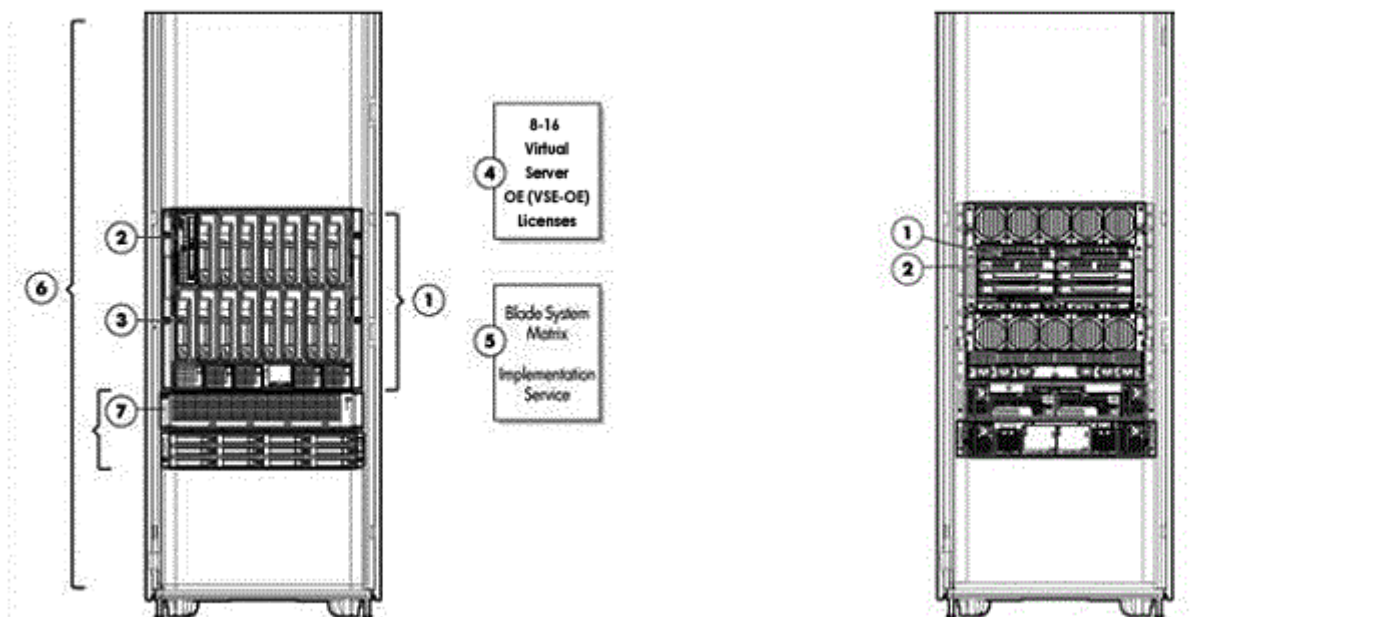


Overview

Starter Kit



Starter Kit - Front

1. HP BladeSystem c7000 enclosure, single phase
2. HP ProLiant DL360 G7 server (optional configuration for central management server, hosting the management software, but can be substituted)
3. 8 full-height device bays available for populating with server blades
4. 8-16 HP-UX 11i v3 Virtual Server Operating Environment (VSE-OE) licenses
5. Onsite CloudSystem Matrix Starter Kit Implementation service
6. HP 10000 G2 Series rack, and rack and power options
NOTE: Rack is not included with the Matrix Starter Kit
7. Existing or supported Fibre Channel SAN or choose this recommended option: HP 4400 Enterprise Virtual Array Starter Kit (EVA4400 controller pair enclosure with embedded switches, drive enclosure, eight 450-GB 10K-rpm 4-Gb dual-port FC EVA M6412 hard disk drives, CommandView and SmartStart media and 4x 1-TB Licenses To Use)

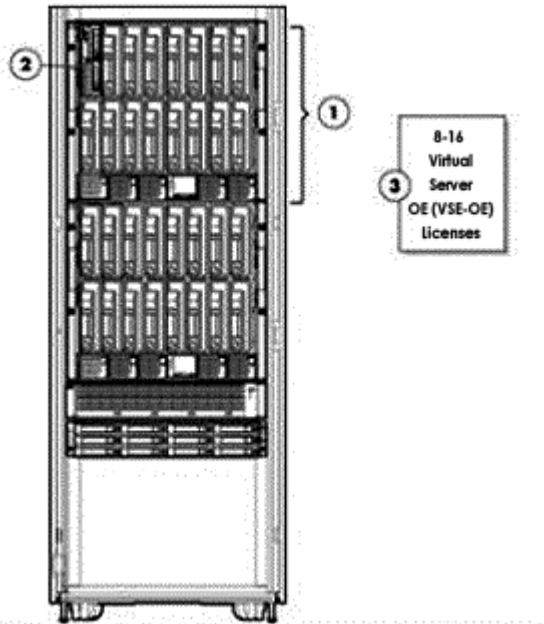
Starter Kit - Rear

1. HP Virtual Connect Flex-10 10-Gb Ethernet modules (redundant pair) - OR - HP Virtual Connect FlexFabric modules (redundant pair)
2. HP Virtual Connect 8Gb 24-Port FC modules (redundant pair)- OR - Interconnect bays 3 & 4 available for additional HP Virtual Connect FlexFabric modules (redundant pair)

Expansion Kit



Overview



Expansion Kit - Front

1. HP BladeSystem c7000 enclosure, single phase
2. 8 full-height device bays available for populating with server 2. blades
3. 8-16 HP-UX 11i v3 Virtual Server Operating Environment (VSE-OE) licenses
4. Onsite CloudSystem Matrix Expansion Kit Integration Implementation service



Expansion Kit - Rear

1. HP Virtual Connect Flex-10 10-Gb Ethernet modules (redundant pair) - OR - HP Virtual Connect FlexFabric modules (redundant pair)
HP Virtual Connect 8Gb 24-Port FC modules (redundant pair)- OR - Interconnect bays 3 & 4 available for additional HP Virtual Connect FlexFabric modules (redundant pair)

NOTE: HP CloudSystem Matrix infrastructure does not include licensed disaster recovery protection but Serviceguard for failover and/or Metrocluster for disaster recovery can optionally be added. Disaster recovery protection can be achieved by implementing a secondary infrastructure at a remote location, and enabling storage replication between the two sites.

Overview

What's New

Updated for version 6.3, including:

- **Feature:** 4X increase in scalability for service-catalog-based auto-provisioning in 'federated mode'
 - **Benefit:** With ever increasing virtual machine density and the need to manage more-and-more template-based workloads from a single-pane of glass, Matrix offers you the ability to orchestrate up to 3200 VMs using a 'federated CMS' environment (Central Management Server). Aggregated management results in more money saved, and greater efficiency.
- **Feature:** Increased multi-tenancy and chargeback including user-group support and location code
 - **Benefit:** Capacity planning and chargeback-ready tools now include the ability to sort by location or group so that chargeback tracking - or even links extended to billing - allows for better segmentation and control of multiple "tenants" within a cloud environment making tracking and chargeback more straight-forward with direct attribution to the actual users.
- **Feature:** New Cloud Maps. (details at www.hp.com/go/cloudmaps)
 - **Benefit:** Accelerates automation of business applications so you can reliably and consistently fast track the implementation of service catalogs. Saves days or weeks of time architecting infrastructure and ensures that every time you implement an environment, it's consistent.
- **Feature:** Support for 3PAR FC for Storage Provisioning Manager (in addition to XP & EVA)
 - **Benefit:** Expanded support of storage pool management and easier to manage storage pools.
- **Feature:** Support for HP P6000 EVA (Supported with Matrix 6.1 Update 1)
 - **Benefit:** Enterprise-class features with a mid-range budget, focused on ease-of-use
- **Feature:** Support for managing an extended infrastructure from a Matrix CMS
 - **Benefit:** The HP Matrix Operating Environment extends its software functionality beyond HP CloudSystem Matrix across select HP ProLiant, HP Integrity and 3rd party servers. CloudSystem Matrix support for this extended infrastructure includes all of the capabilities of the HP Matrix Operating Environment with the exception of some physical server deployment and management capabilities. All capabilities of the HP Matrix Operating Environment are supported for HP BladeSystem servers with Virtual Connect.

