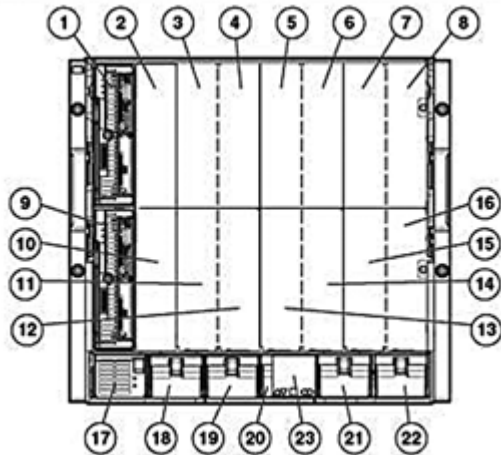


### Overview

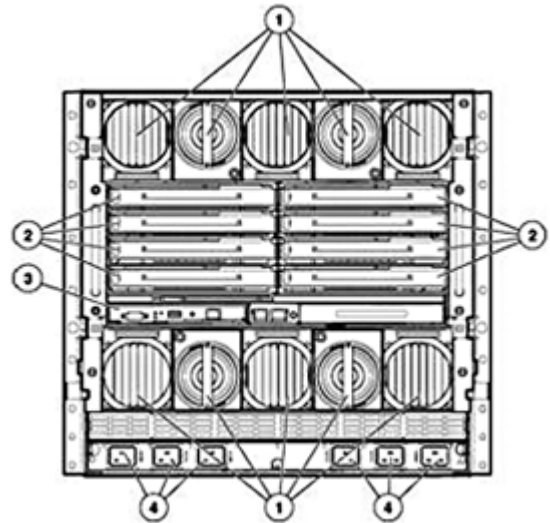
### HP BladeSystem c7000 Enclosure and Server Blades - Carrier Grade Supplement

NEBS Level 3 certified



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. Onboard Administrator
4. Power Inputs

### Overview

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### At A Glance

This document covers the NEBS Level 3 certified HP BladeSystem c7000 Enclosure. This document covers the blades, interconnects, etc. which have passed the NEBS Level 3 and ETSI EN 300 386-2 certifications. Testing and certification is limited to -48VDC powered enclosures. For more information on HP ProLiant Server Blades and HP BladeSystem c-Class Interconnect Components please see the following QuickSpecs:

HP ProLiant c-Class Server Blades:

<http://h18000.www1.hp.com/products/quickspecs/division/12534.html>

HP BladeSystem c-Class Interconnect QuickSpecs:

[http://h18000.www1.hp.com/products/quickspecs/12524\\_div/12524\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12524_div/12524_div.html)

HP BladeSystem c3000 Enclosure QuickSpecs:

[http://h18000.www1.hp.com/products/quickspecs/12790\\_div/12790\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html)

HP BladeSystem Carrier Grade (CG) solution start with a BladeSystem c7000 Enclosure, c7000 hot-plug -48VDC 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 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, 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
- SATA hard drives have a one year parts and labor on-site warranty regardless of the system in which they are installed
- SAS Enterprise drives have a 3 year warranty regardless of the system in which they are installed.

For additional information please visit: <http://www.hp.com/go/bladepystem>

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### 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 Carrier Grade 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) supported simultaneously within the enclosure.
- -48V DC power subsystem .



### Overview

- HP Thermal Logic technology for lower power consumption and airflow.
- Ten (10) Active Cool 200 fans required for Telco operation
- Redundant hot-plug cooling, redundant hot-plug power supplies, redundant connections, redundant interconnect modules, optional redundant Onboard Administrator management modules.
- Lowest cost of ownership.

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

### HP BladeSystem c-Class Overview

#### HP ProLiant & Integrity Server Blades

Delivering best-in-class performance, choice and reliability on 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. The HP BL460 G6 and BL860 have been certified as NEBS Level 3.

For more information please see:

<http://h18000.www1.hp.com/products/quickspecs/division/12534.html>

#### HP BladeSystem c-Class Network Interconnects

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. Dynamic Power Capping solution is available only through the HP Insight Control management software.

