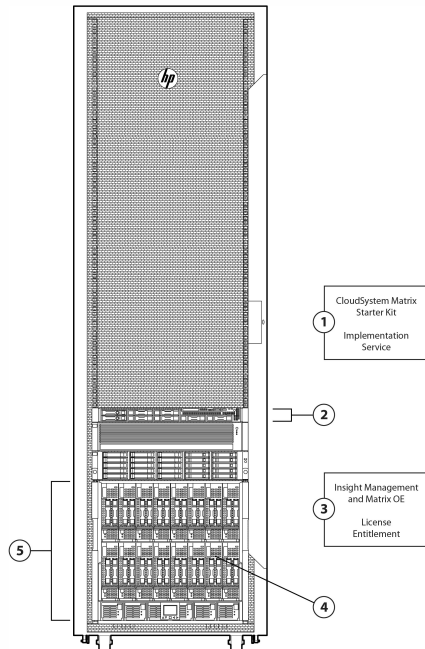


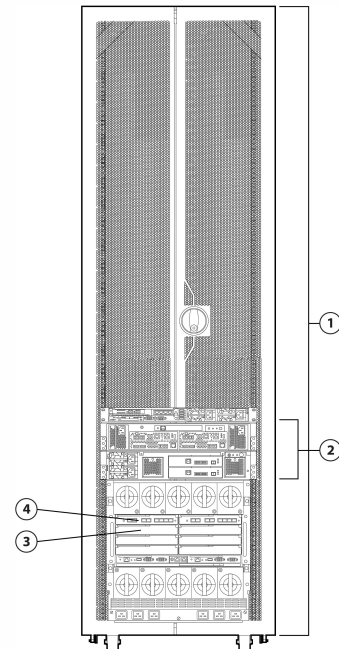
Overview

Starter Kit



Starter Kit - Front

1. Onsite CloudSystem Matrix Starter Kit Implementation
2. Central Management Server (CMS)
HP ProLiant DL360p Gen8 server (recommended CMS)
3. Complete management licenses (including Insight Management and Matrix OE)
4. 8 full-height device bays available for populating with Integrity server blades
5. HP BladeSystem c7000 Platinum Enclosure

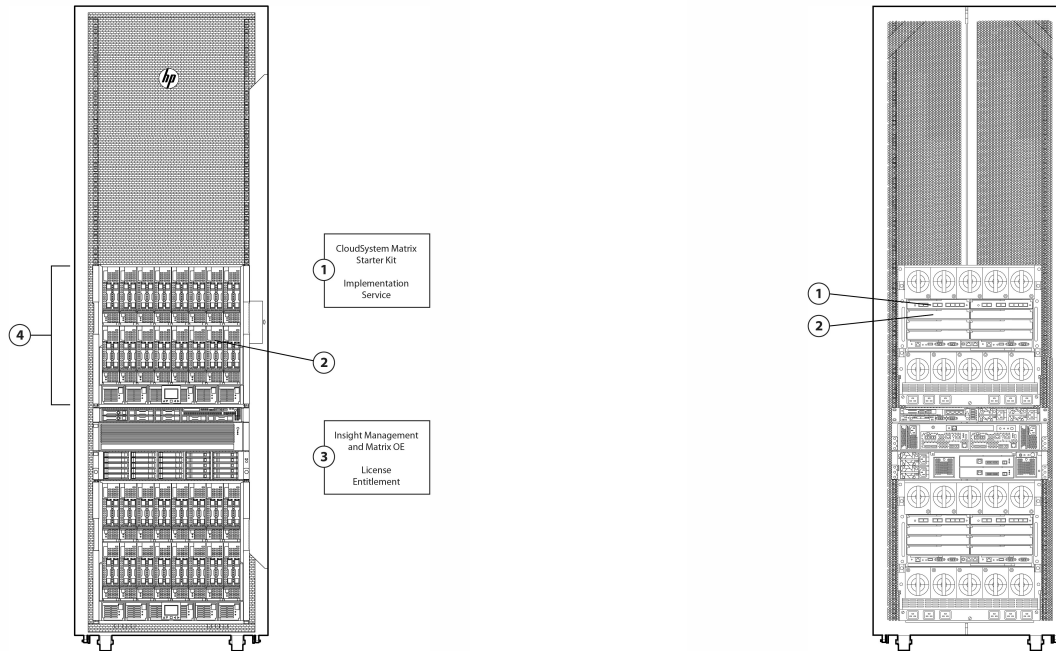


Starter Kit - Rear

1. HP Intelligent Series rack, and rack and power options
NOTE: Rack is not included with the Matrix Starter Kit
2. Shown above with HP 3PAR StoreServ 7200 Storage. HP Fibre Channels SAN supported include HP EVA, 3PAR F-Series, T-Series, P10000 and 3PAR StoreServ 7200 , 7400 & 10000
3. Interconnect bays 3 & 4 available for additional HP Virtual Connect FlexFabric modules (redundant pair)
OR (not shown) HP Virtual Connect 8Gb 24-Port FC modules (redundant pair), OR HP Virtual Connect Flex-10/10D Module
4. HP Virtual Connect FlexFabric modules (redundant pair)
OR (not shown) HP Virtual Connect Flex-10 10-Gb Ethernet modules (redundant pair), OR HP Virtual Connect Flex-10/10D Module

Expansion Kit

Overview



Expansion Kit - Front

1. Onsite CloudSystem Matrix Expansion Kit Implementation Service (for Expansion Kit orders purchased after an initial Matrix environment is implemented)
2. 8 full-height device bays available for populating with server blades
3. Complete HP-UX Operating Environment and management licenses (including Insight Management and Matrix OE)
4. HP BladeSystem c7000 Platinum Enclosure

Expansion Kit - Rear

1. HP Virtual Connect FlexFabric modules (redundant pair)
OR (not shown) HP Virtual Connect Flex-10 10-Gb Ethernet modules (redundant pair), OR (not shown) HP Virtual Connect Flex-10/10D Module
2. Interconnect bays 3 & 4 available for additional HP Virtual Connect FlexFabric modules (redundant pair)
OR (not shown) HP Virtual Connect 8Gb 24-Port FC modules (redundant pair), OR (not shown) HP Virtual Connect Flex-10/10D Module

NOTE: HP CloudSystem Matrix with HP-UX infrastructure can optionally be licensed for High Availability and disaster protection for both physical and virtual servers, in coordination with data replication provided by EVA or XP Continuous Access software. High Availability and Disaster recovery protection can be achieved by implementing a secondary infrastructure at a remote location, and enabling storage replication between the two sites.

What's New

Decreased the minimum HP-UX per socket license (PSL) requirement from eight (8) PSL to two (2) PSL. This change provides more configuration flexibility and lowers the CloudSystem Matrix with HP-UX entry price point.

Overview

At A Glance

HP CloudSystem Matrix is Infrastructure-as-a-Service (IaaS) for private and hybrid cloud environments, allowing users to provision infrastructure in minutes for physical and virtual. This offering includes a self-service infrastructure portal for quick auto-provisioning, along with built-in lifecycle management to optimize infrastructure, manage the resource pools, and help ensure uptime. Matrix is integrated by design with broad support of heterogeneous environments including cloud-bursting to a variety of public cloud providers including HP Cloud Services.