At A Glance

HP CloudSystem Matrix is the industry's first Converged Infrastructure solution delivering the benefits of shared services today which makes it an ideal backbone for private cloud. It provisions complex infrastructure and applications in minutes instead of months and reduces total cost of ownership up to 56%* versus traditional infrastructure.

HP CloudSystem Matrix is designed to simplify the deployment of applications and business services by delivering IT capacity through pools of readily deployed resources. The Matrix operating environment accelerates provisioning with HP Cloud Maps, optimizes IT capacity across physical and virtual environments and ensures predictable delivery and service levels. It includes an integrated service designer, self-service portal, auto-provisioning capabilities, the tools to manage and optimize the resources pools. Through included Cloud APIs it can be easily customized to meet specific requirements enabling chargeback and billing, approval process integration, as well as other process automation capabilities.

CloudSystem Matrix is a pre-integrated hardware, software and services solution which is built on proven HP BladeSystem technologies such as Virtual Connect, Insight management software, ProLiant and Integrity blade servers and shared storage such as Fibre Channel SAN, with HP Services ensuring streamlined implementation and support.

This version of the QuickSpecs is focused on HP CloudSystem Matrix with HP-UX for use with configurations predominantly populated with Integrity BL8x0c i2 blades. While mixed HP ProLiant/Integrity blade environments are fully supported, customers looking for HP ProLiant specific features and configuration options should reference the HP CloudSystem Matrix webpage and QuickSpecs.

Also available worldwide are HP Financial Services offerings unique to Matrix, including 0% lease and Pay as You Grow payment programs.



Overview

HP SiteScope and HP Server Automation software is recommended for use with CloudSystem Matrix. This software is supported on HP-UX and is deployed on a Windows CMS Server. SiteScope and Server Automation are available for optional order.

HP SiteScope is a server based, agent-less remote monitoring tool, that provides a flexible and versatile monitoring environments within an Intranet. It is based on a web standard GUI console and uses standard (secure) connection protocols. It is primarily used to ensure infrastructure availability and performance across heterogeneous hardware, O/S's, applications and technologies. It enables proactive, Web-based infrastructure monitoring and network monitoring solutions. It is lightweight, highly customizable, and doesn't require high overhead agents on production systems.

HP Server Automation software offers complete physical and virtual server lifecycle management and the automation of application deployments. It lets you baseline existing applications, servers and local storage, and it accelerates deployment of new or updated applications. Server Automation's lifecycle management features include automated server provisioning, virtual machine cloning, patching, configuration management, script execution and compliance management. Server Automation includes the scalability and security features necessary for geographically dispersed locations across virtual, public and private cloud environments HP Server Automation software automates your entire server lifecycle- from provisioning to compliance-and the deployment of applications.

For more information about HP CloudSystem Matrix information, see: <http://www.hp.com/go/matrix>

For more information about HP BladeSystem, see: <http://www.hp.com/go/bladeSystem>

For more information about HP Integrity blades, see: <http://www.hp.com/go/integrityblades>

For more information about HP-UX software, see: <http://www.hp.com/go/hpux>

For more information about Matrix Operating Environment software, see: <http://www.hp.com/go/matrixoe/integrity>

For more information about HP Storage, see: <http://www.hp.com/go/storageworks>

For more information about Factory Express, see: <http://h71028.www7.hp.com/enterprise/cache/97688-0-0-225-121.html>



Ordering HP CloudSystem Matrix with HP-UX

The method for purchasing HP CloudSystem Matrix is simple. Start by ordering a HP CloudSystem Matrix Starter Kit, which contains the infrastructure needed for a fully-working environment supporting up to 8 HP Integrity full-height server blades or up to 16 HP ProLiant full-half-height server blades (or a mix of any of these blades). Add Expansion Kits now or in the future to expand your HP CloudSystem Matrix infrastructure with additional infrastructure and blades. The central management server (CMS) host implemented in the Starter Kit simply extends its domain to manage additional infrastructure that might be added by adding Expansion Kits.

NOTE: The Expansion Kit may also be purchased separately.

NOTE: Expansion Kits purchased must be co-located with the Starter Kit to which they are connecting to.

NOTE: For detailed ordering information please see the Configuration Information Factory Integrated Models section of this QuickSpecs.

With all HP CloudSystem Matrix Starter and Expansion Kit orders, the following services are included:

- Factory services to default configure, rack, and cable the infrastructure in a rack,
- Verify and update firmware for the entire solution being purchased (the CloudSystem Matrix kits and the supported blades and options purchased with those kits) to the latest current CloudSystem Matrix firmware release set. This ensures that the CloudSystem Matrix solution will leave the factory with the right levels of firmware needed for the end to end solution to be successful. (For specific version numbers supported and required, please refer to the HP CloudSystem Matrix Compatibility Chart on <http://www.hp.com/go/matrixcompatibility>)
- Coordinate hand-off to Technology Services (TS) or authorized partner. A TS or partner project manager is assigned for managing pre-engagement and assigning a team of engineers to perform the implementation service at the customer's site.

Factory Express custom configuration services should be added to the order if an EVA configuration is also purchased in the same rack with the Starter (or Expansion) Kits, or if any other custom factory services are needed. Factory Express uses its standard processes for capturing customer intent and requirements, as well as providing order verification services.

While Factory Integration/Factory Express are building the CloudSystem Matrix environment for a given customer, an assigned project manager from Technology Services (TS) will start managing a team of TS engineers to begin planning the rollout of the implementation service, including engaging with the customer on environmental requirements and related details. TS engineers will start the actual implementation on the Matrix equipment as soon as possible after its arrival date at the customer site.

NOTE: The account team must initiate contact with a Factory Express Engagement Project Manager (EPM) to initiate the Factory Express processes, including communication of the Customer Intent Document (CID).

The Technology Services CloudSystem Matrix Starter Kit Implementation Service is detailed in a section below.

HP CloudSystem Matrix

CloudSystem Matrix Operating Environment (HP Insight software)

The CloudSystem Matrix Operating Environment delivers the functionality described below. Orchestrated provisioning of services

- Application infrastructure design console with repeatable, best practice templates
- Self-service, automated provisioning of infrastructure with workflow
- Infrastructure services catalog
- Cross-platform, multi-OS server deployment

Optimization and lifecycle management

- Virtual machine controls and synchronized integration with VMware vCenter, Microsoft System Center, and common enterprise management software via APIs
- Ongoing capacity management
- Consolidation what-if analysis and comparison reports
- Advanced visualization of infrastructure resources including virtual machines
- Remote console and remote media for servers
- Power management and dynamic power capping
- Pre-defined power policies to direct power to servers providing critical business services
- Security and patch management
- Virtual Connect centralized management

Availability and proactive support

- Automated server failover with optional Serviceguard
- Disaster recovery management for server blades with optional MetroCluster
- Health monitoring and alerting including pre-alerting for server, network, and storage resources
- Secure remote monitoring, notification/advisories, dispatch and proactive service support

CloudSystem Matrix Starter Kit Implementation Service (onsite), plus additional services

In addition to the CloudSystem Matrix Implementation Service, HP highly recommends HP Education Services (for customer training and education) and Additional Technical Services, as well as in-depth installation or implementation services as may be needed. These recommended services are listed in the "HP Care Pack services" section later in this document. The onsite CloudSystem Matrix Implementation Service for the Starter Kit consists of these steps:

- Upon delivery to customers site, unpack and inspect for damages
- Integrate hardware in to customers environment, power, network cabling
- Installation and configuration of the central management server (CMS)
 - Installation and configuration of the software required for management
- Deployment of operating systems to configured LUNs on the optionally purchased EVA 4400 or other HP SAN or an existing SAN
 - 1 HP server blade running HP-UX
 - 2 HP server blades each running a single HP Integrity Virtual Machines
 - Configuration of up to 2 VMs
- Configure up to two physical target server operating systems to boot from SAN
- Orientation of the CloudSystem Matrix solution
 - Navigation through installed components and all management software
 - Review of the configured hardware components and their configuration
 - Review of the completed system topology
 - How to call HP for support
 - Availability of additional services, educational services, etc. See: <http://www.hp.com/services/insight> and <http://www.hp.com/learn/proliant>
 - CloudSystem Matrix demonstrations. See: <http://www.hp.com/go/matrix>



Warranty services

- The HP CloudSystem Matrix infrastructure 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.
- Offered for CloudSystem Matrix are "uplift" HP Care Pack Services options that extend warranty service period up to 4-, or 5- years across the entire hardware and software infrastructure from the following default included levels of warranty support:
 - Enclosure: Three-year, 24x7 (4 hour response) parts and labor, on-site limited global warranty. Certain restrictions and exclusions apply
 - Enclosure options: fans, power supplies, Onboard Administrator, covered with the enclosure warranty
 - HP Virtual Connect interconnects: 3 Year parts and labor, on-site regardless of the warranty period for the system in which they are installed
 - HP Insight software: 3 Year 24 x 7 Technical Support and Update Service
 - 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

For additional information, see: <http://www.hp.com/go/bladesystem> and <http://www.hp.com/services/insight>.

