AMD SR5690 and SP5100

Upgradeability

Upgradeable to quad (4) processors

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

Integrated Manageability

HP Integrated Lights-Out 3 (iLO 3)

Memory

Type DDR3 Registered (RDIMM)

Standard 64GB (16 x 4GB)

(depending on model)

Maximum (RDIMM) 1TB (32 x 32GB) at 1066MHz or at 800MHz

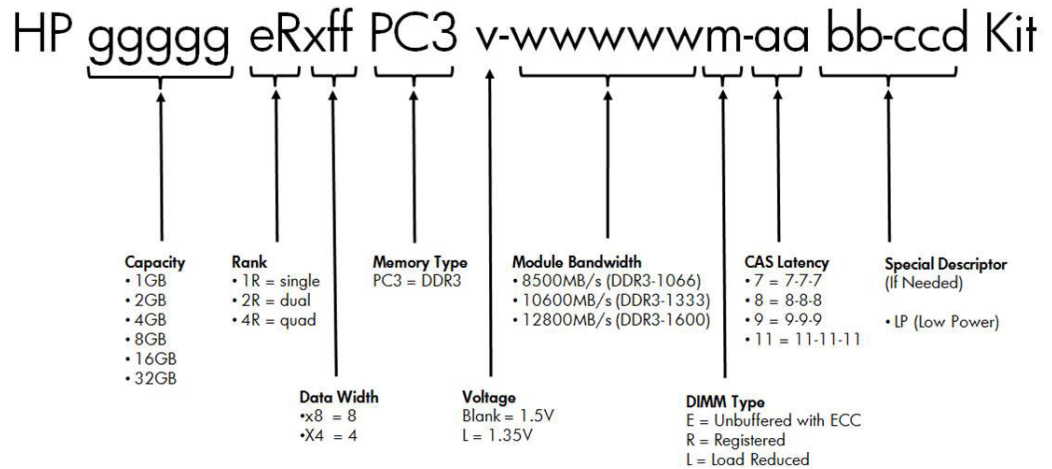
Maximum (RDIMM) 1TB (32 x 32GB) at 1333MHz

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

DDR3 memory options part number decoder

Standard Features



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 or HP 10GbE Pass-Thru Module.

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 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)

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.

Maximum Internal Storage

One of the following depending on Model

Hot Plug SAS	2.4TB SAS (2 x 1.2TB)
Hot Plug SATA	2.0TB SATA (2 x 1.0TB)
Hot Plug SATA SSD	1.6TB SATA SSD (2 x 800GB)
Hot Plug SAS SSD	1.6TB SAS SSD (2 x 800GB)

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

Standard Features

Industry Standard Compliance

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

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>.

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.

Graphics

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

Resolution	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

Form Factor

HP ProLiant BL685c G7 is a single-wide, full-height server blade that plugs into the HP BladeSystem c3000 and c7000 enclosures.

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

Standard Features

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 offline firmware updates will be included.

More information can be found at this link for HP Service Pack for ProLiant: www.hp.com/go/server/service_packs

HP Insight Foundation

Insight Foundation is being baselined at version v8.70 which means the following:

- 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>

Customers are urged to use the replacement product, HP Service Pack for ProLiant, instead of Insight Foundation Suite which is found at these location:

- www.hp.com/go/spp
- www.hp.com/go/spp/download

Standard Features

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
-

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)

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>

Optional Features

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
- 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>

Optional Features

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 Insight Control

HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. For more information, visit : www.hp.com/go/insightcontrol.

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

NOTE: HP Insight Control 7.2 introduces Insight Control server provisioning, a new capability ideal for multi-server OS and firmware provisioning to ProLiant and BladeSystem servers. Insight Control server provisioning is included and licensed as part of HP Insight Control. A media kit, "HP Insight Control server provisioning USB media kit" (# BD883A), including a USB, is available for customers who require a physical copy of the media loaded with Insight Control server provisioning software. Please note that this media kit is separate and in addition to the HP Insight Management DVD media kit (P/N C6N31A)

HP Matrix Operating Environment

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.

