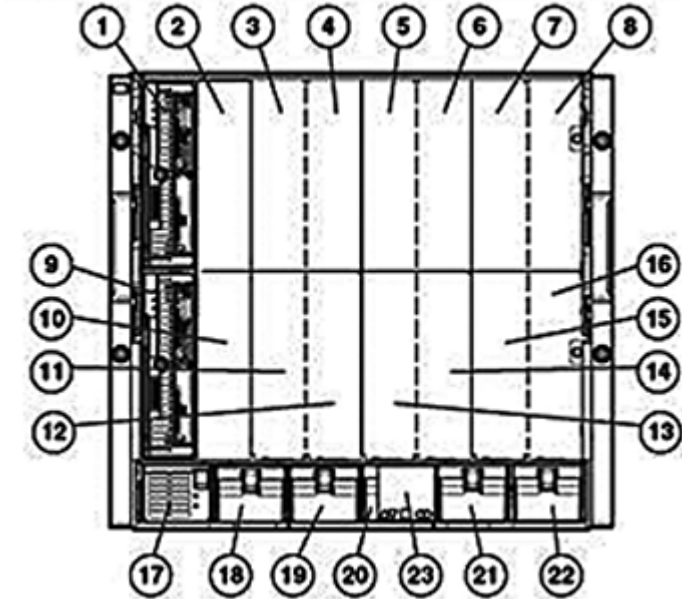# QuickSpecs

Overview

HP BladeSystem c7000 Enclosure

HP BladeSystem c7000 Enclosure - Front View

1. Device Bay 1
2. Device Bay 2
3. Device Bay 3
4. Device Bay 4
5. Device Bay 5
6. Device Bay 6
7. Device Bay 7
8. Device Bay 8
9. Device Bay 9
10. Device Bay 9
11. Device Bay 11
12. Device Bay 12
13. Device Bay 13
14. Device Bay 14
15. Device Bay 15
16. Device Bay 16
17. Power Supply Bay 1
18. Power Supply Bay 2
19. Power Supply Bay 3
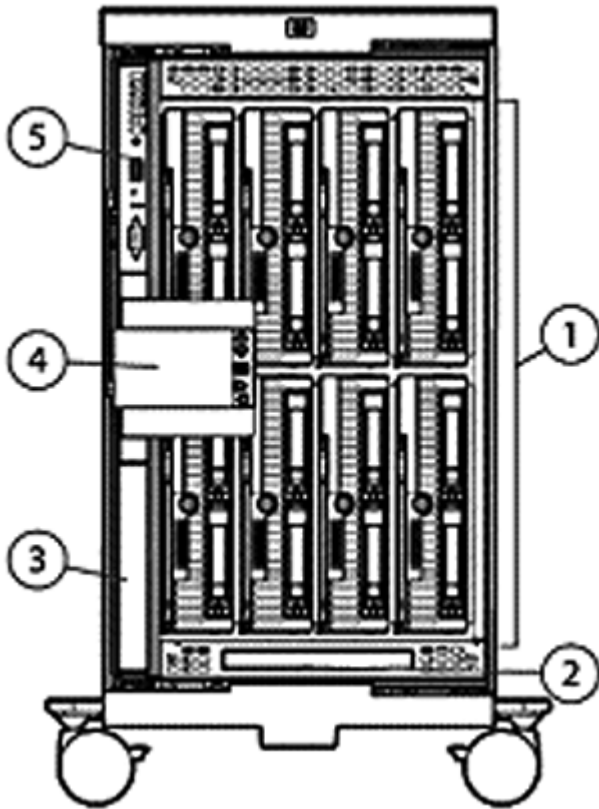20. Power Supply Bay 4
21. Power Supply Bay 5
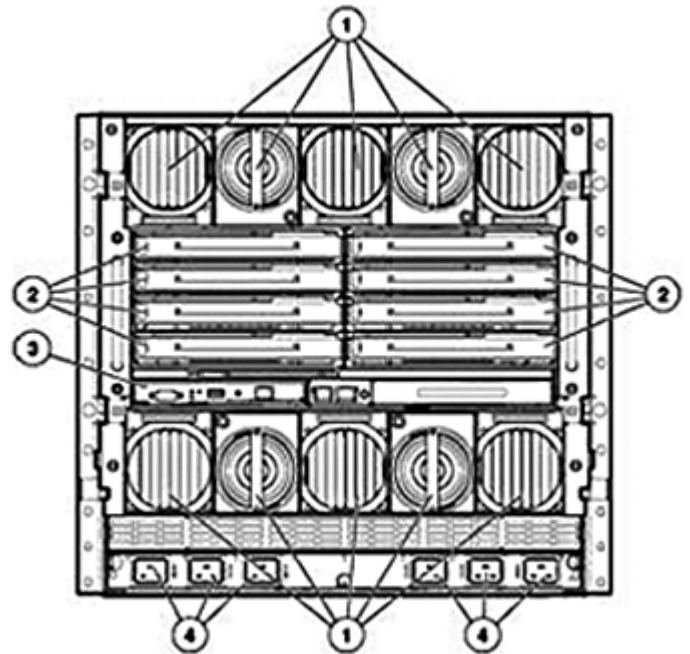
HP BladeSystem c7000 Enclosure - Rear View

1. Active Cool Fans & fan bays
2. Interconnect Bays
3. Onboard Administrator
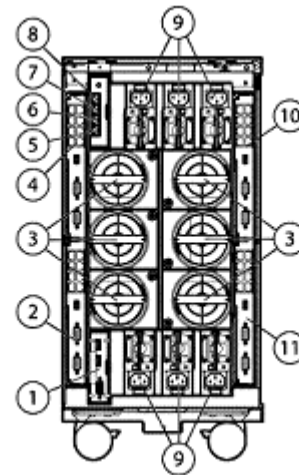4. Power Inputs (single phase model shown)

Overview

22.   Power Supply Bay 6
23.   Insight Display

HP BladeSystem c3000 Enclosure - Front View

1.   Device Bays 1 thru 8
2.   Enclosure DVD Drive
3.   Standby Onboard Administrator (reserved for Future)
4.   Insight Display
5.   Active Onboard Administrator

HP BladeSystem c3000 Enclosure - Tower - Rear View

1.   Local KVM interface
2.   Interconnect Bay 1
3.   Active Cool Fans
4.   Interconnect Bay 2
5.   Enclosure Up-link and Service Port
6.   Enclosure Down-link
7.   iLO/Onboard Administrator Port
8.   iLO/Onboard Administrator Port 2 (reserved for future)
9.   Power Supplies
10.   Interconnect Bay 4
11.   Interconnect Bay 3

Overview

What's New

- Support for Cisco Catalyst Blade Switches 3120 G and 3120X for HP
- Support for HP BladeSystem c3000 Enclosure - Tower Model

At A Glance

NOTE: This document covers the HP BladeSystem c7000 and c3000 Enclosures. For more information on HP ProLiant Server Blades and HP BladeSystem c-Class Interconnect Components please see the following QuickSpecs:

- HP ProLiant Server Blades: http://h18000.www1.hp.com/products/quickspecs/north_america/11070.html
- HP BladeSystem c-Class Interconnect QuickSpecs:
  http://h18000.www1.hp.com/products/quickspecs/12524_na/12524_na.html
- HP BladeSystem c-Class c7000 Enclosure QuickSpecs
  http://h18000.www1.hp.com/products/quickspecs/12810_na/12810_na.html
- HP BladeSystem c-Class c3000 Enclosure QuickSpecs:
  http://h18000.www1.hp.com/products/quickspecs/12790_na/12790_na.html

HP BladeSystem solutions start with a c7000 or c3000 Enclosure:

- For the c3000 Enclosure, customers can add c3000 power supplies, Active Cool Fans, a c3000 DVD drive, and if needed, an optional local KVM module.
- For the c7000 Enclosure, customers can add optional c7000 hot-plug power supplies, HP Active Cool Fans, and an optional redundant Onboard Administrator module.
- Once the enclosure has been selected, the following components can be added: networking interconnect modules, HP ProLiant and Integrity Server Blades, and Insight Control management tools. Reference the QuickSpecs listed above.
- Protected by HP Services and a worldwide network of HP Authorized Channel Partners. Three-year parts, 3 Year Labor and 3 Year on-site limited global warranty. Certain restrictions and exclusions apply.
- For additional information please visit: http://h18004.www1.hp.com/products/blades/components/components.html

QuickSpecs

HP BladeSystem c-Class Standard Features

NOTE: For a brief, printer friendly data sheet that describes this product and informs you of the essential capabilities and specifications, please visit: http://isspit.corp.hp.com/document_storage/LaunchDeliverables/4AA0-5978ENW_Rev_1.PDF

HP BladeSystem Overview As server, storage and network technologies have changed; traditional rack-mounted infrastructure solutions have generated increased complexity of both infrastructure management and physical datacenter deployment.

HP BladeSystem is the evolution of the entire rack-mounted infrastructure. A BladeSystem reduces costs and simplifies the management, building, and maintenance of the infrastructure behind your multi-server environment. It consolidates and repackages all the supporting infrastructure elements-compute, storage, network, and power into a single platform that can accelerate the integration and optimization of your data center.

With the flexibility to scale from a single enclosure holding up to 16 blades, to a rack containing 4 enclosures holding up to 64 blades, the c-Class infrastructure is designed to meet the needs of today's businesses.

An HP BladeSystem c-Class infrastructure is made up of several components:

- ProLiant and Integrity Server blades for Windows, Linux, and HP UX.
- Choice of AMD or Intel processors, including the latest dual-core processors for 32-bit and 64-bit applications.
- HP BladeSystem c-Class enclosure that provides connectivity, power, and cooling options. The c-Class enclosure is designed for full redundancy and high availability. Redundant power, cooling, enclosure management, and interconnect modules are part of the standard enclosure design.
- Onboard Administrator module which provides a single point of control for intelligent management of the entire enclosure.
- Insight Display powered by the Onboard Administrator provides local management through an LCD display conveniently sited on the front of the system.
- Ethernet, Fibre Channel, InfiniBand, iSCSI, and other interconnect choices
- A power subsystem that provides hot-plug redundant power modes and Dynamic Power Saving mode, which uses up to 22% less power than traditional rack-mounted servers.
- PARSEC (Parallel, Redundant, Scaleable, Enclosure Cooling) architecture: for maximum cooling that consumes less power and reduces datacenter noise.
- Zoned cooling that allows only those fans that are required to speed up, reducing power consumption noise and airflow through the system.
- Direct-attach storage blades, tape blades, or future shared storage blades, which will provide block-based shared storage capacity for the server blades in the enclosure.

HP BladeSystem c-Class Standard Features

HP BladeSystem c-Class c3000 Enclosure

A BladeSystem c3000 enclosure holds up to 8 server and/or storage blades plus redundant network and storage switches. It includes a shared, multi-terabit high-speed mid-plane for wire-once connectivity of server blades to network and shared storage. Power is delivered through a pooled power backplane that ensures the full capacity of the hot-plug power supplies is available to all blades.

Each c3000 enclosure is built with the following functions:

- Up to 8 half-height and/or up to 4 full-height server blades and/or storage blades per enclosure.
- Up to 4 different interconnect fabrics (Ethernet, FC, IB, iSCSI, SAS, etc.) supported simultaneously within the enclosure.
- A single-phase power subsystem - for flexibility in connecting to datacenter power, or to UPS's or to low-line wall outlets
- PARSEC enclosure design - Parallel, redundant and scalable cooling and airflow design
- Four (4) or Six (6) Active Cool fans as standard. For redundancy and improved power consumption and acoustics; additional Active Cool Fan kits can be added for a maximum of 10 fans
- Fully redundant design-redundant interconnections between servers and interconnect modules; a mid-plane with no active components; redundant cooling using hot-plug Active Cool fans; hot-plug power supplies.
- Best performance per watt - lower wattage per server blade, in comparison to rack-mounted servers
- Full AC redundancy - with no power zones.
- Single or redundant Onboard Administrator management modules (optional active-standby design)

An Onboard Administrator management module is built in to the enclosure with the following functions:

- Robust, multiple enclosure setup and control.
- Reports asset and inventory information for the devices in the enclosure.
- Reports thermal and power information, including real-time actual power usage per server and per enclosure.
- Front-mounted Insight Display for easy management within the datacenter.
- Integrated access to all server blade iLOs from a single cable.
- Provides integrated access to interconnect bay device management ports from the single Onboard Administrator cable.
- Single sign-on capability for all devices in the enclosure
- Role-based security locally and/or with LDAP directory services.
- Provides a wizard-based initial setup process for easy configuration.

A BladeSystem c3000 enclosure provides the following benefits:

- With local and remote hardware management integrated across the solution, one full enclosure can be managed as easily as one server.
- Scalable: Management and network interconnects extend scalability beyond a single enclosure, allowing resources to be pooled and shared across multiple enclosures.
- Investment protection: Accommodates multiple server and network designs in one enclosure.
- Lower costs per server, in comparison to rack-mounted servers
- Lower power consumption, in comparison to rack-mounted servers
- Service and management: Allows multiple administrators to remotely access and maintain multiple servers & interconnect devices simultaneously.