- Provision infrastructure and applications in minutes for physical and virtual.
- Reduce TCO up to 56%¹ with built-in infrastructure life-cycle management.
- Integrated by design; includes support of heterogeneous environments.

HP Cloud Maps accelerate automation of cloud service deployments and ensure consistency and reliability of the implementation of service catalogs.

HP CloudSystem Matrix is optimized for HP ProLiant and HP Integrity servers as well as HP storage and HP networking, but also supports 3rd party x86 servers, networking, and storage. Supported operating systems are Windows, Linux and HP-UX. Supported hypervisors include VMware, Microsoft HyperV, Red Hat KVM, and Integrity VMs.

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 Insight software, see: <http://www.hp.com/go/insight>

For more information about HP Virtual Connect, see: www.hp.com/go/virtualconnect

For more information about HP Storage, see: www.hp.com/go/storage

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

For more information about HP CloudSystem Matrix with HP-UX, see: <http://www.hp.com/go/missioncriticalcloudsystem>

HP CloudSystem Matrix

How to order HP CloudSystem Matrix

Ordering HP CloudSystem Matrix

The method for purchasing HP CloudSystem Matrix is simple. Start by ordering a HP CloudSystem Matrix with HP-UX Kit, which contains the infrastructure needed for a fully-working environment supporting up to 16 HP ProLiant half-height server blades or 8 HP Integrity full-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. Expansion Kits ordered separately will come with the Matrix Expansion Kit Integration Implementation Service.

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 Matrix 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

HP Matrix Operating Environment

The HP Matrix Operating Environment is cloud management software for infrastructure as a service (IaaS) that enables you to:

- Design and provision infrastructure services in minutes via a self-service portal
- Optimize infrastructure for capacity planning and showback/chargeback
- Protect service continuity with automated cost-effective failover

The HP Matrix Operating Environment, which includes HP Insight Control, is at the core of the HP CloudSystem Matrix, an infrastructure as a service (IaaS) solution for private and hybrid cloud deployments, built on proven HP Converged Infrastructure technologies. It is available for both HP ProLiant and HP Integrity servers as well as for provisioning third party x86 virtual machine environments.

HP 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 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 customer's site, unpack and inspect for damages
- Integrate kits (included in the initial kit order, maximum of 5 total Matrix kits. Additional Matrix expansion kits on same order require Matrix Expansion Kit Implementation Service) hardware in to customer's 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 P6000, 3PAR or other HP SAN or an existing SAN
 - 1 HP server blade running a native OS of the customer's choice (HP-UX) on a boot LUN
 - 2 HP server blades each running a single HP Integrity Virtual Machines
 - Configuration of up to 2 VMs
 - 1 HP server blade installed and configured to be a target for a blade move
- 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>

HP CloudSystem Matrix

HP CloudSystem Matrix Expansion Kit Integration Implementation Service (onsite)

Ordering additional CloudSystem Matrix expansion kits after the initial CloudSystem Matrix kit order or installing more than 5 total kits during the initial installation, includes the CloudSystem Matrix Expansion Kit Integration Implementation Service. Each CloudSystem Matrix Expansion Kit Implementation Service will integrate up to four Matrix expansion kits to an existing Matrix customer environment (single Matrix CMS server). The onsite CloudSystem Matrix Expansion Kit Integration Implementation Service for the Expansion Kits consists of these steps:

- Upon delivery to customer's site, unpack and inspect for damages
- Integrate Matrix Expansion Kits hardware in to customer's environment, power, network cabling
 - Change the firmware versions to be compatible with the version requirements of the existing CloudSystem Matrix customer environment
- Configure up to one physical target server operating systems to boot from SAN
- Perform one of the CloudSystem Matrix demonstrations to verify the Expansion Kits integration is completed successfully.

HP CloudSystem Matrix Conversion Services

HP CloudSystem Matrix Conversion Services convert your existing HP BladeSystem equipment into a fully operational CloudSystem Matrix solution. Converting your existing equipment allows you to build on the investment in your BladeSystem infrastructure and benefit from the advantages that a CloudSystem Matrix solution provides. These services apply to both BladeSystem and BladeSystem-based HP VirtualSystem infrastructures.

CloudSystem Matrix Conversion Services can be used in different combinations to create and/or expand a CloudSystem Matrix, allowing you to:

- Convert a single BladeSystem enclosure and BladeSystem equipment into an initial CloudSystem Matrix configuration
- Include additional enclosures during the conversion process
- Expand your existing CloudSystem at any time by converting and incorporating your BladeSystem enclosures

NOTE: For additional information, see:

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-9863ENw.pdf>

Warranty services

The support provided for CloudSystem Matrix is an uplift from the standard BladeSystem warranty to include 24x7 4hr onsite response for Matrix hardware and 2 hr response for software. Matrix customers will have a system identifier for CloudSystem Matrix that, when provided to the call center by the customer, will route the call to a specially trained team that can expertly support CloudSystem Matrix specifically as well as the necessary software and firmware revisions to support it.

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

HP CloudSystem Matrix

- 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

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

HP Matrix Operating Environment Support

HP Matrix Operating Environment 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 Matrix OE 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 CloudSystem Matrix -- Extended Infrastructure HP Matrix Operating Environment extends its software functionality beyond HP CloudSystem Matrix across all HP ProLiant and HP Integrity servers as well as any x86 3rd party servers which are supported by VMware, Microsoft HyperV and Red Hat KVM.

CloudSystem Matrix support for this extended infrastructure includes key capabilities of HP Matrix Operating Environment such as designing, self-service portal with auto-provisioning for virtual environments and capacity planning, i.e. physical server deployment is not supported (Note: recovery management for virtual only is supported on HP rackmount servers and HP blade servers without Virtual Connect). All capabilities of HP Matrix Operating Environment are supported for HP BladeSystem servers with Virtual Connect.

NOTE: See the [HP Matrix Operating Environment for ProLiant QuickSpecs](http://h18000.www1.hp.com/products/quickspecs/13050_na/13050_na.html) for additional information: http://h18000.www1.hp.com/products/quickspecs/13050_na/13050_na.html (Worldwide)

CloudSystem Matrix for supported extended virtual machine managed nodes is listed in the HP Insight Software Support Matrix document for Matrix Operating Environment.

Customer support for Matrix extended infrastructure servers is handled the same way as HP Matrix Operating Environment standalone software. Matrix extended infrastructure is subject to the same software licensing requirements as Matrix Operating Environment.

NOTE: See the [HP Matrix Operating Environment for ProLiant QuickSpecs](http://h18000.www1.hp.com/products/quickspecs/13050_na/13050_na.html) for more details http://h18000.www1.hp.com/products/quickspecs/13050_na/13050_na.html (Worldwide)

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.

HP 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

HP CloudSystem Matrix

HP Utility Ready Computing on Matrix

HP Utility Ready Computing blades (URB) are pay-for-use infrastructure that resides at your site, billed monthly by HP based on metered power-on time, and transfers cost of blade servers and associated infrastructure from CapEx to OpEx in an alternative way from a traditional lease.

The URB Advantage:

- Aligning costs with utilization
- Reduce upfront expenses
- React instantly to changing demands
- Effective Chargeback mechanism
- And it's at your site, you maintain control!

