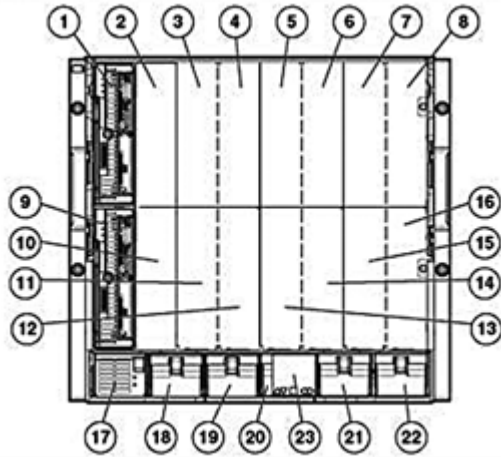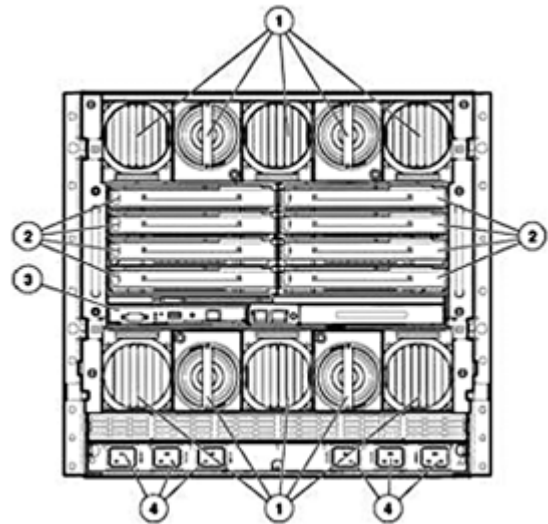## Overview

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
22. Power Supply Bay 6
23. Insight Display

HP BladeSystem c7000 Enclosure - Rear View

1. Active Cool 200 Fans & fan bays
2. Interconnect Bays
3. BladeSystem Onboard Administrator
4. Power Inputs (single phase model shown)

Overview

What's New

- HP BLc Single Phase Intelligent Power Module

At A Glance

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

HP BladeSystem c-Class Server Blades:

http://h18000.www1.hp.com/products/quickspecs/north_america/12534.html

HP BladeSystem c3000 Enclosure QuickSpecs:

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

HP BladeSystem solutions start with a BladeSystem c7000 Enclosure, optional c7000 hot-plug power supplies, HP Active Cool Fans, and an optional redundant BladeSystem 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 software. Reference the QuickSpecs listed above.

- **Warranty** - This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. 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.
  - Enclosure: Three-year parts and labor, on-site limited global warranty. Certain restrictions and exclusions apply
  - Enclosure options: Fans, Power Supplies, BladeSystem Onboard Administrator, 1 Year parts only or enclosure warranty
  - HP BladeSystem Interconnects: 1 Year parts and labor, on-site regardless of the warranty period for the system in which they are installed
  - HP Storage Fibre Channel switches have a maximum warranty period of one (1) year regardless of the warranty period for the system in which they are installed
  - Hard drives have either a one year or three year warranty; refer to specific hard drive QuickSpecs for details.

For additional information please visit: http://www.hp.com/go/bladesystem

HP BladeSystem c-Class Overview

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 redundant 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, three-phase or a -48V DC power subsystem for flexibility in connecting to datacenter power.
- HP Thermal Logic technology for lower power consumption and airflow.
- Four (4) or Ten (10) Active Cool 200 fans as standard. For redundancy and improved power consumption and acoustics; additional Active Cool 200 Fan kits can be added for a maximum of 10 fans.
- Redundant hot-plug cooling, redundant hot-plug power supplies, redundant connections, redundant interconnect modules, optional redundant BladeSystem Onboard Administrator management modules.
- Lowest cost of ownership.
- Full AC redundancy - with no power zones.

An BladeSystem 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 BladeSystem 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.
- Lower airflow requirements, in comparison to rack-mounted servers

HP BladeSystem c-Class Overview

HP c3000 Enclosure	For customers that need a smaller system the c3000 is the perfect solution. Supporting up to 8 blades and 4 interconnects the c3000 enclosure provides and ideal solution for Small and Medium businesses and remote sites for more information refer to the c3000 QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12790_na/12790_na.html
HP ProLiant & Integrity Server Blades	Delivering best-in-class performance, choice and reliability on AMD Opteron™, Intel® Xeon® and Intel® Itanium 2® processors for Windows, Linux, Solaris, 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 server blades, with the widest range of performance, and form factors. For more information please see: http://h18000.www1.hp.com/products/quickspecs/north_america/12534.html
HP D2200sb Storage Blade	The D2200sb Storage Blade delivers direct attached storage for c-Class servers, with support for up to twelve hot plug small form factor (SFF) SAS hard disk drives. The enclosure backplane provides a PCI Express connection to the adjacent c-Class server blade and enables high performance storage access without any additional cables. The D2200sb Storage Blade features an onboard Smart Array P410i controller with 1 GB flash-backed write cache, for increased performance and data protection. Two ways to create shared storage with the D2200sb Use HP StoreVirtual VSA software to turn the D2200sb into an iSCSI SAN for use by all severs in the enclosure and any server on the network. HP VSA software is installed in a virtual machine on a VMware ESX host server adjacent to the D2200sb. HP StoreVirtual VSA turns the D2200sb into a scalable and robust iSCSI SAN, featuring storage clustering for scalability, Network RAID for storage failover, thin provisioning, snapshots, remote replication, and cloning. Expand capacity within the same enclosure or to other BladeSystem enclosures by adding additional D2200sb Storage Blades and HP VSA licenses. A cost effective bundle of the D2200sb Storage Blade and a HP VSA license makes purchasing convenient. If storage needs increase, add HP P4300 or P4500 systems externally and manage everything via a single pane of glass. The HP X1800sb Network Storage Blade is a flexible storage server solution for BladeSystem environments. Combine the X1800sb with the D2200sb Storage Blade to enable file serving and iSCSI shared storage inside the BladeSystem enclosure. For more information, please visit: http://h18000.www1.hp.com/products/quickspecs/12587_na/12587_na.html

HP BladeSystem c-Class Overview

HP Ultrium Tape Blades	The HP SB1760c is an LTO-4 Ultrium, 1.6 TB capacity on a single cartridge (2:1 compression), 576 GB/hr performance (2:1 compression), 128 MB buffer size, WORM capability, AES 256-bit hardware data encryption capability.

Tape blades are ideal for HP BladeSystem c-Class customers who need a data protection solution but are not connected into a Storage Area Network (SAN). They provide direct attach data protection for the adjacent server and network backup protection for all other data within the enclosure. The HP tape blades are the industry's first bladed tape drives and are 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 Network Storage Servers** | HP X1800sb Network Storage Blade
HP X1800sb Network Storage Blade is a flexible storage server solution for BladeSystem environments. Combine the X1800sb with the D2200sb Storage Blade to enable file serving and iSCSI shared storage inside the BladeSystem enclosure. The flexibility of the X1800sb extends to external storage as well. The X1800sb can also be used as a low cost SAN gateway to provide consolidated file-serving access to FC, SAS, or iSCSI SANs.
NOTE: See the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12786_na/12786_na.html

HP X3800sb Network Storage Gateway
The X3800sb Network Storage Gateway Blade is used to access FC, SAS, or iSCSI SAN storage, translating file data from the server into blocks for storage to provide consolidated file, print, and management hosting services in a cluster-able package.
Built on the HP ProLiant BL460c Server Blade, the HP X3800sb Network Storage Gateway Blade is a ready to deploy SAN gateway solution, with Microsoft Storage Server 2008, Enterprise x64 Edition pre-installed. The HP Rapid Start-up Wizard accelerates new deployments by walking you through basic system settings step-by-step. The X3800sb also includes a Microsoft Cluster Server (MSCS) license and Microsoft iSCSI Software Target.
NOTE: See the QuickSpecs for Technical Specifications and additional information: http://h18006.www1.hp.com/products/quickspecs/13334_na/13334_na.html |
| **Dynamic Power Capping** | HP Dynamic Power Capping is the industry's first and only power capping solution that lets you reclaim trapped power and cooling capacity without putting electrical infrastructure or server performance at risk. The enclosure Dynamic Power Cap will be shared amongst all of the installed devices and individual server caps will be changed to match the server load. This will optimize the performance of the servers while ensuring that the enclosure stays below the cap value. |

HP BladeSystem c-Class Overview

Rack Airflow Requirements	**Rack 10000 G2 series cabinets** The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The G2 10000 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors.

