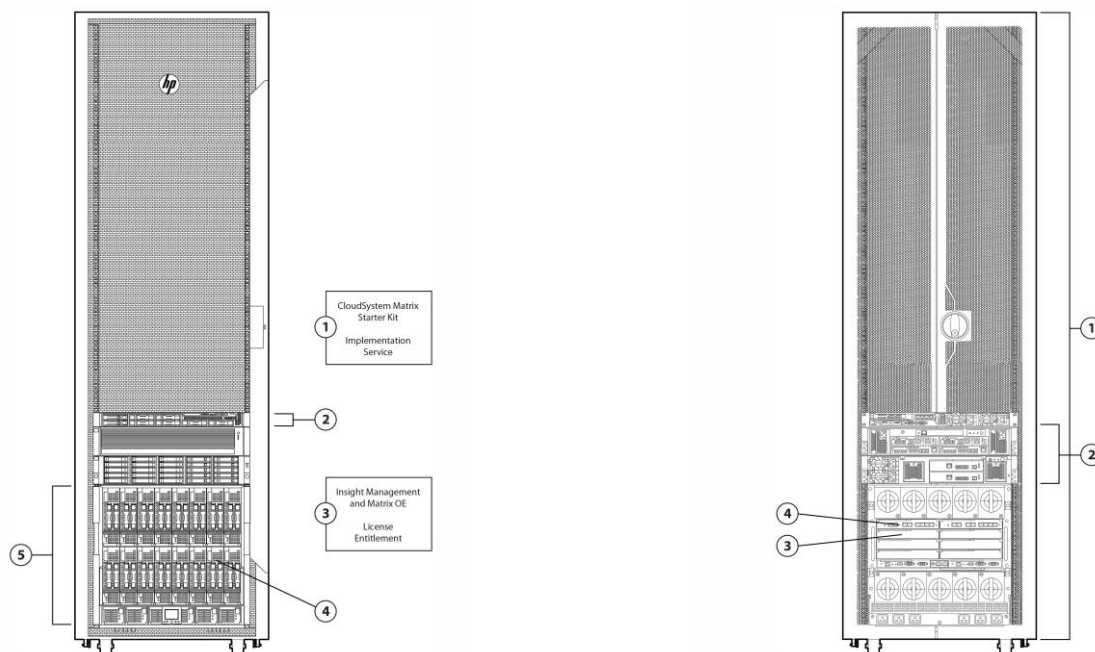


## Overview

## HP CloudSystem Matrix (Retired)

## Starter Kit



## Starter Kit - Front

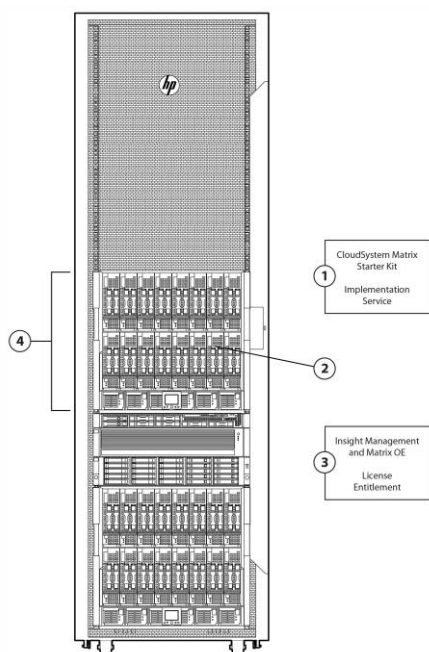
1. Onsite CloudSystem Matrix Starter Kit Implementation
2. Central Management Server (CMS)  
HP ProLiant DL360p Gen8 server (recommended CMS)
3. Complete Matrix OE (including Insight Control) and Virtual Connect Enterprise Manager.
4. 16 half-height device bays available for populating with server blades
5. HP BladeSystem c7000 enclosure, single phase

## 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)
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

## Overview

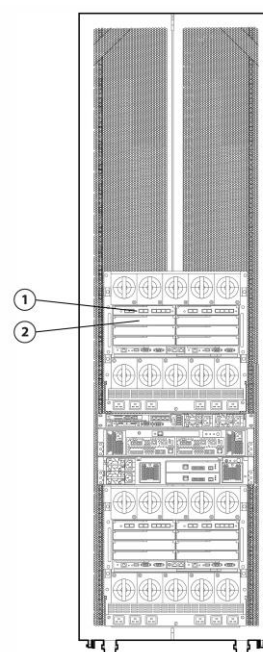
## Expansion Kit



## Expansion Kit - Front

1. Onsite CloudSystem Matrix Expansion Kit Implementation Service (for Expansion Kit orders purchased after an initial Matrix environment is implemented)
2. 16 half-height device bays available for populating with server blades
3. Complete Matrix OE (including Insight Control) and Virtual Connect Enterprise Manager
4. HP BladeSystem c7000 enclosure

**NOTE:** All HP CloudSystem Matrix infrastructure ships with licensed disaster protection for both physical and virtual servers, in coordination with data replication provided by EVA, XP Continuous Access software, or 3PAR. Disaster recovery protection can be achieved by implementing a secondary infrastructure at a remote location, and enabling storage replication between the two sites.