CloudSystem Matrix Operating Environment (HP Insight software) Support

CloudSystem Matrix management software includes three years 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 CloudSystem Matrix users benefit from expedited problem resolution and proactive notification and delivery of software updates.

As part of your implementation service, HP services personnel or your authorized provider will activate your HP Software Technical Support and Update Service for HP Insight software at: <http://www.hp.com/services/insight>.

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>.

HP offers a number of software support services, many of which are provided to customers at no additional charge.

Join the Discussion at: <http://www.itrc.hp.com>

The HP Support Forum is a community-based, user supported tool for HP customers to participate in discussions amongst the customer community about HP products. For discussions related to HP Insight software, see the "Management Software and System Tools" area.

HP Worldwide Customer Service contact numbers are available at: <http://www.hp.com/country/us/en/wwcontact.html>.



HP CloudSystem Matrix

HP Financial Services To support customers' transition, HP Financial Services (HPFS) can help in a way that you may not have considered. HPFS can help you invest in your business while preserving precious capital.

For more information, contact your local HP Financial Services Representative. In the United States, call 1-888-277-5942. In Canada, dial 1-800-HP-LEASE. For more information please visit: www.hp.com/hpfinancialservices for links to HP Financial Services around the world.

ProLiant Instant Capacity Program (U.S. only) The ProLiant Instant Capacity program (U.S. only) provides cost-effective "just in time" inventory protection. ProLiant iCAP is designed to provide "ready to run" servers for immediate activation, while avoiding up-front costs.

- Supported servers include BladeSystem ProLiant (and ML/DL) servers deployed via Direct fulfillment
 - Uses HP Systems Insight Manager, automated, billing and tracking process upon activation and consumption
 - Servers can be pre-racked, pre-imaged, and tested in preparation of activation
 - Amortize total blade infrastructure (rack, enclosure, power, interconnects) over the total number of blades
 - Warranty commences once customer has been invoiced (title exchanges)
 - Price captured at time of shipment
 - Ability to reset target inventory levels in real time
-

Factory Express Portfolio for Servers and Storage For HP CloudSystem Matrix, HP Factory Express services are added if the EVA4400 SAN is purchased with the CloudSystem Matrix Starter Kit. If other custom requirements or intents are required for a given customer's CloudSystem Matrix order, Factory Express capabilities may also be called upon. 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 servers, HP ProLiant servers, HP ProLiant & Integrity c-Class BladeSystem server blades, HP 9000 servers as well as the MSAxxxx, VA7xxx, EVA, and XP storage products, rackable tape libraries and configurable network switches.

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

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



HP CloudSystem Matrix

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 HP 10000 G2 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 HP 10000 Series rack extension is required to allow DC power cabling to be installed.

CAUTION: CloudSystem Matrix infrastructures are best fulfilled by HP with the HP 10000 Series rack. However, 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 holes evenly distributed from top to bottom to permit adequate airflow (equivalent to a required 64 percent open area for ventilation).
- The clearance from face of rack to inside of the front door needs to be a minimum of 1.75".
- Side: The clearance between the installed rack component and the side panels of the rack needs to be a minimum of 2.75 inches (7 cm).
- Depth: a minimum of 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 will result in improper cooling that can lead to thermal damage.



Ordering CloudSystem Matrix

Configuration Information Factory Integrated Models - HP CloudSystem Matrix - Starter Kit

NOTE: This section lists the required steps for ordering a HP CloudSystem Matrix.

NOTE: To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator or contact your local sales representative for additional information on product offerings and requirements.

NOTE: FIO indicates that this option is a Factory Integrated Option.

Step 1: Select HP 10000 G2 Series Rack (Recommended, per notes immediately below)

NOTE: For additional HP Rack information please visit:

<http://h18004.www1.hp.com/products/servers/proliantstorage/racks/index.html>

NOTE: For additional Rack Options please see the "Additional Options" section of this QuickSpecs.

NOTE: The Starter Kit is recommended to be ordered with an HP rack. When not ordering with a rack, it is necessary for the customer to rack any CloudSystem Matrix enclosures in a rack prior to HP arriving onsite to complete the CloudSystem Matrix Implementation Service. You may purchase the HP Install c7000 Enclosure and Server Build Service to assist with onsite racking and cabling of CloudSystem Matrix enclosures into a rack. See the "HP Care Pack services" section later in this document for the part numbers.

| HP Rack Series | HP 10000 G2 Series racks (Graphite Metallic) | |
|----------------|--|--------|
| | HP 10642 G2 Pallet Universal Rack | AF001A |
| | HP 10642 G2 Shock Universal Rack | AF002A |
| | HP 10642 G2 Crated Universal Rack | AF003A |
| | HP 10642 G2 Shock Field Rack | AF007A |
| | HP 10636 G2 Pallet Universal Rack | AF011A |
| | HP 10636 G2 Shock Universal Rack | AF012A |
| | HP 10636 G2 Crated Universal Rack | AF013A |
| | HP 10636 G2 with Extension Shock Rack | AF014A |
| | HP 10622 G2 Pallet Universal Rack | AF021A |
| | HP 10622 G2 Shock Universal Rack | AF022A |
| | HP 10642 G2 200mm Extension Shock Rack | AF034A |
| | HP 10642 G2 200mm Extension Pallet Rack | AF038A |
| | HP 10842 G2 Pallet Universal Rack | AF041A |
| | HP 10842 G2 Shock Universal Rack | AF042A |
| | HP 10647 G2 Pallet Universal Rack | AF031A |
| | HP 10647 G2 200mm Extension Shock Rack | AF044A |
| | HP 10647 G2 200mm Extension Pallet Rack | AF045A |

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

http://h18000.www1.hp.com/products/quickspecs/12402_na/12402_na.html

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

Step 2: Select Required HP CloudSystem Matrix Starter Kit (Choose one of the following from each list unless otherwise noted)

HP CloudSystem **NOTE:** Starter Kit default components means HP ordering systems will default these selections



Ordering CloudSystem Matrix

Matrix Starter Kit (Hardware Components) when any unique HP CloudSystem Matrix part number is entered. The default selections can be changed to meet customer needs.

NOTE: The Starter Kit does not include a central management server or CMS (see BladeSystem c-Class server blades section below for CMS server).

HP Integrity Blc Matrix Starter Kit AM343A

HP Integrity Blc Matrix FlexFabric Starter Kit AM368A

HP CloudSystem Matrix Starter Kits (Hardware Components) include:

- HP BladeSystem c7000 enclosure, single-phase with 6 power supplies, 10 fans
- HP BladeSystem c7000 Onboard Administrator with KVM option, redundant pair
- HP Virtual Connect FlexFabric 10Gb/24-port Module, redundant pair -OR- HP Virtual Connect Flex-10 10Gb Ethernet modules, redundant pair
- **NOTE:** No transceivers/SFPs included so that you can choose these options - need to add to order. See options for this immediately below.
- HP Virtual Connect 8Gb 24-Port FC Module for BladeSystem c-Class, redundant pair (Not included with FlexFabric Starter Kit (PN AM368A))
- **NOTE:** Two [2] Fibre Channel SFP+ transceivers included with each module; therefore, 4 total transceivers per redundant pair.
- CloudSystem Matrix documentation CD
- CloudSystem Matrix label attached to 10000 series rack door handle

NOTE: Following are the VC FlexFabric and Flex-10 10Gb Ethernet module transceiver/SFP options.