The HP Matrix OE includes the automated provisioning, optimization, and recovery management capabilities for HP CloudSystem Matrix, the ideal platform for private cloud and Infrastructure as a Service (IaaS). For more information, see <http://www.hp.com/go/matrixoe>.

HP Integrated Lights-Out (iLO)

HP Integrated Lights-Out (iLO) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP iLO functions without additional software and can be accessed from any location via a web browser. HP iLO works hand-in-hand with HP Systems Insight Manager, Insight Control suites, and 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

Optional Features

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>

Storage Software

Whether you need to solve a specific data protection, archiving, or storage command and control challenge, or deliver on strategic consolidation, compliance, or continuity initiatives, look no further than HP storage software. Our storage software helps you reduce costs, simplify storage infrastructure, protect vital assets and respond faster to business opportunities.

Storage software that gets the job done:

- **Data Protection and Recovery Software**

Whether you're a large enterprise or a smaller business, HP data protection and recovery software will cost-effectively protect you against disaster and ensure business continuity.

- **Data Archive and Migration Software**

HP's storage software enables you to comply with data retention and retrieval requirements, improve application performance, and reduce costs by efficiently migrating infrequently accessed or less valuable data to lower cost storage.

- **Storage Resource Management Software (SRM)**

HP's storage resource management software reduces operational costs and provides the command and control foundation you need to efficiently manage and visualize your physical and virtual environments.

- **Data Replication Software**

HP offers array-based and host-based replication software for use in disaster recovery, testing, application development and reporting.

- **Storage Device Management Software**

Maximize your investment in HP storage and networking with software that enables hardware-specific configuration, performance tuning and connectivity management.

- **HP StoreVirtual VSA**

With HP StoreVirtual VSA you can use the power of virtualization to turn a set of heterogeneous and disconnected physical disk drives in your servers and storage devices into a single pool of logical storage capacity.

Optional Features

NOTE: For more information available Storage Software including QuickSpecs, please see: www.hp.com/go/storage/software.

HP Proactive Insight experience

Prevent problems with innovative, automated monitoring tools and proactive services. The HP Proactive Insight experience consist of using Insight Online, Insight Remote Support, and Proactive Care Support Service as one integrated solution. The Proactive Insight experience provides you with expert advice and personalized, cloud-based automated IT support, helping to prevent unplanned down time and solve problems quickly. For more information, visit: www.hp.com/go/proactiveinsightexperience

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>.

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.

Protect your business beyond warranty with HP Care Pack Services

HP Care Pack services offer complete care and support expertise with committed response choices designed to meet your IT and business needs.

HP Foundation Care services offer scalable reactive support-packages for HP industry-standard servers and software. You can choose the type and level of service that is most suitable for your IT and business needs. HP Proactive Care delivers high levels of system availability through proactive service management and advanced technical response.

Recommended HP Care Pack Services for your HP product

Optimized Care Package

3-Year HP 6 hour Call to Repair Response, Proactive Care

Combined reactive and proactive support for hardware and software helping optimize your systems and delivering high levels of availability through proactive service management and advanced technical response. Hardware problem resolution to return the hardware in operating condition within 6 hours of the initial service request. A Technical Account Manager, as your single point of contact, will own your call or issue end to end until resolved.

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855EEE.pdf>

HP Install c-Class Server Blade Service

This easy-to-buy, easy-to-use HP Care Pack service helps ensure that your new HP hardware is installed smoothly, efficiently, and with minimal disruption of your IT and business operations.

Standard Care

3-Year HP 24x7 4 hour response, Proactive Care Service

This service gives you combined reactive and proactive support including rapid access to our Advanced Solution Center to manage and prevent problems and a Technical Support Specialist with a broad level of technical knowledge that will engage with additional technical expertise as needed from HP's vast global resources.