NOTE: For operation with the DC Input Module the G2 1000 Series Rack Extension is required to allow DC Power Cabling to be installed.

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) for AC power, 47 inches (1200mm) for DC Power Input
- 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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HP Simple Configurator	SCE is a guided self service tool to help sales and non technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes. If you require "custom" rack configuration or configuration for products not available in SCE, please contact HP's Customer Business Center or an Authorized Partner for assistance. http://www.hp.com/products/configurator

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HP Insight management software	Insight Management	Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex Datacenters.

HP BladeSystem c-Class Overview

HP Insight Management lowers the cost of running your HP ProLiant servers by providing you with best-in-class management tools, including HP Insight Control, HP Virtual Connect Enterprise Manager (VCEM), and HP Insight Dynamics / Matrix Operating Environment. Insight Management increases your productivity and reduces your operating costs to get you higher value from your HP ProLiant servers.

Electronic download of Insight Management Media
Insight Management software media is available for free download (not including license entitlement certificates) at this website:
http://www.hp.com/go/insightupdates.

Software media available for download includes:

- HP Insight Control
- HP Insight Control for Microsoft® System Center
- HP Insight Control for VMware vCenter Server
- HP Virtual Connect Enterprise Manager (VCEM)
- HP Insight Dynamics / Matrix Operating Environment

Customers will receive an Insight Control or Insight Dynamics license entitlement certificate via physical shipment or email. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s).

One year of 24x7 Software Technical Support and Updates are included with your purchased licenses.

HP provides a complete range of installation and support services to ensure the successful deployment and operations of your server infrastructure. For more information about support services and licensing options, see the following website:
http://www.hp.com/go/insightsoftware

Insight Software Media Kit (DVDs)
Physical media (DVDs) are also available for purchase from HP or from your authorized reseller (PN 436222-B21)

Service Pack for ProLiant	Customers should use the HP Service Pack for ProLiant (SPP) to perform firmware, driver, and related software updates - SPP main webpage: www.hp.com/go/spp - SPP downloads webpage: www.hp.com/go/spp/download
HP Integrated Lights-Out (iLO)	HP Integrated Lights-Out (iLO) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP iLO functions without additional software and can be accessed from any location via a web browser. HP iLO works hand-in-hand with HP Systems Insight Manager, Insight Control and Insight Dynamics for ProLiant, helping customers unleash the value of the ProLiant platform and deliver the highest possible quality of IT service. For more information, visit: www.hp.com/go/iLO
HP Insight Control	HP Insight Control, a product option, delivers essential infrastructure

HP BladeSystem c-Class Overview

| | management that can help save time and money by making it easy to deploy, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. For more information, see http://www.hp.com/go/insightcontrol.

HP Insight Control includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: http://www.hp.com/services/insight. |
|---|---|
| HP Matrix Operating Environment | The HP Matrix Operating Environment (Matrix OE) for ProLiant and Integrity servers is an integrated command center that helps you instantly adjust to dynamic business demands. This advanced infrastructure management software lets you reduce the cost of common data center tasks by up to 40 percent while keeping pace with your changing business. The HP Matrix OE includes the automated provisioning, optimization, and recovery management capabilities for HP CloudSystem Matrix, the ideal platform for private cloud and Infrastructure as a Service (IaaS).

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

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 operating at very high enterprise application loads.

Values obtained from the BladeSystem Power Sizer are estimates for planning purposes only. Actual measured power consumption can be significantly lower or higher than the Power Sizer estimates. 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: www.hp.com/go/bladesystem/powercalculator

HP Power Advisor

The HP Power Advisor is a tool provided by Hewlett-Packard to assist in the estimation of power consumption and proper selection of components including power supplies at a system, rack, and multi-rack level. A variety of additional features are also provided including a condensed bill of materials, a cost of owner ship calculator, and a power report. The HP Power Advisor allows for the mixing of rack, tower, blade, and other products in a single environment.
Available at: www.hp.com/go/hppoweradvisor

Service and Support	**HP Technology Services for Industry Standard Servers and BladeSystem**

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

Protect your business beyond warranty with HP Care Pack Services

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

HP Foundation Care services offer scalable reactive support-packages for HP servers and software. You can choose the type and level of service that is most suitable for your IT and business needs. HP Proactive Care delivers high levels of system availability through proactive service management and advanced technical response. HP Datacenter Care provides highly flexible environmental support to address unique customer business needs.

Choose a recommended service appropriate to your ISS or Integrity product or contact your HP sales representative or authorized HP ServiceOne partner for additional HP Care Pack services information.

Recommended HP Care Pack Services for your HP ISS product

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

Combined reactive and proactive support for hardware and software helping optimize your systems and delivering high levels of availability through proactive service management and advanced technical response. Hardware problem resolution to return the hardware in operating condition within 6 hours of the initial service request. A Technical Account Manager, as your single point of contact, will own your call or issue end to end until resolved.
http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855EEE.pdf

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

Provides for hardware installation (c-Class ProLiant and Integrity server blades, storage blades, Ethernet Interconnects and Virtual Connect) and software installation and startup of a BladeSystem c7000 Infrastructure in a single enclosure including deployment of OS (two servers), HP Insight Control and Server Deployment (formerly RDP).
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA0-5964ENW.pdf

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

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

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

This service gives you combined reactive and proactive support including rapid access to our Advanced Solution Center to manage and prevent problems and a Technical Support Specialist with a broad level of technical knowledge that will engage with additional technical expertise as needed from HP's vast global resources.
http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855EEE.pdf

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Service and Support

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

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

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

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

Additional HP Care Pack services can be found at: http://www.hp.com/go/cpc

Recommended HP Care Pack Services for your HP Integrity product

Optimized Care   **3- Year HP Critical Service**
This service offers high performance reactive services and proactive components designed to minimize planned and unplanned downtime. The key feature of this service is an assigned support team including an Account Support Manager (ASM), Remote Support Account Advocate, Mission Critical Hardware Specialist and access to HP's Global Mission Critical Solution Center to help resolve complex issues faster. Reactive support components of this service include 24x7 HW and SW coverage, 6-hour Call-to-Repair commitment, enhanced parts inventory and accelerated escalation management.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA0-1613ENW.pdf

HP BCS C7000 Enclosure Startup Service
This service provides efficient and effective HP Integrity Blade infrastructure setup for the server infrastructure including all hardware and networking components.
http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA1-1651ENW.pdf

HP Installation and Startup Service for HP BladeSystem c-Class Enhanced Network
HP Provides for the configuration and testing of BladeSystem Ethernet interconnect switches and Virtual Connect to facilitate proper implementation of network protocols and access to advanced features.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4aa0-5969ENW.pdf

Standard Care   **3-Year HP Proactive 24**
This service offers improved stability, availability, and operational effectiveness through integrated hardware and software support services that combine industry-leading reactive technical assistance with proactive account services delivered by an ASM, giving you IT management support with a team of service specialists. http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA0-1614ENW.pdf

HP BCS C7000 Enclosure Startup Service
This service provides efficient and effective HP Integrity Blade infrastructure setup for the server infrastructure including all hardware and networking components.
http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA1-1651ENW.pdf

HP Installation and Startup Service for HP BladeSystem c-Class Enhanced Network
HP Provides for the configuration and testing of BladeSystem Ethernet interconnect switches and Virtual Connect to facilitate proper implementation of network protocols and access to advanced features.