| | |
|--|------------|
| HP BladeSystem c-Class 10Gb Short Range Small Form-Factor Pluggable Option | 455883-B21 |
| HP BladeSystem c-Class 10Gb Long Range Small Form-Factor Pluggable Option | 455886-B21 |
| HP BladeSystem c-Class 10Gb Long Range Mode Small Form-Factor Pluggable Option | 455889-B21 |
| HP Blc Virtual Connect 1Gb SX Small Form Factor Pluggable Option Kit | 453151-B21 |
| HP Blc Virtual Connect 1Gb RJ-45 Small Form Factor Pluggable Option Kit | 453154-B21 |
| HP 8Gb Shortwave B-series Fibre Channel 1 Pack SFP+ Transceiver | AJ716A |
| HP 8Gb Long Wave B-series 10km Fibre Channel 1 Pack SFP+ Transceiver | AJ717A |
| HP 8Gb Short Wave Fibre Channel SFP+ 1 Pack | AJ718A |

| | | |
|--|---|-------------|
| HP CloudSystem Matrix Starter Kit (Software Licenses and media) | HP-UX 11i Matrix Blade 2Skt PSL LTU | BA929AC#423 |
| | HP-UX 11i Matrix Blade 4Skt PSL LTU | BA929AC#443 |
| | HP-UX 11i Matrix Blade 8Skt PSL LTU | BA929AC#483 |
| | HP Virtual Connect Enterprise Manager including 1yr 24x7 Support Single c7000 Enclosure Lic | 459864-B21 |

NOTE: If the ordering system default of 3 years Technical Support and Update Service is rejected or not selected, the basic 1 year Technical Support and Update Service will apply.

NOTE: HP CloudSystem Matrix requires the purchase of HP-UX 11i v3 Virtual Server Environment Operating Environment (VSE-OE) Licenses. A minimum quantity of 8 Per Socket Licenses and maximum quantity of 16 Per Socket Licenses may be ordered.

The selection of server blades will determine the mix of HP-UX VSE-OE licenses on the order. Supported server blades are BL860c i2, BL870c i2, BL890c i2. If the required eight licenses are not consumed by server blades with the initial Matrix order, the unused licenses will support a deferred server blade purchase of BL860c i2 (ordered without an license), or may be traded-in for credit towards the purchase of HP-UX 11i software licenses for BL870c i2 or BL890c i2.

HP-UX 11i VSE-OE includes the Matrix Operating Environment (formerly Insight Dynamics VSE Suite) for managing virtual environments as well as the HP-UX Base Operating Environment.



Ordering CloudSystem Matrix

Other software that must be ordered with the CloudSystem Matrix is Virtual Connect Enterprise Manager software (VCEM), which is licensed to the BladeSystem c7000 enclosure (one VCEM license per enclosure). HP ProLiant c-Class server blades require separate licensing. HP-UX customers can choose to upgrade the VSE-OE licenses to HP-UX 11i v3 Data Center OE (DC-OE) (see: www.hp.com/go/hpux).

NOTE: SLVM is required with Matrix 6.2 and 6.3, and as part of the Matrix installation, HP will install SLVM; this is essentially a mini Serviceguard installation with a one-node cluster. The EULA (End User License Agreement) for the HP-UX VSE-OE for Matrix has been extended to provide licensing to customers for use of this minimum Serviceguard configuration; this does not provide the full Serviceguard licensing. The EULA also restricts the customer and does not allow for reconfiguration of Serviceguard such as for a multi-node cluster unless the customer also purchases the full Serviceguard product or upgrade from VSE-OE to DC-OE.

| | | |
|--|---|-------------|
| HP CloudSystem Matrix Starter Kit (Implementation Service) | HP CloudSystem Matrix Starter Kit - Implementation Service, Flexible | HA115A1-5NL |
| BladeSystem c-Class server blades (Central Management Server and Target Servers) | HP CloudSystem Matrix Central Mgmt Svr based on DL360 G7 32GB 2P Server NOTE: Please see all NOTES below for HP ProLiant DL360 G7. NOTE: This is the default SKU for the Matrix central management server (CMS), to host the management software. It may be substituted with another rack-mount or blade server configured per notes below and per CMS sizing, scalability, and redundancy preferences. | 627805-B21 |

HP ProLiant DL360 G7 CMS server (627805-B21) is configured as follows:

- Dual processors - Intel® Xeon® Processor X5650 (2.66 GHz, 12MB L3 Cache, 95 Watts, DDR3-1333, HT Turbo 2/2/2/2/3/3)
- 32 GB (4 x 8GB) 2Rx4 PC3-10600R-9 Kit Registered DIMMs
- HP Smart Array P410i Controller (RAID 0/1)
- 512 MB Cache Module
- 2x HP 146GB 6G SAS 10K SFF DP HDDs
- HP Insight Control Software (with 3 Year, 24x7 hardware and software support)
- QLogic HP 82Q PCI-e FC HBA Dual Port

NOTE: Considerations for Central Management Server (CMS) - choice of rack-mount or blade server: HP offers a choice of rack-mounted ProLiant server (DL or ML) or ProLiant server blade (BL) as central management server host for HP CloudSystem Matrix. HP recommends the rack-mounted ProLiant DL360 G7 as the CMS host (see configuration above) for those customers who desire to use all available and licensed enclosure blade bays for managed target blades and workloads. Alternatively, HP offers a CloudSystem Matrix optional CMS server blade SKU (570775-B22), which is a ProLiant BL460c G6 with 32GB memory. When multiple management server hosts are required for scalability and high availability or hosting partner management software, multiple ProLiant DL/ML servers or server blades (or even a combination of blade or rack-mounted servers) can be installed and configured to work together to manage the CloudSystem Matrix environment.

This CMS will be devoted to running the CloudSystem Matrix management software; other management software should be installed on a separate server.

NOTE: Larger environments may warrant having multiple CMS servers for these reasons: scalability, high availability of the management server and data, and separation of database or management components for performance or security access reasons.



Ordering CloudSystem Matrix

NOTE: If the recommended HP ProLiant DL360 configuration above is not purchased, the customer agrees to supply or purchase other HP ProLiant rack-mount server(s) or HP ProLiant server blade(s) that meet the requirements. See also the CMS requirements in this Insight Software 6.0 Support Matrix Chapter 2 "Central Management Server Requirements" for more information: <http://h20000.www2.hp.com/bc/docs/support/SupportManual/c02537423/c02537423.pdf>

NOTE: This CMS should be implemented on a 64-bit Windows operating system.

NOTE: The HP BladeSystem c7000 Enclosure holds up to 8 full-height Integrity blades. Server blanks will be shipped in all empty bays. If the HP ProLiant DL360 recommended configuration above is purchased, it will take up half of one of the 8 full-height bays, leaving 15 remaining half-height bays or 7 full-height bays for managed, target blades.

Target server blades

NOTE: It is highly recommended the Starter kit is at least halfway populated with HP Integrity BL8x0c i2 server blades. HP BL860c and BL870c Integrity server blades are supported. Also, all shipping HP ProLiant c-Class blades are supported except the HP ProLiant BL2x220c server blades.

NOTE: For HP Integrity server blade information, please visit:

http://h18004.www1.hp.com/products/quickspecs/north_america/north_america.html#12391

NOTE: HP Integrity and ProLiant server blades should be configured to connect via the Virtual Connect modules included in the CloudSystem Matrix kits, - i.e. they should have a Fibre Channel Host Bus Adapter (HBA) mezzanine card installed.

HP Interconnect Options

The Virtual Connect interconnect modules that are built in to the Starter and Expansion kits are not removable. Additional supported interconnected options may be added to the remaining available interconnect bays (bays 5/6 and 7/8). For supported CloudSystem Matrix interconnect options, see the Compatibility chart at: <http://www.hp.com/go/matrixcompatibility>.

NOTE: For QuickSpecs for BladeSystem c-Class interconnect options please visit:

http://h18000.www1.hp.com/products/quickspecs/12524_na/12524_na.html

Step 3: Choose Additional Recommended Options

HP EVA4400 (factory integrated)

NOTE: Recommended storage target for Matrix; may be substituted. See note below.

HP EVA4400 450GB HDD with Embedded Switch Simple SAN Solution

AJ699B

NOTE: This is the default selection for hosting boot and data LUNs for the CloudSystem Matrix environment.