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855EEE.pdf>

HP Install c-Class Server Blade Service

This easy-to-buy, easy-to-use HP Care Pack service helps ensure that your new HP hardware is installed smoothly, efficiently, and with minimal disruption of your IT and business operations

Service and Support

Basic Care Package

HP Proactive Care Personalized Support - Environmental Option

The Personalized Support option provides an assigned Account Support Manager who can bring best practices from across the industry plus extra technical skills to your IT team. This option is only available as an add-on to HP Proactive Care Support.

HP Proactive Select Service

Provides a flexible way to purchase HP best-in-class consultancy and technical services. You can buy Proactive Select Service Credits when you purchase your hardware and then use the credits over the next 12 months. <http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENN.pdf>

Additional HP Care Pack services can be found at:

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

Insight Remote Support

HP Insight Remote Support provides 24 X 7 remote monitoring, proactive notifications, and problem resolution. This comes at no additional cost with your HP solution. Learn more about Insight Remote Support <http://www.hp.com/go/insightremotesupport> and Insight Online

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

NOTE: Insight Remote Support is a prerequisite for Proactive Care. All blades within a single HP BladeSystem enclosure must be at the same service level.

HP Support Center

Personalized online support portal with access to information, tools and experts to support HP business products. Submit support cases online, chat with HP experts, access support resources or collaborate with peers. Learn more <http://www.hp.com/go/hpsc>

HP's Support Center Mobile App allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime.

HP Insight Remote Support and HP Support Center are available at no additional cost with a HP warranty, HP Care Pack or HP contractual support agreement.

NOTE: HP Support Center Mobile App is subject to local availability.

Parts and Materials

HP will provide HP-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HP due to malfunction.

For more information

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



Pre-configured Models

Sixteen-Core Models

NOTE: Not all models are available in all regions. Check with your local country HP offices for availability.

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
	Cache Memory	16MB Level 3 cache memory
	Memory	64GB (16 x 4GB) 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 1GB cache flash-backed write cache (FBWC)
	Hard Drives	None ships standard; (2) SFF SAS/SATA/SSD drive bays
	Internal Storage	Up to 2.4TB SAS Up to 2.0TB SATA Up to 1.6TB 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

NOTE: Not all models are available in all regions. Check with your local country HP offices for availability.

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
	Cache Memory	16MB Level 3 cache memory
	Memory	64GB (16 x 4GB) 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 1GB cache flash-backed write cache (FBWC)
	Hard Drives	None ships standard; (2) SFF SAS/SATA/SSD drive bays
	Internal Storage	Up to 2.4TB SAS Up to 2.0TB SATA Up to 1.6TB 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

Pre-configured 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	16MB Level 3 cache memory
	Memory	64GB (16 x 4GB) 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 1GB cache flash backed write cache (FBWC)
	Hard Drives	None ships standard; (2) SFF SAS/SATA/SSD drive bays
	Internal Storage	Up to 2.4TB SAS Up to 2TB SATA Up to 1.6TB 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.

NOTE: 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™ 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

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™ 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
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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



Configuration Information - Factory Integrated Models

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
HP 32GB (1x32GB) Quad Rank x4 PC3L-10600L (DDR3-1333) Load Reduced CAS-9 Low Voltage Memory Kit	647885-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	C6N36A
HP Storage Controller	HP Smart Array P410i/1G FBWC 2-ports Int PCIe x8 SAS Controller 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.	588184-B22

Configuration Information - Factory Integrated Models

Step 4: Choose Additional Options for Factory Integration

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

NOTE: The c3000 HP c-Class enclosures have full backwards and forwards compatibility, existing server blades are supported in the new enclosures and any future server blades will be supported in the existing enclosures.