HP BladeSystem c-Class Standard Features

HP BladeSystem c-Class c7000 Enclosure

A BladeSystem c7000 enclosure holds up to 16 server and/or storage blades plus redundant network and storage switches. It includes a shared, multi-terabit high-speed mid-plane for wire-once connectivity of server blades to network and shared storage. Power is delivered through a pooled power backplane that ensures the full capacity of the hot-plug power supplies is available to all blades.

Each c7000 enclosure is built with the following functions:

- Up to 16 half-height and/or up to 8 full-height server blades and/or storage blades per enclosure.
- Up to 4 different interconnect fabrics (Ethernet, FC, IB, iSCSI, SAS, etc.) supported simultaneously within the enclosure.
- Choice of a single-phase or a three-phase power subsystem - for flexibility in connecting to datacenter power.
- PARSEC enclosure design - Parallel, redundant and scalable cooling and airflow design
- Four (4) or Six (6) Active Cool fans as standard. For redundancy and improved power consumption and acoustics; additional Active Cool Fan kits can be added for a maximum of 10 fans
- Fully redundant design-redundant interconnections between servers and interconnect modules; a mid-plane with no active components; redundant cooling using hot-plug Active Cool fans; hot-plug power supplies.
- Best performance per watt - lower wattage per server blade, in comparison to rack-mounted servers
- Full AC redundancy - with no power zones.
- Redundant Onboard Administrator management modules (optional active-standby design)

An Onboard Administrator management module is built in to the enclosure with the following functions:

- Robust, multiple enclosure setup and control.
- Reports asset and inventory information for the devices in the enclosure.
- Reports thermal and power information, including real-time actual power usage per server and per enclosure.
- Front-mounted Insight Display for easy management within the datacenter.
- Integrated access to all server blade iLOs from a single cable.
- Provides integrated access to interconnect bay device management ports from the single Onboard Administrator cable.
- Single sign-on capability for all devices in the enclosure
- Role-based security locally and/or with LDAP directory services.
- Provides a wizard-based initial setup process for easy configuration.

A BladeSystem c7000 enclosure provides the following benefits:

- With local and remote hardware management integrated across the solution, one full enclosure can be managed as easily as one server.
- Scalable: Management and network interconnects extend scalability beyond a single enclosure, allowing resources to be pooled and shared across multiple enclosures.
- Investment protection: Accommodates multiple server and network designs in one enclosure.
- Lower costs per server, in comparison to rack-mounted servers
- Lower power consumption, in comparison to rack-mounted servers

HP BladeSystem c-Class Standard Features

HP ProLiant & Integrity Server Blades	Delivering best-in-class performance, choice and reliability on AMD Opteron™, Intel® Xeon™, Intel® Itanium 2™ and processors for Windows, Linux, or HP-UX based servers, the HP portfolio of server blades supports a variety of application requirements for scale-out architectures. HP offers one-, two-, and four-processor (dual-core) server blades, including the widest range of performance, and form factors, and the most processing density and performance of any other portfolio. This portfolio of servers is designed for 32-bit and 64-bit applications. For more information please see: http://h18000.www1.hp.com/products/quickspecs/north_america/12534.html
HP SB40c Storage Blade	The StorageWorks SB40c is a half-height c-Class storage blade featuring support for up to six hot-plug Small Form Factor (SFF) Serial Attached SCSI (SAS) or Serial ATA (SATA) hard disk drives. The SB40c connects directly to the adjacent server blade to provide up to 876GB additional storage capacity to that blade. For maximum fault tolerance the SB40c uses supports hardware RAID 0, 1, 1+0, 5, and 6 (ADG), using the onboard Smart Array P400 with up to 256MB of battery-backed write cache. For more information please see: http://h18000.www1.hp.com/products/quickspecs/12587_na/12587_na.html
HP StorageWorks Ultrium 448 Tape Blade	The HP StorageWorks Ultrium 448c Tape Blade is ideal for HP BladeSystem c-Class customers who need a data protection solution but are not connected into a Storage Area Network (SAN). This tape blade provides direct attach data protection for the adjacent server and network backup protection for all other data within the enclosure. The HP Ultrium 448c Tape Blade is the first HP StorageWorks tape product developed exclusively for the BladeSystem c-Class enclosures. For more information, please visit http://h18000.www1.hp.com/products/quickspecs/12729_na/12729_na.html.
HP BladeSystem c-Class Interconnect Options	HP also offers one of the broadest selections of interconnect fabric options in the industry to provide network, SAN/network attached storage (NAS), and cluster connectivity. HP BladeSystem interconnects provide: • Virtual Connect Ethernet and Fibre Channel to simply connections moves and changes in both the Ethernet and SAN environment. • Seamless integration of Ethernet, FC, InfiniBand, iSCSI, and SAS fabrics: Standard-based switch options include Cisco, Brocade, and HP (BNT) products that integrate within your existing standards. • Built-in redundancy: Rear-mounting interconnect modules designed for redundant interconnections between server blades and switches. • Cable reduction: Interconnect switches provide up to 32-to-1 network cable reductions per server blade enclosure For more information HP BladeSystem c-Class Interconnect Components, please visit: http://h18000.www1.hp.com/products/quickspecs/12524_na/12524_na.html

HP BladeSystem c-Class Standard Features

Rack Airflow Requirements	**Rack 10000 series cabinets** The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The 10000 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors.

CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

- Front and rear doors: If your 42U server rack includes closing front and rear doors, you must allow 830 square inches (5,350 sq cm) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
- The clearance from face of rack to inside of the front door needs to be 1.75" minimum.
- Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 2.75 inches (7 cm).
- Depth: Minimum 39.4 inches (1000mm)
- Adjustable rack rails are shipped with each enclosure:
    - Minimum rail length: 25 inches (635mm)
    - Maximum rail length: 34 inches (864mm)

CAUTION: Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

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 & Integrity Server Blades, HP BladeSystem, HP 9000 servers as well as the MSAxxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches. For more information on Factory Express services for your specific server model please contact your sales representative or go to http://www.hp.com/go/factory-express

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Insight Control Environment for BladeSystem Management Suite	Insight Control Environment for BladeSystem delivers foundation management for HP BladeSystem lifecycles, including hardware resource deployment, health monitoring, software version control, performance monitoring, vulnerability, scanning and patch management. Installs and licenses the following components by default using a wizard-based integrated installer:

- HP Systems Insight Manager
- HP iLO Select Pack
- HP Insight Power Manager
- HP ProLiant Essentials Rapid Deployment Pack
- HP ProLiant Essentials Performance Management Pack
- HP ProLiant Essentials Vulnerability and Patch Management Pack
- HP ProLiant Essentials Virtual Machine Management Pack

Additional ProLiant Essentials software and management tools included on the Insight Control

HP BladeSystem c-Class Standard Features

Management DVD can be installed manually.

- Server Migration Pack
  NOTE: HP Server Migration Pack - Universal Edition is licensed separately from the Insight Control Environment Suite.
- HP Open Service Event Manager
- HP Instant Support Enterprise Edition

NOTE: Server Migration Pack - Universal Edition can be installed from the SMP-P2P CD included in the Insight Control Management media kit.

NOTE: Insight Control Environment for HP BladeSystem can be installed from the Insight Control Management DVD, which can be delivered with HP BladeSystem c-Class enclosures with a choice of licensing options. Licensing options include a free 30 day evaluation license for 8 servers (default option for every enclosure order), a full purchased license for 8 blade servers or a full purchased license for 16 blade servers). For additional information on HP c-Class Enclosures please visit: HP BladeSystem c-Class c7000 Enclosure QuickSpecs
http://h18000.www1.hp.com/products/quickspecs/12810_na/12810_na.html
HP BladeSystem c-Class c3000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12790_na/12790_na.html

NOTE: For additional product and licensing information about Insight Control Environment for BladeSystem, HP Systems Insight Manager and Essentials software refer to
http://www.hp.com/servers/proliantessentials.

HP Insight Control Environment for Linux (ICE-Linux) provides comprehensive discovery, imaging & deployment, monitoring, and management for Linux-based ProLiant server platforms. Built on the industry-leading HP Systems Insight Manager framework, this solution integrates open source technology with experience leveraged from HP's Linux products in HP ICLE and HP XC Clusters, while providing paths to the future with developing management technologies.

HP Insight Control management suites and most HP ProLiant Essentials include 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 Software Support

HP Insight Control Environment for BladeSystem and Insight Control Linux Edition will include one year of 24 x 7 HP Software Technical Support and Update Service. This service provides access to HP technical resources for help in resolving software implementation or operations problems. The service also provides access to software updates and reference manuals either in electronic form or on physical media as they are made available from HP.

With this service, HP Insight Control Environment for BladeSystem and Insight Control Linux Edition customers will benefit from expedited problem resolution and proactive notification and delivery of http://www.hp.com/go/ice software updates.

To activate your HP Software Technical Support and Update Service for HP Insight Control Environment for BladeSystem and Insight Control Linux Edition, you must register your software purchase through the HP website at http://www.hp.com/services/insight.

Failure to register your service will jeopardize service fulfillment.

HP BladeSystem c-Class Standard Features

Your Service Agreement Identifier (SAID) will be delivered to you after registration. After you have received your SAID, you can go to the software update manager (SUM) web page to view your contract online and elect electronic delivery (in addition to standard media-based updates). For more information about this service, see http://www.hp.com/services/insight.

Unified Core Services and Flexible Software Extensions	HP Systems Insight Manager	HP Systems Insight Manager (HP SIM) provides a unified, secure and extensible standards-based environment to centrally manage servers, storage and other infrastructure devices, (both HP and non-HP) across multiple operating system platforms.
	ProLiant Essentials Rapid Deployment Pack	Rapid Deployment Pack (RDP) extends HP Systems Insight Manager with a complete deployment solution for HP ProLiant blade servers. RDP provides a central location to configure server hardware, deploy Windows, Linux and VMware ESX operating environments and install HP ProLiant Support Pack drivers using images and scripted profiles.
	Integrated Lights-Out Select Pack	Upgrades the iLO 2 processor with enhanced console sharing and replay, virtual media (floppy, CD/DVD, USB key), virtual folders, historical power reporting, power capping and enterprise security (directory services and two-factor authentication) for servers managed using remote consoles available in iLO 2 Standard and iLO 2 Standard Blade Edition.
	Insight Power Manager (IPM)	Upgrades the single-server remote management capabilities of iLO Select/Advanced to include centralized reporting and policy-based management of power consumption and thermal output provided by the Insight Power Manager. IPM unifies all of this functionality within a single user interface - HP Systems Insight Manager.
	Integrated Lights-Out Power Management Pack	Is energy-efficient management software that delivers centralized control, reliable security, and energy savings for your BladeSystem infrastructure. iPMP combines the total control of iLO 2 Advanced in the area of remote management with the energy monitoring and control of the Insight Power Manager to deliver a robust solution capable of full remote control and power management of ProLiant servers through a unified interface within HP Systems Insight Manager.
	ProLiant Essentials Performance Management Pack	Performance Management Pack (offered exclusively through the Insight Control suites) - a performance management solution that identifies and explains hardware performance bottlenecks on ProLiant servers and attached options enabling users to better utilize their valuable resources.
	HP Insight Dynamics - VSE	Introducing HP Insight Dynamics - VSE, the world's first software integrated by design to let IT professionals analyze and optimize their virtual & physical environments in the same way. It combines the best of the industry-leading HP infrastructure management portfolio-including HP Systems Insight Manager, HP Insight Control and HP Virtual Server Environment-into one integrated offering for HP BladeSystem, ProLiant and Integrity servers. For more information, visit: http://www.hp.com/go/insightdynamics
	Server Migration Pack - Universal Edition	Upgrading, replacing, or virtualizing your existing server? Effortlessly transition to new virtual or physical HP ProLiant servers or BladeSystem with automated, accurate and affordable migration of OS, application and data. SMP Universal automates the manual processes required for migrating servers between physical or virtual platforms, whether migrating to VMware or Microsoft virtual machines. SMP Universal allows all of the following:

HP BladeSystem c-Class Standard Features

- Physical to ProLiant
- Physical to virtual
- Virtual to virtual
- Virtual to ProLiant

	Virtual Machine Management Pack	Virtual Machine Management Pack - provides central management and control of virtual machines from Microsoft and VMware. Integrated approach provides the ability to manage both physical and virtual resources from a single management console.
	The Vulnerability and Patch Management Pack	Vulnerability and Patch Management Pack (offered exclusively through the Insight Control suites) - identifies and remediates software security vulnerabilities due to missing patches as well operating system configurations that can be exploited by viruses, worms, and other blended threats.
		NOTE: Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to: http://www.hp.com/servers/proliantessentials/vpm or the various ProLiant Essentials Value Pack product QuickSpecs for more information. **NOTE:** Selected software packages listed here include one year of 24 x 7 Software Technical Support and Update Service. If you have any questions about this service please visit the HP website at: http://www.hp.com/services/insight.
Core Infrastructure Management	SmartStart	SmartStart is a tool that simplifies server setup, providing a rapid way to deploy reliable and consistent server configurations. For more information, please visit the SmartStart Web site at: http://www.hp.com/servers/smartstart. SmartStart version supported (minimum): SmartStart 7.60
	Insight Management Agents	The Insight Management Agents should be installed on all HP servers to present system instrumentation, health and configuration information into HP Systems Insight Manager and the HP System Management Homepage. The HP System Management Homepage aggregates systems data from Insight Management Agents and other HP management tools, providing a consolidated browser-based interface for managing individual servers. Insight Management Agents and The HP System Management Homepage are included on ProLiant Support Packs, and can also be installed using the server profiles provided with the ProLiant Essentials Rapid Deployment Pack. For additional information about the Management Agents and the HP System Management Homepage please visit the management Web site at: http://www.hp.com/servers/manage.
	Subscriber's Choice	Subscriber's Choice Driver and Support Alerts/Notifications is a web-based email subscription service that provides software and driver change notifications for ProLiant products. Sign up at: http://www.hp.com/go/subscriberschoice and customize your profile to receive various new alerts as they become available, on a weekly or monthly basis.