HP EVA4400 SAN Starter Kit 450GB 10K Factory integrated includes:

- EVA4400 Dual Controller array with embedded NPIV-supported 8Gb/s switches
- M6412 12-bay HDD enclosure
- Eight 450GB 10K RPM disk drives
- Four Emulex 8Gb/s PCI-E HBAs - included to also connect up to four stand-alone servers to this EVA4400
- Command View EVA V9.0 (or later) Media Kit and four 1TB Licenses to Use
- SmartStart for EVA Storage v3.0
- XCS 9.0 Firmware (or later)

NOTE: Please add fibre channel cables and transceivers/SFPs to the order as needed.



Ordering CloudSystem Matrix

NOTE: Includes HP Global Limited Warranty and Technical Support, which includes 3 years 9x5 hardware support, with next business day (NBD) response. HDDs carry a 3 year, parts only warranty.

NOTE: Order the HP 4400 Enterprise Virtual Array Starter Kit (AJ699B with Factory Express services: HA865A1), or order or supply another HP Storage or third-party Fibre Channel SAN array certified for HP BladeSystem c-Class servers (see: <http://h18004.www1.hp.com/products/blades/components/c-class-sans.html>). If a SAN other than the default EVA4400 package is used, HP onsite implementation service team will confirm specific requirements regarding LUN zoning, etc. prior to implementation.

NOTE: HP Factory Express services are added if the EVA4400 SAN is purchased with the CloudSystem Matrix Starter Kit.

HP Rack Signal Cable Interconnect Service

HA865A1

NOTE: Required Selection with AJ699B.

Step 4: Choose Additional Options for Factory Integration

NOTE: Additional supported options may be added to the Starter Kit as desired.

NOTE: For additional options, please refer to the "Additional Options" section below. For additional blade enclosures, interconnect options, and power subsystem options, please refer to the following QuickSpecs:

HP BladeSystem c7000 Enclosure QuickSpecs:

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

and HP BladeSystem c-Class Interconnect Components QuickSpecs:

http://h18000.www1.hp.com/products/quickspecs/12524_na/12524_na.html

| | | |
|-------------------------------------|--|--------|
| HP CloudSystem Matrix Expansion Kit | HP Integrity BLc Matrix Expansion Kit | AM349A |
| | HP Integrity BLc Matrix FlexFabric Expansion Kit | AM369A |

HP CloudSystem Matrix with HP-UX Expansion Kit Includes:

- HP BladeSystem c7000 enclosure, single-phase with 6 power supplies, 10 fans
 - HP BladeSystem c7000 Onboard Administrator with KVM option, redundant pair
 - HP Virtual Connect FlexFabric 10Gb/24-port Module, redundant pair -OR- HP Virtual Connect Flex-10 10Gb Ethernet modules, redundant pair
- NOTE:** No transceivers/SFPs included so that you can choose these options and add to order. See options for this in Note immediately below.
- HP Virtual Connect 8Gb 24-Port FC Module for BladeSystem c-Class, redundant pair (Not included with FlexFabric Expansion Kit (PN AM369A)
- NOTE:** Two [2] Fibre Channel SFP+ transceivers included with each module; therefore, 4 total transceivers per redundant pair.
- CloudSystem Matrix documentation CD
 - CloudSystem Matrix label for attachment to a 10000 series rack door handle

NOTE: Add additional Expansion Kits as your CloudSystem Matrix environments requires or on an as-needed basis.

NOTE: Expansion Kits purchased must be co-located with the Starter Kit(s) to which they are connecting to.

NOTE: Following are the VC Flex-10 10Gb Ethernet module transceiver/SFP options.

| | |
|--|------------|
| HP BladeSystem c-Class 10Gb Short Range Small Form-Factor Pluggable Option | 455883-B21 |
| HP BladeSystem c-Class 10Gb Long Range Small Form-Factor Pluggable Option | 455886-B21 |
| HP BladeSystem c-Class 10Gb Long Range Mode Small Form-Factor Pluggable Option | 455889-B21 |



Ordering CloudSystem Matrix

| | | |
|---|---|-------------|
| | HP BLc Virtual Connect 1Gb SX Small Form Factor Pluggable Option Kit | 453151-B21 |
| | HP BLc Virtual Connect 1Gb RJ-45 Small Form Factor Pluggable Option Kit | 453154-B21 |
| | HP 8Gb Shortwave B-series Fibre Channel 1 Pack SFP+ Transceiver | AJ716A |
| | HP 8Gb Long Wave B-series 10km Fibre Channel 1 Pack SFP+ Transceiver | AJ717A |
| | HP 8Gb Short Wave Fibre Channel SFP+ 1 Pack | AJ718A |
| BladeSystem c-Class server blades | <p>NOTE: For Integrity server blade information, please visit: http://h18004.www1.hp.com/products/quickspecs/north_america/north_america.html#12391</p> <p>NOTE: HP ProLiant and Integrity server blades should be configured to connect via the Virtual Connect modules included in the CloudSystem Matrix kits, - i.e. they should have a Fibre Channel Host Bus Adapter (HBA) mezzanine card installed.</p> <p>NOTE: The HP BladeSystem c7000 Enclosure holds up to 8 full-height blades. Server blanks will be shipped in all empty bays.</p> | |
| HP Interconnect Options | <p>Additional supported SAN and Ethernet options may be added to the remaining available interconnect bays (bays 5/6 and 7/8). For supported CloudSystem Matrix interconnect options, see the Compatibility chart at: http://www.hp.com/go/matrix.</p> <p>For QuickSpecs for BladeSystem c-Class interconnect options see: http://h18000.www1.hp.com/products/quickspecs/12524_na/12524_na.html</p> | |
| Support Plus 24 options for CloudSystem Matrix Starter Kit | <p>NOTE: 3-year Support Plus 24 for the entire CloudSystem Matrix Starter Kit hardware and software (default selection). This Support Plus 24 raises the support levels of all the Matrix components uniformly up to 3 years for easier tracking of warranty support.</p> | |
| | 4 year 24x7 4hr CloudSystem Matrix Starter Hardware Support, Flexible | HA104A4#6YE |
| | 5 year 24x7 4hr CloudSystem Matrix Starter Hardware Support, Flexible | HA104A5#6YE |
| | 4 year 6h CTR HW Support | HA105A4#6YE |
| | 5 year 6h CTR HW Support | HA105A5#6YE |
| | 4 year 6h CTR w/DMR HW Support | HG928A4#6YE |
| | 5 year 6h CTR w/DMR HW Support | HG928A5#6YE |
| | 4 year 24x7 BL Matrix Software Support, Flexible | HA107A4#2FU |
| | 5 year 24x7 BL Matrix Software Support, Flexible | HA107A5#2FU |
| | Support Plus 24 - 4 year Support Plus 24 BLc Matrix Software Support, Flexible | HA110A4#2FU |
| | Support Plus 24 - 5 year Support Plus 24 BLc Matrix Software Support, Flexible | HA110A5#2FU |
| | Proactive 24 - 4 year Support Plus 24 BLc Matrix Software Support, Flexible | HA111A4#2FU |
| | Proactive 24 - 5 year Support Plus 24 BLc Matrix Software Support, Flexible | HA111A5#2FU |
| | Critical Service - 4 year Support Plus 24 BLc Matrix Software Support, Flexible | HA112A4#2FU |
| | Critical Service - 5 year Support Plus 24 BLc Matrix Software Support, Flexible | HA112A5#2FU |
| | Proactive Select - 3 Years, 30 Credits per Year | HG921A3#12K |
| Optional Software - HP SiteScope | <p>NOTE: An HP SiteScope purchase requires a configuration validation prior to purchase. SiteScope monitors are priced according to point consumption. The quantity tier for existing customers is determined based on the total points the customer owns (new quantity + previously purchased).</p> | |
| | HP SiteScope 1-50 Pt SW LTU | TB147AAE |
| | HP SiteScope 51-500 Pt SW LTU | TB148AAE |
| | HP SiteScope 501-2000 Pt SW LTU | TB149AAE |
| | HP SiteScope 2K-50K Pt SW LTU | TB150AAE |
| | HP SiteScope 50+ Pt SW LTU | TB151AAE |