## 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

## What's New

Updates for version 7.4 include:

- Support for recently released HP ProLiant Gen9 servers (including BL460c blade for CloudSystem solutions)
- Hyper-V enhancements (Generation 2 VMs, logical switches, RDM for HA VMs)
- Ability to add/remove networks from physical servers
- Ability to change disk size and user-defined properties at time of service creation

# QuickSpecs

## Overview

- GUI customizations and organization enhancements
  - Storage support enhancements
-

## Standard Features

### Product Features

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% 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: <http://www.hp.com/go/virtualconnect>

For more information about HP Storage, see: [www.hp.com/go/storage](http://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 Cloud Service Automation for Matrix, see:

<http://www.hp.com/go/csa4matrix>

## 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 Kit for ProLiant, which contains the infrastructure needed for a fully-working environment supporting up to 16 HP ProLiant half-height server blades. Add additional 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 with the first kit simply extends its domain to manage additional infrastructure that might be added with additional Matrix kits.

**NOTE:** Additional expansion kits may also be purchased separately. Expansion kits ordered separately will come with the Matrix Expansion Kit Integration Implementation Service.

**NOTE:** Additional expansion kits purchased must be co-located with the initial 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 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 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 begin managing a team of TS engineers to start 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.

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

**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 customers 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 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 P6000, 3PAR or other HP SAN or an existing SAN
  - 1 HP server blade running a native OS of the customer's choice (Windows, Linux) on a boot LUN
  - 2 HP server blades each running a single hypervisor of the customer's choice (VMware ESX, Microsoft Hyper-V or KVM), each on their own boot LUN (hypervisor licenses are customer provided unless purchased from HP as part of the order)
 

**NOTE:** Installation and deployment of KVM requires additional service credits. See [section on Ordering CloudSystem Matrix](#).

    - 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>

## HP CloudSystem Matrix

- CloudSystem Matrix demonstrations. See: <http://www.hp.com/go/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 customers site, unpack and inspect for damages
- Integrate Matrix Expansion Kits hardware in to customers 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 uplifts 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, routes 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

## HP CloudSystem Matrix

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

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

### HP Matrix Operating Environment Support

HP Matrix Operating Environment 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 -- 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



## HP CloudSystem Matrix

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_div/13050_div.html) for additional information: [http://h18000.www1.hp.com/products/quickspecs/13050\\_div/13050\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13050_div/13050_div.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_div/13050_div.html) for more details [http://h18000.www1.hp.com/products/quickspecs/13050\\_div/13050\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13050_div/13050_div.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: <http://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 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.

## HP CloudSystem Matrix

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](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>

### 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 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 1200mm deep rack is required to allow DC power cabling to be installed

**CAUTION:** CloudSystem Matrix infrastructures are best fulfilled with HP racks. However, if a third-party

## HP CloudSystem Matrix

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 Series Rack  | BW908A |
| HP 647 1075mm Shock Intelligent Series Rack  | BW912A |
| HP 647 1200mm Shock Intelligent Series Rack  | BW914A |
| HP 642 1200mm Pallet Intelligent Series Rack | BW907A |
| HP 647 1075mm Pallet Intelligent Series Rack | BW911A |
| HP 647 1200mm Pallet Intelligent Series 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](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 Required 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**

|   |            |
|---|------------|
| HP CloudSystem Matrix for ProLiant v2 Kit | 708919-B21 |
|---|------------|

## Ordering CloudSystem Matrix

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

HP CloudSystem Matrix Modular Kit (Hardware Components) includes:

- HP BladeSystem c7000 enclosure and 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 24-port Module, redundant pair with HP Virtual Connect 8Gb 24-port Fibre Channel Module, redundant pair
- HP Virtual Connect Flex-10/10D 30-port Module, redundant pair with HP Virtual Connect 8Gb 24-port Fibre Channel Module, redundant pair

c7000 Power Option (required choice of one):

- Single phase (QTY of 6)
- 3-Phase (QTY of 6)
- DC Power (QTY of 6)

HP Matrix OE Software (required choice of one)

- Matrix Operating Environment 16-server license, 3 year 24/7 support and updates
- Matrix Operating Environment 8-server license, 3 year 24/7 support and updates

**NOTE:** Additional Matrix OE licenses may be purchased separately.,

**NOTE:** See the HP Matrix Operating Environment for ProLiant QuickSpecs for additional information:

[http://h18000.www1.hp.com/products/quickspecs/13050\\_div/13050\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13050_div/13050_div.html)  
(Worldwide)

**NOTE:** Following are the VC FlexFabric transceiver/SFP options.

|  |            |
|--|------------|
| HP BladeSystem c-Class 10Gb SFP+ SR Transceiver                      | 455883-B21 |
| HP BladeSystem c-Class 10Gb SFP+ LR Transceiver                      | 455886-B21 |
| HP BladeSystem c-Class 10Gb SFP+ LRM Transceiver                     | 455889-B21 |
| HP BladeSystem c-Class Virtual Connect 1G SFP SX Transceiver         | 453151-B21 |
| HP BladeSystem c-Class Virtual Connect 1G SFP RJ-45 Transceiver      | 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     |

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

#### Software Licenses and media

## Ordering CloudSystem Matrix

HP Matrix Operating Environment SW for 16 Server and VCEM for c7000 Enclosure with 3yr 24x7 Support BD683B

HP Matrix Operating Environment SW for 8 Server and VCEM for c7000 Enclosure with 3yr 24x7 Support BD578B

**NOTE:** One (1) entitlement order number is provided.

**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:** The management software licenses packaged with HP CloudSystem Matrix provide licensing to manage HP ProLiant c-Class server blades only, except for Virtual Connect Enterprise Manager software (VCEM) as this is licensed to the actual BladeSystem c7000 enclosure. HP Integrity c-Class server blades require separate licensing. 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) (see: <http://www.hp.com/go/hpux>).