Service and Support

	http://h20195.www2.hp.com/V2/GetPDF.aspx/4aa0-5969ENW.pdf
Related Services	**HP Factory Express** When you add additional enclosures to your environment, consider HP Factory Express. HP Factory Express provides customization and deployment services along with your storage and server purchases. You can customize hardware to your exact specifications in the factory-helping speed deployment. http://hp.com/go/factoryexpress
Insight Online/Insight Remote Support	HP Insight Remote Support provides 24 X 7 remote monitoring, proactive notifications, and problem resolution. This comes at no additional cost with your HP solution. Learn more about Insight Remote Support http://www.hp.com/go/insightremotesupport and Insight Online http://www.hp.com/go/insightonline **NOTE:** Insight Remote Support is a prerequisite for Proactive Care. All blades within a single HP BladeSystem enclosure must be at the same service level.
HP Support Center	Personalized online support portal with access to information, tools and experts to support HP business products. Submit support cases online, chat with HP experts, access support resources or collaborate with peers. Learn more http://www.hp.com/go/hpsc HP's Support Center Mobile App allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime. HP Insight Remote Support and HP Support Center are available at no additional cost with a HP warranty, HP Care Pack or HP contractual support agreement. **NOTE:** HP Support Center Mobile App is subject to local availability.
Parts and Materials	HP will provide HP-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements. Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services. The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HP due to malfunction.
For more information	To learn more on HP ProLiant servers and HP BladeSystem servers, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: www.hp.com/services/bladesystem

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: HP BladeSystem c3000 and c7000 enclosures support mixing of G1 through Gen8 server blades in the same enclosure

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 c-Class Server Blade Enclosure holds up to 16 half-height blades. Server blanks will be shipped in all empty bays.

Select Base Server Blade Enclosure Configuration

HP BladeSystem BLc7000 c-Class Server Blade Enclosures	HP BLc7000 Configure-to-order 3 In LCD ROHS Enclosure	507019-B21
	HP BLc7000 Configure-to-order c-Class Enclosure	AD361C

NOTE: CTO models include 1x BladeSystem Onboard Administrator with KVM, 4x Active Cool 200 Fans and 0x power supplies.
NOTE: All c-Class enclosures support HP ProLiant, Integrity and blades in either mixed or homogenous configurations. The AD361C enclosure is suggested for configurations primarily used with Integrity blades.

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

HP Power Supplies	**c-Class Power Modules** (1 per enclosure)	
	HP Single Phase FIO Intelligent Power Module for c-Class BladeSystem	677595-B21
	HP BLc7000 1 PH FIO Power Module Option	413379-B21
	HP BLc7000 3 PH FIO Power Module Option	413380-B21
	HP BLc7000 -48V DC Power Input Module	AH331A
	c-Class Power Supply (Up to 6)	
	HP 6X 2400W Platinum Hot Plug Factory Integrated Power Supply Kit	517521-B22

NOTE: The bundle includes a quantity of 6 HP 2400W Platinum 94% PSU so a full enclosure can be configured with a single part number.
NOTE: HP BladeSystem Power supplies meet multiple Energy Efficiency Initiatives: 2400W, 94%: Climate Savers Computing Initiative PLATINUM and ECOS Consulting 80 Plus PLATINUM.

	HP 2400W Platinum Hot Plug Power Supply Kit	588603-B21

NOTE: HP BladeSystem Power supplies meet multiple Energy Efficiency Initiatives: 2400W, 94%: Climate Savers Computing Initiative PLATINUM and ECOS Consulting 80 Plus PLATINUM.

	HP 6X 2400W Gold Hot Plug Factory Integrated Power Supply Kit	517521-B21

NOTE: The bundle includes a quantity of 6 HP 2400W High Efficiency PSU so a full enclosure can be configured with a single part number.

Configuration Information Factory Integrated Models

HP 2400W Gold Hot Plug Power Supply Kit	499243-B21
HP 2250W -48VDC Hot Plug Power Supply Kit	AH332A

NOTE: Only compatible with -48V DC Power Input Module.

NOTE: Mixing of power supplies in the same enclosure is Not SUPPORTED. All power supplies must be of the same type. All HP 2400W HE, all HP2250W or all -48V DC.

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.

HP Cooling Options   **c-Class Active Cool Fan** (Up to 6)

HP BLc 6X Active Cool 200 Factory Integrated Fan Option	517520-B21

NOTE: The bundle includes a quantity of 6 HP Active Cool 200 Fans so a full enclosure can be configured with a single part number.

HP BLc7000 Enclosure HP Single Active Cool Fan Option Kit	412140-B21

NOTE: A minimum of 4 Active Cool 200 Fans is required, 8 Active Cool 200 Fans can support a full blade enclosure, 10 Active Cool 200 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 200 Fans.
NOTE: Some Blade configurations require 10 fans.

Step 3: Select optional software bundle (if nothing is selected system will ship with 16 Insight Control Trial Licenses):

HP Insight Software   **Enclosure Options**

HP Insight Control for BladeSystem including 1yr 24x7 Support Enclosure 16 Server FIO License	417688-B23
HP Insight Control for BladeSystem including 1yr 24x7 Support Enclosure 8 Server FIO License	439034-B23

HP BladeSystem c-Class Ethernet Interconnects

HP Virtual Connect Flex-10/10D Module for c-Class BladeSystem	638526-B21
HP Virtual Connect Flex-10/10D Module Enterprise Edition for BLc7000 Option	662048-B21

Monitor   **HP Insight Dynamics - VSE**

HP Insight Dynamics-VSE with Insight Control Environment, 16-server license including 1 year of 24x7 Technical Support and Updates, FIO	483454-B21

NOTE: This license supports HP ProLiant c-Class blade servers.
NOTE: Must be purchased as an option to an HP BladeSystem enclosure. FIO can only be ordered as part of a factory-configured platform. Customer will receive a printed license entitlement certificate via physical shipment.

Configuration Information Factory Integrated Models

Step 4: Select optional Redundant BladeSystem Onboard Administrator Capability

HP c-Class Enclosure Options	HP BLc7000 Onboard Administrator with KVM Option **NOTE:** With 1 Gb/s Adapters.	456204-B21
	NOTE: The HP c7000 OA supports the mixing with the HP c7000 OA with KVM. The HP c7000 OA with KVM must be the active OA to provide the Enclosure KVM feature. The KVM menu has an OA CLI button at the bottom, which allows an OA administrator to log into the OA and be able to force a takeover so the OA with KVM will become the standby OA. The OA Firmware Sync feature cannot be used to update mismatched OA modules. Mismatched OA firmware versions between the original c7000 OA and c7000 OA with KVM require the administrator to use the GUI or CLI to update the OA from a file (http, ftp, tftp, local client file using the GUI or USB key containing the OA firmware file). **NOTE:** Models of the c7000 enclosure (part numbers 507019-B21 and AD361C) come with a BladeSystem Onboard Administrator with KVM as standard. Order this part number (456204-B21) when a second redundant BladeSystem Onboard Administrator is desired for a c7000 enclosure.	

Step 5: Select 1 or more interconnect modules for each enclosure

The following is a list of various HP BladeSystem c-Class interconnect modules (Virtual Connect, Ethernet, Fibre Channel, InfiniBand, and SAS interconnects). For detailed interconnect options consult the specific interconnect QuickSpecs:
http://h18004.www1.hp.com/products/blades/components/c-class-interconnects.html
A pair of interconnects must be ordered if redundancy is required.
NOTE: Options for specific c-Class interconnects are NOT included in the list below. Consult the individual interconnect QuickSpecs to obtain part numbers for interconnect options such as cables, SFPs, etc.