HP BladeSystem c-Class Standard Features

ProLiant Support Packs and ROMPaq, software	The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options, available through ProLiant Support Packs the ProLiant Essentials Rapid Deployment Pack, SmartStart or downloaded from software and drivers download pages website at: http://www.hp.com/go/support.

HP Enterprise Configurator

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

HP BladeSystem Power Sizer

The HP BladeSystem Power Sizer helps in sizing the power infrastructure needed for a HP BladeSystem solution. This sizer enables effective planning for the power consumption and heat load of the BladeSystem at its site.

The sizer enables you to:

- Select the type and number of components within each Blade Server and Blade Enclosure.
- View the effect of component changes on the power consumption and heat loading.
- Review server loading and determine power supply and power subsystem requirements.
- Approximate electrical and heat load for facilities planning purposes.

The sizing estimate is based on component level power measurements for a system stressed to maximum capability.

Values obtained from the BladeSystem Sizer tool are measured with all components stressed to 100% load and are intended for facilities planning purposes only. Actual power consumption varies with application type, application utilization, and ambient temperature.

The p-class BladeSystem and the c-Class BladeSystem solutions are supported in the BladeSystem Power Sizer.

Available at http://www.hp.com/go/bladesystem/powercalculator

HP BladeSystem c-Class Standard Features

Service and Support

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

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.

HP Care Pack services for the c7000 and c3000 enclosures cover the enclosure, power supplies and fans. HP qualified rack options are covered by these services when installed within the same rack. HP supported c-Class enclosure devices including pass thru, Ethernet interconnect and virtual connect modules are also covered by the c7000 and c3000 enclosure Care Pack services.

NOTE: SAN/Fabric switches for the HP c-Class BladeSystem are not covered under the c7000 enclosure Care Packs, SAN/Fabric switches carry separate Care Packs. SAN/Fabric Switch Care Pack service level support should always be uplifted to match existing storage or server service level.

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

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

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

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

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

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

For a complete listing of service offerings and information visit:
http://www.hp.com/services/bladesystemservices
http://www.hp.com/go/proliant/carepack

QuickSpecs

Configuration Information Factory Integrated Models

For a complete configuration of the HP BladeSystem, please do the following:

Step 1: Select desired model, configuration and quantity of HP ProLiant server and Storage blades

NOTE: For server blade information, please visit:
http://h18000.www1.hp.com/products/quickspecs/north_america/12534.html
NOTE: For Storage Blade information, please visit:
http://h18000.www1.hp.com/products/quickspecs/12587_na/12587_na.html

Step 2: Determine quantity of HP BladeSystem c-Class Enclosures to purchase and choose **Required Options** (One of the following from each list unless otherwise noted):

NOTE: Each HP BladeSystem c3000 Server Blade Enclosure holds up to 8 half-height blades, or up to 4 full-height server blades. Server blanks will be shipped in all empty bays.

NOTE: Each HP BladeSystem c7000 Enclosure holds up to 16 half-height blades. Server blanks will be shipped in all empty bays.

Base Server Blade Enclosure Configuration

HP BladeSystem c-Class Server Blade Enclosures	**HP BladeSystem c3000 Enclosure**	
	HP BLc3000 CTO Enclosure -Rack NOTE: CTO model includes 4 Active Cool Fans	437507-B21
	HP BLc3000 CTO Enclosure - Tower NOTE: CTO model includes 4 Active Cool Fans	458034-B21
	HP BladeSystem c7000 Enclosure	
	HP BLc7000 CTO Enclosure NOTE: CTO model includes 1x Onboard Administrator, 4x Active Cool Fans and 0x power supplies.	412152-B22

Required Options (one of the following from each category unless otherwise noted)

BLc3000 Onboard Administrator	HP BLc3000 Onboard Administrator, FIO NOTE: Required when purchasing the BLc3000 Enclosure (P/N 437507-B21)	448589-B21
	HP BL3000 Tower Onboard Administrator, FIO NOTE: Supports CTO Enclosure - Tower (p/n 458034-B21) only.	461514-B21
c-Class Power Modules (1 per enclosure)	HP BLc7000 Single Phase Power Module, FIO	413379-B21
	HP BLc7000 Three Phase Power Module, FIO, INT'L	413381-B21
	HP BLc7000 Three Phase Power Module, FIO, NA/JPN	413380-B21
c-Class Power Supply	HP c7000 Enclosure Hot-Plug Power Supply Option Kit (supplied with IEC C20 - C19 jumper cord) NOTE: If Three Phase Power Module selected, a minimum of 3 Power Supply Option Kits are needed. For full redundancy 6 Power Supply Option Kits are required	412138-B21
c-Class Active Cool Fan	HP Active Cool Fan Option Kit NOTE: A minimum of 4 Active Cool fans is required, 8 Active Cool fans can support a full blade enclosure, 10 Active Cool fans should be ordered for reduced power consumption and noise reduction. NOTE: Single-Phase models may require additional power supplies. Fans should be added to provide redundancy, reduce power consumption and reduce noise. NOTE: Three-Phase models require a minimum of 6 Active Cool fans.	412140-B21

Configuration Information Factory Integrated Models

Step 2A: Select other factory integratable enclosure options:

Enclosure Options	HP BLc7000 Insight Control Environment For BladeSystem 16 License, including 1 year of 24x7 Technical Support and Updates, FIO	417688-B23
	HP c-Class Insight Control Environment for BladeSystem, 8 server blade licenses including 1 year of 24x7 Technical Support and Updates NOTE: Supports the c3000 and c7000 c-Class Server Blade Enclosures.	439034-B23
	HP BLc7000 Insight Control Environment For BladeSystem Evaluation License, FIO	417687-B22
	HP BLc3000 Rack Rails	437576-B21
Additional C3000 Power Supplies	HP 1200W AC Power Supply NOTE: Includes a C13 to C14 PDU power cord. NOTE: Order additional power supplies, as determined by the use of the HP BladeSystem Power Calculator. NOTE: For a full enclosure, order 4 power supplies in a Power Supply Redundant (N+1) configuration; order 6 power supplies in an AC Redundant (N+N) configuration.	437572-B21
HP BLc3000 Enclosure DVD Drive	HP c3000 Enclosure DVD Drive	437577-B21

Step 3: Select an interconnect kit.
A pair of interconnects must be order if redundancy is required. For additional information on Interconnect Options, please visit:
HP BladeSystem c-Class Interconnect QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12524_na/12524_na.html

HP BladeSystem c-Class Ethernet Interconnects	HP 1/10Gb-F Virtual Connect Ethernet Module for c-Class BladeSystem	447047-B21
	HP BladeSystem c-Class Virtual Connect 1Gb SX SFP	453151-B21
	HP BladeSystem c-Class Virtual Connect 1Gb RJ-45 SFP Opt Kit	453154-B21
	HP 1Gb Virtual Connect Ethernet Module for c-Class BladeSystem NOTE: This module must be upgraded to VC Management firmware v1.20 or greater.	399593-B22
	Ethernet Pass-Through Module for HP BladeSystem	406740-B21
	Cisco Catalyst Blade Switch 3120X for HP	451439-B21
	Cisco Catalyst Blade Switch 3120G for HP	451438-B21
	Cisco Catalyst Blade Switch 3020 for HP c-Class BladeSystem	410916-B21
	GbE2c Ethernet Blade Switch for HP c-Class BladeSystem	410917-B21
	GbE2c Layer 2/3 Ethernet Blade Switch for HP c-Class BladeSystem	438030-B21
	HP GbE2c Layer 2/3 Ethernet Blade Switch Advanced Functionality Software NOTE: Provides additional feature functionality such as Hot Links, PVLAN Edge and IGMPv3 Snooping. Purchase of this SW entitles users to three years of additional software upgrades as made available. This option may be purchased at any time.	485192-B21
	HP 1:10 Gb Ethernet BL-c Switch	438031-B21
	HP 1:10 GbE BLc Advanced Functionality Software NOTE: Provides additional feature functionality such as Hot Links, PVLAN Edge and IGMPv3 Snooping. Purchase of this SW entitles users to three years of additional software upgrades as made available. This option may be purchased at any time.	485193-B21

Configuration Information Factory Integrated Models

	HP 10Gb Ethernet BL-c Switch	445860-B21
	NOTE: The purchase the HP 10Gb Ethernet BL0c Switch, also requires the purchase of one (1) HP NC512m Dual Port 10GbE Multifunction BL-c Adapter (P/N 440910-B21) per server blade that requires 10Gbit support.	
	HP 10GbE BLc Advanced Functionality Software	485194-B21
	NOTE: Provides additional feature functionality such as Hot Links, PVLAN Edge and IGMPv3 Snooping. Purchase of this SW entitles users to three years of additional software upgrades as made available. This option may be purchased at any time.	
	NOTE: The HP BladeSystem c-Class Network Interconnects ship as single units. The above interconnects must be ordered in quantities of two for redundancy support.	
HP BladeSystem c-Class FC SAN Interconnects	HP 4Gb Virtual Connect Fibre Channel Module for c-Class BladeSystem	409513-B21
	16 port FC Pass-thru Module for c-Class BladeSystem	403626-B21
	HP Brocade 4/12 SAN Switch	AE370A
	HP Brocade 4/24 SAN Switch Power Pack	AE371A
	HP Brocade 4/24 SAN Switch	AE372A
	HP Brocade 4/12 SAN Switch Upgrade LTU	AE373A
	Cisco MDS 9124e 12-port Fabric Switch	AG641A
	Cisco MDS 9124e 24-port Fabric Switch	AG642A
	Cisco MDS 9124e 12-port Upgrade LTU	T5169A
HP BladeSystem InfiniBand Interconnects	HP 4X DDR IB Switch Module for HP c-Class BladeSystem	410398-B21

Step 4: Select rack power distribution for single-phase models

NOTE: A pair of PDUs must be ordered for AC Feed redundancy.

HP Monitored Power Distribution Unit	HP 17.3 kVA S348 Monitored PDU- single input, 3Ø, 48A	AF916A
	HP 8.6 kVA S1324 Monitored PDU- single input, 3Ø, 24A	AF504A
	NOTE: Supports the c3000 c-Class Server Blade Enclosure.	
HP Modular Power Distribution Units	HP 8.6 kVA Modular PDU 24A 3Ø Core Only**	AF512A
	HP 8.3kVA Modular Distribution Unit 40 Amp	252663-D73
	NOTE: Supports the c3000 c-Class Server Blade Enclosure.	
	HP 8.3k VA Modular PDU 40 Amp Core Only**	252663-D75
	HP 4.9kVA Modular PDU 24 Amp Core Only**	252663-D74
	HP 4.9kVA Modular Distribution Unit 24 Amp	252663-D72
	NOTE: Supports the c3000 c-Class Server Blade Enclosure.	
	** The Modular Distribution Unit Kits excludes the extension bars as they are not required with the HP BladeSystem	
	HP Two C-13 PDU Extension Bars	AF500A
	NOTE: Each extension bar has a C19 input and 7 C13 receptacles. The option is ideal for model S348, and, model S332, which both have only C19 outlets (12) and for all Core Only Modular PDUs.	
	NOTE: For additional information on HP Power Distribution Units including accessories please go to: www.hp.com/go/pdu	

Configuration Information Factory Integrated Models

HP UPS	HP rack-mountable R5500 UPS (5000VA / 4500 watts)	AF426A

NOTE: The R5500 includes four c-13 PDU Extension bars.
NOTE: The R5500 supports 4 power supplies in the Power Supply Redundant (N+1) power mode.
NOTE: Supports the c3000 c-Class Server Blade Enclosure.

Step 5: Select Wall Outlet Power Cords (For connection to standard wall outlets)
NOTE: Select one wall outlet power cord for each power supply when plugging the power supplies into a wall outlet.
NOTE: Wall Outlet power cords should only be used with low-line (100v to 110V) power sources. If high-line power outlets are required, safety regulations require the use of a PDU or a UPS between the c3000 enclosures power supplies and wall outlets.
NOTE: A standard PDU power cord(c13 to C14) is included with each AC power supply, so these wall outlet power cords are not required if you plan to plug the power supplies into a PDU or UPS.

Wall Outlet Power Cords	Nema 5-15P to IEC320-C13, low voltage (6 ft/2 m)	AF556A

NOTE: HP Power cord (6 ft) 1.83 meter 10A C-13-UL domestic power cord, for grounded USA 110V wall outlets.