Ordering CloudSystem Matrix

| | | |
|---|--|----------|
| | HP SiteScope 11.10 English SW E-Media | T8354FAE |
| Optional Software - HP Server Automation | NOTE: The HP Server Automation, Enterprise Edition is licensed by OS Instance. The Enterprise Edition includes Baseline (global shell, script, remote terminal), Patching, Audit policies and Provisioning. | |
| | HP SA Ent Edition OS Instance SW LTU | T9067AA |
| | HP SA Ent Edition OS Instance SW E-LTU | T9067AAE |
| | HP Server Automation 9.10 SW Media | T8900FA |
| | HP Server Automation 9.10 SW E-Media | T8900FAE |

Configuration Information Factory Integrated Models - HP CloudSystem Matrix - Expansion Kit

Step 1: Select Required HP CloudSystem Matrix Expansion Kit (Choose one of the following from each list unless otherwise noted)

| | | |
|--|---|--------|
| HP CloudSystem Matrix Expansion Kit | <p>NOTE: Add additional enclosures and/or server blades to a Matrix Environment.</p> <p>NOTE: Add HP server blades and other supported options to the Expansion Kit as desired. Depending on quantity of Expansion Kits purchased, additional racks, storage arrays, and other options may also be warranted.</p> <p>NOTE: Expansion Kits purchased must be co-located with the Starter Kit(s) to which they are connecting to.</p> <p>NOTE: For HP CloudSystem Matrix compatibility chart: http://www.hp.com/go/matrixcompatibility for details on supported options, operating systems, etc.</p> | |
| | HP Integrity BLc Matrix Expansion Kit | AM349A |
| | HP Integrity BLc Matrix FlexFabric Expansion Kit | AM369A |

Expansion Kit includes:

- HP BladeSystem c7000 enclosure, single-phase with 6 power supplies, 10 fans
 - 3 Year, 24x7 4 Hour Response hardware support (includes support for OA's, and Virtual Connect modules)
- HP BladeSystem c7000 Onboard Administrator with KVM option, redundant pair
- HP Virtual Connect FlexFabric 10Gb/24-port Module, redundant pair
- OR-
- HP Virtual Connect Flex-10 10Gb Ethernet module for the BladeSystem c-Class, redundant pair
- HP 8-Gb Virtual Connect Fibre Channel module for BladeSystem c-Class, redundant pair (Not included with FlexFabric Expansion Kit (PN AM369A))
- Factory services (firmware verification and default racking and cabling), if ordered CTO
- CloudSystem Matrix documentation CD
- CloudSystem Matrix label for attachment to a 10000 series rack door handle

NOTE: If the ordering system default of 3 years Technical Support and Update Service is rejected or not selected, or if the Expansion Kit is purchased BTO, the basic 1 year Technical Support and Update Service will apply.

| | | |
|---|-------------------------------------|-------------|
| HP CloudSystem Matrix Expansion Kit (Software) | HP-UX 11i Matrix Blade 2Skt PSL LTU | BA929AC#423 |
|---|-------------------------------------|-------------|



Ordering CloudSystem Matrix

| | | |
|---------------------|---|-------------|
| Licenses and media) | HP-UX 11i Matrix Blade 4Skt PSL LTU | BA929AC#443 |
| | HP-UX 11i Matrix Blade 8Skt PSL LTU | BA929AC#483 |
| | HP Virtual Connect Enterprise Manager including 1yr 24x7 Support Single c7000 Enclosure Lic | 459864-B21 |

NOTE: If the ordering system default of 3 years Technical Support and Update Service is rejected or not selected, the basic 1 year Technical Support and Update Service will apply.

NOTE: HP CloudSystem Matrix requires the purchase of HP-UX 11i v3 Virtual Server Environment Operating Environment (VSE-OE) Licenses. A minimum quantity of 8 Per Socket Licenses and maximum quantity of 16 Per Socket Licenses may be ordered.

The selection of server blades will determine the mix of HP-UX VSE-OE licenses on the order. Supported server blades are BL860c i2, BL870c i2, BL890c i2. If the required eight licenses are not consumed by server blades with the initial Matrix order, the unused licenses will support a deferred server blade purchase of BL860c i2 (ordered without an license), or may be traded-in for credit towards the purchase of HP-UX 11i software licenses for BL870c i2 or BL890c i2.

HP-UX 11i VSE-OE includes the Matrix Operating Environment (formerly Insight Dynamics VSE Suite) for managing virtual environments as well as the HP-UX Base Operating Environment.

Other software that must be ordered with the CloudSystem Matrix is Virtual Connect Enterprise Manager software (VCEM), which is licensed to the BladeSystem c7000 enclosure (one VCEM license per enclosure). HP ProLiant c-Class server blades require separate licensing. HP-UX customers can choose to upgrade the VSE-OE licenses to HP-UX 11i v3 Data Center OE (DC-OE) (see: www.hp.com/go/hpux).

NOTE: SLVM is required with Matrix 6.2 and 6.3, and as part of the Matrix installation, HP will install SLVM; this is essentially a mini Serviceguard installation with a one-node cluster. The EULA (End User License Agreement) for the HP-UX VSE-OE for Matrix has been extended to provide licensing to customers for use of this minimum Serviceguard configuration; this does not provide the full Serviceguard licensing. The EULA also restricts the customer and does not allow for reconfiguration of Serviceguard such as for a multi-node cluster unless the customer also purchases the full Serviceguard product or upgrade from VSE-OE to DC-OE.

| | | |
|--|--|-------------|
| HP CloudSystem Matrix Expansion Kit (Implementation Service) | HP CloudSystem Matrix Expansion Kit - Implementation Service, Flexible | HA115A1-5P9 |
|--|--|-------------|



Ordering CloudSystem Matrix

Step 2: Select Recommended options for HP BladeSystem Expansion Kit

BladeSystem c-Class target server blades

Target server blades

NOTE: It is highly recommended the Starter kit is at least halfway populated with HP Integrity BL8x0c i2 server blades. All shipping HP ProLiant c-Class blades are supported except the HP ProLiant BL2x220c server blades and workstation blades. In addition, HP BL860c and BL870c Integrity server blades are supported.

NOTE: For Integrity server blade information, please visit:

http://h18004.www1.hp.com/products/quickspecs/north_america/north_america.html#12391

NOTE: HP server blades should be configured to benefit from the Virtual Connect modules included in the Starter Kit, and necessary for full CloudSystem Matrix functionality - i.e. they should have a FC HBA mezzanine card installed.

NOTE: The HP BladeSystem c7000 Enclosure holds up to 8 full-height blades. Server blanks will be shipped in all empty bays.

Interconnect options

Additional supported SAN and Ethernet options may be added to the remaining available interconnect bays (bays 5/6 and 7/8).

NOTE: For supported CloudSystem Matrix interconnect options, see the compatibility chart at: <http://www.hp.com/go/matrix>.

NOTE: For QuickSpecs for c-Class interconnect options see:

http://h18000.www1.hp.com/products/quickspecs/12524_na/12524_na.html

Support Plus 24 options for the entire CloudSystem Matrix Expansion Kit

NOTE: 4-, and 5-year Support Plus 24 Care Pack uplifts are available for the entire CloudSystem Matrix Starter Kit hardware and software. Support Plus 24 raises the support levels of all the Matrix components uniformly up to 3-5 years for easier tracking of warranty support.

| | |
|---|-------------|
| 4 year 24x7 4hr CloudSystem Matrix Starter Hardware Support, Flexible | HA104A4#6YD |
| 5 year 24x7 4hr CloudSystem Matrix Starter Hardware Support, Flexible | HA104A5#6YD |
| 4 year 6h CTR HW Support | HA105A4#6YD |
| 5 year 6h CTR HW Support | HA105A5#6YD |
| 4 year 6h CTR w/DMR HW Support | HG928A4#6YD |
| 5 year 6h CTR w/DMR HW Support | HG928A5#6YD |
| 4 year 24x7 BL Matrix Software Support, Flexible | HA107A4#2FU |
| 5 year 24x7 BL Matrix Software Support, Flexible | HA107A5#2FU |
| Support Plus 24 - 4 year Support Plus 24 BLc Matrix Software Support, Flexible | HA110A4#2FU |
| Support Plus 24 - 5 year Support Plus 24 BLc Matrix Software Support, Flexible | HA110A5#2FU |
| Proactive 24 - 4 year Support Plus 24 BLc Matrix Software Support, Flexible | HA111A4#2FU |
| Proactive 24 - 5 year Support Plus 24 BLc Matrix Software Support, Flexible | HA111A5#2FU |
| Critical Service - 4 year Support Plus 24 BLc Matrix Software Support, Flexible | HA112A4#2FU |
| Critical Service - 5 year Support Plus 24 BLc Matrix Software Support, Flexible | HA112A5#2FU |
| Proactive Select - 3 Years, 30 Credits per Year | HG921A3#12K |