With CloudSystem Matrix, customers can add Utility Ready Computing blades to their Matrix enclosures and leverage the benefits offered by utility ready computing.

NOTE: Customers cannot mix non-URC blades with URC blades same in same enclosure, they should be housed in separate enclosures.

NOTE: For additional information, please see:

http://h18000.www1.hp.com/products/blades/components/utility.html?jumpid=reg_R1002_USEN

Factory Express Portfolio for Servers and Storage

For HP CloudSystem Matrix, HP Factory Express services are added if the EVA P6000 SAN or 3PAR 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 Simple Configurator

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

HP CloudSystem Matrix

Rack Airflow Requirements

HP rack cabinets

The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The HP 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 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: All HP CloudSystem Matrix infrastructure ships with licensed disaster recovery protection for both physical and virtual servers, in coordination with data replication provided by EVA or XP Continuous Access software. Disaster recovery protection can be achieved by implementing a secondary infrastructure at a remote location, and enabling storage replication between the two sites.

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 Intelligent Series Rack (Recommended, per notes immediately below)

NOTE: For additional HP Rack information please visit:

<http://h18004.www1.hp.com/products/servers/proliantstorage/racks/intelligentseries/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 Intelligent Series racks

HP 642 1075mm Shock Intelligent Series Rack	BW904A
HP 642 1075mm Pallet Intelligent Series Rack	BW903A
HP 642 1200mm Shock Intelligent Rack	BW908A
HP 647 1075mm Shock Intelligent Rack	BW912A
HP 647 1200mm Shock Intelligent Rack	BW914A
HP 642 1075mm Crate Intelligent Rack	BW905A
HP 642 1200mm Pallet Intelligent Rack	BW907A
HP 647 1075mm Pallet Intelligent Rack	BW911A
HP 647 1200mm Pallet Intelligent Rack	BW913A

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

http://h18004.www1.hp.com/products/quickspecs/14223_div/14223_div.html
(Worldwide)

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

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

HP CloudSystem Matrix Starter Kit

NOTE: Starter Kit default components means HP ordering systems will default these selections 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).

Hardware Components

Ordering CloudSystem Matrix

HP CloudSystem Matrix with HP-UX LDS Kit with 3 year 24x7 Support

AM393B

NOTE: The configurable starter kit can be either Starter or Expansion Kit with applicable services applied appropriately when configured.

HP CloudSystem Matrix Modular Kit (Hardware Components) includes:

- HP BladeSystem c7000 enclosure, 10 fans
- HP BladeSystem c7000 Onboard Administrator with KVM (keyboard, video, mouse) option, redundant pair

HP Virtual Connect Option (required choice of one):

- HP Virtual Connect FlexFabric 10Gb/24-port Module, redundant pair
- HP Virtual Connect Flex-10 10Gb Ethernet Module, redundant pair with HP Virtual Connect 8Gb 24-port Fibre Channel Module, redundant pair
- HP Virtual Connect Flex-10/10D Module, redundant pair with HP Virtual Connect 8Gb 24-port Fibre Channel Module, redundant pair

c7000 Power Option (required choice of one):

- Single phase with 6x 2400W power supplies (AC)
- 3-Phase with 6x 2400W power supplies (AC)
- DC Power with 6x 2250W power supplies (-48V DC)

Required Virtual Connect Enterprise Manager (VCEM)

- A quantity of one (1) VCEM license is required for each CloudSystem Matrix ordered.

Required HP-UX 11i v3 - a minimum quantity of 2 Per Socket Licenses and maximum quantity of 16 Per Socket Licenses must be ordered (choice of one or both)

- HP-UX 11i v3 Virtual Server Environment Operating Environment (VSE-OE)
 - Includes Matrix Operating Environment
- HP-UX 11i v3 Data Center Operating Environment (DC-OE)
 - Includes Matrix Operating Environment

NOTE: Following are the VC FlexFabric 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	AJ716B
HP 8Gb Long Wave B-series 10km Fibre Channel 1 Pack SFP+ Transceiver	AJ717A
HP 8Gb Short Wave Fibre Channel SFP+ 1 Pack	AJ718A

Software Licenses and media

Ordering CloudSystem Matrix

HP Virtual Connect Enterprise Manager including 1yr 24x7 Support Single c7000 Enclosure License 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.

HP-UX 11i v3 Data Center Operating Environment (DC-OE)

HP-UX Matrix 2Skt PSL w/3yr Svc LTU BA931AC#423

HP-UX Matrix 4Skt PSL w/3yr Svc LTU BA931AC#443

HP-UX Matrix 8Skt PSL w/3yr Svc LTU BA931AC#483

HP-UX Matrix 2Skt PSL w/3yr Svc E-LTU BA931ACE#423

HP-UX Matrix 4Skt PSL w/3yr Svc E-LTU BA931ACE#443

HP-UX Matrix 8Skt PSL w/3yr Svc E-LTU BA931ACE#483

Virtual Server Environment Operating Environment (VSE-OE)

HP-UX Matrix 2Skt PSL w/3yr Svc LTU BA929AC#423

HP-UX Matrix 4Skt PSL w/3yr Svc LTU BA929AC#443

HP-UX Matrix 8Skt PSL w/3yr Svc LTU BA929AC#483

HP-UX Matrix 2Skt PSL w/3yr Svc E-LTU BA929ACE#423

HP-UX Matrix 4Skt PSL w/3yr Svc E-LTU BA929ACE#443

HP-UX Matrix 8Skt PSL w/3yr Svc E-LTU BA929ACE#483

NOTE: HP CloudSystem Matrix requires the purchase of HP-UX 11i v3 Virtual Server Environment Operating Environment (VSE-OE) or Data Center Operating Environment (DC-OE) Licenses. A minimum quantity of 2 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 i4, BL870c i4, BL890c i4, BL860c i2, BL870c i2, BL890c i2.

HP-UX 11i VSE-OE and DC-OE include 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.

Implementation Service

HP BladeSystem Matrix Starter Kit - Implementation Service UK831E

Ordering CloudSystem Matrix

	HP BladeSystem Matrix Starter Kit - Implementation Service, Flexible NOTE: Includes the installation & configuration of any Matrix Expansion Kit included in the order.	HA115A1-5NL
Central Management Server	HP CloudSystem Matrix Central Management Svr based DL360p Gen8 32G 2P Server 3y 24x7 Support NOTE: This is the default part number for the Matrix central management server (CMS), to host the management software. It may be substituted with another server configured per notes below and per CMS sizing, scalability, and redundancy preferences. HP ProLiant DL360p Gen8 CMS server (PN 666224-B21) is configured as follows:	666224-B21

- Dual processors - Intel® Xeon® E5-2640 processor
- 32 GB (4 x 8GB) 1Rx4 PC3-12800R-11 Kit Registered DIMMs
- HP P-Series Smart Array 1GB Flash Based Write Cache for P-series
- FlexFabric 10Gb 2P 554FLR-SFP+ Adapter Ethernet 1Gb 4-port 331T Adapter
- 2x HP 300GB 6G SAS 15K 2.5in SC ENT HDDs
- HP 82Q 8Gb Dual Port PCI-e Fibre Channel Host Bus Adapter
- HP 9.5mm SATA JB DVDRW Optical Drive
- HP DL360 3 Year, 24x7 4 Hour Response Hardware support
- HP Insight Control Software (with 3 Year, 24x7 hardware and software support)

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) as central management server host for HP CloudSystem Matrix. HP recommends the rack-mounted ProLiant DL360p Gen8 as the CMS host (see configuration below) for those customers who desire to use all available and licensed enclosure blade bays for managed target blades and workloads. 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 such as VMware vCenter Server 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.