**Implementation Service**

HP Implementation service for the CloudSystem Matrix Starter Kit UK831E

HP CloudSystem Matrix Starter Kit - Implementation Service, Flexible HA115A1-5NL

**NOTE:** Includes the installation & configuration of any Matrix Expansion Kit included in the order.

**Central Management Server** HP CloudSystem Central Management Kit (DL360p Gen8 128G 2P Server 3y 24x7 Support G6X20A

**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 G6X20A) is configured as follows:

- Dual processors - Intel® Xeon® E5-2650v2 processor
- 128 GB (8 x 16GB) 16GB 2Rx4 PC3-14900R-13 Kit Registered DIMMs
- HP 2GB FBWC for P-Series Smart Array
- FlexFabric 10Gb 2P 554FLR-SFP+ Adapter Ethernet 1Gb 4-port 331T Adapter
- 8x HP 300GB 6G SAS 15K 2.5in SC ENT HDD
- 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

**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

## Ordering CloudSystem Matrix

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 Management Support Matrix Chapter 2 "Central Management Server Requirements" for more information:

<http://bizsupport2.austin.hp.com/bc/docs/support/SupportManual/c03341309/c03341309.pdf>

**NOTE:** This CMS should be implemented on a 64-bit Windows operating system. (See Matrix compatibility chart at <http://www.hp.com/go/matrixcompatibility>)

#### 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: <http://www.hp.com/go/hpux>. Please refer to ordering information for Integrity Matrix at: [www.hp.com/go/matrix](http://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 Management Server requires that an additional 3 Implementation days (HK928A1) to be added to the standard CloudSystem Matrix installation offering.

## Ordering CloudSystem Matrix

**NOTE:** Specific hardware and software configuration guidelines for the KVM Management Server can be found within the HP Insight Management Support Matrix, which can be located within the document list at [http://h18013.www1.hp.com/products/servers/management/unified/infolibrary\\_ic.html](http://h18013.www1.hp.com/products/servers/management/unified/infolibrary_ic.html)

**KVM Managed Hosts** CloudSystem Matrix supports KVM managed hosts on servers that are generally supported by Matrix. Specifically, they can be within Matrix enclosures or ProLiant DL or SL servers. 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:

**NOTE:** Specific hardware and software configuration guidelines for the KVM Managed Hosts can be found within the HP Insight Management Support Matrix, which can be located at [http://h18013.www1.hp.com/products/servers/management/unified/infolibrary\\_ic.html](http://h18013.www1.hp.com/products/servers/management/unified/infolibrary_ic.html)

**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.

**NOTE:** If installation is using KVM managed nodes in a federated CMS configuration, the KVM management server must be managed by the top-level Matrix CMS.

**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.



## Ordering CloudSystem Matrix

**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>

### 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 for ProLiant v2 Kit

708919-B21

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

HP CloudSystem Matrix Modular 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 24-port Module, redundant pair with HP Virtual Connect 8Gb 24-port Fibre Channel Module, redundant pair
- HP Virtual Connect Flex-10/10D 30-port Module, redundant pair with HP Virtual Connect 8Gb 24-port Fibre Channel Module, redundant pair

c7000 Power Option (required choice of one):

- Single phase (QTY of 6)
- 3-Phase (QTY of 6)
- DC Power (QTY of 6)

HP Matrix OE Software (required choice of one)

- Matrix Operating Environment 16-server license, 3 year 24/7 support and updates
- Matrix Operating Environment 8-server license, 3 year 24/7 support and updates

## Ordering CloudSystem Matrix

**NOTE:** Additional Matrix OE licenses may be purchased separately. ,  
**NOTE:** See the HP Matrix Operating Environment for ProLiant QuickSpecs for additional information:

[http://h18000.www1.hp.com/products/quickspecs/13050\\_div/13050\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13050_div/13050_div.html)  
(Worldwide)

**NOTE:** Following are the VC FlexFabric transceiver/SFP options.

|  |            |
|--|------------|
| HP BladeSystem c-Class 10Gb SFP+ SR Transceiver                      | 455883-B21 |
| HP BladeSystem c-Class 10Gb SFP+ LR Transceiver                      | 455886-B21 |
| HP BladeSystem c-Class 10Gb SFP+ LRM Transceiver                     | 455889-B21 |
| HP BladeSystem c-Class Virtual Connect 1G SFP SX Transceiver         | 453151-B21 |
| HP BladeSystem c-Class Virtual Connect 1G SFP RJ-45 Transceiver      | 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     |

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

|   |            |
|---|------------|
| HP BladeSystem c-Class 10Gb SFP+ SR Transceiver                 | 455883-B21 |
| HP BladeSystem c-Class 10Gb SFP+ LR Transceiver                 | 455886-B21 |
| HP BladeSystem c-Class 10Gb SFP+ LRM Transceiver                | 455889-B21 |
| HP BladeSystem c-Class Virtual Connect 1G SFP SX Transceiver    | 453151-B21 |
| HP BladeSystem c-Class Virtual Connect 1G SFP RJ-45 Transceiver | 453154-B21 |

**Implementation Service**

|  |             |
|--|-------------|
| HP Implementation service for the CloudSystem Matrix Expansion Kit | UU959E      |
| HP CloudSystem Expansion Kit - Implementation Service, Flexible    | HA115A1-5P9 |

**NOTE:** The Matrix Expansion Kit Integration Implementation Service is required for any purchased Expansion Kit being added to an existing Matrix environment. The Matrix Expansion Kit Integration Service supports the integration of up to four Matrix Expansion Kits into the existing Matrix environment.