HP BladeSystem c-Class Network Interconnects	HP Virtual Connect Flex-10 10Gb Ethernet Module for c-Class BladeSystem	455880-B21
	HP Virtual Connect Flex-10 Ethernet Module Enterprise Edition for BLc7000 Option **NOTE:** Includes two HP Virtual Connect Flex-10 10Gb Ethernet modules plus one BL-c7000 enclosure license for HP Virtual Connect Enterprise Manager software. The license entitlement certificate must be redeemed online or via fax to obtain the VCEM license activation key.	591973-B21
	HP Virtual Connect FlexFabric 10/24 Enterprise Edition BLc7000 Option **NOTE:** Includes 2 x HP Virtual Connect FlexFabric 10Gb/24-port modules plus 1 x VCEM BL-c7000 enclosure license. Customer will receive a printed license entitlement certificate and 2 Virtual Connect modules as a single deliverable. The license entitlement certificate must be redeemed online or via fax to obtain the VCEM license activation key.	605865-B21
	HP Virtual Connect FlexFabric 10Gb/24-port Module for c-Class BladeSystem	571956-B21
	HP 6125G Ethernet Blade Switch	658247-B21
	HP 6125G/XG Ethernet Blade Switch	658250-B21
	HP 6120G/XG Ethernet Blade Switch	498358-B21
	HP 6120XG Blade Switch	516733-B21
	HP 1GB Ethernet Pass-Thru Module for c-Class BladeSystem	406740-B21
	HP 10GbE Ethernet Pass-Thru Module for c-Class BladeSystem	538113-B21
	Cisco Catalyst 1/10GbE 3120X Blade Switch	451439-B21
	Cisco Catalyst 1GbE 3120G Blade Switch	451438-B21

Configuration Information Factory Integrated Models

	Cisco Catalyst Blade Switch 3020 for HP c-Class BladeSystem	410916-B21
	HP Cisco B22HP Fabric Extender for BladeSystem c-Class	641146-B21
	HP Cisco B22HP Fabric Extender with 16 FET for BladeSystem c-Class	657787-B21
	HP GbE2c Layer 2/3 Ethernet Blade Switch	438030-B21
	HP 1:10Gb Ethernet Blade Switch for c-Class BladeSystem	438031-B21
	HP MDS 8/12c BladeSystem Fabric Switch	AW563A
	HP MDS 8/24c BladeSystem Fabric Switch	AW564A
	Cisco MDS 9124e Switch for c-Class BladeSystem 12-port Upgrade LTU	T5169A
	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 SAN Interconnects	HP Virtual Connect 8Gb 24-port Fibre Channel Module for c-Class BladeSystem	466482-B21
	HP Virtual Connect 8Gb 20-port Fibre Channel Module for c-Class BladeSystem	572018-B21
	HP 4GB Fibre Channel Pass-thru Module for c-Class BladeSystem	403626-B21
	HP B-series 8/12c SAN Switch for BladeSystem c-Class	AJ820B
	HP B-series 8/24c SAN Switch for BladeSystem c-Class	AJ821B
	HP B-series 8/24c Power Pack+ SAN Switch for BladeSystem c-Class	AJ822B
	HP B-series 8/12c SAN Switch for BladeSystem c-Class 12-port Upgrade LTU	T5517A
HP SAS Switch	HP 3Gb 8-port SAS 2.0 BL-c Switch Module for BladeSystem c-Class Enclosure	AJ864A
HP BladeSystem InfiniBand Interconnects	HP 4X QDR QLogic InfiniBand Switch Module for c-Class BladeSystem	505958-B21
	QLogic InfiniBand 4X QDR Management Module for c-Class BladeSystem	505959-B21
	HP 4X QDR InfiniBand Switch Module for c-Class BladeSystem	489184-B21
	NOTE: Quad Data Rate (QDR) InfiniBand Switch Modules are only supported in the RoHS 6 of 6 compliant enclosures (part numbers starting with 507) and G6 Blades.	
	HP 4X FDR InfiniBand Managed Switch Module for c-Class BladeSystem	648311-B21
	HP 4X FDR InfiniBand Switch Module for c-Class BladeSystem	648312-B21

Step 6: Select rack power distribution for single-phase models

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

Configuration Information Factory Integrated Models

HP Power Distribution Units	**HP Monitored Power Distribution Unit**	
	HP 17.3kVA 48A Single Input Three Phase Monitored Power Distribution Unit	AF916A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12118_na/12118_na.html	
	HP Modular Power Distribution Units	
	HP 17.3kVA 48A Three Phase Modular Power Distribution Unit	AF511A
	HP 14.4kVA 40A Three Phase NA/JP Modular Power Distribution Unit	AF519A
	HP 8.6kVA 24A Three Phase Modular Power Distribution Unit	AF512A
	HP 8.3kVA 40A High Voltage Core Modular Power Distribution Unit	252663-D75
	HP 4.9kVA 24A High Voltage Core Modular Power Distribution Unit	252663-D74
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/11041_na/11041_na.html	
	NOTE: The Core Only Modular Power Distribution Unit Kits excludes the extension bars as they are not required with the HP BladeSystem	
	HP Two C13 PDU Extension Bar	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.	

Step 7: Select optional Power Cords for Single Phase Model (power cords are listed under options)

NOTE: Default power cord is a 6ft IEC C19 - C20 cord

HP Intelligent Power Distribution Units Power cords (HP C19 to C20) **NOTE:** Order with P/N 677595-B21	HP 2.0m 250V 16A C19-C20 WW 3PC Kit IPD Enabled Jumper Cord	TK738A
	HP 2.0m 250V 16A C19-C20 WW Single IPD Enabled Jumper Cord	TK739A
	HP 2.5m 250V 16A C19-C20 WW Single IPD Enabled Jumper Cord	TK740A
	HP 2.5m 250V 16A C19-C20 WW 3PC Kit IPD Enabled Jumper Cord	TK741A
	HP 3.0m 250V 16A C19-C20 WW Single IPD Enabled Jumper Cord	TK742A
	HP 3.0m 250V 16A C19-C20 WW 3PC Kit IPD Enabled Jumper Cord	TK743A
	HP 1.37m 250V 16A C19-C20 WW Single IPD Enabled Jumper Cord	TK744A
	HP 1.37m 250V 16A C19-C20 WW 3PC Kit IPD Enabled Jumper Cord	TK745A
HP Power Distribution Units Power cords (HP C19 to C20)	HP C19 - C20 WW 250V 16Amp Flint Gray 1.20m Jumper Cord	AF575A
	HP C19 - C20 WW 250V 16Amp Flint Gray 2.0m Jumper Cord	AF574A
	HP C19 - C20 WW 250V 16Amp 2.5m Jumper Cord	295633-B22
	HP C19 - C20 WW 250V 16Amp 4.5m Jumper Cord	E7804A

Related Options

HP BladeSystem c-Class Server Blade Enclosures	HP BLc7000 Enclosure with 1 Phase 6 Power Supply 10 Fan ROHS ICE License	507015-B21
	HP BLc7000 Enclosure with 3 Phase 6 Power Supply 10 Fan ROHS ICE License	507017-B21
	HP BLc7000 Enclosure with 3 Phase 6 Power Supply 10 Fan ROHS ICE License	507016-B21
	HP BLc7000 Enclosure with 1 Phase 2 Power Supply 4 Fan ROHS ICE License	507014-B21

NOTE: All c7000 BTO enclosures will ship with 15 server blanks. CTO enclosures will ship with the required number of server blanks.
NOTE: New models of the c7000 enclosure (part numbers 5070xx-B21) come as standard with the HP 2400W HE PSU and BladeSystem Onboard Administrator with KVM.