Related Options

HP BladeSystem c-Class Server Blade Enclosures	**HP BladeSystem c3000 Enclosures - Rack Models** - Supports a full enclosure of 8 blades	
	HP BladeSystem c3000 Single-Phase Enclosure NOTE: Includes 4 Power Supplies, 6 Fans, an Onboard Administrator module, a DVD drive, rail kit, and 8 Insight Control Environment Licenses	437504-B22
	HP BladeSystem Single-Phase c3000 Enclosure NOTE: Includes 4 Power Supplies, 6 Fans, an Onboard Administrator module, a DVD drive, rail kit, and 8 Insight Control Environment Trial Licenses.	437502-B22
	HP BladeSystem c3000 Enclosures - Rack Models - A "starter" enclosure that supports up to 4 blades	
	HP BladeSystem c3000 Single-Phase Enclosure NOTE: Includes 2 Power Supplies, 4 Fans, a DVD drive, rail kit, and 8 Insight Control Environment Licenses	437504-B21
	HP BladeSystem Single-Phase c3000 Enclosure NOTE: Includes 2 Power Supplies, 4 Fans, a DVD drive, rail kit, and 8 Insight Control Environment 30 Day Trial Licenses	437502-B21
	HP BladeSystem c3000 Enclosures - Tower Models - Supports a full enclosure of 8 blades	
	HP BladeSystem c3000 Tower Enclosure with 8 Insight Control Environment for BladeSystem Licenses NOTE: Includes 4 Power Supplies, 6 Fans, an Onboard Administrator module, a DVD drive and 8 Insight Control Environment Licenses.	458033-B21
	HP BladeSystem c3000 Tower Enclosure with 8 Insight Control Environment Trial Licenses. NOTE: Includes 4 Power Supplies, 6 Fans, an Onboard Administrator module, a DVD drive and 8 Insight Control Environment Trial Licenses.	458032-B21
	HP BladeSystem c3000 Enclosures - Tower Models - A "starter" enclosure that supports up to 4 blades	
	HP BladeSystem c3000 Tower Enclosure NOTE: Includes 2 Power Supplies, 4 Fans, an Onboard Administrator module, a DVD drive and Trial Licenses; additional power supplies and fans can subsequently be added to support more than 4 blades	469499-B21
	HP BladeSystem c3000 Tower Enclosure NOTE: Includes 2 Power Supplies, 4 Fans, an Onboard Administrator module, a DVD drive and Insight Control Environment for BladeSystem Licenses; additional power supplies and fans can subsequently be added to support more than 4 blades.	469500-B21
	HP BladeSystem c7000 Enclosures	
	HP BLc7000 Single Phase Enclosure with 2 Power Supplies and 4 Fans with 16 Insight Control Linux Edition Licenses	441908-B23
	HP BladeSystem c7000 Enclosure, Single-Phase with 2 Power Supplies, 4 Fans with 16 Insight Control Environment Licenses	403321-B22
	HP BladeSystem c7000 Enclosure, Three-Phase with 6 Power Supplies, 6 Fans with 16 Insight Control Environment Licenses	412136-B22
	HP BladeSystem c7000 Enclosure, Single-Phase with 2 Power Supplies, 4 Fans with 8 Insight Control Environment 30 Day Trial Licenses	403320-B22
	HP BladeSystem c7000 Enclosure, Three-Phase with 6 Power Supplies,6 Fans with 8 Insight Control Environment 30 day Trial Licenses	412133-B22

Related Options

> NOTE: All c7000 BTO enclosures will ship with 12 server blanks. Additional server blanks may be purchased if required. CTO enclosures will ship with the required number of server blanks.

c3000 Enclosure Options	HP c-Class Replacement Enclosure Miscellaneous Blanks kit	412148-B21
	NOTE: Contains 1 each of Power Supply Blank, Interconnect Module Blank, Local KVM option blank, DVD Blank, Active Cool Fan Blank, and c3000 minidivider) NOTE: This kit should only be ordered to replace lost or damaged blanks.	
	HP c-Class Replacement Server Blank and Coupler Option Kit (contains 1 x half-height server blank with coupler) NOTE: The coupler allows half-height server blanks to be coupled together to create a full-height server blank. NOTE: This kit should only be ordered to replace lost or damaged blanks.	412150-B21
	HP BLc3000 Rack Rails NOTE: For use with the c3000 rack-able (437507-B21) model.	437576-B21
c7000 Enclosure Options	HP Redundant Onboard Administrator Option	412142-B21
	HP c7000 Enclosure 10K Rack Ship Bracket Option Kit NOTE: The shipping bracket is required when shipping a c7000 enclosure when installed in a rack. It is not required for normal operation.	433718-B21
	HP c7000 Replacement Enclosure Miscellaneous Blanks kit (contains 1 each of Power Supply Blank, Interconnect Module Blank, Onboard Administrator Blank, Active Cool Fan Blank) NOTE: This kit should only be ordered to replace lost or damaged blanks.	412148-B21
	HP c-Class Server Blank and Coupler Option Kit (contains 1 x half-height server blank with coupler) NOTE: The coupler allows half-height server blanks to be coupled together to create a full-height server blank. NOTE: This kit should only be ordered to replace lost or damaged blanks.	412150-B21
c-Class Power Supply	HP c7000 Enclosure Hot-Plug Power Supply Option Kit (supplied with IEC C20 - C19 jumper cord)	412138-B21
	HP 1200W AC Power Supply NOTE: Supports the c3000 c-Class Server Blade Enclosure. NOTE: Includes a C13 to C14 PDU power cord. NOTE: For a full enclosure, order 2 additional power supplies (4 total) in a Power Supply Redundant (N+1) configuration; order 4 additional power supplies (6 total) in an AC Redundant (N+N) configuration. NOTE: For c-3000 Low-line Power Cords, please order the appropriate power cord for your countries standard electrical outlets. Please see Step 5 above for power cord part numbers.	437572-B21
c-Class Active Cool Fan	HP Active Cool Fan Option Kit NOTE: A minimum 4 Active Cool fans is required, 8 Active Cool fans can support a full blade enclosure, 10 Active Cool fans should be ordered for reduced power consumption and noise reduction. NOTE: Supports the c3000 and c7000 c-Class Server Blade Enclosures.	412140-B21
HP BLc3000 Enclosure DVD Drive	HP c3000 Enclosure DVD Drive	437577-B21
Other c3000 enclosure options	HP BLc3000 Rack Rails	437576-B21

Related Options

HP BladeSystem c-Class Ethernet Interconnects	HP 1Gb Virtual Connect Ethernet Module for c-Class BladeSystem NOTE: This module must be upgraded to VC Management firmware v1.20 or greater	399593-B22
	Ethernet Pass-Through Module for HP BladeSystem NOTE: The Ethernet Pass-Thru Module is shipped as a single unit and should be ordered in quantities of two.	406740-B21
	Cisco Catalyst Blade Switch 3120X for HP	451439-B21
	Cisco Catalyst Blade Switch 3120G for HP	451438-B21
	Cisco Catalyst Blade Switch 3020 for HP c-Class BladeSystem	410916-B21
	HP GbE2c Ethernet Blade Switch for HP c-Class BladeSystem	410917-B21
	HP GbE2c Layer 2/3 Ethernet Blade Switch	438030-B21
	HP GbE2c Layer 2/3 Ethernet Blade Switch Advanced Functionality Software NOTE: Provides additional feature functionality such as Hot Links, PVLAN Edge and IGMPv3 Snooping. Purchase of this SW entitles users to three years of additional software upgrades as made available. This option may be purchased at any time.	485192-B21
	HP 1:10Gb Ethernet BL-c switch	438031-B21
	HP 10Gb SR XFP Module	443756-B21
	HP 10Gb LR XFP Module	443757-B21
	HP 1:10 Gb Ethernet BL-c Switch	438031-B21
	HP 1:10 GbE BLc Advanced Functionality Software NOTE: Provides additional feature functionality such as Hot Links, PVLAN Edge and IGMPv3 Snooping. Purchase of this SW entitles users to three years of additional software upgrades as made available. This option may be purchased at any time.	485193-B21
	HP 10Gb Ethernet BL-c Switch NOTE: The purchase the HP 10Gb Ethernet BL0c Switch, also requires the purchase of one (1) HP NC512m Dual Port 10GbE Multifunction BL-c Adapter (P/N 440910-B21) per blade that requires 10Gbit support	445860-B21
	HP 10GbE BLc Advanced Functionality Software NOTE: Provides additional feature functionality such as Hot Links, PVLAN Edge and IGMPv3 Snooping. Purchase of this SW entitles users to three years of additional software upgrades as made available. This option may be purchased at any time.	485194-B21
	NOTE: The HP BladeSystem c-Class Network Interconnects ship as single units. The above interconnects must be ordered in quantities of two for redundancy support.	
HP BladeSystem c-Class FC SAN Interconnects	HP 4Gb Virtual Connect Fibre Channel Module for c-Class BladeSystem	409513-B21
	16 port FC Pass-thru Module for c-Class BladeSystem	403626-B21
	HP Brocade 4/12 SAN Switch	AE370A
	HP Brocade 4/24 SAN Switch Power Pack	AE371A
	HP Brocade 4/24 SAN Switch	AE372A
	HP Brocade 4/12 SAN Switch Upgrade LTU	AE373A
	Cisco MDS 9124e 12-port Fabric Switch	AG641A
	Cisco MDS 9124e 24-port Fabric Switch	AG642A
	Cisco MDS 9124e 12-port Upgrade LTU	T5169A
HP BladeSystem InfiniBand Interconnects	HP 4X DDR IB Switch Module for HP c-Class BladeSystem	410398-B21

HP Insight Control	NOTE: Electronic licensing options are available for Insight Control suites software

Related Options

Environment Management Suite	products. Please see the appropriate Insight Control QuickSpecs for additional information.	

HP Insight Control Environment for BladeSystem

HP Insight Control Environment for BladeSystem, No Media 1-Server License including 1 year of 24x7 Technical Support and Updates
NOTE: Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.

453484-B21

HP Insight Control Management Software Media Kit
NOTE: Insight Control Management DVD media without licenses. Contains Insight Manager and Essentials software products and components licensed by Insight Control Management suites. Uses an integrated installer to perform quick and accurate software installation and updates.

NOTE: Contains 1 license for each of RDP, PMP, VPM, IPM and iLO Select. Includes one year of 24 x 7 HP Software Technical Support and Update Service.
NOTE: For additional License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12631_na/12631_na.html

436222-B21

HP Insight Control Environment for Linux

HP Insight Control Environment for Linux, No Media, 8-Server license, including One year of 24x7 Technical Support and Updates, FIO
NOTE: This part number can be used to purchase eight (8) server blade licenses with a single activation key. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. For Factory Integration only. NOTE: Orderable only with c-Class blade enclosure (c3000 or c7000).

464429-B21

HP Insight Control Environment for Linux, No Media, 16-Server license, including One year of 24x7 Technical Support and Updates, FIO
NOTE: This part number can be used to purchase sixteen (16) server blade licenses with a single activation key. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. For Factory Integration only.
NOTE: Orderable only with c-Class blade enclosure (c7000).

NOTE: For additional information regarding the HP Virtual Connect Enterprise Manager License kits, please visit: http://h18000.www1.hp.com/products/quickspecs/13019_na/13019_na.html

464432-B21

iLO Power Management Pack for BladeSystem

HP iLO Power Management Pack for BladeSystem, No Media, 1-Server License including 1 year of 24x7 Technical Support and Updates
NOTE: This option kit includes 1 license for iLO Select and Insight Power Manager. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.

NOTE: For additional -HP Insight Power Manager Packs please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12632_na/12632_na.html

442937-B21

QuickSpecs

HP BladeSystem c-Class Infrastructure

Related Options

Server Management Stand Alone Software Product - ProLiant Essentials	**NOTE:** Electronic licensing options are available for select ProLiant Essentials software products. Please see the appropriate ProLiant Essentials QuickSpecs for additional information.

Deploy

ProLiant Essentials Rapid Deployment Pack

ProLiant Essentials Rapid Deployment Pack No Media 1-Server License including 1 year of 24x7 Technical Support and Updates **NOTE:** This license allows 1 server to be deployed and managed via RDP. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. **NOTE:** For additional ProLiant Essentials Rapid Deployment Pack License Kits- please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11053_na/11053_na.html	452151-B21

HP Server Migration Pack - Universal Edition

HP Server Migration Pack - Universal Edition, No Media, Physical / Virtual to ProLiant Single Migration License, including 1 year of 24x7 Technical Support **NOTE:** This license allows 1 physical to ProLiant or virtual to ProLiant migration. Customer will receive a printed license entitlement certificate and documentation via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.	460750-B21
HP Server Migration Pack - Universal Edition, No Media, Physical / Virtual to Virtual Single Migration License, including 1 year of 24x7 Technical Support **NOTE:** This license allows 1 physical to virtual or virtual to virtual migration. Customer will receive a printed license entitlement certificate and documentation via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support.	460753-B21
HP Server Migration Pack - Universal Edition, No Media, 1-Year Unlimited Migration License, including 1 year of 24x7 Technical Support **NOTE:** This license allows unlimited migrations (physical to ProLiant, physical to virtual, virtual to virtual, and virtual to ProLiant) for one year. Customer will receive a printed license entitlement certificate and documentation via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service. **NOTE:** For additional License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12855_na/12855_na.html	460756-B21

Monitor

HP Insight Dynamics - VSE

HP Insight Dynamics-VSE without Insight Control Environment, 1-server license including 1 year of 24x7 Technical Support and Updates **NOTE:** This license supports HP ProLiant ML/DL and c-Class Blade servers. Customer will receive via email a receipt and link to a license entitlement certificate.	483531-B21

Related Options

HP Insight Dynamics-VSE with Insight Control Environment, 1-server license including 1 year of 24x7 Technical Support and Updates	483534-B21

NOTE: This license supports HP ProLiant c-Class Blade servers. Customer will receive a printed license entitlement certificate via physical shipment.