**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\\_div/12810\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.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

## Ordering CloudSystem Matrix

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: <http://www.hp.com/go/hpux>. Please refer to ordering information for Integrity Matrix at: [www.hp.com/go/matrix](http://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:

<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>.

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**8Gb Fibre Channel Mezzanines**

|   |            |
|---|------------|
| HP LPe1205A 8Gb Fibre Channel Host Bus Adapter for BladeSystem c-Class    | 659818-B21 |
| HP QMH2572 8Gb Fibre Channel Host Bus Adapter for BladeSystem c-Class     | 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 |
| 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 |

## Ordering CloudSystem Matrix

|   |             |
|---|-------------|
| 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.

**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 #OD1 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

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**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 EVA 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**

**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

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|   |            |
|---|------------|
| 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.

|                                |                            |            |
|--------------------------------|----------------------------|------------|
| <b>HP PCI expansion blades</b> | 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\\_div/12753\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12753_div/12753_div.html)  
(Worldwide)

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

**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 10GbE SFP+ to SFP+ 0.5m Direct Attach Copper Cable | 487649-B21 |
| HP BladeSystem c-Class 10GbE SFP+ to SFP+ 1m Direct Attach Copper Cable   | 487652-B21 |
| HP BladeSystem c-Class 10GbE SFP+ to SFP+ 3m Direct Attach Copper Cable   | 487655-B21 |
| HP BladeSystem c-Class 10GbE SFP+ to SFP+ 5m Direct Attach Copper Cable   | 537963-B21 |
| HP BladeSystem c-Class 10GbE SFP+ to SFP+ 7m Direct Attach 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**

## Ordering CloudSystem Matrix

|  |        |
|--|--------|
| 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 |
| HP 15.2m/50ft CAT5 RJ45 M/M Ethernet Cable             | C7542A |

**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 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 Systems

**HP Rack Mounted R5500 UPS (single-phase)**

|  |        |
|--|--------|
| HP R5500 6000VA INTL 3U Rackmount Uninterruptible Power System   | AF416A |
| 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\\_div/11871\\_div.html](http://h18000.www1.hp.com/products/quickspecs/11871_div/11871_div.html) (Worldwide)

**HP Rack Mounted R8000 UPS (3-phase UPS)**

|   |        |
|---|--------|
| HP R8000/3 8000kVA Three Phase NA 6U Rackmount Uninterruptible Power System | AF431A |
| HP R8000/3 8000kVA Three Phase INTL 6U Rackmount Uninterruptible Power      | AF432A |



## Ordering CloudSystem Matrix

System

**HP Rack Mounted R12000 UPS (3-phase UPS)**

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

HP R12000/3 12000VA Three Phase INTL 6U Rackmount Uninterruptible Power System AF430A

**NOTE:** For more information on the HP 3-Phase UPS products please consult the QuickSpecs at:

[http://h18004.www1.hp.com/products/quickspecs/12857\\_div/12857\\_div.html](http://h18004.www1.hp.com/products/quickspecs/12857_div/12857_div.html)  
(Worldwide)

## 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 Series Rack  | BW908A |
| HP 647 1075mm Shock Intelligent Series Rack  | BW912A |
| HP 647 1200mm Shock Intelligent Series Rack  | BW914A |
| HP 642 1200mm Pallet Intelligent Series Rack | BW907A |
| HP 647 1075mm Pallet Intelligent Series Rack | BW911A |
| HP 647 1200mm Pallet Intelligent Series 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](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>.

**HP Rack Options****Keyboards and Monitors**

|   |        |
|---|--------|
| HP TFT7600 Rackmount Keyboard 17in US Monitor   | AG052A |
| HP TFT7600 Rackmount Keyboard 17in UK Monitor   | AG053A |
| HP TFT7600 Rackmount Keyboard 17in FR Monitor   | AG055A |
| HP TFT7600 Rackmount Keyboard 17in ES Monitor   | AG057A |
| HP TFT7600 Rackmount Keyboard 17in DK Monitor   | AG058A |
| HP TFT7600 Rackmount Keyboard 17in NO Monitor   | AG059A |
| HP TFT7600 Rackmount Keyboard 17in CH Monitor   | AG061A |
| HP TFT7600 Rackmount Keyboard 17in BE Monitor   | AG063A |
| HP TFT7600 Rackmount Keyboard 17in RU Monitor   | AG065A |
| HP TFT7600 Rackmount Keyboard 17in Intl Monitor | AG066A |
| 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 |

