Overview
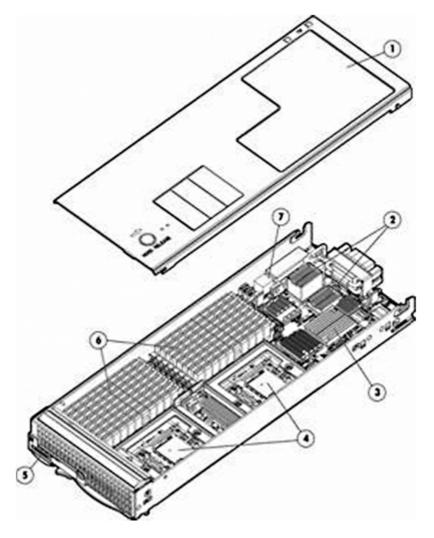

HP ProLiant BL495c Generation 6 (G6) Server Blade

1. Access panel
2. Two (2) mezzanine I/O expansion slots

3. Embedded dual port Flex-10 10GbE multifunction server adapter
4. Up to two (2) AMD Opteron™ 2400 Series processors

5. Local I/O connector
6. Sixteen (16) PC2-5300 Registered DIMM (DDR2-667) or PC2-6400 Registered DIMM (DDR2-800) memory slots
7. Internal USB connector

What's New

● Support for Low Power Six-Core AMD Opteron™ processor Model 2425 HE

At A Glance

This document covers the HP ProLiant BL495c G6 server blade only. For more information on HP BladeSystem c-Class Infrastructure

Overview

and HP BladeSystem c-Class Interconnect Components, please see the following QuickSpecs:

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

The HP ProLiant BL495c G6 Server Blade virtualization blade eliminates the performance bottlenecks of a virtual machine host. Engineered with more memory and I/O than any other half-height blade server, this world's first virtualization blade maximizes the number and performance of VMs that you can deploy per blade.

HP ProLiant BL495c G6 server blade includes:

- Processor:
    - Up to two (2) Six-Core AMD Opteron™ 2400 series processors
    - Supports up to 2.6 GHz, 2.2 GHz HyperTransport™; 512 KB Level 2 cache memory per core; 6 MB Level 3 cache
    - Dual-Link AMD HyperTransport connection between processors for maximum performance
    - AMD Dual Dynamic Power Management™ for optimum performance and reduced power consumption
    - ServerWorks HT-1000 and HT-2100 chipsets
- Memory:
    - Up to 128 GB of memory, supported by sixteen (16) slots of PC2-5300 Registered DIMMs at 667MHz or 64GB of memory, supported by sixteen (16) slots of PC2-6400 Registered DIMMs at 800MHz
    - Supporting memory interleaving (2:1)
      NOTE: The memory bus will operate at 800 MHz with four (4) or fewer DIMMs per processor, 667 MHz with six (6) DIMMs per processor, and 533 MHz with eight (8) DIMMs per processor.
- Storage Controller:
    - HP Embedded SATA Controller
- Internal Drive Support:
    - Up to two (2) non-hot plug SATA Solid State Drives (SSD)
    - With an attached SB40c Storage Blade, up to six (6) hot plug SFF Serial Attached SCSI (SAS) or SATA Hard Drives (optional)
- Network Controller:
    - Embedded NC532i Dual Port Flex-10 10GbE Multifunction Server Adapter
      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: Each port is autosensing 1Gb/10Gb, and can interoperate with 1Gb HP BladeSystem c-Class interconnect components.
    - One (1) additional 10/100 server adapter dedicated to iLO 2 Management
- Mezzanine Support:
    - Two (2) I/O expansion mezzanine slots
    - Supports up to two (2) mezzanine cards
        - Dual-Port Fibre Channel Mezzanine options for SAN connectivity (Choice of Emulex or QLogic)
        - iSCSI Ethernet mezzanine option for optimized iSCSI connectivity
        - Ethernet server adapter mezzanine options for additional network ports
        - 4X DDR InfiniBand (IB) Mezzanine (20 Gb/s) options for low latency server interconnectivity (based on Mellanox technology)
        - I/O Accelerator mezzanine options for high transaction rate local storage
- Internal USB Support:
    - One (1) internal USB 2.0 connector for security key devices and USB drive keys
- Form Factor:

Overview

- ○ HP ProLiant BL495c G6 server blade plugs into the BladeSystem c3000 and c7000 enclosures
- **Infrastructure Management:**
  - ○ HP ProLiant Onboard Administrator (powered by the HP Integrated Lights-Out 2 management processor) for simplified server setup, health monitoring and recovery, power and thermal control, and lights-out remote administration.
  - ○ HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, control and optimize your IT infrastructure through a single, simple management console. Insight Control supports both Windows and Linux-based central management servers.
  - ○ HP Insight Dynamics for ProLiant, a product option, is an integrated command center that enables IT Staff personnel to continuously analyze and optimize a converged infrastructure, while automating and reducing the cost of common data center tasks by as much as 40 percent. This ultimately enables them to dynamically keep pace with the organization's changing business requirements.
- **Operating Systems and Virtualization Software**:
  - ○ Supports Windows, RHEL, SLES, OEL, VMware ESX, Citrix XenServer
- **Enclosures**:
  - ○ HP offers three different c-Class server blade enclosures to meet your individual needs:
    - ▪ The HP BladeSystem c7000 rack enclosure is 10U high and holds up to sixteen (16) ProLiant BL495c G6 servers plugged vertically.
    - ▪ The HP BladeSystem c3000 rack enclosure is 6U high and holds up to eight (8) HP ProLiant BL495c G6 servers plugged horizontally.
    - ▪ The HP BladeSystem c3000 tower enclosure is designed with casters for sites without racks and holds up to eight (8) HP ProLiant BL495c G6 servers plugged vertically.
  - ○ Server blades, storage blades, and interconnect modules are all designed to fit into the c7000 and c3000 enclosures.
  - ○ For additional enclosure information, please see:
    http://h18004.www1.hp.com/products/blades/components/enclosures/c-class/index.html.
- **Warranty**:
  - ○ This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard Drives have either a one year or three year warranty; refer to 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

Processor	**Six-Core Processors**
	AMD Opteron™ processor Model 2435 (2.6 GHz, 6 MB L3 Cache, 75W ACP)
	AMD Opteron processor Model 2427 (2.2 GHz, 6 MB L3 Cache, 75W ACP)
	Low Power AMD Opteron processor Model 2425 HE (2.1 GHz, 6 MB L3 Cache, 55W ACP)
	NOTE: Offered through Configure-To-Order process only. See Factory Integration Models section for more details.
	NOTE: AMD Opteron 2400 series processors are 64-bit, six-core, and support AMD Virtualization™.
	NOTE: Processor wattage references reflect Average CPU Power (ACP). For more information on ACP visit: http://www.amd.com/powernow.

Upgradeability	Upgradeable to dual (2) processors

Cache Memory	512 KB Level 2 cache memory per core
	6 MB Level 3 cache memory

Chipset	ServerWorks HT-1000 and HT-2100

Memory	Type	PC2-5300 DDR2 Registered DIMMs at 667 MHz
		PC2-6400 DDR2 Registered DIMMs at 800MHz
	Standard	4 GB (2 x 2 GB)
	Maximum	128 GB (16 x 8 GB) at 533 MHz

NOTE: Memory must be installed in pairs.
NOTE: The memory bus will operate at 800 MHz with four (4) or fewer DIMMs per processor, 667 MHz with six (6) DIMMs per processor, and 533 MHz with eight (8) DIMMs per processor.

Network Controller	Embedded NC532i Dual Port Flex-10 10GbE Multifunction Server Adapter
	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: The iSCSI offload feature of the embedded multifunction adapter requires the HP Accelerated iSCSI Pack. For more information, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12466_div/12466_div.html
	One (1) additional 10/100 server adapter dedicated to iLO 2 management

I/O Expansion Slots	Two (2) I/O expansion mezzanine slots (One x8 and one x4 PCI Express)

Integrated Manageability	ProLiant Onboard Administrator (powered by the Integrated Lights-Out 2 management processor)

Storage Controller	HP Embedded SATA Controller (for connecting to non-hot plug SATA SDD only)

Standard Features

Maximum Internal Storage	Non-Hot Plug SATA (SATA) SSD	128GB	2 x 64GB SATA SSD
	Hot Plug SFF SAS (with optional SB40c Storage Blade attached)	1.8TB	6 x 300GB Hot Plug SAS