NOTE: If the recommended HP ProLiant DL360p Gen8 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 6.3 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.

Ordering CloudSystem Matrix

Target server blades

NOTE: It is highly recommended that at least four (4) additional HP ProLiant c-Class blades be ordered with each Starter Kit, because the Onsite Implementation Service includes provisioning of up to four (4) HP ProLiant blades, two of which are directly provisioned as physical servers and two of which are virtual machine hosts. See separate section on "CloudSystem Matrix Starter Kit Implementation Service" for details. All shipping HP ProLiant c-Class blades are supported except the HP ProLiant BL2x220c server blades and workstation blades.

NOTE: For server blade information, please visit:

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

NOTE: HP ProLiant server blades should be configured to connect via the Virtual Connect modules included in the CloudSystem Matrix kits. See the sections below on FlexibleLOM and Mezzanine options for further details.

HP Integrity Servers

NOTE: All shipping HP Integrity c-Class blades are supported when configured with Integrity software products. For additional server blade information please visit:

<http://h18004.www1.hp.com/products/quickspecs/division/division.html#12391>.

NOTE: The management software licenses packaged with HP CloudSystem Matrix provide licensing to manage HP ProLiant c-Class server blades and Virtual Connect Enterprise Manager software (VCEM) which is licensed to the BladeSystem c7000 Enclosure. HP Integrity c-Class server blades require separate licensing (except for VCEM software). HP-UX customers should order licenses for the HP-UX 11i v3 Virtual Server Environment OE (VSE-OE) or HP-UX 11i v3 Data Center OE (DC-OE) For additional information, please visit: www.hp.com/go/hpux. Please refer to ordering information for Integrity Matrix at: www.hp.com/go/matrix.

KVM Management Server

To utilize management of KVM hosts and guests an additional, dedicated management server is required. This KVM management server will be connected to and managed by, via network, the Matrix Central Management Server (listed above). Installation and configuration of the KVM CMS requires that an additional 2 ASE days to be added to the order.

NOTE: HP suggests that the KVM Management server be of same type and physical configuration (HP PN 6665224-B21) as that used for the Matrix CMS server. If the customer will be providing the KVM management server, see minimum requirements below if using other server hardware.

- Quad-core, dual processor, min 2.4 GHz
- 12GB RAM
- 160GB local disc
- 2-GB Ethernet ports

Red Hat 6.3 with KVM (not supplied by HP unless purchased)

KVM Managed Hosts

CloudSystem Matrix supports KVM managed hosts within the Matrix enclosures or ProLiant DL or SL servers supported as listed in the Insight Management Compatibility matrix (http://h20565.www2.hp.com/portal/site/hpsc/public/kb/docDisplay?docId=emr_na-c03341309&ac.admitted=1344982088440.876444892.492883150).

ProLiant blades must be housed in either the Matrix Starter or Expansion Kit. The KVM managed hosts may be contained in the same enclosure as other non-KVM hypervisor hosts, or a separate enclosure. The supported KVM blade host must have the following minimum configuration:

Ordering CloudSystem Matrix

- BL460 (supported by Matrix)
- 8-core, dual processor
- 192GB RAM
- 146GB local disk (min)
- 2-GB Ethernet ports
- FC HBA Controllers
- Red Hat 6.3 with KVM (not supplied by HP unless purchased)

For additional KVM managed server hosts please

Federated Central Management Servers for CloudSystem Matrix

To scale beyond a single CloudSystem central management server (CMS) server node limits (physical+virtual), a federated CMS model has been developed.

For more information on CloudSystem Matrix federated CMS implementations please refer to:

<http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=4AA3-4721ENW&cc=us&lc=en>

HP requires the following components when implementing a federated CMS solution:

- Additional CMS servers - HP recommends HP CloudSystem Matrix Central Mgmt Svr based on DL360p Gen8, 32GB, 2P Server (PN 66224-B21) as each CMS when adding additional CloudSystem Matrix management servers. See Central Management Server section in this document for more information about this configuration.
- HP Insight Control license on each CloudSystem Matrix CMS server. NOTE: The above server (PN 66224-B21) includes a license for Insight Control.
- CloudSystem Matrix Implementation and Startup services for each additional CMS. Please see the Services section below in this QuickSpecs for additional details.

HP Interconnect Options

NOTE: The Virtual Connect interconnect modules that are built in to the Starter and Expansion kits are not removable. Interconnect bays 3 and 4 are available for additional Virtual Connect (VC) FlexFabric modules in HP CloudSystem Matrix with FlexFabric Starter and Expansion kits. Additional supported interconnected options may be added to the remaining available interconnect bays (bays 5/6 and 7/8).

NOTE: HP Virtual Connect FlexFabric 10Gb/24-port Modules should not be added to existing CloudSystem Matrix c7000 enclosures that are using HP Virtual Connect Flex-10 10Gb Ethernet modules and HP Virtual Connect 8Gb 24-Port FC Modules for BladeSystem c-Class. Mixing of Virtual Connect FlexFabric and non-FlexFabric legacy Virtual Connect modules is not permitted.

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

NOTE: For HP BladeSystem c-Class Interconnect and Mezzanine Components please visit:

<http://h18004.www1.hp.com/products/blades/components/c-class-interconnects.html>

<http://h18004.www1.hp.com/products/blades/components/c-class-adapters.html>

Ordering CloudSystem Matrix

Step 3: Select HP CloudSystem Matrix Expansion Kits.

HP CloudSystem Matrix Expansion Kit

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.

NOTE: Add HP server blades and other recommended 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.

NOTE: Refer to the HP CloudSystem Matrix compatibility chart at:

<http://www.hp.com/go/matrixcompatibility> for details on supported options, operating systems, etc.

Hardware plus software licenses

HP CloudSystem Matrix with HP-UX LDS Kit with 3 year 24x7 Support

AM393B

NOTE: The configurable starter kit can be defined as either Starter or Expansion Kit with appropriate services applied appropriately when configured.

HP CloudSystem Matrix with HP-UX Kit (Hardware Components) includes:

- HP BladeSystem c7000 enclosure and, 10 fans
- HP BladeSystem c7000 Onboard Administrator with KVM option, redundant pair

HP Virtual Connect Option (required choice of one):

- HP Virtual Connect FlexFabric 10Gb/24-port Module, redundant pair
- HP Virtual Connect Flex-10 10Gb Ethernet Module, redundant pair with HP Virtual Connect 8Gb 24-port Fibre Channel Module, redundant pair
- HP Virtual Connect Flex-10/10D Module, redundant pair with HP Virtual Connect 8Gb 24-port Fibre Channel Module, redundant pair

c7000 Power Option (required choice of one):

- Single phase with 6x 2400W power supplies (AC)
- 3-Phase with 6x 2400W power supplies (AC)
- DC Power with 6x 2250W power supplies (-48V DC)

Required Virtual Connect Enterprise Manager (VCEM)

- A quantity of one (1) VCEM license is required for each CloudSystem Matrix with HP-UX ordered.