HP Enclosure Options	HP BLc7000 Onboard Administrator with KVM Option	456204-B21

NOTE: The HP c7000 OA supports the mixing with the HP c7000 OA with KVM. The HP c7000 OA with KVM must be the active OA to provide the Enclosure KVM feature. The KVM menu has an OA CLI button at the bottom, which allows an OA administrator to log into the OA and be able to force a takeover so the OA with KVM will become the standby OA. The OA Firmware Sync feature cannot be used to update mismatched OA modules. Mismatched OA firmware versions between the original c7000 OA and c7000 OA with KVM require the administrator to use the GUI or CLI to update the OA from a file (http, ftp, tftp, local client file using the GUI or USB key containing the OA firmware file).
NOTE: Models of the c7000 enclosure (P/Ns 507015-B21, 507017-B21, 507014-B21) come with a BladeSystem Onboard Administrator with KVM as standard. Order (P/N 456204-B21) when a second redundant BladeSystem Onboard Administrator is desired for a c7000 enclosure.

HP BLc7000 10000 Series Rack Shipping Bracket Option	433718-B21

NOTE: The shipping bracket is required when shipping a c7000 enclosure when installed in a rack. It is not required for normal operation.

HP BLc7000 Miscellaneous Blanks Option Kit	412148-B21

NOTE: This kit should only be ordered to replace lost or damaged blanks.

HP BLc7000 Server Blank w/Coupler Option	412150-B21

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.

HP Power Supplies	HP 2400W Platinum Hot Plug Power Supply Kit	588603-B21

NOTE: HP BladeSystem Power supplies meet multiple Energy Efficiency Initiatives: 2400W, 94%: Climate Savers Computing Initiative PLATINUM and ECOS Consulting 80 Plus PLATINUM.

HP 2400W Gold Hot Plug Power Supply Kit	499243-B21

NOTE: Supplied with 2m/6ft IEC C20 - C19 jumper cord.
NOTE: HP BladeSystem Power supplies meet multiple Energy Efficiency Initiatives: 2400W, 92%: Climate Savers Computing Initiative GOLD and ECOS Consulting 80 Plus GOLD.

HP 2250W -48VDC Hot Plug Power Supply Kit	AH332A
HP BLc7000 -48V DC Power Input Module	AH331A

NOTE: Mixing of power supplies in the same enclosure is not supported. All power supplies must be of the same type, all HP 2400W HE, all HP2250W or all -48V DC.

Related Options

NOTE: The 80 PLUS program is a unique forum that unites electric utilities, the computer industry, and consumers in an effort to bring energy efficient technology solutions to the marketplace. 80 Plus independently tests power supply efficiency and publically posts the results on 80Plus.org."

HP Cooling Options	**HP c-Class Active Cool Fan**	
	HP BLc7000 Enclosure HP Single Active Cool Fan Option Kit	412140-B21
	NOTE: A minimum 4 Active Cool 200 Fans is required, 8 Active Cool 200 Fans can support a full blade enclosure, 10 Active Cool 200 Fans should be ordered for reduced power consumption and noise reduction. Some Blade configurations require 10 fans.	
HP BladeSystem c-Class Network Interconnects	HP Virtual Connect Flex-10 10Gb Ethernet Module for c-Class BladeSystem	455880-B21
	HP Virtual Connect Flex-10 Ethernet Module Enterprise Edition for BLc7000 Option	591973-B21
	NOTE: Includes 2 x HP Virtual Connect Flex-10 10Gb Ethernet modules plus 1 x VCEM BL-c7000 enclosure license. Customer will receive a printed license entitlement certificate and 2 Virtual Connect modules as a single deliverable. The license entitlement certificate must be redeemed online or via fax to obtain the VCEM license activation key	
	NOTE: For additional license kits, please visit:	
	http://h18000.www1.hp.com/products/quickspecs/12860_na/12860_na.html	
	HP Virtual Connect FlexFabric 10/24 Enterprise Edition BLc7000 Option	605865-B21
	NOTE: Includes 2 x HP Virtual Connect FlexFabric 10Gb/24-port modules plus 1 x VCEM BL-c7000 enclosure license. Customer will receive a printed license entitlement certificate and 2 Virtual Connect modules as a single deliverable. The license entitlement certificate must be redeemed online or via fax to obtain the VCEM license activation key.	
	HP Virtual Connect FlexFabric 10Gb/24-port Module for c-Class BladeSystem	571956-B21
	HP 6125G Ethernet Blade Switch	658247-B21
	HP 6125G/XG Ethernet Blade Switch	658250-B21
	HP 6120G/XG Ethernet Blade Switch	498358-B21
	HP 6120XG Blade Switch	516733-B21
	HP 1GB Ethernet Pass-Thru Module for c-Class BladeSystem	406740-B21
	HP 10GbE Ethernet Pass-Thru Module for c-Class BladeSystem	538113-B21
	Cisco Catalyst 1/10GbE 3120X Blade Switch	451439-B21
	Cisco Catalyst 1GbE 3120G Blade Switch	451438-B21
	Cisco Catalyst Blade Switch 3020 for HP c-Class BladeSystem	410916-B21
	HP Cisco B22HP Fabric Extender for BladeSystem c-Class	641146-B21
	HP Cisco B22HP Fabric Extender with 16 FET for BladeSystem c-Class	657787-B21
	HP GbE2c Layer 2/3 Ethernet Blade Switch	438030-B21
	HP 1:10Gb Ethernet Blade Switch for c-Class BladeSystem	438031-B21
	HP MDS 8/12c BladeSystem Fabric Switch	AW563A
	HP MDS 8/24c BladeSystem Fabric Switch	AW564A
	Cisco MDS 9124e Switch for c-Class BladeSystem 12-port Upgrade LTU	T5169A
	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	HP Virtual Connect 8Gb 24-port Fibre Channel Module for c-Class BladeSystem	466482-B21

Related Options

c-Class SAN Interconnects	HP Virtual Connect 8Gb 20-port Fibre Channel Module for c-Class BladeSystem	572018-B21
	HP 4GB Fibre Channel Pass-thru Module for c-Class BladeSystem	403626-B21
	HP B-series 8/12c SAN Switch for BladeSystem c-Class	AJ820B
	HP B-series 8/24c SAN Switch for BladeSystem c-Class	AJ821B
	HP B-series 8/24c Power Pack+ SAN Switch for BladeSystem c-Class	AJ822B
HP SAS Switch	HP 3Gb 8-port SAS 2.0 BL-c Switch Module for BladeSystem c-Class Enclosure	AJ864A
	HP 6Gb SAS BL Switch Single Pack	BK763A
	HP 6Gb SAS BL Switch Dual Pack	BK764A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information at:
http://h18000.www1.hp.com/products/quickspecs/13960_na/13960_na.html

HP BladeSystem InfiniBand Interconnects	HP 4X QDR QLogic InfiniBand Switch Module for c-Class BladeSystem	505958-B21
	QLogic InfiniBand 4X QDR Management Module for c-Class BladeSystem	505959-B21
	HP 4X QDR InfiniBand Switch Module for c-Class BladeSystem	489184-B21

NOTE: Quad Data Rate (QDR) InfiniBand Switch Modules are only supported in the RoHS 6 of 6 compliant enclosures and G6 Blades.

	HP 4X FDR InfiniBand Managed Switch Module for c-Class BladeSystem	648311-B21
	HP 4X FDR InfiniBand Switch Module for c-Class BladeSystem	648312-B21
HP Optical Drives	HP Integrity USB External DVD/RW Drive	AT120A

HP Insight Software	**Insight Control**	
	HP Insight Control for BladeSystem including 1yr 24x7 Support Enclosure 8 Server Electronic License	TC276AAE
	HP Insight Control for BladeSystem including 1yr 24x7 Support Enclosure 16 Server Electronic License	TC277AAE
	HP iLO Advanced for BladeSystem including 1yr 24x7 Support Eight Server License	512489-B21
	HP Insight Management Media Kit	436222-B21

NOTE: HP Insight Management Media Kit contains DVDs without licenses. Contains HP Systems Insight Manager, HP Insight Control, HP Matrix Operating Environment, and Virtual Connect Enterprise Manager software. Uses an integrated installer to perform quick and accurate software installation and updates.