HP BladeSystem c7000 Enclosure QuickSpecs:

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

NOTE: The c7000 HP c-Class enclosures have full backwards and forwards compatibility, existing server blades are supported in the new enclosures and any future server blades will be supported in the existing enclosures.

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
HP BL685c G7 AMD Opteron™ 6172 (2.1GHz/12-core/12MB/115W) 2-processor Kit	593675-B21
HP BL685c G7 AMD Opteron™ 6174 (2.2GHz/12-core/12MB/115W) 2-processor Kit	518871-B21
HP BL685c G7 AMD Opteron™ 6176 (2.3GHz/12-core/12MB/115W) Processor Kit	632994-B21
HP BL685c G7 AMD Opteron™ 6136 (2.4GHz/8-core/12MB/115W) 2-processor Kit	518874-B21
HP BL685c G7 AMD Opteron™ 6166HE (1.8GHz/12-core/12MB/85W) 2-processor Kit	632998-B21
HP BL685c G7 AMD Opteron™ 6164HE (1.7GHz/12-core/12MB/85W) 2-processor Kit	596199-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
HP BL685c G7 AMD Opteron™ 6140 (2.6GHz/8-core/12MB/115W) 2-processor Kit	632996-B21
HP BL685c G7 AMD Opteron™ 6132HE (2.2GHz/8-core/12MB/85W) 2-processor Kit	633000-B21
HP BL685c G7 AMD Opteron™ 6128HE (2.0GHz/8-core/12MB/85W) 2-processor Kit	596201-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

Core Options

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.

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
HP 32GB (1x32GB) Quad Rank x4 PC3L-10600L (DDR3-1333) Load Reduced CAS-9 Low Voltage Memory Kit	647885-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 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



Core Options

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

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

HP 1.2TB 6G SAS 10K SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	693648-B21
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 3yr 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

6G SATA Value Endurance Hot Plug SFF (2.5-inch) Enterprise Boot Solid State Drives

HP 120GB 6G SATA Value Endurance SFF 2.5-in Enterprise Boot 3yr Wty Solid State Drive	728726-B21
HP 80GB 6G SATA Value Endurance SFF 2.5-in Enterprise Boot 3yr Wty Solid State Drive	734366-B21

6G SATA Value Endurance Hot Plug SFF (2.5-inch) Enterprise Value Solid State Drives

HP 800GB 6G SATA Value Endurance SFF 2.5-in Enterprise Value 3yr Wty Solid State Drive	728743-B21
HP 480GB 6G SATA Value Endurance SFF 2.5-in Enterprise Value 3yr Wty Solid State Drive	728739-B21
HP 240GB 6G SATA Value Endurance SFF 2.5-in Enterprise Value 3yr Wty Solid State Drive	728735-B21

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

HP 800GB 6G SATA Mainstream Endurance SFF 2.5-in Enterprise Mainstream 3yr Wty Solid State Drive	730065-B21
HP 400GB 6G SATA Mainstream Endurance SFF 2.5-in Enterprise Mainstream 3yr Wty Solid State Drive	730063-B21
HP 200GB 6G SATA Mainstream Endurance SFF 2.5-in Enterprise Mainstream 3yr Wty Solid State Drive	730061-B21
HP 100GB 6G SATA Mainstream Endurance SFF 2.5-in Enterprise Mainstream 3yr Wty Solid State Drive	730059-B21

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

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



Core Options

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

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 C6N28ABE

HP Insight Control including 1yr 24x7 Technical Support and Updates Single Server License C6N27A

HP iLO Advanced for BladeSystem including 1yr 24x7 Support Eight Server License 512489-B21

HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle FIO Electronic License C6N36ABE

HP Insight Control Server Provisioning Media Kit BD883A

HP Insight Management Media Kit C6N31A

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 for BladeSystem including 1yr 24x7 Tech Support and Updates Electronic License E6U60ABE

HP iLO Advanced Blade including 3yr 24x7 Tech Support and Updates Electronic License E6U63ABE

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. 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 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 I/O Accelerator Options

NOTE: Models compatible with G7 and previous generation Blade Servers only.	
HP 320GB IO Accelerator for BladeSystem c-Class	AJ878B
HP 640GB IO Accelerator for BladeSystem c-Class	BK836A
NOTE: Please see the QuickSpecs for Technical Specifications and additional configuration information at: http://h18000.www1.hp.com/products/quickspecs/13220_na/13220_na.html	

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.	