Required HP-UX 11i v3 - a minimum quantity of 2 Per Socket Licenses and maximum quantity of 16 Per Socket Licenses must be ordered (choice of one or both)

- HP-UX 11i v3 Virtual Server Environment Operating Environment (VSE-OE)
 - Includes Matrix Operating Environment
- HP-UX 11i v3 Data Center Operating Environment (DC-OE)
 - Includes Matrix Operating Environment

Ordering CloudSystem Matrix

Step 4: Select Recommended options for HP CloudSystem Matrix Kits

NOTE: Supported options may be added to the Starter or Expansion 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 and Mezzanine Components:

<http://h18004.www1.hp.com/products/blades/components/c-class-interconnects.html>

<http://h18004.www1.hp.com/products/blades/components/c-class-adapters.html>

BladeSystem c-Class target server blades

HP ProLiant server blades

NOTE: All shipping HP ProLiant c-Class blades are supported except the HP ProLiant BL2x220c server blades and workstation blades. For server blade information, please visit: <http://h18000.www1.hp.com/products/quickspecs/division/12534.html>

NOTE: It is highly recommended that at least four (4) additional HP ProLiant c-Class blades be ordered with each Starter Kit, because the Onsite Implementation Service includes provisioning of up to four (4) HP ProLiant blades, two of which are directly provisioned as physical servers and two of which are virtual machine hosts. See separate section on "CloudSystem Matrix Starter Kit Implementation Service" for details.

NOTE: HP ProLiant server blades should be configured to connect via the Virtual Connect modules included in the CloudSystem Matrix kits. See the section below on Mezzanine options for further details.

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

HP Integrity Servers

NOTE: All shipping HP Integrity c-Class blades are supported when configured with Integrity software products. For additional server blade information please visit:

<http://h18004.www1.hp.com/products/quickspecs/division/division.html#12391>.

NOTE: The management software licenses packaged with HP CloudSystem Matrix provide licensing to manage HP ProLiant c-Class server blades and Virtual Connect Enterprise Manager software (VCEM) which is licensed to the BladeSystem c7000 Enclosure. HP Integrity c-Class server blades require separate licensing (except for VCEM software). HP-UX customers should order licenses for the HP-UX 11i v3 Virtual Server Environment OE (VSE-OE) or HP-UX 11i v3 Data Center OE (DC-OE) For additional information, please visit: www.hp.com/go/hpux. Please refer to ordering information for Integrity Matrix at: www.hp.com/go/matrix.

Interconnect options

NOTE: The Virtual Connect interconnect modules that are built in to the Starter and Expansion kits are not removable. Interconnect bays 3 and 4 are available for additional Virtual Connect (VC) FlexFabric modules in HP CloudSystem Matrix with FlexFabric Starter and Expansion kits. Additional supported interconnected options may be added to the remaining available interconnect bays (bays 5/6 and 7/8).

NOTE: HP Virtual Connect FlexFabric 10Gb/24-port Modules should not be added to existing CloudSystem Matrix c7000 enclosures that are using HP Virtual Connect Flex-10 10Gb Ethernet modules and HP Virtual Connect 8Gb 24-Port FC Modules for BladeSystem c-Class. Mixing of Virtual Connect FlexFabric and non-FlexFabric legacy Virtual Connect modules is not permitted.

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

NOTE: For HP BladeSystem c-Class Interconnect and Mezzanine Components:

Ordering CloudSystem Matrix

<http://h18004.www1.hp.com/products/blades/components/c-class-interconnects.html>

<http://h18004.www1.hp.com/products/blades/components/c-class-adapters.html>

HP Networking

NOTE: For servers that require one FlexibleLOM to be installed in the FlexibleLOM connector. All FlexibleLOMs are dual port: One port is routed to interconnect module bay 1 and the other to bay 2. For supported CloudSystem Matrix FlexibleLOM options, see the Compatibility chart at: <http://www.hp.com/go/matrixcompatibility>.

10Gb FlexibleLOM Adapters

HP FlexFabric 10Gb 2-port 554FLB FIO Adapter 684212-B21

HP Flex-10 10Gb 2-port 530FLB FIO Adapter 684211-B21

NOTE: Flex-10 adapters are compatible with FlexFabric, but are limited to Flex-10 functionality only. Do not configure Flex-10 adapters into c-Class server blades in any CloudSystem Matrix FlexFabric kit.

Mezzanine Options

NOTE: For supported CloudSystem Matrix mezzanine options, see the Compatibility chart at: <http://www.hp.com/go/matrixcompatibility>.

8Gb Fibre Channel Mezzanines

HP LPe1205A-HP 8Gb Fibre Channel Host Bus Adapter for BladeSystem c-Class 659818-B21

HP QMH2572 8Gb Fibre Channel Host Bus Adapter 651281-B21

Emulex LPe1205 8Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem 456972-B21

QLogic QMH2562 8Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem 451871-B21

NOTE: A Fibre Channel host bus adapter card is required for each server blade connecting to a HP Virtual Connect 8Gb 24-Port Fibre Channel Module for c-Class BladeSystem in bays 3-4 (i.e. for all blades in a Matrix with Flex-10 Starter or Expansion kit).

10Gb Ethernet Converged Network Adapter Mezzanines

HP FlexFabric 10Gb 2-port 554M Adapter 647590-B21

HP NC553m 10Gb 2-port FlexFabric Adapter 613431-B21

HP BLc NC551m Dual Port FlexFabric 10Gb Converged Network Adapter 580151-B21

NOTE: Required for each server blade connecting to a VC FlexFabric module in bays 3-4 (i.e. when a Matrix with FlexFabric Starter or Expansion kit is purchased with additional FlexFabric modules).

Support Plus 24 options for CloudSystem Matrix Starter Kit

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.

Proactive Select - 3 year 24x7 30 credits per year, Flexible HG921A3#12L

4 year 24x7 BL Matrix Software Support, Flexible HA107A4#9K2

5 year 24x7 BL Matrix Software Support, Flexible HA107A5#9K2

Support Plus 24 - 4 year Support Plus 24 BLc Matrix Software Support, Flexible HA110A4#9K2

Support Plus 24 - 5 year Support Plus 24 BLc Matrix Software Support, Flexible HA110A5#9K2

Proactive 24 - 4 year Support Plus 24 BLc Matrix Software Support, Flexible HA111A4#9K2

Proactive 24 - 5 year Support Plus 24 BLc Matrix Software Support, Flexible HA111A5#9K2

Critical Service - 3 year Support Plus 24 BLc Matrix Software Support, Flexible HA112A3#9K2

Critical Service - 4 year Support Plus 24 BLc Matrix Software Support, Flexible HA112A4#9K2