#### Core Infrastructure Management

##### HP Insight Foundation

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

HP provides management solutions that are designed to simplify a server's installation, configuration and maintenance throughout the entire server lifecycle. This provides the customer with higher levels of operational efficiency and highly reliable systems:

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

The foundation pack includes:

- HP SmartStart
- HP Management
- HP ProLiant Firmware Maintenance

SmartStart version supported (minimum): SmartStart 7.60.

<http://www.hp.com/servers/smartstart>

##### ProLiant Onboard Administrator

HP ProLiant Onboard Administrator (powered by the HP Integrated Lights-Out 2 management processor) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP ProLiant Onboard Administrator functions without additional software, and can be accessed from any location via a web browser. It works hand-in-hand with HP Systems Insight Manager, Insight Control suites, and the Insight Dynamics-VSE suite helping customers unlock the value of the ProLiant platform and deliver the highest possible quality of IT service to the business.

See [www.hp.com/go/onboardadministrator](http://www.hp.com/go/onboardadministrator)

##### HP Insight Control suites

HP Insight Control (ICE) suites, as product options, deliver essential infrastructure management that can help save time and money by making it easy to deploy, monitor, remote control, and optimize your IT infrastructure



### HP BladeSystem c-Class Overview

through a single, simple management console. ICE suites install and license software modules that are integrated into HP System Insight Manager.

Two Insight Control suites are available, to serve environments requiring either Linux-based or Windows-based management consoles: HP Insight Control suite for Linux (ICE-LX), and HP Insight Control suite (ICE). See [www.hp.com/go/insightcontrol](http://www.hp.com/go/insightcontrol)

HP Insight Control suites 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 Insight Dynamics - VSE suite** The HP Insight Dynamics - VSE suite for ProLiant, a product option, is an integrated command center that enables you to continuously analyze and optimize your adaptive infrastructure. This advanced infrastructure management software that allows you to analyze and optimize your adaptive infrastructure to manage physical and virtual resources in the same way. HP Insight Dynamics - VSE gives you a powerful toolkit to accelerate complex technology projects and simplify daily operations. It enables you to plan capacity and power continuously, balance across physical and virtual resources, ensure cost-effective high availability, and provision infrastructure consistently.

HP Insight Orchestration, an optional extension to Insight Dynamics - VSE, enables IT organizations to provision infrastructure consistently and automatically from pools of shared resources using a self-service portal. Resources provisioned can range from a single virtual machine to complex multi-tier environments and their associated physical and virtual resource requirements.

HP Insight Recovery, also an optional extension for Insight Dynamics - VSE, enables cost-effective disaster recovery for physical and virtual environments. Application environments can be reactivated in minutes with the touch of a button to a remote location.

**NOTE:** For more information, visit:

<http://www.hp.com/go/insightdynamics>,

<http://www.hp.com/go/insightorchestration>,

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

### HP Software Support

HP Insight Control suite for Linux 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 suite and Insight Control suite for Linux customers will benefit from



### HP BladeSystem c-Class Overview

expedited problem resolution and proactive notification and delivery of software updates.

To activate your HP Software Technical Support and Update Service for HP Insight Control suite and Insight Control suite for Linux, 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.

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>.

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### 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>

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### Service and Support

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

The HP Care Pack service for HP ProLiant carrier-grade 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 carrier-grade 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.



### *HP BladeSystem c-Class Overview*

**NOTE:** SAN/Fabric switches for the HP c-Class BladeSystem are not covered under the c7000-cg 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/bladessystemservices>