NOTE: For additional license kits, please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/13050_na/13050_na.html

Control

Integrated Lights-Out Select Pack

ProLiant Essentials Integrated Lights-Out Select Pack, No Media, 1-Server License	452158-B21

NOTE: For additional License Kits, please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12362_na/12362_na.html

Featuring: Sophisticated remote control and security features for HP BladeSystem servers and ProLiant ML/DL servers.

NOTE: For additional ProLiant Essentials Integrated Lights-Out Value Packs please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12362_na/12362_na.html

Optimize

HP Insight Power Manager (IPM)

HP Insight Power Manager, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates	452677-B21

NOTE: Customers purchasing this upgrade must already have an iLO Advanced or Select license on each managed server. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.

NOTE: For additional -HP Insight Power Manager Packs please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12623_na/12623_na.html

ProLiant Essentials Virtual Machine Management Pack

ProLiant Essentials Virtual Machine Management Pack, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates	452153-B21

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

NOTE: For additional ProLiant Virtual Machine Management Pack License Kits please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12328_na/12328_na.html

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

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

QuickSpecs

Related Options

HP Insight Control Environment for Linux	HP Insight Control Environment for Linux, No Media, 8-Server license, including One year of 24x7 Technical Support and Updates, FIO NOTE: This part number can be used to purchase eight (8) server blade licenses with a single activation key. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. For Factory Integration only. Orderable only with c-Class blade enclosure (c3000 or c7000). NOTE: For additional information regarding the HP Virtual Connect Enterprise Manager License kits, please visit: http://h18000.www1.hp.com/products/quickspecs/13019_na/13019_na.html	464429-B21
HP Virtual Connect Enterprise Manager	HP Virtual Connect Enterprise Manager for BL-c3000, No Media, 1-Enclosure License including 1 year of 24x7 Technical Support and Updates. NOTE: This license allows 1 BL-c3000 enclosure to be managed with VCEM. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. NOTE: For additional information regarding the HP Virtual Connect Enterprise Manager License kits, please visit: http://h18000.www1.hp.com/products/quickspecs/12860_na/12860_na.html	459867-B21
HP c-Class Storage Blades	HP StorageWorks SB40c storage blade	411243-B21
	HP PCI Express Mezzanine pass-thru card for HP BladeSystem NOTE: The Mezzanine card is needed to support the SB40c storage blade (PN: 411243-B21) with HP c-Class BladeSystem full-height server blades. NOTE: For additional information regarding the HP StorageWorks SB40c storage blade, please visit: http://h18000.www1.hp.com/products/quickspecs/12587_na/12587_na.html	431643-B21
HP c-Class Tape Blades	HP Ultrium 448c Tape Blade	440947-B21
	HP PCI Express Mezzanine pass-thru card for HP BladeSystem NOTE: The HP PCI Express Mezzanine Pass-Thru Card for HP BladeSystem (PN: 431643-B21) is required when installing a tape blade adjacent to a full-height server blade. NOTE: For additional information regarding the HP Ultrium 448c Tape Blade, please visit: http://h18000.www1.hp.com/products/quickspecs/12729_na/12729_na.html	431643-B21

QuickSpecs

Related Options

HP PCI Expansion Blade	PCI Expansion Blade	448018-B21
	NOTE: For additional information regarding the HP PCI Expansion Blade, please visit: http://h18000.www1.hp.com/products/quickspecs/12753_na/12753_na.html	

HP StorageWorks AIO SB600c shared storage blade	HP StorageWorks AiO SB600c Storage Blade - 1.16TB	AG780A
	NOTE: Shared storage blade for server blades within the enclosure. The SB600c can be either NAS (file-based shared storage or iSCSI Shared Storage connected to server blades within the enclosure using an Ethernet switch in the enclosures interconnect bays.	
	StorageWorks Storage Mirroring for AiO Edition 1 LTU	T5321A
	NOTE: This optional software is for mirroring data between AiO Storage blades in different locations. This is host-based data replication software for disaster recovery and data protection. NOTE: order 1 unit for each AiO SB600c Storage Blade.	
	NOTE: For additional information regarding the HP StorageWorks All-in-One Storage Systems, please visit: http://h18000.www1.hp.com/products/quickspecs/12786_na/12786_na.html	

HP Rack 5000 Series (Graphite Metallic)	HP 5642 Rack - Unassembled	358254-B21
	NOTE: Please see the HP Rack 5642 QuickSpecs for additional part numbers and Technical Specifications such as height, width, depth, weight, and color: http://h18000.www1.hp.com/products/quickspecs/12074_na/12074_na.html NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower	

HP Rack 10000 G2 Series (Carbon/Graphite Metallic)	10642 G2 (42U) Rack Cabinet - Pallet	AF001A
	10642 G2 (42U) Rack Cabinet - Shock Pallet	AF002A
	10642 G2 (42U) Rack Cabinet - Crated	AF003A
	10642 G2 (42U) Rack Cabinet, with Extension - Shock Pallet	AF004A
	10636 G2 (36U) Rack Cabinet - Shock Pallet	AF011A
	10636 G2 (36U) Rack Cabinet - Crated	AF012A
	10636 G2 (36U) Rack Cabinet, with Extension - Shock Pallet	AF013A
	10636 G2 (36U) Rack Cabinet, without door - Shock Pallet	AF014A
	NOTE: It is mandatory to use a shock pallet when shipping racks with equipment installed. NOTE: Please see the Rack 10000 G2 QuickSpecs for additional part numbers and Technical Specifications such as height, width, depth, weight, and color: http://h18000.www1.hp.com/products/quickspecs/12402_na/12402_na.html NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower.	

HP Modular Cooling System	HP Modular Cooling System	AF098A

Related Options

Tape Libraries

NOTE: The following options are supported in an Enterprise Backup Solution (EBS) environment with the HP BladeSystem c-Class enclosure. For complete compatibility details, please visit: http://www.hp.com/go/ebs.

HP StorageWorks MSL2024 Tape Library

HP StorageWorks MSL2024 1 LTO-4 Ultrium 1840 SCSI Drive Library	AJ033A
HP StorageWorks MSL2024 1 LTO-4 Ultrium 1840 4GB FC Library	AJ034A
HP StorageWorks MSL2024 1 LTO-3 Ultrium 960 SCSI Drive Library	AG115A
HP StorageWorks MSL2024 1 LTO-3 Ultrium 960 4GB FC Library	AG326B
HP StorageWorks MSL2024 1 LTO-3 Ultrium 920 SAS Drive Library	AH559A
HP StorageWorks MSL2024 1 LTO-3 Ultrium 920 SCSI Drive Library	AH169A
HP StorageWorks MSL2024 1 LTO-2 Ultrium 448 SCSI Drive Library	AG116A

HP StorageWorks MSL4048 Tape Library

HP StorageWorks MSL4048 1 Ultrium 448 SCSI Drive Library	AG320A
HP StorageWorks MSL4048 1 Ultrium 920 SAS Drive Library	AH560A
HP StorageWorks MSL4048 1 Ultrium 920 SCSI Drive Library	AH171A
HP StorageWorks MSL4048 1 Ultrium 960 SCSI Drive Library	AG322A
HP StorageWorks MSL4048 1 Ultrium 960 4GB FC Library	AG324B
HP StorageWorks MSL4048 1 LTO-4 Ultrium 1840 SCSI Drive Library	AJ035A
HP StorageWorks MSL4048 1 LTO-4 Ultrium 1840 4GB FC Library	AJ036A

HP StorageWorks MSL8096 Tape Library

HP StorageWorks MSL8096 2 Ultrium 920 SAS Drive Library	AH561A
HP StorageWorks MSL8096 2 Ultrium 960 4GB FC Library	AH218A
HP StorageWorks MSL8096 2 Ultrium 960 SCSI Drive Library	AH219A
HP StorageWorks MSL8096 2 LTO-4 Ultrium 1840 SCSI Drive Library	AJ039A
HP StorageWorks MSL8096 2 LTO-4 Ultrium 1840 4GB FC Library	AJ040A

HP StorageWorks MSL6000 Tape Library

LTO-4 Ultrium 1840 technology

HP StorageWorks MSL6030 1 LTO-4 Ultrium 1840 SCSI Drive Library	AJ029A
HP StorageWorks MSL6030 1 LTO-4 Ultrium 1840 4GB FC Library	AJ030A
HP StorageWorks MSL6060 2 LTO-4 Ultrium 1840 SCSI Drive Library	AJ031A
HP StorageWorks MSL6060 2 LTO-4 Ultrium 1840 4GB FC Library	AJ032A

LTO-3 Ultrium 960 technology

HP StorageWorks MSL6030 1 Ultrium 960 Dr LVDS Library	AD606B
HP StorageWorks MSL6030 1 Ultrium 960 Dr FC Library	AD608B
HP StorageWorks MSL6030 2 Ultrium 960 Dr LVDS Library	AD607B
HP StorageWorks MSL6030 2 Ultrium 960 Dr FC Library	AD609B

12000 Virtual Library System

HP StorageWorks 12000 Virtual Library System Gateway Base Library	AH814A

6000 Virtual Library Systems

HP StorageWorks 6218 Virtual Library System	AH809A
HP StorageWorks 6227 Virtual Library System	AH810A
HP StorageWorks 6227 Virtual Library System	AH811A

Related Options

	HP StorageWorks 6653 Virtual Library System	AH812A

NOTE: Please reference the Virtual Library Systems QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution. Reference current compatibility information at http://www.hp.com/go/ebs

Monitors and Keyboards	TFT7600 Rackmount Keyboard Monitor	AG052A
	1U Rackmount Keyboard with USB	AG072A

NOTE: For additional information regarding Rack Options, please see the following URL: http://www.hp.com/go/rackandpower

HP KVM Switch Options	2x1x16 IP Console Switch with Virtual Media	AF601A
	4x1x16 IP Console Switch with Virtual Media	AF602A
	2x16 Server Console Switch with Virtual Media	AF600A
	PS/2 Virtual Media Interface Adapter, 1 pack	AF604A

NOTE: Requires PS/2 and one USB port on server.

	BladeSystem c-Class KVM Interface Adapter - 1 pack	AF605A
	HP 1x8 Server Console Switch	336044-B21
	HP 2x16 Server Console Switch	336045-B21
	PS/2 Interface Adapter, 1-pack	262588-B21
	PS/2 Interface Adapter, 8-pack	262587-B21
	USB Interface Adapter, 1-pack	336047-B21
	Serial Interface Adapter, 1-pack with power supply	373045-B21

NOTE: Cat5e cables are required to connect Interface Adapters to Consoles Switches. Cat52 cables can be found at the following URL: http://www.hp.com/go/kvm

	HP 1x4 Console Switch	AF611A
	HP PS2 Server Console Cable, 6 foot, 2-Pack	AF612A
	HP USB Server Console Cable, 6 foot, 2-Pack	AF613A

NOTE: required for supporting USB peripherals.

	HP USB KVM Cable with audio, 6'-2-pack	371729-B21

NOTE For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: http://www.hp.com/go/kvm

Related Options

HP Serial Console Server Options	HP 16 Port Serial Console Server	AF101A
	HP 48 Port Serial Console Server	AF102A
	Serial Adapter, RJ45-DB9 DCE Female, 1 Pack	AF103A
	Serial Adapter, RJ45-DB9 DCE Female, 8 Pack	AF110A

NOTE: Cat5e cables are required to connect Serial Adapters to Serial Console Servers. Additional Serial Adapters and Cat5e cables can be found at the following URL: http://www.hp.com/go/kvm.

NOTE: For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: http://www.hp.com/go/kvm.

Service and Support Offerings for c3000 Enclosure
(HP Care Pack Services)

NOTE: HP Care Pack services for the c3000 Enclosure cover the enclosure, power supplies and fans. HP qualified rack options are covered by these services when installed within the same rack. HP supported c-Class enclosure devices including pass thru, Ethernet interconnect and virtual connect modules are also covered by the c3000 enclosure Care Pack services.
NOTE: SAN/Fabric switches for the HP c-Class BladeSystem are not covered under the c3000 enclosure Care Packs, SAN/Fabric switches carry separate Care Packs. SAN/Fabric Switch Care Pack service level support should always be uplifted to match existing storage or server service level.

Hardware Services On-site Service

Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic	UH309E

NOTE: Uplifts the Ethernet devices to the same level of warranty as the c-class enclosure.