Additional Options

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
	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	
	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	
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 StoreEver LTO-4 Ultrium SB1760c Tape Blade	AQ697B
	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	

Additional Options

HP Storage Blades

HP StoreEver LTO-5 Ultrium SB3000c Tape Blade

BS580B

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 PCIe 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/blade/system/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: 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

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

HP Rack Options

HP Server Console Switches

HP Server Console 0x2x8 Port Analog Switch

AF616A

HP Server Console 0x2x16 Port Analog Switch

AF617A

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

http://h18000.www1.hp.com/products/quickspecs/11834_na/11834_na.html

HP Server Console Switch G2 with Virtual Media & CAC

HP 0x2x16 KVM Server Console Switch G2 with Virtual Media CAC Software

AF618A

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

http://h18000.www1.hp.com/products/quickspecs/13475_na/13475_na.html

HP IP Console Switch G2 with Virtual Media & CAC

HP 2x1Ex16 KVM IP Console Switch G2 with Virtual Media CAC Software

AF621A

HP 4x1Ex32 KVM IP Console Switch G2 with Virtual Media CAC Software

AF622A

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

http://h18000.www1.hp.com/products/quickspecs/13474_na/13474_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

HP 2GB USB Flash Media Drive Key Kit	608447-B21
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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 microSD Enterprise Performance Flash Media Kit

HP 4GB microSD Enterprise Performance Flash Media Kit	647444-B21
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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>.

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

http://h18000.www1.hp.com/products/quickspecs/13971_na/13971_na.html

HP Care Pack Services

Proactive Care - Collaborative Support plus Proactive services delivered by the on shore/near shore Advanced Solution Center (ASC) and backed by the global delivery organization, end-to-end case ownership from a Technical Solution Specialists and Technical Account Manager who remotely delivers firmware/software revision management, proactive scans and incident trend reports. Recommended for customers running a virtualized infrastructure and/or customers who desire an enhanced call support experience.

HP 3 year 4 hour 24x7 ProLiant BL6xxc Proactive Care Service	U3B32E
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HP 3 year 4 hour 24x7 with Defective Media Retention ProLiant BL6xxc Proactive Care Service	U3B35E
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HP 3 year 6 hour Call To Repair 24x7 ProLiant BL6xxc Proactive Care Service	U3B38E
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HP 3 year 6hr Call To Repair 24x7 with Defective Media Retention ProLiant BL6xxc Proactive Care SVC	U3B41E
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Proactive Care Personalized Support Environmental Option - to add an onsite Account Support Manager (ASM) to Proactive Care. ASM is an assigned resource who delivers support planning and brings technical expertise and best practices advice for the customer's environment.

HP 3 year ISS ProactiveCare Personalized Support	U6W98E
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Installation Services - reduce the time required to get your system up and running and help minimize disruptions to your business.

HP Install c-Class Server Blade Service	UE493E
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HP Hardware Installation during Non Standard Hours c-Class Enclosure and Server Blade Service	UG869E
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Additional HP Care Pack services can be found at:

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

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 one (1) DIMM per processor is 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.
- RDIMMs and LRDIMMs cannot be mixed.
- 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.

NOTE: DIMMs of different speeds may be mixed in any order; the server will select a common optimal speed.