<http://www.hp.com/go/proliant/carepack>



### Storage

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

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

**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.

### Base Server Blade Enclosure Configuration

HP BladeSystem BLC7000	HP BLC7000 CTO Enclosure	507019-B21
c-Class Server Blade Enclosures	HP BLC7000 BCS CTO c-Class Enclosure	AD361C
	<b>NOTE:</b> CTO models include 1x Onboard Administrator with KVM, 4x Active Cool 200 Fans and 0x power supplies.	
	<b>NOTE:</b> All c-Class enclosures support HP ProLiant, Integrity and StorageWorks 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)

c-Class Power Modules (1 per enclosure)	HP BLC7000 -48V DC Power Input Module	AH331A
c-Class Power Supply (Up to 6)	HP c7000 Enclosure 2250W Hot-Plug -48V DC Power Supply (single PSU)	AH332A
	<b>NOTE:</b> Only compatible with -48V DC Power Input Module.	
c-Class Active Cool Fan (Up to 6)	6x HP Active Cool 200 Fan Bundle, FIO	517520-B21
	<b>NOTE:</b> The bundle includes a quantity of 6 HP Active Cool 200 Fans so a full enclosure can be configured with a single part number.	
	<b>NOTE:</b> NEBS Level 3 certification requires 10 fans.	

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

Enclosure Options	HP c-Class Insight Control suite for BladeSystem 16 License, including 1 year of 24x7 Technical Support and Updates, FIO	417688-B23
	HP c-Class Insight Control suite for BladeSystem 8 License, including 1 year of 24x7 Technical Support and Updates, FIO	439034-B23

### Step 4: Select optional Redundant Onboard Administrator Capability

HP c7000 Onboard Administrator with KVM Option	456204-B21
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**NOTE:** With 1 Gb/s Adapters.

**NOTE:** Models of the c7000 enclosure (part numbers 507019-B21 and AD361C) come with an Onboard Administrator with KVM as standard. Order this part number (456204-B21) when a second redundant Onboard Administrator is desired for a c7000 enclosure.





### Storage

#### 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, and Fibre Channel), which have been tested for NEBS Level 3 compliance. 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.

<b>HP BladeSystem c-Class Network Interconnects</b>	HP Virtual Connect Flex-10 10Gb Ethernet Module for the c-Class BladeSystem	455880-B21
	HP 1/10Gb Virtual Connect Ethernet Module	447047-B21
	HP ProCurve 6120G/XG	399593-B22
	HP ProCurve 6120XG	498358-B21
	HP GbE2c Layer 2/3 Ethernet Blade Switch	516733-B22
	Cisco Catalyst Blade Switch 3020 for HP c-Class BladeSystem	410916-B21
	HP GbE2c Layer 2/3 Ethernet Blade Switch Advanced Functionality Software	438030-B21
	<b>NOTE:</b> 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.	
	HP 1:10 GbE BLc Advanced Functionality Software	485192-B21
	<b>NOTE:</b> 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.	
	HP 10Gb Ethernet BL-c Switch	485193-B21
<b>NOTE:</b> The purchase the HP 10Gb Ethernet BLOc 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	445860-B21	
<b>NOTE:</b> 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.		
<b>NOTE:</b> The HP BladeSystem c-Class Network Interconnects ship as single units. The above interconnects must be ordered in quantities of two for redundancy support.	485194-B21	
<b>HP BladeSystem c-Class SAN Interconnect</b>	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	

<b>c7000 Enclosure Options</b>	HP c7000 Onboard Administrator with KVM	456204-B21
	<b>NOTE:</b> Models of the c7000 enclosure (P/Ns 507019-B21: 507015-B21, 507017-B21, 507016-B21, 507014-B21) come with an Onboard Administrator with KVM as standard. Order (P/N 456204-B21) when a second redundant Onboard Administrator is desired for a c7000 enclosure.	



### Storage

HP c7000 Enclosure 10K Rack Ship Bracket Option Kit 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 BladeSystem Replacement Enclosure Miscellaneous Blanks kit (contains 1 each of Power Supply Blank, Interconnect Module Blank, Onboard Administrator Blank, Active Cool Fan Blank) 412148-B21

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

HP c-Class Server Blank and Coupler Option Kit (contains 1 x half-height server blank with coupler) 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 Insight Control suites (ICE)

**NOTE:** Electronic licensing options are available for Insight Control suites software products. Please see the appropriate Insight Control QuickSpecs for additional information. [www.hp.com/go/ice](http://www.hp.com/go/ice)

#### Insight Control suite

HP Insight Control suite, No Media, 1-Server License including 1 year of 24x7 Technical Support and Updates 452148-B22

**NOTE:** Contains 1 license for each of RDP, PMP, VMM, VPM, IPM and iLO Advanced.

**NOTE:** This part number can be purchased as a single license or as multiple licenses with a single activation key. Customer will receive a license entitlement certificate via e-mail. 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. Only available directly from HP and select resellers in the Americas region.