Ordering CloudSystem Matrix

Step 3: Choose Additional Options for Factory Integration

Rack power distribution for CloudSystem Matrix enclosures

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

| | | |
|----------------------------------|---|------------|
| Power Distribution Units | HP Monitored Power Distribution Unit: Half Rack Version | |
| | HP 17.3kVA 48A Single Input Three Phase NA/JP Monitored Power Distribution Unit | AF916A |
| | HP 7.3kVA 32A Single Input Three Phase INTL Intelligent Modular Power Distribution Unit | AF536A |
| | HP 22kVA 32A Single Input Three Phase INTL Monitored Power Distribution Unit | AF917A |
| | Modular PDUs 1U/0U (Up to 28 outlets) | |
| | NOTE: 1U/0U mounting brackets shipped with the unit (optimized for 10000 G2 and 9000 series racks). | |
| | HP 17.3kVA 48A Three Phase NA/JP Modular Power Distribution Unit | AF511A |
| | HP 22kVA 32A Three Phase INTL Core Modular Power Distribution Unit | AF518A |
| | HP 8.6kVA 24A Three Phase NA/JP Modular Power Distribution Unit | AF512A |
| | HP 11kVA 16A Three Phase INTL Modular Power Distribution Unit | AF513A |
| | HP 8.3kVA 40A High Voltage NA/JP Core Modular Power Distribution Unit | 252663-D75 |
| | HP 9.2kVA 40A High Voltage INTL Core Modular Power Distribution Unit | 252663-B34 |
| | HP 7.3kVA 32A High Voltage INTL Core Modular Power Distribution Unit | 252663-B33 |
| | HP 4.9kVA 24A High Voltage NA/JP Core Modular Power Distribution Unit | 252663-D74 |
| | 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. | |
| | Select optional Power Cords for Single-Phase Model (country specific power cords are listed under options) | |
| | NOTE: Default power cord is a 6ft IEC C19 - C20 cord | |
| PDU cords (HP C19 to C20) | HP 1.2m 16A C19-C20 Redundant Jumper Cord | AF575A |
| | HP 2m 16A C19-C20 Redundant Jumper Cord | AF574A |
| | HP 1xC19-C120 16A 2.5m Cable | 295633-B22 |
| | HP 4.5M Power Cord with C19/C20 Plug | E7804A |



Additional Options

| | | |
|---|--|------------|
| HP PCI 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 |
| <hr/> | | |
| Power cords | HP C19 - C20 Jumper Cords | |
| | HP 16A IEC320-C19 to C20 1.2m/4ft, PDU cord, Flint Gray | AF575A |
| | HP 16A IEC320-C19 to C20 2m/6ft, PDU cord, Flint Gray | AF574A |
| | HP 16A IEC320-C19 to C20 2.5m/8ft PDU cord, Black | 295633-B22 |
| | HP 16A IEC320-C19 to C20 4.5m/15ft, PDU cord, Black | E7804A |
| | HP HV Power Cords 200 - 240V AC | |
| | HP 16A 250V L6-30P/IEC320-C19 4.5m/15ft | E7805A |
| | HP 16A 250V NEMA L 6-20P/IEC320-C19 3.6m/12ft | AF593A |
| | HP 240 VAC 4.5M Unterminated End Power Cord | E7806A |
| <hr/> | | |
| Uninterruptible Power Systems | HP Rack Mounted R5500 UPS (single-phase) | |
| | HP R5500 5000kVA 3U Rackmount Uninterruptible Power System | AF426A |
| | NOTE: For more information on the R5500 please consult the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11871_na/11871_na.html | |
| | HP Rack Mounted R8000 UPS (3-phase UPS) | |
| | HP R8000/3 8000kVA Three Phase 6U Rackmount Uninterruptible Power System | AF431A |
| | HP Rack Mounted R12000 UPS (3-phase UPS) | |
| HP R12000/3 12000VA Three Phase 6U Rackmount Uninterruptible Power System | AF429A | |
| NOTE: For more information on the HP 3-Phase UPS products please consult the QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12857_na/12857_na.html | | |
| <hr/> | | |



Additional Options

| | | |
|-----------------------|---|--------|
| HP Rack Series | HP 10000 G2 Series racks (Graphite Metallic) | |
| | HP 10642 G2 Pallet Universal Rack | AF001A |
| | HP 10642 G2 Shock Universal Rack | AF002A |
| | HP 10642 G2 Crated Universal Rack | AF003A |
| | HP 10642 G2 Shock Field Rack | AF007A |
| | HP 10636 G2 Pallet Universal Rack | AF011A |
| | HP 10636 G2 Shock Universal Rack | AF012A |
| | HP 10636 G2 Crated Universal Rack | AF013A |
| | HP 10636 G2 with Extension Shock Rack | AF014A |
| | HP 10622 G2 Pallet Universal Rack | AF021A |
| | HP 10622 G2 Shock Universal Rack | AF022A |
| | HP 10642 G2 200mm Extension Shock Rack | AF034A |
| | HP 10642 G2 200mm Extension Pallet Rack | AF038A |
| | HP 10842 G2 Pallet Universal Rack | AF041A |
| | HP 10842 G2 Shock Universal Rack | AF042A |
| | HP 10647 G2 Pallet Universal Rack | AF031A |
| | HP 10647 G2 200mm Extension Shock Rack | AF044A |
| | HP 10647 G2 200mm Extension Pallet Rack | AF045A |

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

http://h18000.www1.hp.com/products/quickspecs/12402_na/12402_na.html

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

HP Rack Options

Keyboards and Monitors

| | |
|--|--------|
| HP TFT7600 Rackmount Keyboard 17in Monitor | AG052A |
| HP 1U US Rackmount Keyboard with USB | AG072A |
| HP 1U UK Rackmount Keyboard with USB | AG073A |
| HP 1U DE Rackmount Keyboard with USB | AG074A |
| HP 1U FR Rackmount Keyboard with USB | AG075A |
| HP 1U IT Rackmount Keyboard with USB | AG076A |
| HP 1U ES Rackmount Keyboard with USB | AG077A |
| HP 1U DK Rackmount Keyboard with USB | AG078A |
| HP 1U NO Rackmount Keyboard with USB | AG079A |
| HP 1U SE/FI Rackmount Keyboard with USB | AG080A |
| HP 1U Rackmount Keyboard with USB | AG081A |
| HP 1U PT Rackmount Keyboard with USB | AG082A |
| HP 1U BE Rackmount Keyboard with USB | AG083A |
| HP 1U JP Rackmount Keyboard with USB | AG084A |
| HP 1U RU Rackmount Keyboard with USB | AG085A |
| HP 1U INT Rackmount Keyboard with USB | AG086A |



Additional Options

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

HP KVM Switch Options

HP Server Console 0x2x8 Port Analog Switch AF616A

HP Server Console 0x2x16 Port Analog Switch AF617A

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

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

HP 1-pack PS/2 Virtual Media Interface Adapter AF604A

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

HP BladeSystem c-Class KVM Interface Adapter AF605A

HP KVM CAT5 1-pack PS/2 Interface Adapter 262588-B21

HP KVM CAT5 8-pack PS/2 Interface Adapter 262587-B21

NOTE: Cat5e cables are required to connect Interface Adapters to Consoles Switches. Cat52 cables can be found at the following URL:

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

HP 1x4 USB/PS2 KVM Console Switch AF611A

HP 1x4 KVM Console 6ft PS2 Cable AF612A

HP 1x4 KVM Console 6ft USB Cable AF613A

NOTE: Required for supporting USB peripherals.

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

http://h18000.www1.hp.com/products/quickspecs/12662_na/12662_na.html

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

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

Rack options for HP 10000 G2 Series racks

HP Universal 10642 G2 Front Door AF009A

HP Universal 10636 G2 Front Door AF019A

HP 10642 G2 Side Panel AF054A

HP 10636 G2 Side Panel AF056A

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

HP Airflow Optimization

HP 10000 Series Rack Airflow Optimization Kit AF090A



Additional Options

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 Care Pack services

NOTE: HP Care Pack services for the BladeSystem 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 BladeSystem c-Class enclosure devices including pass thru, Ethernet interconnect and virtual connect modules are also covered by the BladeSystem c7000 enclosure Care Pack services.