Ordering CloudSystem Matrix

	Critical Service - 5 year Support Plus 24 BLc Matrix Software Support, Flexible	HA112A5#9K2
	Critical Service - 4 year Support Plus 24 BLc Matrix Software Support, Flexible	HA112A4#9K2
	Critical Service - 5 year Support Plus 24 BLc Matrix Software Support, Flexible	HA112A5#9K2
Support Plus 24 options for CloudSystem Matrix Expansion Kit	NOTE: 3-, 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.	
	HP 4 year Support Plus24 BLc7000 Matrix Expansion Service	UM860E
	HP 5 year Support Plus24 BLc7000 Matrix Expansion Service	UM861E
	4 year Support Plus 24 BLc Matrix Expansion Kit Support, Flexible	HA110A4#9K1
	5 year Support Plus 24 BLc Matrix Expansion Kit Support, Flexible	HA110A5#9K1
	Proactive 24 - 4 year Support Plus 24 BLc Matrix Expansion Kit Support, Flexible	HA111A4#9K1
	Proactive 24 - 5 year Support Plus 24 BLc Matrix Expansion Kit Support, Flexible	HA111A5#9K1
	Critical Service - 3 year Support Plus 24 BLc Matrix Expansion Kit Support, Flexible	HA112A3#9K1
	Critical Service - 4 year Support Plus 24 BLc Matrix Expansion Kit Support, Flexible	HA112A4#9K1
	Critical Service - 5 year Support Plus 24 BLc Matrix Expansion Kit Support, Flexible	HA112A5#9K1
	24x7 4hr HW Support - 4 year Support Plus 24 BLc Matrix Expansion Kit Support, Flexible	HA104A4#9K1
	24x7 4hr HW Support - 5 year Support Plus 24 BLc Matrix Expansion Kit Support, Flexible	HA104A5#9K1
	24x7 SW Support - 4 year Support Plus 24 BLc Matrix Expansion Kit Support, Flexible	HA107A4#9K1
	24x7 SW Support - 4 year Support Plus 24 BLc Matrix Expansion Kit Support, Flexible	HA107A5#9K1
Hypervisor Licensing	VMware vSphere Enterprise Plus licenses for CloudSystem Matrix	
	NOTE: Buy one per CloudSystem Matrix Starter/Expansion kit (supports up to 32 processor sockets).	
	VMware vSphere Enterprise Plus 32P 3yr 24x7 No Media License	TC290A
	VMware vSphere Installation & Startup Enterprise Service, Flexible	HA124A1#5NS
	HP Installation and Startup of Vmware Vsphere Enterprise or Enterprise Plus	UK837E
	VMware vCenter Server Standard for vSphere	
	VMware vCenter Standard for vSphere 1yr No Media License	571780-B21
	NOTE: 4.0 here refers to vSphere, not ESX 4.0. Reference the Matrix compatibility chart at: http://www.hp.com/go/matrixcompatibility for the latest supported ESX versions.	
	NOTE: vCenter is licensed per instance (one needed per management domain).	
	NOTE: This does not include VMware vCenter for vSphere implementation services, which may be purchased separately.	
VMware vSphere Enterprise Plus individual licenses, per processor socket		
VMware vSphere Enterprise Plus 1P 1yr 9x5 No Media License	571774-B21	
NOTE: 4.0 here refers to vSphere, not ESX 4.0. Reference the Matrix compatibility chart at: http://www.hp.com/go/matrixcompatibility for the latest supported ESX versions.		
NOTE: This 4.0 license can be used with prior ESX versions, for example, ESX 3.5.		
NOTE: Includes technical support and updates for 1 year. For more information, see: http://h18006.www1.hp.com/products/servers/software/vmware/index.html		
NOTE: One instance of VMware vCenter Server (see below) is required to enable vSphere features such as VMware VMotion, VMware Distributed Resource Scheduler, and more.		

Ordering CloudSystem Matrix

Microsoft Windows Server 2008 with Hyper-V licenses

Microsoft Windows 2008 Server Standard Edition 5CAL Factory Integrated Not Pre-installed Software 468721-B21

Windows Server 2008 Enterprise Edition OS Not Pre-Installed, FIO (includes 4 Hyper-V licenses) 468723-B21

HP P6300 EVA (factory integrated)

P6300 EVA Factory Integrated Starter Kit with (8) 600GB 10K SFF drives

NOTE: This kit is only for Factory Integration and requires the #0D1 option.

- HP P6300 EVA (8) 600GB 10K SFF SAS Factory Integrated Starter Kit AP891A
NOTE: Order additional 600GB 10K RPM SFF SAS disk drives as needed to add capacity
- P6000 Command View/ABM installed with restore CD
NOTE: P6000 SmartStart software, containing P6000 Command View/SBM software, either on a CD or an e-copy, if needed, can be ordered separately
- P6300 Unlimited Command View LTU
- XCS v10.x Firmware installed with restore CD

HP P6300 EVA

Additional Components

HP 8/40 Power Pack+ (24) Full Fabric Ports Enabled SAN Switch AM870A

HP 8/40 Base (24) Full Fabric Ports Enabled SAN Switch AM869A

HP 8/24 Base (16) Full Fabric Ports Enabled SAN Switch AM868A

NOTE: Required to connect the blade enclosure to the EVA, if customer needs a top of rack B-series SAN switch.

HP 8/20q Fibre Channel 8-ports Active Switch AQ233A

HP 8/20q Fibre Channel Switch AK242A

HP SN6000 Stackable 8Gb 24-port Single Power Fibre Channel Switch AW575A

HP SN6000 Stackable 8Gb 24-port Dual Power Fibre Channel Switch AW576A

HP SN6000 Stackable 12-port Single Power FC Switch BK780A

NOTE: Required to connect the blade enclosure to the EVA, if customer needs an H-series SAN switch (top of rack).

Optional Components

HP CP 3Y Support Plus 24 HA110A3

HP CP Installation & Startup HA114A1

HP CP Tech Installation and Startup HA124A1

HP Enterprise Virtual Array Loopback Connector AJ706A

HP P6000 SmartStart V3.4 E-Media Kit T5505HAE

HP LC to LC Multi-mode OM3 2-Fiber 5.0m 1-Pack Fiber Optic Cable AJ836A

HP Virtualized SAN

NOTE: Optional iSCSI storage solutions, including the following.

HP P4300 G2 7.2TB SAS Starter SAN Solution BK716A

HP P4500 G2 14.4TB SAS Virtualization SAN Solution BQ888A

Factory Express

HP Rack Signal Cable Interconnect Service HA865A1

NOTE: Required selection when storage or switching is Factory integrated in the same rack.

Step 5: Choose Additional Options for Factory Integration

Ordering CloudSystem Matrix

Power Distribution Units **NOTE:** PDUs must be ordered in pairs for AC Feed redundancy.

HP Monitored Power Distribution Units

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
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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.

HP PCI expansion blades HP BLc PCI Expansion Blade	448018-B21
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NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://h18000.www1.hp.com/products/quickspecs/12753_na/12753_na.html (Worldwide)

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

Optical Cables

HP LC to LC Multi-mode OM3 2-Fiber 0.5m 1-Pack Fiber Optic Cable	AJ833A
HP LC to LC Multi-mode OM3 2-Fiber 1.0m 1-Pack Fiber Optic Cable	AJ834A
HP LC to LC Multi-mode OM3 2-Fiber 2.0m 1-Pack Fiber Optic Cable	AJ835A
HP LC to LC Multi-mode OM3 2-Fiber 5.0m 1-Pack Fiber Optic Cable	AJ836A
HP LC to LC Multi-mode OM3 2-Fiber 15.0m 1-Pack Fiber Optic Cable	AJ837A
HP LC to LC Multi-mode OM3 2-Fiber 30.0m 1-Pack Fiber Optic Cable	AJ838A
HP LC to LC Multi-mode OM3 2-Fiber 50.0m 1-Pack Fiber Optic Cable	AJ839A

NOTE: For VC Ethernet 10Gb uplinks

NOTE: For VC Fibre Channel uplinks

NOTE: For NC550SFP 10Gb dual port NIC uplinks in the Matrix CMS

NOTE: Optical transceivers/SFP+ must be purchased to connect these cables.