HP Insight Control Management Software Media Kit 436222-B21

**NOTE:** Insight Software DVD media without licenses. Contains Insight Manager and Essentials software products and components licensed by Insight Control Environment suite. Uses an integrated installer to perform quick and accurate software installation and updates.

**NOTE:** For additional license kits, please see the QuickSpecs at:

[http://h18000.www1.hp.com/products/quickspecs/12631\\_div/12631\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html)

#### HP Insight Control suite for Linux

HP Insight Control suite for Linux, No Media, 1-Server license, including one year of 24x7 Technical Support and Updates 464423-B22

**NOTE:** This part number can be used to purchase one (1) license 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.

**NOTE:** One certificate is shipped for each license.

HP Insight Control suite for Linux, Media pack (DVD) - No licenses included HP Insight Control suite for Linux Media Only Kit 464422-B22

**NOTE:** This optional Media pack DVD contains the ISO image for HP Insight Control suite for Linux, HP System Insight Manager, HP Insight Power Manager software, HP Insight Virtual Machine Manager software for ProLiant, and an integrated installer.



### Storage

Servers must be acquired separately.

**NOTE:** This Media pack is optional because the latest ISO image and latest updates may be downloaded at no cost from: <http://www.hp.com/go/ice-linux> (click on Download button).

**NOTE:** For additional license kits, please see the QuickSpecs at: [http://h18000.www1.hp.com/products/quickspecs/13019\\_div/13019\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13019_div/13019_div.html)

<b>HP Virtual Connect Enterprise Manager</b>	<p>HP Virtual Connect Enterprise Manager for BL-c7000, No Media, 1-Enclosure License including 1 year of 24x7 Technical Support and Updates</p> <p><b>NOTE:</b> 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.</p> <p><b>NOTE:</b> For additional license kits, please visit: <a href="http://h18000.www1.hp.com/products/quickspecs/12860_div/12860_div.html">http://h18000.www1.hp.com/products/quickspecs/12860_div/12860_div.html</a></p>	459864-B21
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### Step 6: Select 1 to 16 server blades for each enclosure

<b>HP BL460c G6</b>	<p><b>HP ProLiant BL460c G6 CTO Blade</b></p> <p>Intel® Xeon® Processor X5570 (2.93 GHz, 8MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3) BL460c G6 Kit, FIO - for second processor add 507791-B21</p> <p>Intel® Xeon® Processor X5560 (2.80 GHz, 8MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3) BL460c G6 Kit, FIO - for second processor add 507792-B21</p> <p>Intel® Xeon® Processor X5550 (2.66 GHz, 8MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3) BL460c G6 Kit, FIO - for second processor add 507793-B21</p> <p>Intel® Xeon® Processor E5540 (2.53 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) BL460c G6 Kit, FIO - for second processor add 507794-B21</p> <p>Intel® Xeon® Processor E5530 (2.40 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) BL460c G6 Kit, FIO - for second processor add 507797-B21</p> <p>Intel® Xeon® Processor E5520 (2.26 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) BL460c G6 Kit, FIO - for second processor add 507799-B21</p> <p>Intel® Xeon® processor HP E5506 (2.13 GHz, 4MB L3 Cache, 80W, DDR3-800) BL460c G6 Kit, FIO - for second processor add 507800-B21</p> <p>Intel® Xeon® processor HP E5504 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800) BL460c G6 Kit, FIO - for second processor add 507801-B21</p>	<p>507864-B21</p> <p>507791-L21</p> <p>507792-L21</p> <p>507793-L21</p> <p>507794-L21</p> <p>507797-L21</p> <p>507799-L21</p> <p>507800-L21</p> <p>507801-L21</p>
<b>Memory</b>	<p><b>Registered DIMM (RDIMM) Memory Options (NEBS tested)</b></p> <p>HP 2GB 2Rx8 PC3-10600R -9 Kit</p> <p>HP 4GB 2Rx4 PC3-10600R-9 Kit</p>	<p>500656-B21</p> <p>500658-B21</p>