## Additional Options

|  |            |
|--|------------|
| HP 1U RU Rackmount Keyboard with USB   | AG085A     |
| HP 1U INT Rackmount Keyboard with USB  | AG086A     |
| <b>NOTE:</b> For additional information regarding Rack Options, please see the following URL: <a href="http://www.hp.com/go/rackandpower">http://www.hp.com/go/rackandpower</a>  |            |
| <b>HP KVM Switch Options</b>   |            |
| HP 1-pack PS/2 Virtual Media Interface Adapter   | AF604A     |
| <b>NOTE:</b> 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 |
| <b>NOTE:</b> Cat5e cables are required to connect Interface Adapters to Consoles Switches. Cat52 cables can be found at the following URL: <a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a>                                     |            |
| HP 1x4 USB/PS2 KVM Console Switch  | AF611A     |
| HP 1x4 KVM Console 6ft PS2 Cable   | AF612A     |
| HP 1x4 KVM Console 6ft USB Cable   | AF613A     |
| <b>NOTE:</b> required for supporting USB peripherals.  |            |
| <b>NOTE:</b> For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: <a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a>   |            |
| <b>NOTE:</b> 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: <a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a> .  |            |
| <b>NOTE:</b> For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: <a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a> . |            |
| <b>Rack options for HP 10000 G2 Series racks</b>   |            |
| 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     |
| <b>Rack options for HP Intelligent Series racks</b>  |            |
| HP Rack Grounding Kit  | BW891A     |
| HP Rack Baying Kit   | BW902A     |
| HP 42U 1075mm Side Panel Kit   | BW906A     |
| HP 600m Rack Tie Down Kit  | BW926A     |
| HP 600mm 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     |
| <b>Rack options for HP Intelligent Series racks</b>  |            |

## Additional Options

|  |        |
|--|--------|
| HP Rack Grounding Kit                      | BW891A |
| HP Rack Baying Kit                         | BW902A |
| HP 600m Rack Tie Down Kit                  | BW926A |
| HP 600mm 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 |

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

**HP Airflow Optimization**

|                                  |        |
|----------------------------------|--------|
| HP 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.

|   |  |          |
|---|--|----------|
| <b>HP Matrix OE Public Cloud Managed Instance License</b> | HP Matrix Operating Environment Public Cloud Managed Instance 1 year 24x7 Support License          | BD580A   |
|   | HP Matrix Operating Environment Public Cloud Managed Instance 1 year 24x7 Support E-LTU            | BD580AAE |
|   | HP Matrix Operating Environment Public Cloud Managed Instance 1 year 24x7 Support Flexible License | BD581A   |

**NOTE:** Each traditional (node-based) Matrix OE license includes rights to also manage one public cloud instance. For example, a purchase of 16 Matrix OE server licenses entitles the buyer to also manage up to 16 instances concurrently across all public clouds. This built-in public cloud licensing may be sufficient to cover all bursting needs of some CloudSystem users. If more extensive bursting is required, a Matrix OE public cloud managed instance license (BD580A, BD580AAE, and BD581A) is required for each additional VM that will be managed concurrently on public cloud infrastructure.

**NOTE:** Customers purchasing "t" quantity of the traditional (node-based) Matrix OE license and "p" quantity of the Matrix OE Public Cloud Managed Instance License will be able to burst up to "t+p" virtual machine(s) concurrently. The total number of VMs in use simultaneously across all cloud service providers may not exceed "t+p".

**NOTE:** The Matrix OE Public Cloud Managed Instance License (BD580A, BD580AAE, and BD581A) will be valid for a period of one year from the date of purchase. To extend rights to manage a public cloud instance beyond the license term, customers must purchase another license when their current license expires.

**NOTE:** For each purchased fixed or flexible license, a printed license entitlement certificate will be delivered. For each purchased electronic license, a license entitlement certificate will be delivered electronically.

|                              |   |
|------------------------------|---|
| <b>HP Care Pack services</b> | <b>NOTE:</b> HP Care Pack services for the BladeSystem c7000 enclosure cover the enclosure, power supplies and fans. HP qualified rack options are covered by these |
|------------------------------|---|

## Additional Options

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.

**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 Software Technical Support 10 incidents 24x7 Microsoft Software 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:

<http://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

## Additional Options

|   |             |
|---|-------------|
| 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 |
| <b>Infrastructure Software On-site Services</b>   |             |
| HP Startup Insight Dynamics Recovery Management Service   | UK830E      |
| <b>NOTE:</b> 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.   |             |
| <b>NOTE:</b> 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 CloudSystem Upgrade (same CMS) Implementation Service  | HA115A1#5PA |
| <b>NOTE:</b> This is a required Service to upgrade your Matrix environment to a later version.  |             |
| <b>NOTE:</b> This service performs an upgrade to the Matrix environment using the existing Matrix HP SIM Central Management Server.   |             |
| HP Implementation service for the CloudSystem Matrix Upgrade  | UU960E      |
| HP CloudSystem Upgrade (different CMS) Implementation Service   | HA115A1#5PB |
| <b>NOTE:</b> This is a required Service to upgrade your Matrix environment to a later version.  |             |
| <b>NOTE:</b> 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 Implementation service for the CloudSystem Matrix Upgrade with Migration   | UU961E      |
| HP CloudSystem Expansion Kit Integration Implementation Service   | HA115A1#5P9 |
| <b>NOTE:</b> This is a required Service to expand your existing Matrix environment by adding Matrix Expansion Kits.   |             |
| HP Hardware Install c-Class Enclosure and Server Blade Service  | UE494E      |
| <b>NOTE:</b> 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 |
| <b>NOTE:</b> 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     |
| <b>NOTE:</b> This service provides the capability to customize tasks and activities including assistance with design, implementation, migration, and project management.  |             |
| <b>NOTE:</b> HP recommends the client purchase the optional 13 education credits (SKU#  |             |