Graphics	Integrated ATI RN-50 1280 x 1024 x 16M color (32 MB DDR1 memory)

Graphics Resolution Supported	Resolution Color Depths	1280 x 1024, 16.7M, 64k, 256, 16
		1024 x 768, 16.7M, 64k, 256, 16
		800 x 600, 16,7M, 64k, 256, 16
		640 x 480, 16,7M, 64k, 256, 16

Fibre Channel Support

Two optional dual-port Fibre Channel HBAs are supported by the HP ProLiant BL495c G6. Each mezzanine circuit board connects directly to the server blade system board. These Fibre Channel HBAs are available via option kits and must be ordered separately.

HBA mezzanine card option kits:

Emulex LPe1105-HP 4Gb FC HBA (403621-B21)

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

QLogic QMH2462 4Gb FC HBA (403619-B21)

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

Emulex and QLogic Fibre Channel HBAs for HP BladeSystem c-Class feature:

- Optimal performance utilizing PCI Express
- 4/2/1Gb/s auto negotiating speeds (4Gb HBAs)
- Dual-ports for redundant path connections
- Up to two FC HBAs per server blade providing redundant FC HBA support
- Optimized for HP StorageWorks and supported by third party SAN vendors
- Support for Microsoft® Windows® and Linux operating system environments

Standard Features

Compatible SAN	HP ProLiant BL495c G6 server blades are optimized for HP StorageWorks MSA, EVA, and XP HP ProLiant BL495c G6 server blades are compatible with select 3rd party SANs (please see blade storage page for more details: http://h18004.www1.hp.com/products/blades/components/c-class-sans.html)

HP Virtual Connect	HP Virtual Connect simplifies server connectivity to LANs and SANs, and reduces costs. Unique HP Flex-10 technology makes maximum use of 10Gb Ethernet bandwidth by allowing multiple ports within a single Industry Standard connection that can be dynamically tuned to meet individual server requirements. HP Virtual Connect Enterprise Manager (VCEM) provides a central console to administer connections and workloads for thousands of servers. For more information on Virtual Connect Ethernet, Fibre Channel and management options see: www.hp.com/go/virtualconnect

HP Insight management software	HP Insight Foundation	Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex Datacenters.
		HP provides management solutions that are designed to simplify a server's installation, configuration and maintenance throughout the entire server lifecycle. This provides the customer with higher levels of operational efficiency and highly reliable systems: www.hp.com/go/foundation.
		The foundation pack includes:
		- HP SmartStart - HP Management - HP ProLiant Firmware Maintenance
		SmartStart version supported (minimum): SmartStart 8.1 http://www.hp.com/servers/smartstart
	ProLiant Onboard Administrator	HP ProLiant Onboard Administrator (powered by the HP Integrated Lights-Out 2 management processor) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP ProLiant Onboard Administrator functions without additional software, and can be accessed from any location via a web browser. It works hand-in-hand with HP Systems Insight Manager, Insight Control suites, and the Insight Dynamics for ProLiant helping customers unlock the value of the ProLiant platform and deliver the highest possible quality of IT service to the business. See www.hp.com/go/ProLiantOA
	HP Insight Control	HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console.
		Two versions of Insight Control are available, to serve environments requiring either a Linux-based or a Windows-based central management server: HP Insight Control for Linux, and HP Insight Control. See www.hp.com/go/insightcontrol

Standard Features

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

HP Insight Dynamics for ProLiant

HP Insight Dynamics for ProLiant, a product option, is an integrated command center that enables IT Staff personnel to continuously analyze and optimize a converged infrastructure, while automating and reducing the cost of common data center tasks by as much as 40 percent. As a powerfully integrated by design toolkit to accelerate complex technology projects and simplify daily operations that ultimately enable IT Staff personnel to dynamically keep pace with the organizations changing business requirements. It enables them to plan capacity and power continuously, balance across physical and virtual resources, and ensure cost-effective high availability. It also enables IT organizations to provision infrastructure consistently and automatically from pools of shared resources using a self-service portal. Resources provisioned can range from a single virtual machine to complex multi-tier environments and their associated physical and virtual resource requirements. In addition to the previous functional benefits, it also provides a cost-effective disaster recovery for physical and virtual environments that works with HP StorageWorks Continuous Access software for both the Enterprise Virtual Array and the XP storage array allowing application environments to be reactivated in minutes with the touch of a button to a remote location.