### Storage

#### Un-Registered DIMM (UDIMM) Memory Options (NEBS Tested)

HP 2GB 2Rx8 PC3-10600E-9 Kit 500670-B21

**NOTE:** All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: [www.hp.com/go/ddr3memoryconfigurator](http://www.hp.com/go/ddr3memoryconfigurator).

#### Storage Controller Options

256 MB Cache Module 462968-B21

Battery Kit Upgrade (for BBWC) 462969-B21

**NOTE:** Requires 256 MB Cache Module.

512 MB BBWC Cache Module 462967-B21

#### Mezzanine Options

HP NC325m PCI Express Quad Port 1Gb Server Adapter for c-Class BladeSystem 416585-B21

**NOTE:** If the NC325m is installed in mezzanine slot 1 of a half-height server, connectivity will be provided on 2 of the 4 ports.

HP NC360m Dual Port 1GbE BL-c Adapter 445978-B21

HP NC382m Dual Port 1GbEm Multi-function BL-c Adapter 453246-B12

QLogic QMH2462 4Gb FC HBA for HP c-Class BladeSystem 403619-B21

#### Hard Drives

HP 300GB 6G SAS 10K SFF DP ENT HDD 507127-B21

HP 146GB 6G SAS 15K SFF DP ENT HDD 512547-B21

HP 72GB 6G SAS 15K SFF DP ENT HDD 512545-B21

#### HP PCI Expansion Blade

PCI Expansion Blade - 1 per server blade, uses 1 ½ height bay 448018-B21

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

[http://h18000.www1.hp.com/products/quickspecs/12753\\_div/12753\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12753_div/12753_div.html)

HP PCI Express Mezzanine pass-thru card for HP BladeSystem 431643-B21

#### HP Seismic Rack

HP Seismic Rack Cabinet AH343A

#### Rack Options for HP Seismic Rack

HP c7000 Enclosure Seismic Kit (one per enclosure)  
Adds 1U of rack space AH330A

HP Seismic cabinet caster kit AH336A

Aids in moving configured cabinet.

**Reusable, one set per site.**

HP Seismic cabinet concrete anchor (one per cabinet) AH334A

HP Seismic cabinet raised floor anchor (one per cabinet) AH335A

HP -48VDC Breaker Panel (one per enclosure) AH355A

Includes 6 80 amp breakers

HP -48VDC 2.0m power cable for Breaker panel (lower) AH392A

HP -48VDC 1.3m power cable for Breaker panel (upper) AH393A

HP -48VDC 30 amp breaker for AH335A AH336A

For use with -48VDC powered ProLiant and MSA2000

HP 10000 G2 Rack Grounding Kit AF074A

HP Cable Management Tray for PCIe Expansion Blade AH394A



### Storage

One per enclosure, if PCIe Expansion Blade is present

#### Service and Support Offerings

(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

#### Support Plus 24

Onsite HW support 24x7, 4hr response and Insight Control suite for Linux SW Updates, SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time including. HP holidays, Electronic UK137E

Onsite HW support 24x7, 4hr response and Insight Control suite 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/bladessystemservices>