HP 10Gb SFP+ Copper cables

HP BladeSystem c-Class Small Form-Factor Pluggable .5m 10GbE Copper Cable	487649-B21
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Ordering CloudSystem Matrix

HP BladeSystem c-Class Small Form-Factor Pluggable 1m 10GbE Copper Cable	487652-B21
HP BladeSystem c-Class Small Form-Factor Pluggable 3m 10GbE Copper Cable	487655-B21
HP BladeSystem c-Class Small Form-Factor Pluggable 5m 10GbE Copper Cable	537963-B21
HP BladeSystem c-Class Small Form-Factor Pluggable 7m 10GbE Copper Cable	487658-B21

NOTE: For VC stacking between enclosures. 2 short links per Expansion kit, and 2 long links per Matrix rack (i.e. VC domain) is recommended.

NOTE: For VC Ethernet module uplinks (if Ethernet switch supports this uplink)

NOTE: For NC550SFP 10Gb dual port NIC uplinks in the Matrix CMS (if Ethernet switch supports this uplink)

1Gb Ethernet (CAT5e) cables

HP 1.2m/4ft CAT5 RJ45 M/M Ethernet Cable	C7533A
HP RJ45 to RJ45 Cat5e Black M/M 7.6m 1-pack Data Cable	C7535A
HP 4.3m/14ft CAT5 RJ45 M/M Ethernet Cable	C7536A
HP 7.6m/25ft CAT5 RJ45 M/M Ethernet Cable	C7537A

NOTE: For OA/iLO port uplinks to Ethernet switch (2 for each BladeSystem c7000 Enclosure, 1 for each Matrix CMS SKU or HP ProLiant DL server) C7542A

NOTE: For OA enclosure linking (1 short link per Expansion Kit recommended).

NOTE: For OA/iLO port uplinks to Ethernet switch (2 for each BladeSystem c7000 Enclosure, 1 for each Matrix CMS SKU or HP ProLiant DL server).

NOTE: For 1Gb NIC uplinks to Matrix CMS SKU (optional, up to 4).

NOTE: For iSCSI device uplinks when present.

Power cords

HP C19 - C20 Jumper Cords

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

HP C19 - C20 WW 250V 16Amp Flint Gray 1.20m Jumper Cord	AF575A
HP C19 - C20 WW 250V 16Amp Flint Gray 2.0m Jumper Cord	AF574A
HP C19 - C20 WW 250V 16Amp 2.5m Jumper Cord	295633-B22
HP C19 - C20 WW 250V 16Amp 4.5m Jumper Cord	E7804A

HP HV Power Cords 200 - 240V AC

HP C19 -Nema L6-30P US/CA 250V 16Amp 4.5m Power Cord	E7805A
HP C19 - Nema L6-20P NA/JP 250V 20Amp High Voltage 3.6m Power Cord	AF593A
HP C19 - NBR-14136 BR 250V 16Amp 2.5m Power Cord	AF592A
HP C19 - BS-1363/A UK/HK/SG 250V 13Amp 3.6m Power Cord	359615-031
HP C19 - CEE-VII EU 250V 16Amp 3.6m Power Cord	AF576A
HP C19 - AS3112-3 AU/NZ 250V 15Amp 3.6m Power Cord	AF577A
HP C19 - SABS-164 ZA 250V 16Amp 3.6m Power Cord	AF579A
HP C19 - CEI-23-50 IT/CL 250V 16Amp 3.6m Power Cord	AF580A
HP C19 - IEC-309 DK/SE/AR 250V 16Amp 3.6m Power Cord	AF581A
HP C19 - IS-1293 IN/PK/BD 250V 16Amp 2.5m Power Cord	AF582A
HP C19 - ISI-32 IL 250V 16Amp 2.5m Power Cord	AF583A
HP C19 - GB-1002 CN 250V 16Amp 2.5m Power Cord	AF584A
HP C19 - CNS-690 TW 250V 16Amp 2.5m Power Cord	AF585A
HP 240 VAC 4.5M Unterminated End NA Power Cord	E7806A

Uninterruptible Power

HP Rack Mounted R5500 UPS (single-phase)



Ordering CloudSystem Matrix

Systems

HP R5500 5000kVA NA/JP 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 NA 6U Rackmount Uninterruptible Power System	AF431A
HP Rack Mounted R12000 UPS (3-phase UPS)	
HP R12000/3 12000VA Three Phase NA 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	

Additional Options

HP Rack Series

HP Intelligent Series Rack

HP 642 1075mm Shock Intelligent Series Rack	BW904A
HP 642 1075mm Pallet Intelligent Series Rack	BW903A
HP 642 1200mm Shock Intelligent Rack	BW908A
HP 647 1075mm Shock Intelligent Rack	BW912A
HP 647 1200mm Shock Intelligent Rack	BW914A
HP 642 1075mm Crate Intelligent Rack	BW905A
HP 642 1200mm Pallet Intelligent Rack	BW907A
HP 647 1075mm Pallet Intelligent Rack	BW911A
HP 647 1200mm Pallet Intelligent Rack	BW913A

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

http://h18004.www1.hp.com/products/quickspecs/14223_na/14223_na.html
(Worldwide)

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

HP Rack Options

Keyboards and Monitors

HP TFT7600 Rackmount Keyboard 17in US Monitor	AG052A
HP 1U US Rackmount Keyboard with USB	AG072A
HP 1U Rackmount Keyboard with USB	AG081A

NOTE: For additional information regarding Rack Options, please see the following URL:

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

HP KVM Switch Options

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 Server Console 0x2x8 Port Analog Switch	AF616A
HP Server Console 0x2x16 Port Analog Switch	AF617A
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: 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>

Additional Options

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 10636 G2 Front Door AF019A

HP 10K G2 600W Graphite Stabilizer Kit AF062A

HP 10K G2 600W Heavy Duty Graphite Stabilizer Kit AF064A

Rack options for HP Intelligent Series racks

HP Intelligent Series Rack Grounding Kit BW891A

HP Intelligent Series JackBlack Rack Baying Kit BW902A

HP 42U 1075mm Side Panel Kit BW906A

HP 600mm Rack Tie Down Kit BW926A

HP 600mm JackBlack Rack Stabilizer Kit BW932A

HP 42U Front Door Kit BW934A

HP Quarter Turn Hook and Loop 10 Pack Kit BW963A

HP Quarter Turn Hook and Loop 100 Pack Kit BW964A

Rack options for HP Intelligent Series racks

HP Rack Grounding Kit BW891A

HP Baying Kit JB BW902A

HP 42U 1075mm Side Panel Kit BW906A HP 600mm Rack Tie Down Kit BW926A

HP 600mm Stabilizer JB BW932A

HP 42U Front Door Kit BW934A

HP Quarter Turn Hook and Loop 10 PK BW963A

HP Quarter Turn Hook and Loop 100 PK BW964A

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

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.