NOTE: For more information, visit:
http://www.hp.com/go/insightdynamics

Operating Systems and Virtualization Software	Microsoft Windows Server Microsoft Windows Server Hyper-V Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) Oracle Enterprise Linux (OEL) VMware ESX Citrix XenServer

NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: http://www.hp.com/go/supportos and our driver download page http://www.hp.com/support/BL495cG6

Availability	Dual-Port Fibre Channel Mezzanine Card for redundant SAN connection Dual- and Quad-Port server adapter for redundant LAN connections Redundant ROM on each server blade Multiple mezzanine I/O expansion ECC Memory Network adapter teaming (network fault tolerance, transmit load balancing, switch-assisted load balancing)

Standard Features

Industry Standard Compliance	ACPI 2.0 Compliant PCI 2.2 Compliant Microsoft® Logo certifications USB 2.0 Support

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

Factory Express Portfolio for Servers and Storage

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

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

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

HP Enterprise Configurator

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

Service and Support

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

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

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

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

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

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

Standard Features

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

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

For a complete listing of service offerings and information visit:
http://www.hp.com/services/bladesystemservices
http://h20219.www2.hp.com/services/us/en/warranty/carepack-servers-proliant.html

QuickSpecs

Models

Six-Core Models

HP ProLiant BL495c G6 2435 6C, 4G (1P) 539804-B21	**Processor(s)** One of the following depending on model	(1) AMD Opteron™ processor Model 2435 (2.6 GHz) (1) AMD Opteron processor Model 2427 (2.2 GHz)
HP ProLiant BL495c G6 2427 6C, 4G (1P) 539807-B21	**Cache Memory**	512 KB Level 2 cache memory per core 6 MB Level 3 cache memory
	Memory	4 GB (2 x 2 GB) PC2-6400, Registered DDR2-800
	Network Adapter	Embedded NC532i Dual Port Flex-10 10GbE Multifunction Server Adapter and one (1) additional 10/100 server adapter dedicated to iLO 2 management
	Storage Controller	HP Embedded SATA Controller
	Hard Drives	No drives included; (2) Non-Hot Plug SSD internal drive bays
	Internal Storage	Up to 128 GB SATA SSD
	Optical Drive	None
	Form Factor	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure

Configuration Information - Factory Integrated Models

NOTE: This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on CTO product offerings and requirements.
NOTE: HP does not allow factory integration of options into standard models listed above.
Configure-to-order servers must start with a CTO Chassis.
NOTE: FIO indicates that this option is a Factory Installable Option.

Step 1: Base Server Blade Configuration

Models	HP ProLiant BL495c G6 CTO Blade	539810-B21

Configurable Model ships with:

Embedded NC532i Dual Port Flex-10 10GbE Multifunction Server Adapter and one (1) additional 10/100 server adapter dedicated to iLO 2 management

HP Embedded SATA Controller

Two (2) non-hot plug internal SATA SSD drive bays

HP ProLiant Onboard Administrator (powered by the Integrated Lights-Out 2 management processor)

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

Processors	For single processor configuration choose:	
	AMD Opteron processor Model 2435 (2.6 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit, FIO Base NOTE: If two (2) processors are desired, select one 539805-L21 and one 539805-B21.	539805-L21
	AMD Opteron processor Model 2427 (2.2 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit, FIO Base NOTE: If two (2) processors are desired, select one 539808-L21 and one 539808-B21.	539808-L21
	Low Power AMD Opteron processor Model 2425 HE (2.1 GHz, 6 MB L3 Cache, 55W ACP) Processor Option Kit, FIO Base NOTE: If two (2) processors are desired, select one 539812-L21 and one 539812-B21.	539812-L21
Memory	2 GB REG PC2-6400 DDR2 2 x 1 GB Kit	497763-B21
	4 GB REG PC2-6400 DDR2 2 x 2 GB Kit	497765-B21
	8 GB REG PC2-6400 DDR2 2 x 4 GB Kit	497767-B21
	8 GB REG PC2-6400 DDR2 2 x 4 GB Low Power Kit	504351-B21
	16 GB REG PC2-5300 DDR2 2 x 8 GB Dual Rank Kit	408855-B21
	64 GB REG PC2-5300 DDR2 8 x 8 GB Dual Rank Kit	495605-B21

NOTE: Must be installed in pairs.
NOTE: The memory bus will operate at 800 MHz with four (4) or fewer DIMMs per processor, 667 MHz with six (6) DIMMs per processor, and 533 MHz with eight (8) DIMMs per processor.