4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	UH310E
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UH311E
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UH312E

Support Plus 24

Onsite HW support 24x7, 4-Hour response and Insight Control Environment for BladeSystem Software Updates and Software Technical support offsite, onsite at HP's discretion, 24x7 2-Hour response time including. HP holidays, Electronic	UF540E

Installation & Start-up Services

HP BladeSystem c3000 + ICE + OS Installation and Startup Service for Blade ardware and Insight Control Software, Electronic	UF817E
HP BladeSystem c3000 Installation & Startup for Blade Hardware and Operating ystem	UF818E
HP BladeSystem c3000 Enhanced Network Installation and Startup Service, Electronic	UF814E
ProLiant BL c-Class Enclosure and Blade Hardware Installation, Electronic	UE494E
ProLiant BL c-Class Blade Server Hardware Installation, Electronic	UE493E

NOTE: For more information, customer/resellers can contact: http://www.hp.com/services/bladesystemservices

NOTE: The HP Care Pack service part numbers below covers the HP Brocade 4Gb, 12 Port SAN Switch and Brocade 4/24 SAN Switch.

Hardware Services On-site Service

Next Business Day On-site Service, 5-Day x 9-Hour Coverage,3 Years, Electronic	UE436E
4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	UE437E

Related Options

4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, (24 port) Electronic	UE438E
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UE439E
Hardware Installation, Electronic	U5988E

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

Hardware Services On-site Service

Support Plus

Onsite Hardware support, 8am-9pm, M-F, 4-hour response and Software Technical support offsite, onsite at HP's discretion, 8am-9pm, M-F 2-hour response time excluding HP holidays, Electronic	UE728E

Support Plus 24

Onsite Hardware support, 8am-9pm, M-F, 4-Hour response and Software Technical support offsite, onsite at HP's discretion, 8am-9pm, M-F 2-Hour response time excluding. HP holidays, Electronic	UE729E

NOTE: The HP Care Pack service part numbers below covers the HP Cisco MDS 9124e 12 port and 24 port Fabric Switch.

Hardware Services On-site Service

Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic	UF313E
4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	UF972E
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UF973E
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UF974E
Hardware Installation, Electronic	U5988E

Software Installation and StartUp Services

Provides for the Installation and Start-up of ProLiant Essentials Rapid Deployment Pack, Electronic	U5683E

NOTE: Provides installation on a Customer supplied server designated as a Deployment Server. Includes the deployment of a single server. This new server will be deployed using either one of the pre-configured scripts or an image. In addition, the service will provide for the capture and storage of the configuration of the newly deployed server and orientation on product usage. To be delivered during standard office ours, standard office days.

Provides for the Installation and Start-up of Rapid Deployment Pack Implementation of Rapid Deployment Pack (Basic), Electronic	UA042E

NOTE: Service coverage: onsite installation of the Vulnerability and Patch Management (VPM) software on a customer designated server, configuration of the VPM software to acquire security patches, enabling the VPM software to scan up to five (5) systems, applying the security patches to the designated servers, generating a report from VPM that shows the vulnerability assessment results, and providing customer with an orientation to the software.

Provides for the Installation and Start-up of System Insight Manager (Electronic)	UA041E
Provides for the Installation and Start-up of System Insight Manager Agents (Electronic)	UA040E
Provides for the Installation and Startup of Insight Control - Linux Edition	UF369E
Provides for the Installation and Startup of Virtual Machine Management & Server Migration Pack	UD546E

Related Options

Software Operating Environment Care Packs

1 Year Microsoft operating environment software support 24x7 - 10 incidents	U9269E
1 Year Red Hat operating System software support 24x7 - 10 incidents	U3408E
1 Year SuSE operating System software support 24x7 - 10 incidents	U9936E
1 Year 9x5 ProLiant Essentials Software Support	UF512E
1 Year 24x7 ProLiant Essentials Software Support	UF513E
3 Year 9x5 ProLiant Essentials Software Support	UF514E
HP 3 Year 24x7 ProLiant Essentials Software Support	UF515E

NOTE: For more information, customer/resellers can contact:
http://www.hp.com/hps/carepack/services/

NOTE: HP Care Pack services for the c3000 Enclosure cover the enclosure, power supplies and fans. HP qualified rack options are covered by these services when installed within the same rack. HP supported c-Class enclosure devices including pass thru, Ethernet interconnect and virtual connect modules are also covered by the c7000 enclosure Care Pack services.

NOTE: SAN/Fabric switches for the HP c-Class BladeSystem are not covered under the c7000 enclosure Care Packs, SAN/Fabric switches carry separate Care Packs. SAN/Fabric Switch Care Pack service level support should always be uplifted to match existing storage or server service level.

Hardware Services On-site Service

Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic	HA101A3#6X4

NOTE: Uplifts the Ethernet devices to the same level of service as the c-class enclosure

4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	HA103A3#6X4
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	HA104A3#6X4
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	HA105A3#6X4

Support Plus

Onsite HW support, 8am-9pm, M-F, 4hr response and SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excl. HP holidays, 3 Years	HA109A3#6X4
Support Plus 24 - Onsite HW support 24x7, 4hr response and SW support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, 3 Year	HA110A3#6X4
Proactive 24 Service - Mission Critical proactive environment 24x7 4hr onsite HW support, 3 Years	HA111A3#6X4
Critical Service - Mission Critical proactive environment 6-Hour Call-to-Repair onsite HW support, 3 Years	HA112A3#6X4

Installation & Start-up Services

HP BladeSystem c3000 Hard Ware Installation	HA113A1#57A
HP BladeSystem c3000 Infrastructure Installation and Startup Service for Blade Hardware and Insight Control Software	HA114A1#57A

NOTE: For more information, customer/resellers can contact:
http://www.hp.com/services/bladesystemservices

NOTE: The HP Care Pack service part numbers below covers the HP Brocade 4Gb, 12 Port SAN Switch and Brocade 4/24 SAN Switch.

Hardware Services On-site Service

Related Options

Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years	HA101A3#85J
4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years	HA103A3#85J
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years	HA104A3#85J
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	HA105A3#85J
Hardware Installation, Electronic	HA113A1#5D2

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

Hardware Services On-site Service

Support Plus

Onsite HW support, 8am-9pm, M-F, 4hr response and SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excluding HP holidays, Electronic	HA109A3#85K

Support Plus 24

Onsite HW support 24x7, 4hr response and SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time including HP holidays, Electronic	HA110A3#85K

NOTE: The HP Care Pack service part numbers below covers the HP Cisco MDS 9124e 12 port and 24 port Fabric Switch.

Hardware Services On-site Service

Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years	HA101A3#87L
4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years	HA103A3#87L
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years	HA104A3#87L
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	HA105A3#87L
Hardware Installation, Electronic	HA113A1#5D2

NOTE: For more information, customer/resellers can contact: http://www.hp.com/hps/carepack/services/

Service and Support Offerings for c7000 Enclosure
(HP Care Pack Services)

NOTE: HP Care Pack services for the c7000 Enclosure cover the enclosure, power supplies and fans. HP qualified rack options are covered by these services when installed within the same rack. HP supported c-Class enclosure devices including pass thru, Ethernet interconnect and virtual connect modules are also covered by the c7000 enclosure Care Pack services.

NOTE: SAN/Fabric switches for the HP c-Class BladeSystem are not covered under the c7000 enclosure Care Packs, SAN/Fabric switches carry separate Care Packs. SAN/Fabric Switch Care Pack service level support should always be uplifted to match existing storage or server service level.

Hardware Services On-site Service

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

NOTE: Uplifts the Ethernet devices to the same level of service as the c-class enclosure

4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	UE478E
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UE479E
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UE480E

Related Options

Support Plus 24

Onsite HW support 24x7, 4hr response and Insight Control Linux Edition SW Updates, SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time including. HP holidays, Electronic	UH321E
Onsite HW support 24x7, 4hr response and Insight Control Environment for BladeSystem SW Updates, SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time including. HP holidays, Electronic	UH322E
Onsite HW support 24x7, 4hr response and Insight Control Data Center Edition SW Updates, SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time including. HP holidays, Electronic	UH323E

Installation & Start-up Services

HP BladeSystem c7000 Infrastructure Installation and Startup Service for Blade Hardware and Insight Control Software, Electronic	UE602E
HP BladeSystem C7000 Enhanced Network Installation and Startup Service, Electronic	UE603E
ProLiant BL c-Class Enclosure and Blade Hardware Installation, Electronic	UE494E
ProLiant BL c-Class Blade Server Hardware Installation, Electronic	UE493E

NOTE: For more information, customer/resellers can contact:
http://www.hp.com/services/bladesystemservices

Hardware Services On-site Service

Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic	UE436E
4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	UE437E
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UE438E
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UE439E
Hardware Installation, Electronic	U5988E

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

Hardware Services On-site Service

Support Plus

Onsite HW support, 8am-9pm, M-F, 4hr response and SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excluding HP holidays, Electronic	UE728E

Support Plus 24

Onsite HW support 24x7, 4hr response and SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time including HP holidays, Electronic	UE729E

NOTE: The HP Care Pack service part numbers below covers the HP Cisco MDS 9124e 12 port and 24 port Fabric Switch.

Hardware Services On-site Service

Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic	UF313E
4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	UF972E
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UF973E
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UF974E
Hardware Installation, Electronic	U5988E

Software Installation and StartUp Services

Related Options

Provides for the Installation and Start-up of ProLiant Essentials Rapid Deployment Pack, Electronic	U5683E

NOTE: Provides installation on a Customer supplied server designated as a Deployment Server. Includes the deployment of a single server. This new server will be deployed using either one of the pre-configured scripts or an image. In addition, the service will provide for the capture and storage of the configuration of the newly deployed server and orientation on product usage. To be delivered during standard office ours, standard office days.

Provides for the Installation and Start-up of Rapid Deployment Pack Implementation of Rapid Deployment Pack (Basic) (Electronic)	UA042E

NOTE: Service coverage: onsite installation of the Vulnerability and Patch Management (VPM) software on a customer designated server, configuration of the VPM software to acquire security patches, enabling the VPM software to scan up to five (5) systems, applying the security patches to the designated servers, generating a report from VPM that shows the vulnerability assessment results, and providing customer with an orientation to the software

Provides for the Installation and Start-up of System Insight Manager (Electronic)	UA041E
Provides for the Installation and Start-up of System Insight Manager Agents (Electronic)	UA040E
Provides for the Installation and Startup of Insight Control - Linux Edition	UF369E
Provides for the Installation and Startup of Virtual Machine Management & Server Migration Pack	UD546E

Software Operating Environment Care Packs

1 Year Microsoft operating environment software support 24x7 - 10 incidents	U9269E
1 Year Red Hat operating system software support 24x7 - 10 incidents	U3408E
1 Year SuSE operating system software support 24x7 - 10 incidents	U9936E
1 Year 9x5 ProLiant Essentials Software Support	UF512E
1 Year 24x7 ProLiant Essentials Software Support	UF513E
3 Year 9x5 ProLiant Essentials Software Support	UF514E
3 Year 24x7 ProLiant Essentials Software Support	UF515E

NOTE: For more information, customer/resellers can contact:
http://www.hp.com/hps/carepack/services/

BCS Flexible Care Packs Integrity blade server enclosure

NOTE: HP Care Pack services for the c7000 Enclosure cover the enclosure, power supplies and fans. HP qualified rack options are covered by these services when installed within the same rack. HP supported c-Class enclosure devices including pass thru, Ethernet interconnect and virtual connect modules are also covered by the c7000 enclosure Care Pack services.

NOTE: SAN/Fabric switches for the HP c-Class BladeSystem are not covered under the c7000 enclosure Care Packs, SAN/Fabric switches carry separate Care Packs. SAN/Fabric Switch Care Pack service level support should always be uplifted to match existing storage or server service level.

Hardware Services On-site Service

Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic	HA101A3#6Q6

NOTE: Uplifts the Ethernet devices to the same level of service as the c-class enclosure.

4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	HA103A3#6Q6

Related Options

4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	HA104A3#6Q6
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	HA105A3#6Q6

Support Plus

Proactive 24 Service - Mission Critical proactive environment 24x7 4hr onsite HW support	HA111A3#6Q6
Critical Service - Mission Critical proactive environment 6-Hour Call-to-Repair onsite HW support	HA112A3#6Q6

Installation & Start-up Services

HP BladeSystem c7000 Infrastructure Installation and Startup Service for Blade Hardware and Insight Control Software, Electronic	HA114A1#57A

NOTE: The HP Care Pack service part numbers below covers the HP Brocade 4Gb, 12 Port SAN Switch and Brocade 4/24 SAN Switch.

Hardware Services On-site Service

Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic	HA101A3#85J
4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	HA103A3#85J
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	HA104A3#85J
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	HA105A3#85J
Hardware Installation, Electronic	HA113A1#5D2

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

Hardware Services On-site Service

Support Plus

Onsite HW support, 8am-9pm, M-F, 4hr response and SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excluding HP holidays, Electronic	HA109A3#85K

Support Plus 24

Onsite HW support 24x7, 4hr response and SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time including HP holidays, Electronic	HA110A3#85K

NOTE: The HP Care Pack service part numbers below covers the HP Cisco MDS 9124e 12 port and 24 port Fabric Switch.