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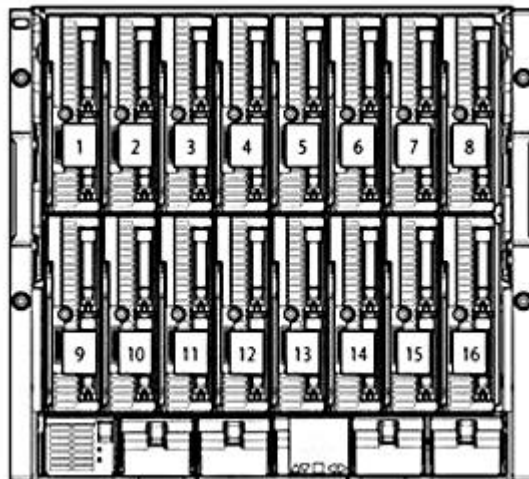
**Additional Options**

HF385E or HF385A1) found on every Matrix quote. Specific training recommendations for a given client will vary depending on the customer's existing knowledge and experience.

|   |        |
|---|--------|
| c-class BladeSystem administration (For customers new to ProLiant blades) | HE646S |
| HP Insight Control: Management Fundamentals                               | HK756S |
| HP Virtual Connect  | HK758S |
| HP Matrix OE: Infrastructure Administration                               | HK920S |
| HP Insight Control: Management Master                                     | HK757S |
| HP Integrity Virtual Machines (Integrity Installations)                   | HB506S |
| Managing 3PAR Disk Arrays (3 PAR installations)                           | HK902S |
| HP Care Pack Service for ProLiant Training                                | HF385E |

## Power Specifications

## Half-height server blade bay numbering

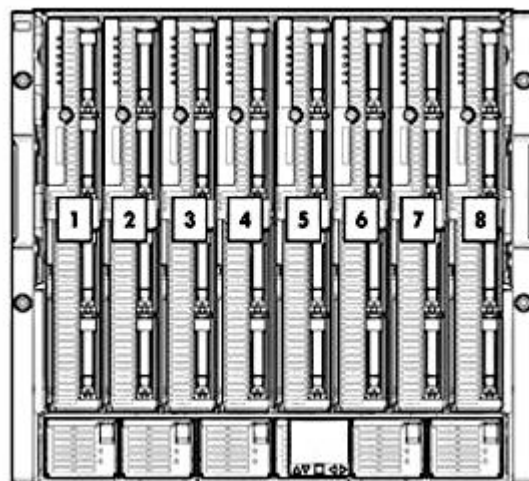


1. Device Bay 1
2. Device Bay 2
3. Device Bay 3
4. Device Bay 4
5. Device Bay 5
6. Device Bay 6
7. Device Bay 7
8. Device Bay 8

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
3. Device Bay 3

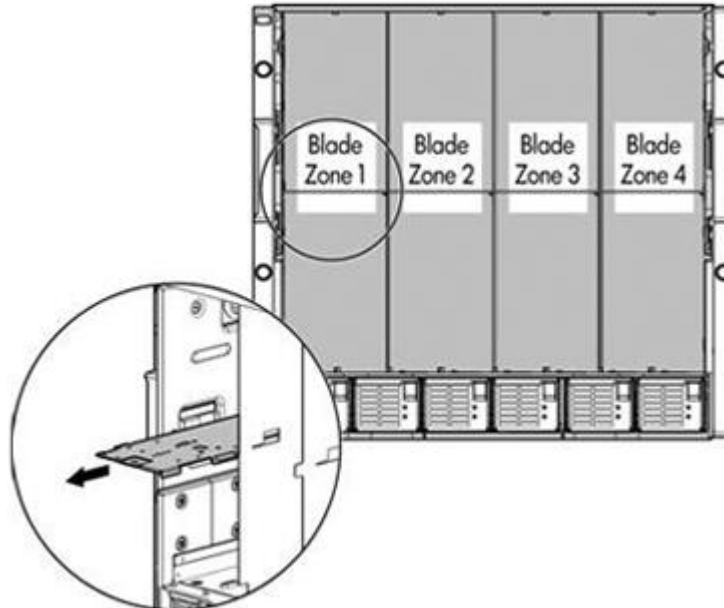
5. Device Bay 5
6. Device Bay 6
7. Device Bay 7



## Power 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.

|   |   |                   |                     |
|---|---|-------------------|---------------------|
| <b>HP BladeSystem<br/>c7000 enclosure</b>         | <b>Dimensions</b>                                     | Height            | 17.4 in (442 mm)    |
|   |   | Width             | 17.6 in (447.04 mm) |
|   |   | Depth             | 32 in (813 mm)      |
|   | <b>Shipping dimensions</b>                            | Height            | 29.88 in (759 mm)   |
|   |   | Width             | 23.88 in (607 mm)   |
|   |   | Depth             | 39.88 in (1013 mm)  |
|   | <b>Single-phase enclosure<br/>weight</b>              | Unboxed           | 192 lb (87 kg)      |
|   |   | Shipping          | 235 lb (106.6 kg)   |
|   | <b>Three -phase enclosure<br/>NA/JPN weight</b>       | Unboxed           | 222 lb (100.7 kg)   |
|   |   | Shipping          | 265 lb (120.2 kg)   |
|   | <b>Three-phase enclosure<br/>international weight</b> | Unboxed           | 222 lb (100.7 kg)   |
|   |   | Shipping          | 265 lb (120.2 kg)   |
| <b>DC input enclosure<br/>weight</b>              | Unboxed   | 151 lb (68.5 kg)  |                     |
|   | Shipping  | 194 lb (88 kg)    |                     |
| <b>Maximum enclosure<br/>weight (approximate)</b> | Unboxed   | 450 lb (204 kg)   |                     |
|   | Shipping  | 493 lb (223.6 kg) |                     |