Configuration Information - Factory Integrated Models

Step 3: 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 QuickSpecs:
HP BladeSystem c-Class Infrastructure QuickSpecs:
HP BladeSystem c3000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html
HP BladeSystem c7000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html
and HP BladeSystem c-Class Interconnect Components QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12524_div/12524_div.html.

Core Options

Ethernet Mezzanine Options	**Gigabit Ethernet Mezzanines**	
	HP NC325m PCI Express Quad Port 1Gb Server Adapter for c-Class BladeSystem	416585-B21
	NOTE: If the NC325m is installed in mezzanine slot 1 of a half-height server, connectivity will be provided on only 2 of the 4 ports.	
	HP NC326m PCI Express Dual Port 1Gb Server Adapter for c-Class BladeSystem	406771-B21
	HP NC360m Dual Port 1GbE BL-c Adapter	445978-B21
	HP NC364m Quad Port 1GbE BL-c Adapter	447883-B21
	NOTE: If the NC364m is installed in mezzanine slot 1 of a half-height server, connectivity will be provided on only 2 of the 4 ports.	
	HP NC382m Dual Port 1GbE Multifunction BL-c Adapter	453246-B21
	HP BLc QLogic iSCSI Dual Port Adapter	488074-B22
	NOTE: The Gigabit Ethernet adapters above transmit from the server at 2000 Mbps, full duplex per port. For more information, see the "Network Controller" segment in the Standards Features section.	
	10 Gigabit Ethernet Mezzanines	
	HP 10GbE Dual Port Mezzanine Adapter	516936-B21
	HP NC522m Dual Port Flex-10 10GbE Multifunction BL-c Adapter	467801-B21
	NOTE: The NC522m requires a minimum of 2 GB of server memory. NOTE: The NC522m supports linking at 1000Mbps or 10000Mbps when not connected to a Flex-10 enabled module and will link with all current 1Gb switches at 1Gb.	
	HP NC532m Dual Port Flex-10 10GbE Multifunction BL-c Adapter	467799-B21
	NOTE: The NC532m requires a minimum of 2 GB of server memory. NOTE: The NC532m supports linking at 1000Mbps or 10000Mbps when not connected to a Flex-10 enabled module and will link with all current 1Gb switches at 1Gb.	
	HP NC542m Dual Port Flex-10 10GbE Multifunction BL-c Adapter	539857-B21
	NOTE: The NC542m network adapter card is required for each server blade connecting to a 10Gb interconnect in bays 3-8 (HP BladeSystem c7000 Enclosure) or bays 3-4 (HP BladeSystem c3000 Enclosure) NOTE: The NC542m requires a minimum of 2 GB of server memory. NOTE: The NC542m supports linking at 1000Mbps or 10000Mbps when not connected to a Flex-10 device. The NC542m will only support 1000Mbps when connected to a 1Gb Ethernet interconnect.	
Fibre Channel Mezzanine Options	**Fibre Channel Mezzanine Options**	
	Emulex LPe1105 FC Dual Channel 4Gb, PCI-E-to-Fibre Channel Host Bus Adapter	403621-B21
	QLogic QMH2462 4Gb FC HBA for HP c-Class BladeSystem	403619-B21

QuickSpecs

Core Options

Processors		
	AMD Opteron™ processor Model 2435 (2.6 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit	539805-B21
	AMD Opteron processor Model 2427 (2.2 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit	539808-B21
	Low Power AMD Opteron processor Model 2425 HE (2.1 GHz, 6 MB L3 Cache, 55W ACP) Processor Option Kit	539812-B21

Memory		
	2 GB REG PC2-6400 DDR2 2 x 1 GB Kit	497763-B21
	4 GB REG PC2-6400 DDR2 2 x 2 GB Kit	497765-B21
	8 GB REG PC2-6400 DDR2 2 x 4 GB Kit	497767-B21
	8 GB REG PC2-6400 DDR2 2 x 4 GB Low Power Kit	504351-B21
	16 GB REG PC2-5300 DDR2 2 x 8 GB Dual Rank Kit	408855-B21
	64 GB REG PC2-5300 DDR2 8 x 8 GB Dual Rank Kit	495605-B21

NOTE: Must be installed in pairs.
NOTE: The memory bus will operate at 800 MHz with four (4) or fewer DIMMs per processor, 667 MHz with six (6) DIMMs per processor, and 533 MHz with eight (8) DIMMs per processor.