Hardware Services On-site Service

Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic	HA101A3#87L
4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	HA103A3#87L
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	HA104A3#87L
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	HA105A3#87L
Hardware Installation, Electronic	HA113A1#5D2

NOTE: For more information, customer/resellers can contact:
http://www.hp.com/hps/carepack/services/
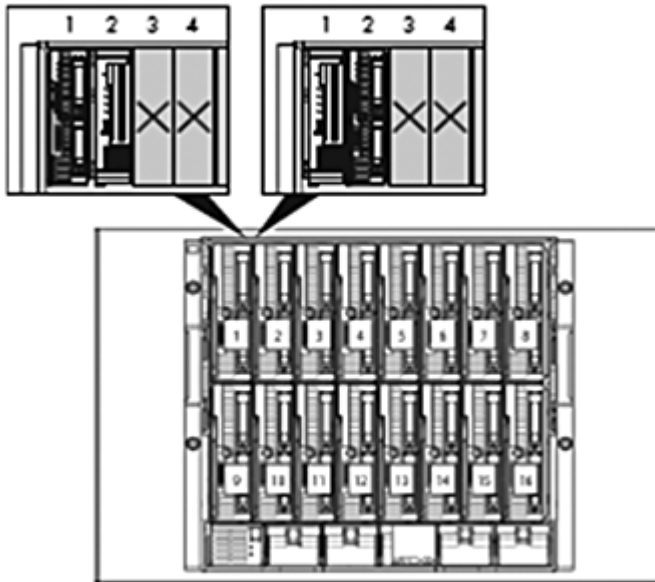
Storage

Figure 1   Installing a tape blade adjacent to a half-height server blade.
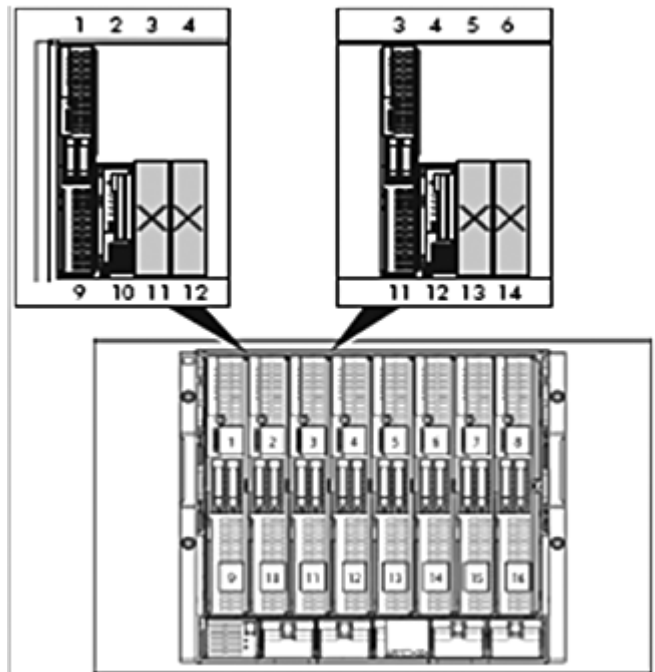
Figure 2   Installing a tape blade adjacent to a full-height server blade.

HP StorageWorks Ultrium 448c & 920c Tape Blade

Description	Quantity Supported	Position Supported	Comments
HP Ultrium Tape Blade NOTE: Connected adjacent to a half-height server blade (Figure 1)	Up to 8 per HP BladeSystem c-Class c7000 Enclosure	Odd or Even slots next to partner server blade	• A tape blade supports one partner server blade, and one partner server blade supports one tape blade. • Identify the partner server blade to be installed with the tape blade. The two blades always occupy a pair of slots, as follows: 1 & 2, 3 & 4, 5 & 6, 7 & 8, 9 & 10, 11 & 12, 13 & 14, 15 & 16 (See Figure 1). • If the partner server blade is installed in an odd-numbered bay, the tape blade is installed in the adjacent even-numbered bay to the right. • If the partner server blade is installed in an even-numbered bay, the tape blade is installed in the adjacent odd-numbered bay to the left.
HP Ultrium Tape Blade NOTE: Connected adjacent to a full-height server blade (Figure 2)	Up to 4 per HP BladeSystem c-Class c7000 Enclosure	Odd or Even slots next to partner server blade (lower bays only)	• A tape blade supports one partner server blade, and one partner server blade supports one tape blade. • When partnering a tape blade with a full height server blade, an HP PCI Express

Storage

Mezzanine Pass-Thru Card for BladeSystem c-Class (431643-B21) is required. This card is installed in mezzanine 3 connector in the server blade.

- Identify the partner server blade to be installed with the tape blade. The two blades always occupy a pair of slots, as follows: 9 & 10, 11 & 12, 13 & 14, 15 & 16 (See Figure 2).
- If the partner server blade is installed in an odd-numbered bay, the tape blade is installed in the adjacent even-numbered bay to the right.
- If the partner server blade is installed in an even-numbered bay, the tape blade is installed in the adjacent odd-numbered bay to the left.
- The tape blade is always located on the lower row of the enclosure when installed next to a full-height server blade.

Tape Libraries and Virtual Library Systems

NOTE: For an up-to-date listing of the latest O/S Support details for each of the Tape Drives listed below, please see the following: http://h18000.www1.hp.com/products/quickspecs/north_america/10233.html

NOTE: For an up-to-date listing of the latest O/S Support details for each of the Tape Autoloaders & Tape Libraries listed below, please see the following: http://h18000.www1.hp.com/products/quickspecs/north_america/10809.html

NOTE: For complete listing of tape drive offerings see http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html

For details on connecting tape drives to this server, see the following:

	Position Supported	Position Controller	Part Number
HP StorageWorks Tape Libraries, External MSL2024 MSL4048 MSL6000	External	Please consult the EBS connectivity matrix at http://www.hp.com/go/ebs for detailed connectivity information	N/A
HP StorageWorks Virtual Library Systems 12000 VLS 1002i VLS 6218 VLS 6227 VLS 6636 VLS 6653 VLS	External	Please consult the EBS connectivity matrix at http://www.hp.com/go/ebs for detailed connectivity information	N/A

Technical Specifications

Server Blade, Power Supply and Fan Population Guidelines

Fan & power supply bay numbering

HP BladeSystem c3000 Enclosure - Rack
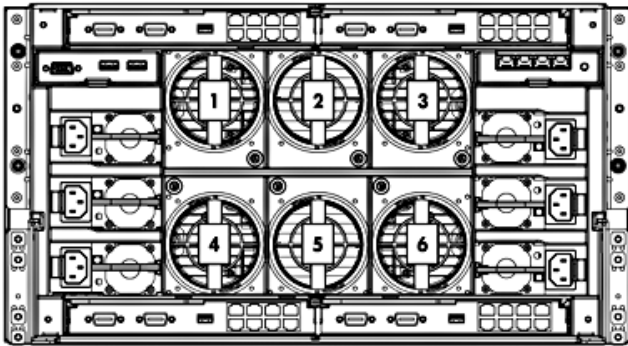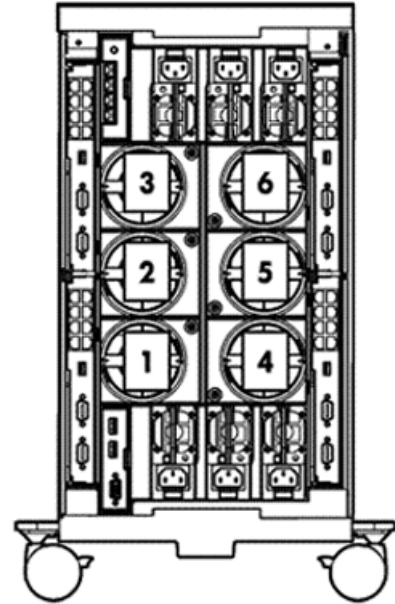
HP BladeSystem c3000 Enclosure - Tower
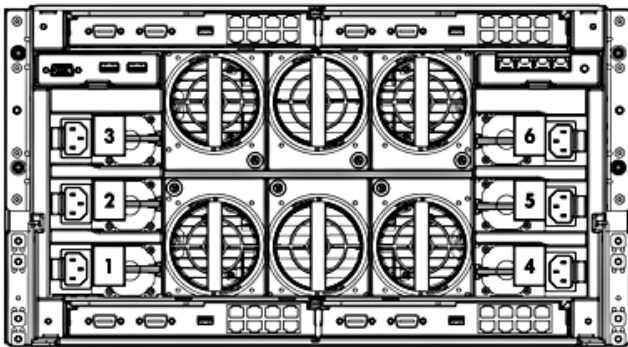
Fan bay numbering

HP BladeSystem c3000 Enclosure - Rack
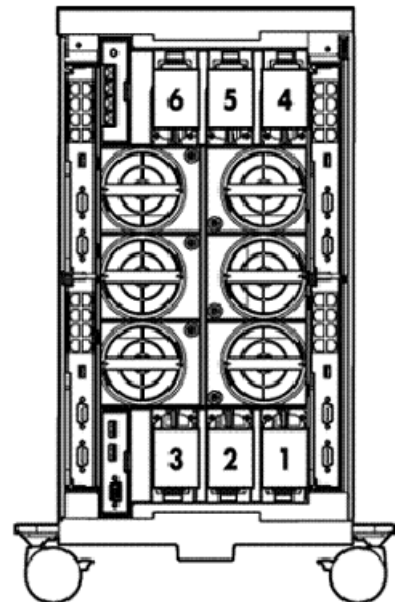
HP BladeSystem c3000 Enclosure - Tower

Power supply bay numbering

Power Supplies & Fans must be placed in the following bays

Technical Specifications

Number of Fans	Fan Bays Used
4	2,4,5, 6
6	all bays filled

Number of Power Supplies (for PS Redundant or non-redundant mode)	Power Supply Bays Used
2	1 & 2
3	1, 2, & 3
4	1, 2, 3, 4
5	1 through 5
6	All bays

Number of Power Supplies (For AC Redundant mode)	Place Power Supplies in bays:
2	1 & 4
4	1, 2, 4, & 5
6	all bays filled

NOTE: With four fans, the enclosure will support only 4 half-Height Server blades in the bottom half of the enclosure device bays. With six fans, all 8 server bays may be filled.

NOTE: For correct operation, fans and server blades must be installed in the correct bays. The Onboard Administrator will ensure that fans and blades are correctly placed before allowing systems to power on.

Half-height server blade bay numbering
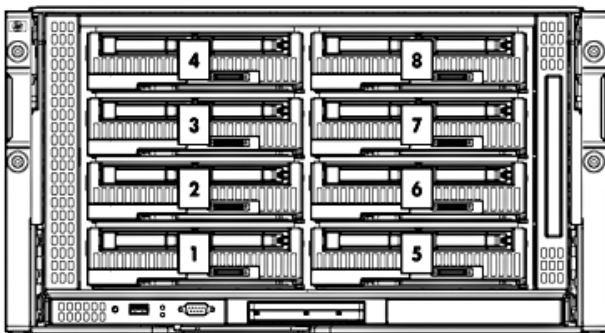
HP BladeSystem c3000 Enclosure - Racks

1. Device Bay 1
2. Device Bay 2
3. Device Bay 3
4. Device Bay 4
5. Device Bay 5
6. Device Bay 6
7. Device Bay 7
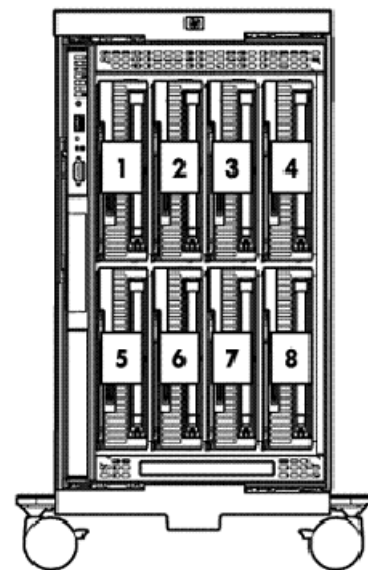
HP BladeSystem c3000 Enclosure - Tower

1. Device Bay 1
2. Device Bay 2
3. Device Bay 3
4. Device Bay 4
5. Device Bay 5
6. Device Bay 6
7. Device Bay 7

Technical Specifications

8.   Device Bay 8   8.   Device Bay 8

NOTE: Half-height server blades should be populated from the bottom half of the enclosure, in the following order (bays 1, 5, 2, 6, 3, 7, 4, & 8)

Full-height server blade bay numbering
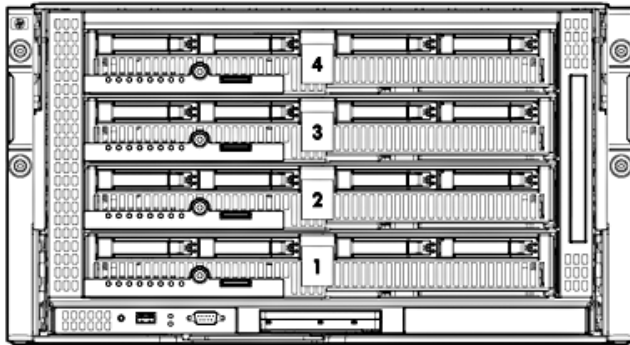
HP BladeSystem c3000 Enclosure - Racks

1.   Device Bay 1
2.   Device Bay 2
3.   Device Bay 3
4.   Device Bay 4
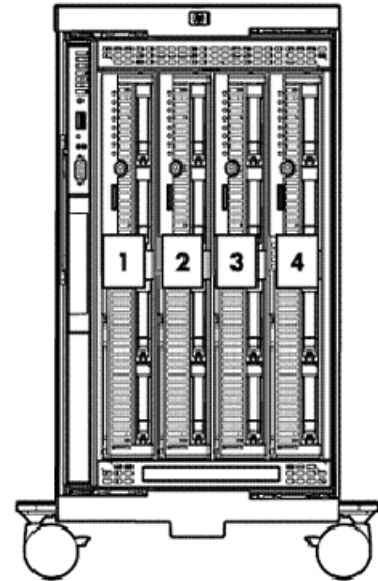
HP BladeSystem c3000 Enclosure - Tower

1.   Device Bay 1
2.   Device Bay 2
3.   Device Bay 3
4.   Device Bay 4

NOTE: Full-height servers should be populated from the bottom to the top (bays 1 thru 4). With four fans, only the bottom 2 bays can be used; with six fans, all bays can be used.