**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

4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic UE438E



## Storage

6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UE439E
Hardware Installation, Electronic	U5988E
<b>NOTE:</b> The HP Care Pack service part numbers below covers the Brocade 4/24 SAN Switch Power Pack.	
<b>Hardware Services On-site Service</b>	
<b>Support Plus</b>	
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
<b>Support Plus 24</b>	
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
<b>NOTE:</b> The HP Care Pack service part numbers below covers the HP Cisco MDS 9124e 12 port and 24 port Fabric Switch.	
<b>Hardware Services On-site Service</b>	
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
<b>Software Installation and StartUp Services</b>	
Provides for the Installation and Start-up of HP Insight Rapid Deployment software, Electronic	U5683E
<b>NOTE:</b> 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 HP Insight Rapid Deployment software Implementation of HP Insight Rapid Deployment software (Basic) (Electronic)	UA042E
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 suite for Linux	UF372E
Provides for the Installation and Startup of HP Insight Virtual Machine Manager software for ProLiant & HP Insight Server Migration software for ProLiant	UD546E
<b>Software Operating Environment Care Packs</b>	
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





### Storage

**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

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

Support Plus Service, 5-Day x 13-Hour Coverage HA109A3#6Q6

#### Support Plus 24

Support Plus 24 Service HA110A3#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

**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





### Storage

#### 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

**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#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

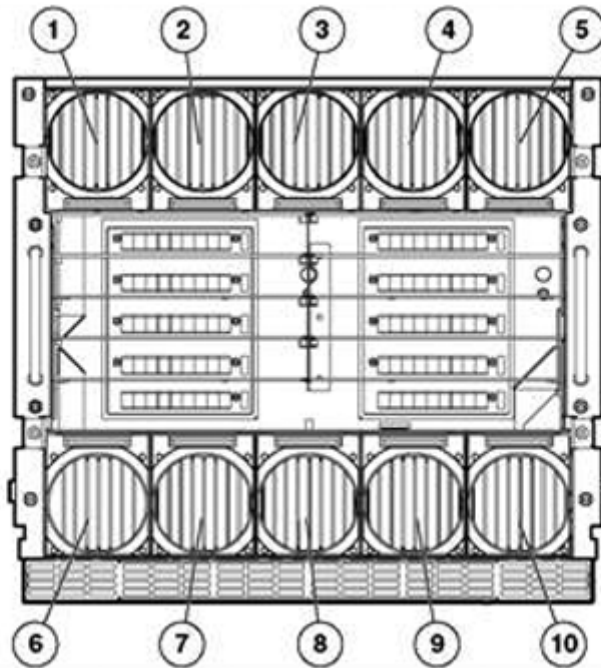
**NOTE:** For more information, customer/resellers can contact:

<http://www.hp.com/hps/carepack/services/>

### Technical Specifications

### Server Blade and Fan Population Guidelines

#### Fan bay numbering



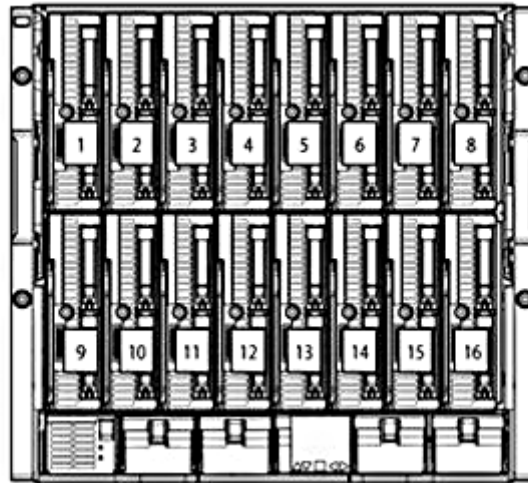
Fans must be placed in the following bays

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

#### Half-height server blade bay numbering

### Technical Specifications

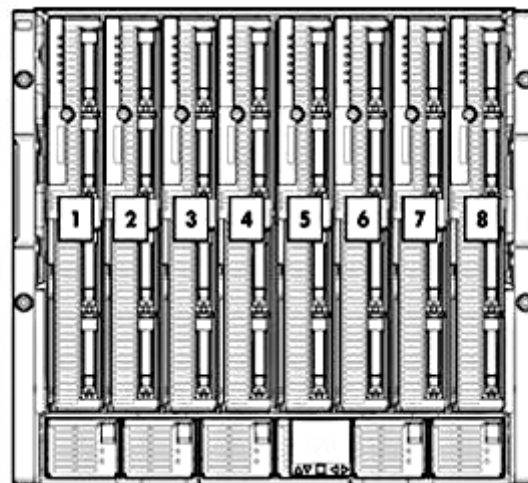


1. Device Bay 1
2. Device Bay 2
3. Device Bay 3
4. Device Bay 4
5. Device Bay 5
6. Device Bay 6
7. Device Bay 7
8. Device Bay 8