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

Memory

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

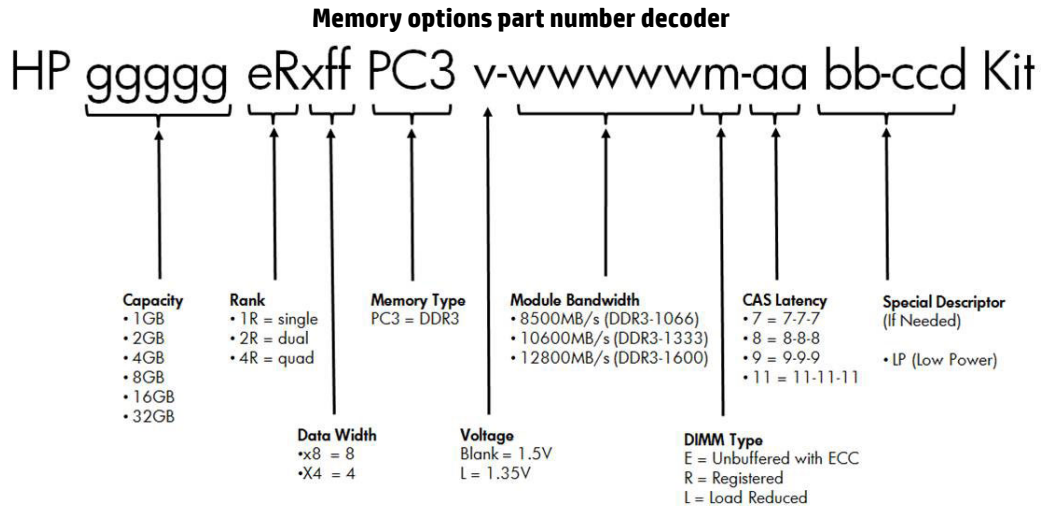
Memory

	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
HP 32GB (1x32GB) Quad Rank x4 PC3L-10600L (DDR3-1333) Load Reduced CAS-9 Low Voltage Memory Kit	647885-B21

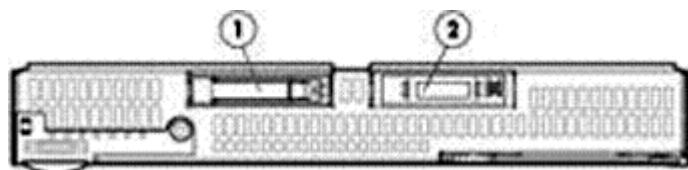
NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator

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

NOTE: Kits described as PC3L include Low 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

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
1.2TB 6G SAS 10K 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

6G SATA Value Endurance Hot Plug SFF (2.5-inch) Enterprise Boot Solid State Drives

	Quantity Supported	Position Supported	Controller
120GB 6G SATA VE SFF 80GB 6G SATA VE SFF	2	1-2	Smart Array P410i Controller

6G SATA Value Endurance Hot Plug SFF (2.5-inch) Enterprise Value Solid State Drives

Storage

	Quantity Supported	Position Supported	
800GB 6G SATA VE SFF	2	1-2	Smart Array P410i Controller
480GB 6G SATA VE SFF			
240GB 6G SATA VE SFF			

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

	Quantity Supported	Position Supported	Controller
800GB 6G SATA ME SFF	2	1-2	Smart Array P410i Controller
400GB 6G SATA ME SFF			
200GB 6G SATA ME SFF			
100GB 6G SATA ME SFF			

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

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

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

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

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

2.4 TB (2 x 1.2 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
		SUSE Linux Enterprise Desktop 10
	Client Browser Support	Microsoft Internet Explorer 8
		Microsoft Internet Explorer 7
		Microsoft Internet Explorer 6
		Firefox 3.5 (on supported Windows and Linux systems)
		Firefox 3.0 (on supported Windows and Linux systems)
	Command Line Support	Secure Shell and serial port access
		Secure Socket Layer
		Secure Shell version 2
	Security	Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser, CLP and XML scripting interface
		AES encryption of video
		RC4 encryption of video
	Directory Support Services	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.