Mixed Configuration - Full Height and Half Height Population

The c3000 enclosure is divided into 2 zones or quadrants by the horizontal (vertical on Tower model) support metalwork. Zone 1 includes bays 1, 2, 4, & 5; and Zone 2 contains bays 3, 4, 7, & 8. Within each zone a removable divider is used to support half height devices. To install a full-height blade in any zone this divider must be removed. An optional mini-divider support bracket is included with every c3000 enclosure. As a consequence of using the mini-divider in the Zone 2, this zone can only contain one full height blade and 2 half-height blades. Zone 1 can contain either 4 half-height blades, or by removing the divider, it can contain 2 full-height blades.

NOTE: Please read the RTF card (included with each c3000 enclosure) and the "HP BladeSystem c3000 Setup and Installation Guide" for more information on using bay dividers and the mini-divider for mixed configurations.

NOTE: Storage or tape blades can be installed in the same zone as both full-height and half-height blades, a bracket ships with each SB40c that allows a half-height blade to be mounted to the left side of a storage or tape blade.

NOTE: In this case, the SB40c or tape blade cannot be removed without first removing the half height blade and mounting bracket.
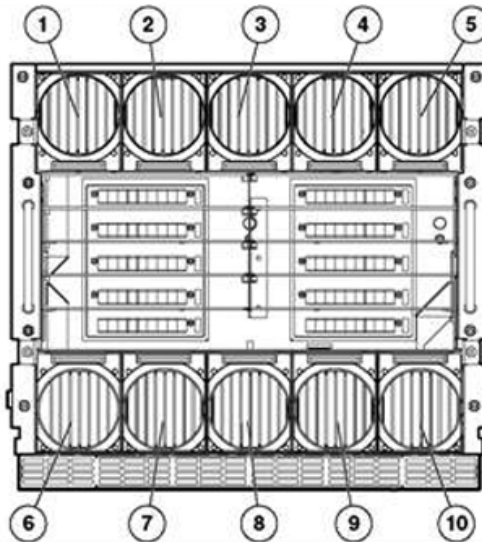
NOTE: For Mixed configurations of full height and half height population rules; please see the c3000 Enclosure installation and

Technical Specifications

## Server Blade, Power Supply and Fan Population Guidelines

Fan bay numbering

c7000 Enclosure - Fans must be placed in the following bays

Number of Fans	Fan Bays Used
4	4, 5, 9, 10
6	3, 4, 5, 8, 9, 10
8	1, 2, 4, 5, 6, 7, 9, 10
10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10

NOTE: For correct operation fans and server blades must be installed in the correct bays. The Onboard Administrator will ensure that fans and blades are correctly placed before allowing systems to power on.

c7000 Enclosure - Half-height server blade bay numbering
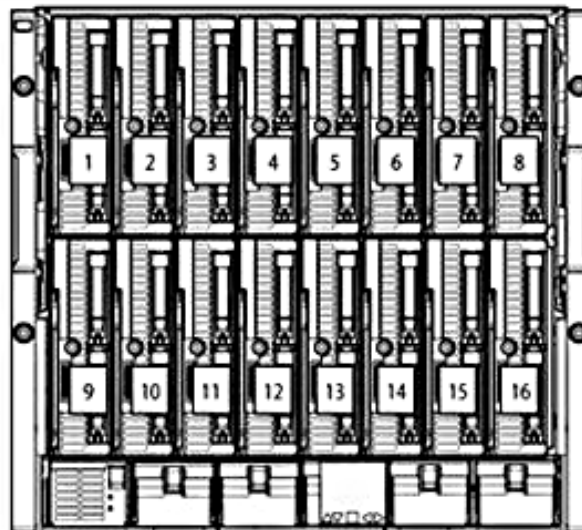
Technical Specifications

1. Device Bays 1-16
2. Device Bays 2
3. Device Bays 3
4. Device Bays 4
5. Device Bays 5
6. Device Bays 6
7. Device Bays 7
8. Device Bays 8

9. Device Bays 9
10. Device Bays 10
11. Device Bays 11
12. Device Bays 12
13. Device Bays 13
14. Device Bays 14
15. Device Bays 15
16. Device Bays 16

NOTE: Half-height servers should be populated from top and bottom from left to right from the front of the enclosure. So the first two half-height servers would be placed in bays 1 & 9 the second two half-height servers would be placed in bays 2 & 10 and so on until the enclosure is full.

c7000 Enclosure - Full-height server blade bay numbering
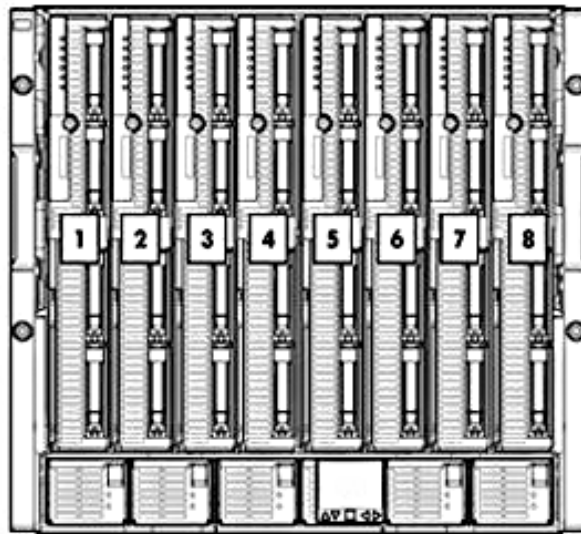
1. Device Bays 1-8
2. Device Bay 2
3. Device Bay 3
4. Device Bay 4

5. Device Bay 5
6. Device Bay 6
7. Device Bay 7
8. Device Bay 8

NOTE: Full-height servers should be populated from left to right.

c7000 Enclosure - Mixed Configuration - Full Height and Half-Height Population rules

Technical Specifications
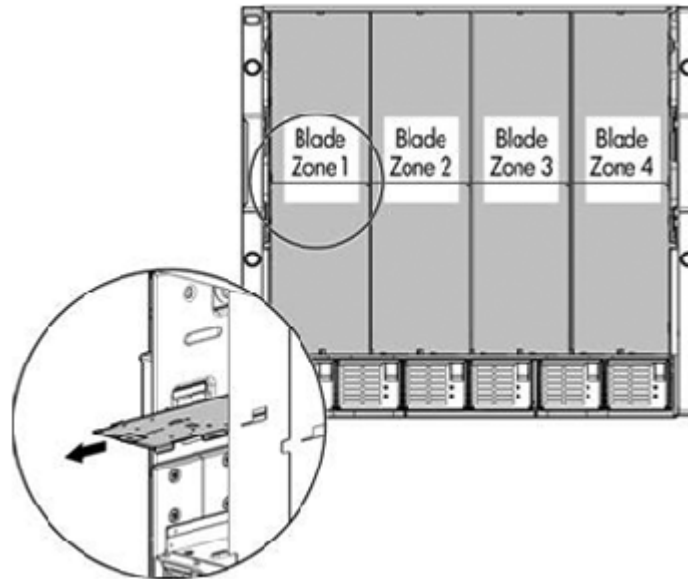
The c7000 enclosure is divided into 4 quadrants by the vertical support metalwork. Within each quadrant a removable divider is used to support half height devices. To install a full-height blade in any quadrant this divider must be removed. As a consequence a quadrant can only contain either full-height server blades or half-height server blades.

NOTE: Storage blades and Tape blades can be installed in the same quadrant as both full-height and half-height blades, a bracket ships with each SB40c that allows a half-height blade to be mounted on top of an SB40c/Tape Blade that allows a half-height blade to be mounted on top of the storage blade.

NOTE: The lower tape or storage blade cannot be removed without first removing the upper half height blade.

HP BladeSystem c3000 Server Blade Enclosure -Rack Model			
	Dimensions	Height	10.4 in (265 mm)
		Width	19.1 in (485 mm)
		Depth	32.877 in (835 mm)
	Shipping Dimensions	Height	23.0 in (584 mm)
		Width	23.88 in (607 mm)
		Depth	39.88 in (1013 mm)
	C3000 Enclosure Weight	Unboxed	145 lb (65.8 kg) approximately
		Shipping	195 lb (88.5 kg) approximately
	Max Enclosure Weight (approximated for fully loaded enclosure)	Unboxed	300 lb (136 kg) approximately
		Shipping	350 lb (158.8 kg) approximately
	Temperature Range	Operating	50° to 95° F (10° to 35° C)
		Non-Operating	-22° to 140° F (-30° to 60° C)
	Relative Humidity (non-condensing)	Operating	20% to 80%
		Non-Operating	5% to 95%
	Wet Bulb Temperature	Operating	82.4° F (28° C)
		Non-Operating	101.7° F (38.7° C)

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Technical Specifications

NOTE: Operating temperature has an altitude derating of 1.8° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

NOTE: For additional Technical Specifications regarding the c3000 Server Blade Enclosure, please see: http://h18000.www1.hp.com/products/quickspecs/12790_na/12790_na.html

Enclosure Unit - Tower Model	Dimensions (H x W x D) (with bezel)		21.29 x 13.48 x 34.43 in (54.08 x 34.24 x 87.45 cm)
	Weight (approximate)	Maximum (all server blades and interconnects installed)	342 lb (155 kg)
		Minimum (2 power supplies & 4 fans, no server blades nor interconnects installed)	192 lb (87.09 kg)
	Input Requirements (per AC power supply)	Rated Line Voltage	90 - 132 VAC 180 - 264 VAC
		Rated Input Current	9.3 A (at 100 VAC) 9.7 A (at 110 VAC) 7.8 A (at 200 VAC) 7.2 A (at 208 VAC) 6.8 A (at 220 VAC) 6.2 A (at 240 VAC)
		Rated Input Frequency	47 to 63 Hz
	BTU Rating	Maximum per power supply	2728 BTU/hr (at 100 VAC) 3069 BTU/hr (at 120VAC) 4092 BTU/hr (at 200 to 240 VAC)
	Power Specifications		To review typical system power ratings use the Power Calculator which is available via the online tool located at URL: www.hp.com/go/bladesystem/powercalculator
	Power Supply Output (per power supply)	Rated Steady-State Power	800 W (at 100 VAC), 900 W (at 120 VAC) 1200 W (at 200 to 240 VAC)
		Maximum Peak Power	880 W (at 100 VAC), 990 W (at 120 VAC) 1350 W (at 200 to 240 VAC
	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).

Technical Specifications

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. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).	
	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).	
Acoustic Noise		Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).	
	Idle	depends on server configuration & mix of server blades	
	Operating	varies by CPU utilization, server configuration, and mix of server blades	

HP BladeSystem c7000 Server Blade Enclosure	Dimensions	Height	17.4in (442 mm)
		Width	17.5in (445 mm)
		Depth	32in (813 mm)
	Shipping Dimensions	Height	29.88in (759 mm)
		Width	23.88in (607 mm)
		Depth	39.88in (1013 mm)
	Single Phase Enclosure Weight	Unboxed	121 lb (54.9 Kg)
		Shipping	164 lb (74.4 Kg)
	Three -Phase Enclosure NA/JPN Weight	Unboxed	150 lb (68 Kg)
		Shipping	193 lb (87.5 Kg)
	Three-Phase Enclosure International Weight	Unboxed	150 lb (68 Kg)
		Shipping	193 lb (87.5 Kg)
	Max Enclosure Weight	Unboxed	450 lb (204 Kg)
		Shipping	493 lb (223.6 Kg)
	Temperature Range	Operating	50° to 95° F (10° to 35° C)
		Non-Operating	-22° to 140° F (-30° to 60° C)
	Relative Humidity (non-condensing)	Operating	20% to 80%
		Non-Operating	5% to 95%
	Wet Bulb Temperature	Operating	82.4° F (28° C)
		Non-Operating	101.7° F (38.7° C)

Power Specifications

NOTE:
To review maximum system power ratings for facilities planning purposes use the Active Answers Power Calculator which is available via the online tool located at URL: http://www.hp.com/go/bladesystem/powercalculator

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.