Solid State Drives		
	NOTE: Drives have either a one year or three year warranty; refer to the specific drive QuickSpecs for details.	
	HP 32GB 1.5G SATA NHP SFF SP ENT SSD	461201-B21
	HP 64GB 1.5G SATA NHP SFF SP ENT SSD	461203-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13121_div/13121_div.html

Additional Options

HP Insight software	**HP Insight Control**	
	HP Insight Control suite, No Media, Electronic License including 1 year of 24x7 Technical Support and Updates	T9074BAE
	HP Insight Control suite, No Media 1-Server License including 1 year of 24x7 Technical Support and Updates	452148-B22
	HP Insight Software Media Kit	436222-B21

NOTE: Insight Software DVD media without licenses. Contains Insight Control, Insight Dynamics and Virtual Connect Enterprise Manager. Uses an integrated installer to perform quick and accurate software installation and updates.

NOTE: Licenses ship without media. The HP Insight Control Media Kit can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightupdates.

NOTE: Electronic licenses can be used to purchase multiple licenses with a single activation key, and is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.

NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support & Update Service.

NOTE: For additional license kits, including bundles with HP BladeSystem enclosures, please see the Insight Control QuickSpecs at:
http://h18004.www1.hp.com/products/quickspecs/12631_div/12631_div.html

HP Insight Control for Linux

HP Insight Control for Linux, 1-server license, including one year of 24x7 Technical Support and Updates, Electronic	T9084BAE
HP Insight Control for Linux, No Media, 1-Server license, including one year of 24x7 Technical Support and Updates	464423-B22
HP Insight Control for Linux, Media pack (DVD) - No licenses included	464422-B22

NOTE: Media pack DVD contains HP Insight Control for Linux, HP Systems Insight Manager, HP Insight Control power management, HP Insight Control virtual machine management, and an integrated installer. Licenses must be acquired separately.

NOTE: Licenses ship without media. The Media Kit for Insight Control for Linux can be ordered separately, or can be downloaded at: http://www.hp.com/go/ic-linux (click on Download button).

NOTE: Electronic licenses can be used to purchase multiple licenses with a single activation key, and are available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.

NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.

NOTE: For additional License Kits, including electronic licensing options, please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/13019_div/13019_div.html

HP iLO Advanced for BladeSystem

HP Integrated Lights-Out Advanced for BladeSystem, No Media, Electronic License, including 1 year of 24x7 Technical Support and Updates	TA851AAE
HP Integrated Lights-Out Advanced for BladeSystem, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates	512488-B21

NOTE: Electronic licenses can be used to purchase multiple licenses with a single

Additional Options

activation key, and is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.
NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.
NOTE: For additional license kits please see the HP ProLiant Onboard Administrator (OA), powered by the Integrated Lights-Out 2 QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12362_div/12362_div.html

HP Insight Control server deployment

HP Insight Control server deployment Electronic License including 1 year 24x7 Technical Support and Updates	T9082AAE
HP Insight Control server deployment 1-Server License including 1 year 24x7 Technical Support and Updates	452151-B21

NOTE: Licenses ship without media. The Insight Control Media Kit can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightupdates.
NOTE: Electronic licenses can be used to purchase multiple licenses with a single activation key, and is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.
NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.
NOTE: For additional license kits please see the Insight Control QuickSpecs at:
http://h18004.www1.hp.com/products/quickspecs/12631_div/12631_div.html

Storage Controller	HP Smart Array P700m/512 Controller	508226-B21
	HP Smart Array P700m/256 Controller	507925-B21
	Optional Upgrade	
	HP Smart Array P700m/512 Battery Option Kit	452348-B21

NOTE: The Smart Array battery option kit is required to enable battery-backed write cache (BBWC).