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

NOTE: The "for bundling with an enclosure" license kits can only be ordered together with a BladeSystem c3000 or c7000 enclosure on the same order.

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

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

NOTE: For additional license kits, please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12631_na/12631_na.html

Related Options

HP Virtual Connect Enterprise Manager	HP Virtual Connect Enterprise Manager including 1yr 24x7 Support Single c7000 Enclosure Lic	459864-B21

NOTE: This license allows 1 BL-c7000 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 license kits, please visit:
http://h18000.www1.hp.com/products/quickspecs/12860_na/12860_na.html

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HP c-Class Storage Blades	HP LTO-5 SB3000c Tape Blade	BS580B

NOTE: Please see the QuickSpecs for Technical Specifications and additional information at:
http://h18000.www1.hp.com/products/quickspecs/12729_na/12729_na.html (Worldwide)

HP BL c-Class SB40c PCI Express Mezzanine Pass Thru Option Kit	431643-B21

NOTE: The mezzanine card is needed to support the D2200sb storage blade with HP c-Class BladeSystem full-height server blades.

HP D2200sb Storage Blade	AP880A

NOTE: Please see the HP D2200sb Storage Blade QuickSpecs for technical specifications and additional information at:
http://h18000.www1.hp.com/products/quickspecs/13714_na/13714_na.html

HP X1800sb G2 Network Storage Blade	BV872A
HP X3800sb G2 Network Storage Blade	BV874A

HP Expansion Blades	HP BLc PCI Expansion Blade	448018-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/12753_na/12753_na.html

HP BL c-Class SB40c PCI Express Mezzanine Pass Thru Option Kit	431643-B21

NOTE: The mezzanine card is needed to support the PCI Expansion Blade (P/N 448018-B21) with HP c-Class BladeSystem full-height server blades.

HP Ultrium Tape Blades	HP LTO-4 SB1760c Tape Blade	AQ697B
	HP BL c-Class SB40c PCI Express Mezzanine Pass Thru Option Kit	431643-B21

NOTE: The HP PCI Express Mezzanine Pass-Thru Card for HP BladeSystem (431643-B21) is required when installing a tape blade adjacent to a full-height server blade
NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/12729_na/12729_na.html

Related Options

HP Power Cords	**HP LV Power Cords 100 - 120V AC**	
	HP C19 - Nema 5-20P US/CA 125V 20Amp 4.5m Power Cord	E7802A
	HP C19 - C20 Jumper Cords	
	HP C19 - C20 WW 250V 16Amp Flint Gray 1.20m Jumper Cord	AF575A
	HP C19 - C20 WW 250V 16Amp Flint Gray 2.0m Jumper Cord	AF574A
	HP C19 - C20 WW 250V 16Amp 2.5m Jumper Cord	295633-B22
	HP C19 - C20 WW 250V 16Amp 4.5m Jumper Cord	E7804A
	HP HV Power Cords 200 - 240V AC	
	HP C19 -Nema L6-30P US/CA 250V 16Amp 4.5m Power Cord	E7805A
	HP C19 - Nema L6-20P NA/JP 250V 20Amp High Voltage 3.6m Power Cord	AF593A
	HP C19 - IEC-309 DK/SE/AR 250V 16Amp 3.6m Power Cord	AF581A
	HP 240 VAC 4.5M Unterminated End Power Cord	E7806A

NOTE: For additional power cable information, please visit:
http://h18000.www1.hp.com/products/servers/proliantstorage/power-protection/options/power-cable.html

HP Uninterruptible Power Systems	**HP Rack-mountable UPS**	
	R5000 Uninterruptible Power System (UPS)	
	HP R5KVA 3U L630 High Voltage NA/JP Uninterruptible Power System	AF460A

NOTE: Please see the QuickSpecs for additional information:
http://h18004.www1.hp.com/products/quickspecs/14109_na/14109_na.html

R7000 Uninterruptible Power System (UPS)

HP R7KVA 4U 50A High Voltage NA/JP Uninterruptible Power System	AF462A

NOTE: Please see the QuickSpecs for additional information:
http://h18004.www1.hp.com/products/quickspecs/14110_na/14110_na.html

HP R5KVA and R7KVA 3U Extended Runtime Module	AF464A

HP Rack-mountable R8000/R12000 UPS

HP R8000/3 8000kVA Three Phase NA 6U Rackmount Uninterruptible Power System	AF431A
HP R12000/3 12000VA Three Phase NA 6U Rackmount Uninterruptible Power System	AF429A

NOTE: Please see the QuickSpecs for additional information:
http://h18004.www1.hp.com/products/quickspecs/12857_na/12857_na.html
NOTE: For additional information on sizing your server, please reference:
http://www.upssizer.com

Related Options

HP Rack Series	**HP Rack 10000 G2 Series (Graphite Metallic)**	
	HP 642 1075mm Pallet Intelligent Series Rack	BW903A
	HP 642 1075mm Shock Intelligent Series Rack	BW904A

NOTE: HP BladeSystem c7000 Enclosure is not supported in a 14U rack

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/14223_na/14223_na.html
(Worldwide)

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

HP Rack Options	**Keyboards and Monitors**	
	HP USB BFR with PVC Free Keyboard/Mouse Kit	631341-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13972_na/13972_na.html

HP TFT7600 G2 KVM Console Rackmount Keyboard Monitor	AZ870A
HP TFT7600 G2 KVM Console Rackmount Keyboard TAA Monitor	AZ885A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13731_na/13731_na.html

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

HP KVM Switches

HP Server Console 0x2x8 Port Analog Switch	AF616A
HP Server Console 0x2x16 Port Analog Switch	AF617A
HP 0x2x16 KVM Server Console Switch G2 with Virtual Media CAC Software	AF618A
HP 2x1Ex16 KVM IP Console Switch G2 with Virtual Media CAC Software	AF621A
HP 4x1Ex32 KVM IP Console Switch G2 with Virtual Media CAC Software	AF622A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/11834_na/11834_na.html
(Worldwide)

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

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

Rack Options

HP Universal 10636 G2 Front Door	AF019A
HP 36U Rack Rear Extension Kit	AF060A
HP 10K G2 600W Graphite Stabilizer Kit	AF062A
HP 10K G2 600W Heavy Duty Graphite Stabilizer Kit	AF064A
HP 10000 G2 Series Rack Grounding Kit	AF074A
HP 600W 10K G2 Rack Tie Down Kit	AF076A

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

HP Airflow Optimization

HP 10000 Series Rack Airflow Optimization Kit	AF090A

NOTE: The Airflow Optimization kit is designed to prevent hot and cold air from mixing thus optimizing the temperature at which the chilled air enters the racked servers.
NOTE: When configuring racks through Factory Express, a Rack Optimization kit will automatically ship with the rack. This kit is recommended for all other rack configurations also.

HP Tape Backup

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

HP MSL2024 Tape Library

HP MSL2024 1 LTO-4 Ultrium 1840 Tape Library	AJ033A
HP MSL2024 1 LTO-4 Ultrium 1840 Fibre Channel Tape Library	AJ034A
HP MSL2024 1 Ultrium 920 Drive Tape Library	AH169A

HP MSL4048 Tape Library

HP MSL4048 2 LTO-4 Ultrium 1840 Tape Library	AJ037A
HP MSL4048 1 LTO-4 Ultrium 1840 Fibre Channel Tape Library	AJ036A
HP MSL4048 2 LTO-4 Ultrium 1840 Fibre Channel Tape Library	AJ038A
HP MSL4048 1 Ultrium 920 Drive Tape Library	AH171A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information or to create a complete solution; reference current compatibility information at: http://www.hp.com/go/ebs.

HP Care Pack Services

NOTE: Some options, including Fibre Channel and InfiniBand switches for the HP c-Class BladeSystem, are not covered under the c7000 enclosure Care Packs and carry separate Care Packs. Care Pack service level support for these options should always be uplifted to match existing storage or server service level.