Additional Options

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

HP 3 year Next business day c7000 Enclosure Hardware Support UE477E

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

HP 3 year 4 hour 13x5 c7000 Enclosure Hardware Support UE478E

HP 3 year 4 hour 24x7 c7000 Enclosure Hardware Support UE479E

HP 3 year 6 hour 24x7 Call to Repair c7000 Enclosure Hardware Support UE480E

Hardware Services On-site Service

HP 3 Years Next business day c-Class SAN Switch Hardware Support UE436E

HP 3 Years 4 hour 13x5 c-Class SAN Switch Hardware Support UE437E

HP 3 Years 4 Hour 24 hours UE438E

HP 3 Years 6 Hour 24x7 Call-To-Repair c-Class SAN Switch Hardware Support UE439E

HP Installation Storage Switches Service U5988E

Software Operating Environment Care Packs

HP 1 year 24x7 10 incidents Microsoft/Novell Software Technical Support U9269E

HP 1 year 24x7 25 incident Red Hat High Performance Computing Software Technical Support U3408E

HP 1 year 24x7 10 incidents SuSE IA32 Software Technical Support U9936E

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

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

Hardware Installation, Electronic HA113A1#5D2

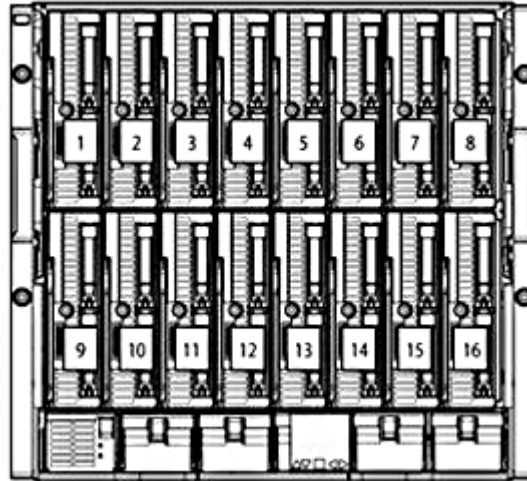
Infrastructure Software On-site Services

Additional Options

HP Startup Insight Dynamics Recovery Management Service	UK830E
NOTE: 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: All HP CloudSystem Matrix infrastructure ships with licensed disaster recovery protection for both physical and virtual servers, in coordination with data replication provided by EVA or XP Continuous Access software. Disaster recovery protection can be achieved by implementing a secondary infrastructure at a remote location, and enabling storage replication between the two sites.	
HP Matrix Operating Environment Recovery Management Installation & Startup Service, Flexible	HA124A1#5FX
HP BladeSystem 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 BladeSystem Matrix Upgrade Implementation Service	UU960E
HP BladeSystem 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 BladeSystem Matrix Upgrade with Migration Implementation Service	UU961E
HP BladeSystem Matrix Expansion Kit Integration Implementation Service	HA115A1#5P9
NOTE: This is a required Service to expand your existing Matrix environment by adding Matrix Expansion Kits.	
HP Install c-Class Enclosure & ServerBlade Service	UE494E
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 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 HP Matrix Operating Environment 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

Technical Specifications

Half-height server blade bay numbering

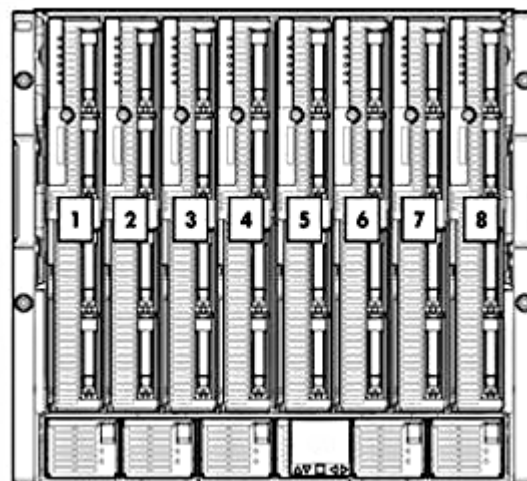


1. Device Bay 1
2. Device Bay 2
3. Device Bay 3
4. Device Bay 4
5. Device Bay 5
6. Device Bay 6
7. Device Bay 7
8. Device Bay 8

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 (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
2. Device Bay 2

5. Device Bay 5
6. Device Bay 6

Technical Specifications

3. Device Bay 3

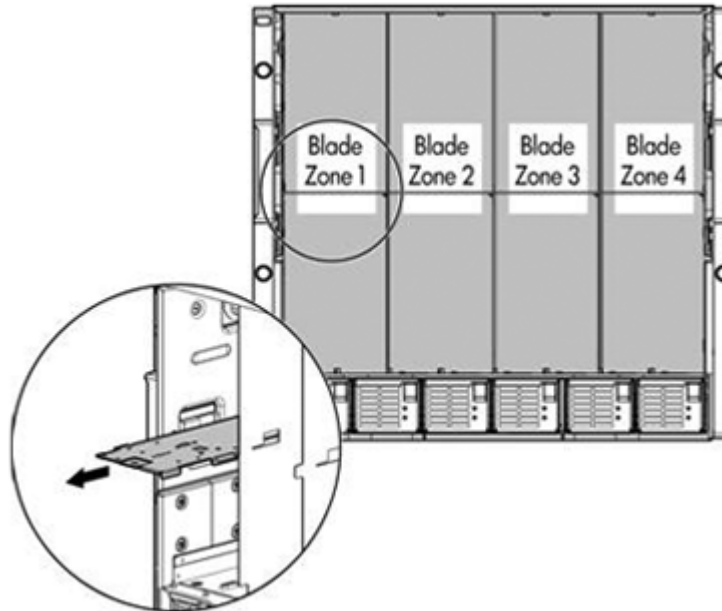
7. Device Bay 7

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 NA/JPN weight	Unboxed	222 lb (100.7 kg)
		Shipping	265 lb (120.2 kg)
	Three-phase enclosure international 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)	

Technical Specifications

Maximum enclosure weight (approximate)	Unboxed	450 lb (204 kg)
	Shipping	493 lb (223.6 kg)
Temperature range	Operating	50° to 95° F (10° to 35° C)
	Non-Operating	-22° to 140° F (-30° to 60° C)
Relative humidity	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.

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
		Rated input power per power supply	2612 VA Max
	2400W PSU	Rated input voltage	200 to 240 VAC
		Rated input current per power supply	13.9 A at 200 VAC 13.3 A at 208 VAC 12.6 A at 220 VAC
Rated input power per power supply		2780 VA	

Power cords

Single-Phase	IEC-320 C19-C20 1.22m (6 ft)
3-Phase NA/JPN	2 x NEMA L15-30p 2.44m (10 ft)
3-Phase International	2 x IEC-309 200/346 V - 240/415 V, 5-Pin, 6h 16A 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

Technical Specifications

HP 2250W -48V DC Hot- Plug Power Supply 2250W

Acoustic noise

Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).

Idle

LWAd 7.5 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>

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