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13175_div/13175_div.html (Worldwide)

Smart Array P712m Controller

HP Smart Array P712m Controller	484299-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information at:
http://h18000.www1.hp.com/products/quickspecs/13296_div/13296_div.html (Worldwide)

Additional Options

I/O Accelerator Mezzanine Options	HP StorageWorks 80GB IO Accelerator for BladeSystem c-Class	AJ876A
	HP StorageWorks 160GB IO Accelerator for BladeSystem c-Class	AJ877A
	HP StorageWorks 320GB IO Accelerator for BladeSystem c-Class	AJ878A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13220_div/13220_div.html	

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

HP Ultrium Tape Blades	HP StorageWorks SB1760c Tape Blade NOTE: LTO-4 Ultrium technology	AQ697A
	HP StorageWorks SB920c Tape Blade NOTE: LTO-3 Ultrium technology	AJ401A
	HP StorageWorks Ultrium 448c Tape Blade NOTE: LTO-2 Ultrium tape technology	440947-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information at: http://h18000.www1.hp.com/products/quickspecs/12729_div/12729_div.html NOTE: Please visit the BladeSystem c-Class enclosure QuickSpecs for a complete list of recommended data protection solutions for BladeSystem c-Class enclosures: http://h18004.www1.hp.com/products/blades/components/enclosures/c-class/index.html.	

HP StorageWorks SB40c Storage Blade	HP StorageWorks SB40c Storage Blade NOTE: Please see the QuickSpecs for Technical Specifications and additional information at: http://h18000.www1.hp.com/products/quickspecs/12587_div/12587_div.html (Worldwide)	411243-B21

HP PCI Expansion Blade	HP PCI Expansion Blade 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 information at: http://h18000.www1.hp.com/products/quickspecs/12753_div/12753_div.html	448018-B21

USB Options	HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)	DC172B

Additional Options

Service and Support Offerings
(HP Care Pack Services)

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

Hardware Services On-site Service

4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	UK065E
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UK066E
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UK067E

Memory

Memory configurations listed do not apply to "Factory Integrated Models".
DIMM installation guidelines:

1. All DIMMs must be PC2-5300 Registered DDR2 DIMMs (667 MHz) or PC2-6400 Registered DDR2 DIMMs (800 MHz).
2. Both DIMM slots in a memory bank must be populated.
3. Both DIMMs in a memory bank must be identical.
4. Processor 1 memory bank A must always be populated.
5. DIMM banks are active only when the corresponding processor socket is populated.
6. If installing only one bank on a processor, populate the bank physically farthest from the processor.
7. If mixing DIMM sizes on the same processor, the largest capacity DIMMs must be populated in the bank physically farthest from the processor. The smallest capacity DIMMs must be populated in the bank physically nearest the processor.
8. For optimal performance in most applications, populate the first memory bank for every populated processor socket.
9. The memory bus will operate at 800 MHz with four (4) or fewer DIMMs per processor, 667 MHz with six (6) DIMMs per processor, and 533 MHz with eight (8) DIMMs per processor.

HP ProLiant BL495c G6 Server Blade

Standard Memory
4096 MB (2 x 2048 MB) of PC2-5300 or PC2-6400, Registered DDR2 ECC DIMMs.

Standard Memory Plus Optional Memory
Up to 118784 MB of PC2-5300 or 61440 MB of PC2-6400, Registered DDR2 ECC DIMMs. Memory is available with the installation of optional PC2-5300 or PC2-6400, Registered DDR2 DIMM memory expansion kits.

Standard Memory Replaced with Optional Memory
Up to 131072 MB of PC2-5300 or 65536 MB of PC2-6400, Registered DDR2 ECC DIMMs. Memory is available with the removal of standard memory and the installation of optional PC2-5300 or PC2-6400, Registered DDR2 DIMM memory expansion kits.