Please view the option QuickSpecs or contact your HP sales representative or HP authorized ServiceOne partner for Care Pack information.

Proactive Care Services

HP 3y 4h 24x7 c7000 ProCare Service	U3C33E

Related Options

HP 3y 6h CTR 24x7 c7000 ProCare SVC	U3C36E
HP 3y 4h 24x7 c7000 w/IC ProCare Service	U3P10E
HP 3y 6h CTR 24x7 c7000 w/IC ProCare SVC	U3P13E

HP Proactive Care Personalized Support - Environmental Option

HP 3y ISS ProactiveCare PersonalizedSUPP	U6W98E

Installation & Start-up Services

HP Startup Blade System c-Class Infrastructure Service	UE602E
HP Startup Blade System c-Class Enhanced Network Service	UE603E
HP Install c-Class Enclosure & ServerBlade Service	UE494E
HP Install nonStdHrs c7000 Encl&Bld SVC	UG870E

NOTE: Additional HP Care Pack services can be found at: http://www.hp.com/go/cpc

HP 3 Years 4 Hour 24 hours

HP BCS Flexible Care Pack Services for your Integrity BladeSystem Enclosure

NOTE: Some options, including Fibre Channel and InfiniBand switches for the HP c-Class BladeSystem, are not covered under the c7000 enclosure Care Packs and carry separate Care Packs. Care Pack service level support for these options should always be uplifted to match existing storage or server service level.

Please view the option QuickSpecs or contact your HP sales representative or HP authorized ServiceOne partner for Care Pack information.

Mission Critical Services

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
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
HP Startup BladSys c-Class Encd Ntwk SVC HA124A1#56H	

NOTE: Additional HP Care Pack services can be found at: http://www.hp.com/go/cpc
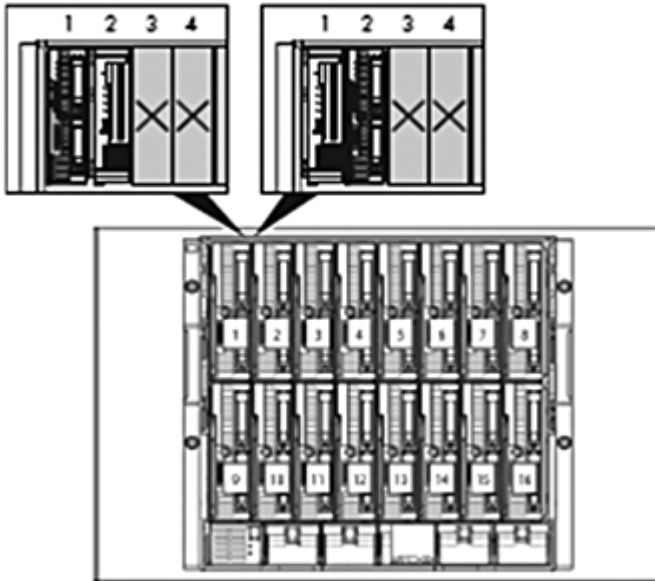
Storage

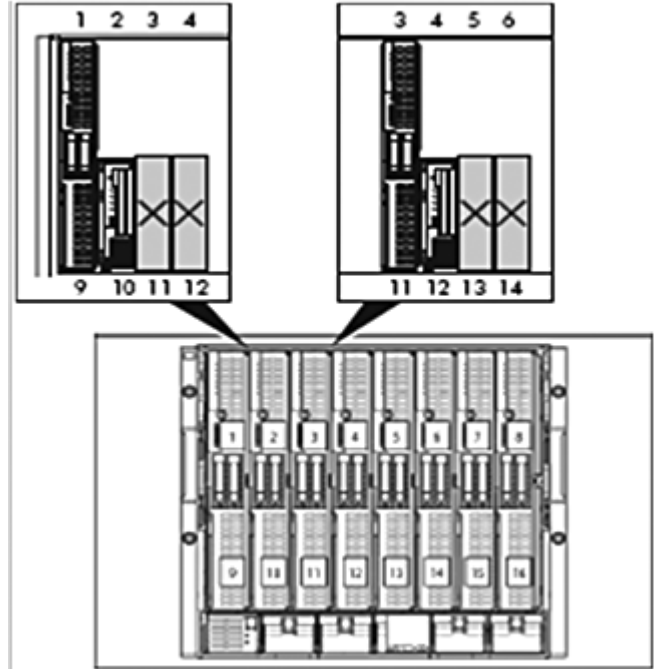**Figure 1**   Installing a tape blade adjacent to a half-height server blade.

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

Installing Tape or Storage Blade

Description	Quantity Supported	Position Supported	Comments
Connecting a tape or storage blade to an adjacent 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 or storage blade supports one partner server blade, and one partner server blade supports one tape or storage blade. • Identify the partner server blade to be installed with the tape or storage. 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. • If the partner server blade is installed in an odd-numbered bay, the tape or storage 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 or storage blade is installed in the adjacent odd-numbered bay to the left.
Connecting a tape or storage blade to an adjacent full-height server blade (Figure 2)	Up to 4 per HP BladeSystem c-Class c7000 Enclosure	Slots 10, 12, 14, or 16 (lower bays only)	• A tape or storage blade supports one partner server blade, and one partner server blade supports one tape or storage blade. • When partnering a tape or storage blade with a full height server blade, an HP PCI Express 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 or storage blade. The two blades always occupy a pair of slots, as follows: 9 & 10, 11 & 12, 13 & 14, 15 & 16.

Storage

- The partner server blade is installed in an odd-numbered bay. The tape or storage blade is installed in the adjacent even-numbered bay to the right.
- The tape or storage blade is always located on the lower row of the enclosure in an even-numbered bay (slots 10, 12, 14 or 16)

Power Specifications

HP BLc7000 Enclosure 2400 Watts Platinum Efficiency Power Supply					
Part Number	588603-B21				
Input Voltage Range (Vrms)	200-240				
Frequency Range (Nominal) (Hz)	50 / 60				
Nominal Input Voltage (Vrms)	**200**	**208**	**220**	**230**	**240**
Maximum Rated Output Wattage	2450	2450	2450	2450	2450
Nominal Input Current (A rms)	13.9	13.4	12.6	12.0	11.4
Maximum Rated Input Wattage Rating (Watts)	2692	2692	2678	2678	2663
Maximum Rated VA (Volt-Amp)	2778	2778	2762	2762	2747
Efficiency (%) at Max. Rated Output Wattage	91	91	91.5	91.5	92
Power Factor	0.98	0.98	0.98	0.98	0.98
Leakage Current (mA)	0.97	1.01	1.06	1.11	1.16
Maximum Inrush Current (A peak)	100	100	100	100	100
Maximum Inrush Current duration (mS)	10	10	10	10	10
Maximum British Thermal Unit Rating (BTU-Hr)	9186	9186	9136	9136	9086

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

Technical Specifications

Server Blade and Fan Population Guidelines

Fan bay numbering
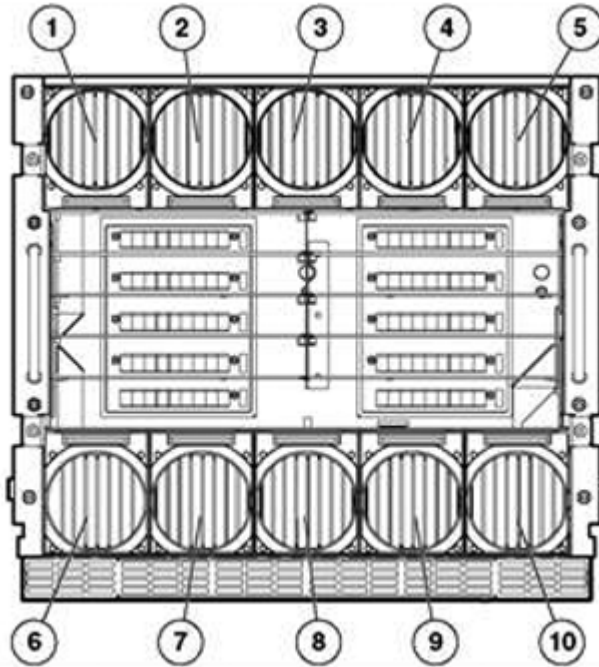
Fans must be placed in the following bays

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 BladeSystem Onboard Administrator will ensure that fans and blades are correctly placed before allowing systems to power on.