9. Device Bay 9
10. Device Bay 10
11. Device Bay 11
12. Device Bay 12
13. Device Bay 13
14. Device Bay 14
15. Device Bay 15
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



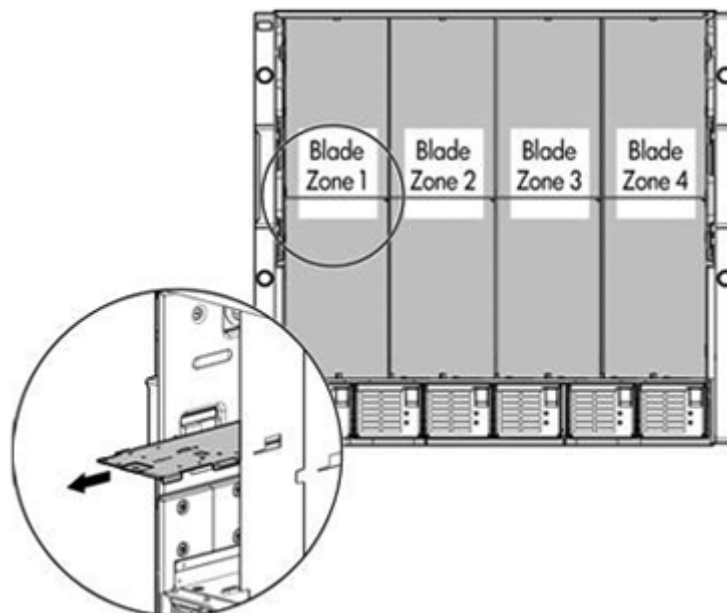
1. Device Bay 1
2. Device Bay 2
3. Device Bay 3
4. Device Bay 4

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.

### Technical Specifications

#### 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 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 c7000 Server Blade Enclosure	<b>Dimensions</b>	Height	17.4 in (442 mm)
		Width	17.6 in (447.04 mm)
		Depth	35.72 in (907 mm)
		Minimum cabinet depth	47 inches (1200mm)
	<b>Shipping Dimensions</b>	Height	29.88 in (759 mm)
		Width	23.88 in (607 mm)
		Depth	39.88 in (1013 mm)
	<b>DC Input Enclosure Weight</b>	Unboxed	151 lb (68.5 Kg)
		Shipping	194 lb (88 Kg)
	<b>Max Enclosure Weight (approximate)</b>	Unboxed	450 lb (204 Kg)
Shipping		493 lb (223.6 Kg)	
<b>Temperature Range</b>	Operating	50° to 95° F (10° to 35° C)	
	Non-Operating	-22° to 140° F (-30° to 60° C)	
<b>Relative Humidity</b>	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-	

### Technical Specifications

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.

<b>Power</b>	<b>Input Requirements DC Power</b>	Rated Input Voltage	36 to -72 VDC
		Max Input Current per line cord	75A
		Max Input Power per line Cord	2700W
		Single Phase	IEC-320 C19-C20 1.22m (6 ft)
	<b>Output Specifications (per power supply)</b>	HP 2250W -48V DC Hot-Plug Power Supply	2250W
	<b>Acoustic Noise</b>	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	7.5 Bels
		LpAm	57 dB
		Idle	
		LWAd	7.5 Bels
		LpAm	57 dB

<b>Option Kits</b>	<b>Power Supply Option Shipping Dimensions</b>	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)
	<b>Fan Option Shipping Dimensions</b>	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)
	<b>Onboard Administrator Option Shipping Dimensions</b>	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)

**Environment-friendly**      **End-of-life Management**      Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling



### *Technical Specifications*

#### **Products and Approach 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.

### *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>

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