## Power Specifications

|                          |               |   |
|--------------------------|---------------|---|
| <b>Temperature range</b> | Operating     | 50° to 95° F (10° to 35° C)   |
|                          | Non-Operating | -22° to 140° F (-30° to 60° C)  |
| <b>Relative humidity</b> | Operating     | 10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.   |
|                          | Non-Operating | 5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing. |

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

|   |  |   |                                      |   |
|---|--|---|--------------------------------------|---|
| <b>Power</b>                                    | <b>Input requirements - single-phase model</b> | Rated input frequency   | 50 to 60 Hz                          |   |
|   |  | 2250W PSU   | Rated input voltage                  | 100 to 120 VAC<br>200 to 240 VAC  |
|   |  |   | Rated input current per power supply | 12.3A at 100 - 120 VAC<br>13.1 A at 200 VAC<br>12.6 A at 208 VAC<br>11.9 A at 220 VAC |
|   |  | 2400W PSU   | Rated input power per power supply   | 2612 VA Max   |
|   |  |   | Rated input voltage                  | 200 to 240 VAC  |
|   |  | 2400W PSU   | Rated input current per power supply | 13.9 A at 200 VAC<br>13.3 A at 208 VAC<br>12.6 A at 220 VAC                           |
|   |  |   | Rated input power per power supply   | 2780 VA   |
|   |  | <b>Power cords</b>  | 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                 |   |                                      |   |
| <b>Output specifications (per power supply)</b> | 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   |                                      |   |
|   |  | Two-hole lug<br>45 degree bend<br>0.25in. (6.4mm) stud hole size<br>0.63in. (16mm) hole spacing |                                      |   |

## Power Specifications

**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.

**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/bladestystem/powercalculator>

## Summary of Changes

| Date        | Version History       | Action  | Description of Change:   |
|-------------|-----------------------|---------|--|
| 24-Jun-2016 | From Version 35 to 36 | Retire  | Document Retired   |
| 06-Mar-2015 | From Version 34 to 35 | Added   | Added the new CMS  |
| 13-Oct-2014 | From Version 33 to 34 | Changed | Changed the What 's New Section and Update some SKU Descriptions.  |
| 16-May-2014 | From Version 32 to 33 | Changed | Product descriptions were revised throughout Ordering CloudSystem Matrix   |
| 20-Dec-2013 | From Version 31 to 32 | Changed | Changes made to What's New and in the Additional Options section.  |
| 28-Jun-2013 | From Version 30 to 31 | Changed | Two part numbers were changed in Step 2.   |
| 25-Mar-2013 | From Version 29 to 30 | Changed | Overview: Completely updated What's new section.<br><br>Ordering CloudSystem Matrix: Updated KVM Management Sever and KVM Managed Host sections.   |
| 09-Nov-2012 | From Version 27 to 28 | Changed | Changes were made in Ordering CloudSystem Matrix section.  |
| 14-Sep-2012 | From Version 26 to 27 | Changed | Changes were made in Cloud System Matrix and Additional Options sections.  |
| 17-Aug-2012 | From Version 25 to 26 | Changed | Changes made in the Ordering CloudSystem Matrix and Additional Options sections.   |
| 13-Aug-2012 | From Version 24 to 25 | Changed | Changes made throughout the QuickSpec.   |
| 12-Jun-2012 | From Version 23 to 24 | Removed | Removed a bullet from the What's New section.  |
| 08-Jun-2012 | From Version 22 to 23 | Changed | Changes made within the Overview and Ordering CloudSystem Matrix sections.   |
| 04-Jun-2012 | From Version 21 to 22 | Changed | Changes made throughout the QuickSpec.   |
| 20-Apr-2012 | From Version 20 to 21 | Changed | Changes made in the CloudSystem System Matrix, Configuration Information and Additional Options sections.  |
| 06-Apr-2012 | From Version 18 to 20 | Changed | BladeSystem was changed to CloudSystem.  |
| 06-Mar-2012 | From Version 17 to 18 | Changed | Changes were made throughout the QuickSpec.  |
| 30-Aug-2011 | From Version 16 to 17 | Changed | Changes were made throughout Ordering Information and to HP Rack Options and HP Care Pack services in Additional Options<br><br>Mentions of Cloud Service Automation for Matrix were added   |
| 20-Jun-2011 | From Version 15 to 16 | Changed | Revisions were made throughout changing BladeSystem to CloudSystem.  |
| 05-Apr-2011 | From Version 14 to 15 | Added   | HP BladeSystem Matrix Conversion Services, HP BladeSystem Matrix - Extended Infrastructure and HP Utility Ready Computing on Matrix were added to HP BladeSystem Matrix<br><br>HP NC553m 10Gb 2-port FlexFabric Adapter was added to HP Ethernet Mezzanine Options |
|             |                       | Changed | Updated to version 6.3<br><br>HP Uninterruptible Power Systems product descriptions were revised   |