Technical Specifications

Half-height server blade bay numbering
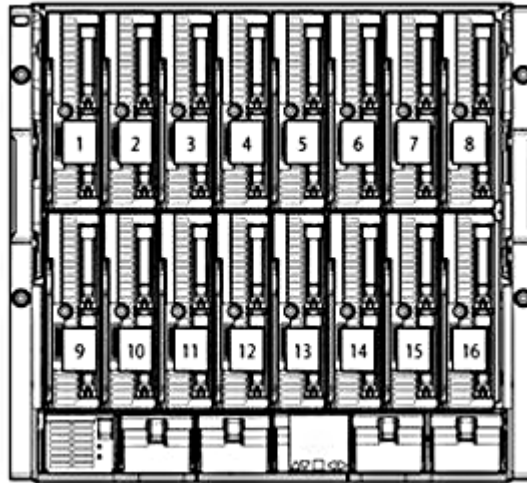
1. Device Bay 1	9. Device Bay 9
2. Device Bay 2	10. Device Bay 10
3. Device Bay 3	11. Device Bay 11
4. Device Bay 4	12. Device Bay 12
5. Device Bay 5	13. Device Bay 13
6. Device Bay 6	14. Device Bay 14
7. Device Bay 7	15. Device Bay 15
8. Device Bay 8	16. Device Bay 16

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.

Full-height server blade bay numbering
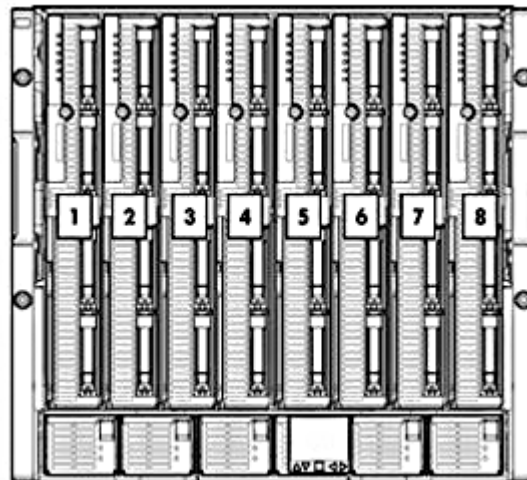
1. Device Bay 1	5. Device Bay 5
2. Device Bay 2	6. Device Bay 6
3. Device Bay 3	7. Device Bay 7

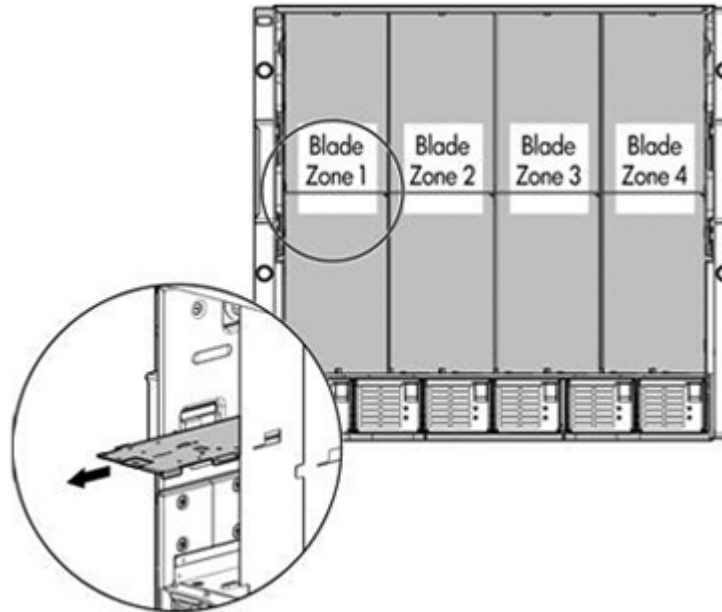## Technical Specifications

4. Device Bay 4   8. Device Bay 8

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

Mixed Configuration - Full Height and Half-Height Population rules

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 D2200sb/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 c7000 Server Blade Enclosure	Dimensions	Height	17.4 in (442 mm)
		Width	17.6 in (447.04 mm)
		Depth	32 in (813 mm)
	Shipping Dimensions	Height	29.88 in (759 mm)
		Width	23.88 in (607 mm)
		Depth	39.88 in (1013 mm)
	Single Phase Enclosure Weight	Unboxed	192 lb (87 kg)
		Shipping	235 lb (106.6 kg)
	Three -Phase Enclosure Weight	Unboxed	222 lb (100.7 kg)
		Shipping	265 lb (120.2 kg)
	DC Input Enclosure Weight	Unboxed	151 lb (68.5 kg)
		Shipping	194 lb (88 kg)
	Max Enclosure Weight (approximate)	Unboxed	450 lb (204 kg)
		Shipping	493 lb (223.6 kg)

Technical Specifications

Temperature Range	Operating	50° to 95° F (10° to 35° C)	
	Non-Operating	-22° to 140° F (-30° to 60° C)	
Relative Humidity	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.	

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.

Power	**Input Requirements – Single Phase Model**	Rated input frequency	50 to 60 Hz	
	2400W PSU	Rated input voltage	200 to 240 VAC
		Rated input current per power supply	13.9 A at 200 VAC 13.3 A at 208 VAC 12.6 A at 220 VAC
		Rated input power per power supply	2780 VA
	Input Requirements – Three Phase Model	Rated input voltage	200 to 208 VAC Line to Line 3-Phase Delta
		Rated input frequency	50 to 60 Hz
	2250W PSU	Max input current per line cord	22.6A at 200 VAC 21.8A at 208 VAC
		Max input power per line cord	7836VA Max
	2400W PSU	Max input current per line cord	24A at 200 VAC 23.1A at 208 VAC
		Max input power per line cord	8340 VA Max
	Input Requirements DC Power	Rated Input Voltage	36 to -72 VDC
		Max Input Current per line cord	75A
		Max Input Power per line Cord	2700W
	Power Cords	Single Phase	IEC-320 C19-C20 1.22m (6 ft)
		3-Phase	2 x NEMA L15-30p 3.048m (10 ft)
		-48V DC Power	Terminal lug: 45DG 4AWG 1/4 2H
			Two-hole lug 45 degree bend 0.25in. (6.4mm) stud hole size 0.63in. (16mm) hole spacing

Technical Specifications

	Output Specifications (per power supply)	HP 2400W High Efficiency Hot-Plug Power Supply	200 - 240 VAC 2400 W 92% Efficiency
		HP 2250W -48V DC Hot-Plug Power Supply	2250W
	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	
		LWAd	7.1 Bels
		LpAm	54 dBA
		Operating	
		LWAd	7.2 Bels
		LpAm	54 dBA

Option Kits	**Power Supply Option Shipping Dimensions**	Height	8.75 in (223 mm)
		Width	8.63 in (219 mm)
		Depth	35.13 in (892 mm)
		Weight	8.5 lbs (3.85 kg)
	Fan Option Shipping Dimensions	Height	8.75 in (223 mm)
		Width	9.75 in (248 mm)
		Depth	15.88 in (403 mm)
		Weight	4.0 lbs (1.8 kg)
	BladeSystem Onboard Administrator Option Shipping Dimensions	Height	2.50 in (63.5 mm)
		Width	9.88 in (251 mm)
		Depth	13.50 in (343 mm)
		Weight	4.0 lbs (1.8 kg)

Environmental-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.

Technical Specifications