NOTE: SAN/Fabric switches for the HP BladeSystem c-Class enclosure are not covered under the BladeSystem 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.

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

www.hp.com/go/carepack

NOTE: SAN/Fabric switches for the HP BladeSystem c-Class enclosure are not covered under the BladeSystem 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

6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic

HA105A3#6YC

Hardware Installation, Electronic

HA113A1#5D2

Infrastructure Software On-site Services

NOTE: Optional Disaster Recovery requires both a Primary Site and Secondary Site, and supported HP SAN Storage at both sites to have "Continuous Access" implemented between the SAN.

NOTE: HP CloudSystem Matrix infrastructure does not include licensed disaster recovery protection but Serviceguard for failover and/or Metrocluster for disaster recovery can optionally be added. Disaster recovery protection can be achieved by implementing a secondary infrastructure at a remote location, and enabling storage replication between the two sites.

HP CloudSystem Matrix Upgrade (same CMS) Implementation Service

HA115A1#5PA

NOTE: This is a required Service to upgrade your Matrix environment to a later version.

NOTE: This service performs an upgrade to the Matrix environment using the existing Matrix HP SIM Central Management Server.

HP CloudSystem Matrix Upgrade (different CMS) Implementation Service

HA115A1#5PB

NOTE: This is a required Service to upgrade your Matrix environment to a later version.

NOTE: This service performs an upgrade to the Matrix environment using requiring a different Matrix HP SIM Central Management Server (includes migrating data from the existing CMS to the new CMS).

HP CloudSystem Matrix Expansion Kit Integration Implementation Service

HA115A1#5P9



Additional Options

NOTE: This is a required Service to expand your existing Matrix environment by adding Matrix Expansion Kits.

HP Install c7000 Enclosure and Server Build Service, Flexible

HA113A1#5FY

NOTE: This is recommended to assist with onsite racking and cabling of CloudSystem Matrix enclosures into a rack, particularly when CloudSystem Matrix kits are purchased without a rack.

HP Additional Technical Assistance

HA334A1

NOTE: This service provides the capability to customize tasks and activities including assistance with design, implementation, migration, and project management.

NOTE: The following HP Education Services (sold in units) are highly recommended to ensure effective solution usage and knowledge.

HP BladeSystem Virtualization Tools using Insight Dynamics for ProLiant (28 units)

HG812S

HP Virtual Connect and Virtual Connect Enterprise Manager (VCEM)

HF837S

HP Insight Control: Introduction

HE643S

HP Insight Control: Deploying & Updating with Insight Control server deployment

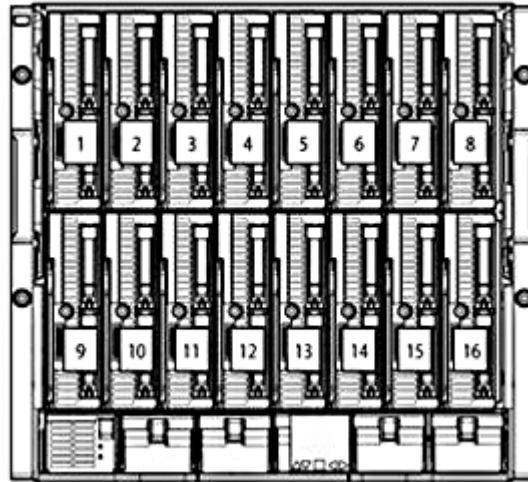
HE645S

HP BladeSystem c-Class administration

HE646S



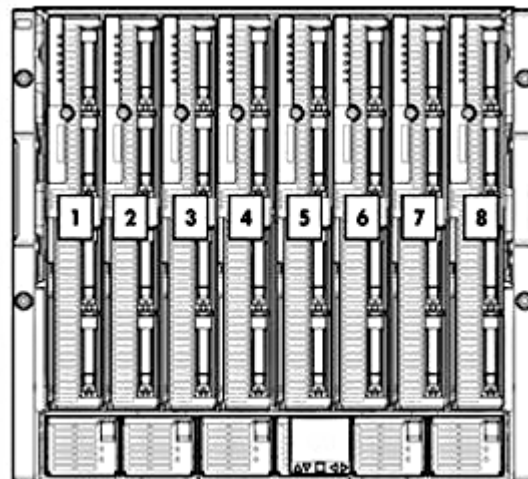
Half-height server blade bay numbering



- | | |
|-----------------|-------------------|
| 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 (looking at 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 |



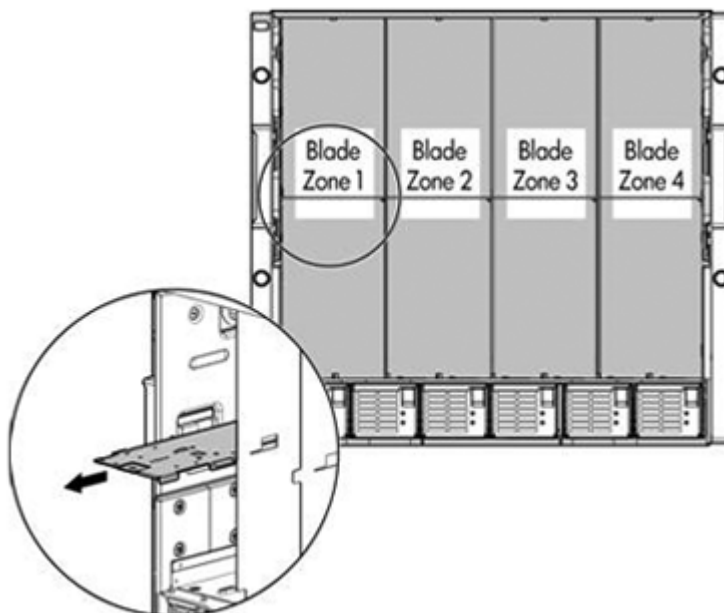
Technical Specifications

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 BladeSystem c7000 enclosure is divided into 4 zones by the vertical support metalwork. Within each zone a removable divider is used to support half height devices. To install a full-height blade in any zone this divider must be removed. As a consequence a zone 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 zone as both full-height and half-height server blades, a bracket ships with each SB40c tape blade that allows a half-height blade to be mounted on top of the tape blade.

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

| | | | |
|--|-------------------------------|-------------------|---------------------|
| HP BladeSystem c7000 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) | |
| Maximum enclosure weight (approximate) | Unboxed | 450 lb (204 kg) | |
| | Shipping | 493 lb (223.6 kg) | |

QuickSpecs

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 | |
| | | 2250W PSU | Rated input voltage | 100 to 120 VAC 200 to 240 VAC |
| | | | Rated input current per power supply | 12.3A at 100 - 120 VAC 13.1 A at 200 VAC 12.6 A at 208 VAC 11.9 A at 220 VAC |
| | | 2400W PSU | Rated input power per power supply | 2612 VA Max |
| | | | 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 | |
| | Power cords | Single-Phase | IEC-320 C19-C20 1.22m (6 ft) | |
| | | 3-Phase | 2 x NEMA L15-30p 2.44m (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 | |
| Output specifications (per power supply) | HP 2250W Hot-Plug Power Supply | 200 - 240 VAC 2250 W 100 - 120 VAC 960 W | | |
| | HP 2400W High Efficiency Hot-Plug Power Supply | 200 - 240 VAC 2400 W | | |
| | HP 2250W -48V DC Hot-Plug Power Supply | 2250W | | |
| | Acoustic noise | Listed are the declared A-Weighted sound power levels (LWA _d) and declared average bystander position A-Weighted sound pressure levels (LpA _m) 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 | | |



Technical Specifications

accordance with ISO 9296 (ECMA 109).

Idle

LWAd 7.5 Bels

LpAm 57 dB

Idle

LWAd 7.5 Bels

LpAm 57 dB

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.



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>

© Copyright 2011 Hewlett-Packard Development Company, L.P.

The information contained herein is subject to change without notice.

Microsoft and Windows are US registered trademarks of Microsoft Corporation.

Intel, the Intel logo, Xeon and Xeon Inside are trademarks of Intel Corporation in the U.S. and other countries.

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