## Summary of Changes

|             |                       |         |   |
|-------------|-----------------------|---------|---|
| 14-Jan-2011 | From Version 13 to 14 | Changed | Changes made within the Ordering BladeSystem Matrix.  |
| 16-Nov-2010 | From Version 12 to 13 | Changed | Edits were made within Ordering BladeSystem Matrix including revising product descriptions and updating HP Interconnects notes<br><br>HP Rack Series was completely revised   |
| 05-Oct-2010 | From Version 11 to 12 | Changed | How to order HP BladeSystem Matrix and Warranty Services were revised in HP BladeSystem Matrix<br><br>Virtual to physical was added to Availability and proactive support and Storage LUN configuration and presentation/zoning (with purchase of EVA4400) was removed from Orchestrated provisioning of services in HP BladeSystem Matrix Infrastructure Operating Environment<br><br>Ordering BladeSystem Matrix and HP Care Pack Services were completely revised<br><br>Part numbers were modified in HP Rack Series<br><br>Matrix Starter Kit and Matrix Expansion Kits (included in the Starter Kit order) was added to HP BladeSystem Matrix Starter Kit Implementation Service<br><br>HP BladeSystem Matrix Expansion Kit Integration Implementation Service was added to HP BladeSystem Matrix<br><br>Tape Storage was removed from Additional Options |
| 12-Jul-2010 | From Version 10 to 11 | Removed | Removed duplicate text.   |
| 09-Jul-2010 | From Version 9 to 10  | Changed | Descriptions for part numbers 500662-B21 and 418367-B21 were revised for BladeSystem c-Class server blades chart in Ordering BladeSystem Matrix<br><br>HP BladeSystem c7000 enclosure descriptions were revised in Technical Specifications   |
|             |                       | Removed | HP 16A 250V IRAM 2073/IEC320-C19 2.5m/8ft was removed from Power Cords<br><br>2x1x16 and 4x1x16 IP Console Switches with Virtual Media and 2x16 Server Console Switch with Virtual Media were removed from HP Rack Options<br><br>HP StorageWorks Virtual Library Systems were removed from Tape Storage  |
| 30-Apr-2010 | From Version 8 to 9   | Changed | Revisions were made throughout Ordering BladeSystem Matrix.   |
| 29-Mar-2010 | From Version 7 to 8   | Changed | Part number for HP BladeSystem Matrix Starter Kit - HP Insight  |

# QuickSpecs

### Summary of Changes

|             |                     |         |  |
|-------------|---------------------|---------|--|
|             |                     |         | <p>Software was changed in Step 2</p> <p>Central management server (CMS), recommended default SKU was completely revised and Part number was added in Step 2</p> <p>Microsoft Windows Server 2008 with Hyper-V licenses were revised in Step 3</p> <p>NOTE was added to callout 6 for the Starter Kit Overview image</p>   |
| 12-Feb-2010 | From Version 6 to 7 | Changed | Changes made throughout the QuickSpec.   |
| 04-Dec-2009 | From Version 5 to 6 | Changed | Changes made throughout the QuickSpec.   |
| 04-Sep-2009 | From Version 4 to 5 | Changed | Changes made throughout the entire QuickSpec except for the Technical Specifications section.  |
| 12-Jun-2009 | From Version 3 to 4 | Added   | <p>HP BladeSystem Matrix Orchestration throughout the HP BladeSystem Matrix section</p> <p>NOTEs and VC Flex-10 10Gb Ethernet module transceiver/SFP options to HP BladeSystem Matrix Starter Kit and Expansion Kit in the Ordering BladeSystem Matrix section</p>   |
|             |                     | Changed | Updated BladeSystem c-Class server blades and HP StorageWorks EVA4400 in the Ordering BladeSystem Matrix section   |
| 29-May-2009 | From Version 2 to 3 | Added   | <p>What's New to the Overview section</p> <p>HP BladeSystem Matrix Starter Kit - Implementation Service, Fixed and Flexible to HP BladeSystem Matrix Starter Kit in the Ordering BladeSystem Matrix section</p> <p>4 year and 5 year, 24x7 4hr BladeSystem Matrix Starter Hardware Support, Fixed and Flexible to Support Plus 24 options for BladeSystem Matrix Starter Kit in the Ordering BladeSystem Matrix section</p> <p>4 year and 5 year 24x7 BL Matrix Software Support, Fixed and Flexible to Support Plus 24 options for BladeSystem Matrix Starter Kit in the Ordering BladeSystem Matrix section</p> <p>4 year and 5 year Support Plus 24 BLc Matrix Expansion Kit Support, Fixed and Flexible to Support Plus 24 options for the entire BladeSystem Matrix Expansion Kit in the Ordering BladeSystem Matrix section</p> <p>HP Insight Recovery Installation &amp; Startup Service, Flexible to Service and Support offerings in the Additional Options section</p> |
| 01-May-2009 | From Version 1 to 2 | Changed | Other changes made throughout the QuickSpec including a complete revision of the Ordering BladeSystem Matrix section.  |

## Summary of Changes

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