1 Processor Configurations									
Memory		Slot							
		1A	2A	3B	4B	5C	6C	7D	8D
Standard	4096 MB	2048 MB	2048 MB	Empty	Empty	Empty	Empty	Empty	Empty
Optional	53248 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	2048 MB	2048 MB
Maximum	65536 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB

2 Processor Configuration, Total Memory = 60GB								
Memory		Slot						
	1A	2A	3B	4B	5C	6C	7D	8D
	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	2048 MB	2048 MB
	9E	10E	11F	12F	13G	14G	15H	16H
	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB

2 Processor Configuration, Total Memory = 64GB								
Memory		Slot						
	1A	2A	3B	4B	5C	6C	7D	8D
	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB
	9E	10E	11F	12F	13G	14G	15H	16H
	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB	4096 MB

2 Processor Configuration, Total Memory = 116GB

Memory

Memory		Slot							
		1A	2A	3B	4B	5C	6C	7D	8D
		8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	2048MB	2048MB
		9E	10E	11F	12F	13G	14G	15H	16H
		8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB

2 Processor Configuration, Total Memory = 128GB									
Memory		Slot							
		1A	2A	3B	4B	5C	6C	7D	8D
		8192MB	8192MB	8192MB	8192MB	8192MB	8192MB	8192MB	8192MB
		9E	10E	11F	12F	13G	14G	15H	16H
		8192MB	8192MB	8192MB	8192MB	8192MB	8192MB	8192MB	8192MB

Following are memory options available from HP:

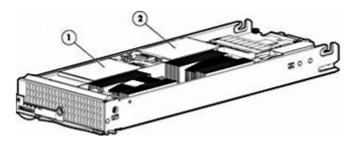|	
2 GB REG PC2-6400 DDR2 2 x 1 GB Kit	497763-B21
4 GB REG PC2-6400 DDR2 2 x 2 GB Kit	497765-B21
8 GB REG PC2-6400 DDR2 2 x 4 GB Kit	497767-B21
8 GB REG PC2-6400 DDR2 2 x 4 GB Low Power Kit	504351-B21
16 GB REG PC2-5300 DDR2 2 x 8 GB Dual Rank Kit	408855-B21
64 GB REG PC2-5300 DDR2 8 x 8 GB Dual Rank Kit	495605-B21

NOTE: Must be installed in pairs.
NOTE: DIMMs must be installed in decreasing capacity with the largest DIMMs installed in the banks furthest away from each processor.
NOTE: The memory bus will operate at 800 MHz with four (4) or fewer DIMMs per processor, 667 MHz with six (6) DIMMs per processor, and 533 MHz with eight (8) DIMMs per processor.

Storage

1-2   2 x SATA Solid State Drives (SSD)

SATA Non-Hot Plug Solid State Drives

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

	Quantity Supported	Position Supported	Controller
32GB 1.5G SATA SSD	2	1-2	HP Integrated SATA Controller HP Smart Array P712m Controller
64GB 1.5G SATA SSD	2	1-2	HP Integrated SATA Controller HP Smart Array P712m Controller

Technical Specifications

System Unit	Dimensions (H x W x D)		7.154 x 2.19 x 20.058 in (18.17 x 5.56 x 50.95 cm)
	Weight (approximate)	Maximum (all hard drives and processors installed)	14.20 lb (6.44 kg)
		Minimum (one hard drive and processor installed)	10.75 lb (4.87 kg)
	Power Specifications		For power specifications including Input Requirements, BTU Rating, and Power Supply Output, please see the HP BladeSystem c-Class Enclosures QuickSpecs located at URL: HP BladeSystem c3000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html HP BladeSystem c7000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html
			To review typical system power ratings use the HP BladeSystem Power Sizer which is available via the online tool located at URL: http://www.hp.com/go/bladesystem/powercalculator
	System Inlet Temperature	Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).
		Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
	Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
		Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
	Altitude	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed.
		Non-operating	Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Acoustic Noise		For acoustic noise specifications, please see the HP BladeSystem c-Class Enclosures QuickSpecs located at URL: HP BladeSystem c3000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html

Technical Specifications

HP BladeSystem c7000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html

Embedded NC532i Dual Port Flex-10 10GbE Multifunction Server Adapter	Type	Integrated dual-port KR 10GbE
	Network Processor	Broadcom 57711
	Data Transfer Method	x8 PCI Express 1.0
	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. **NOTE:** Each port on the NC532i adapter transmits from the server at only 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 • 4K Jumbo frames • Microsoft Windows Receive Side Scaling (RSS) • Optional accelerated iSCSI

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.