

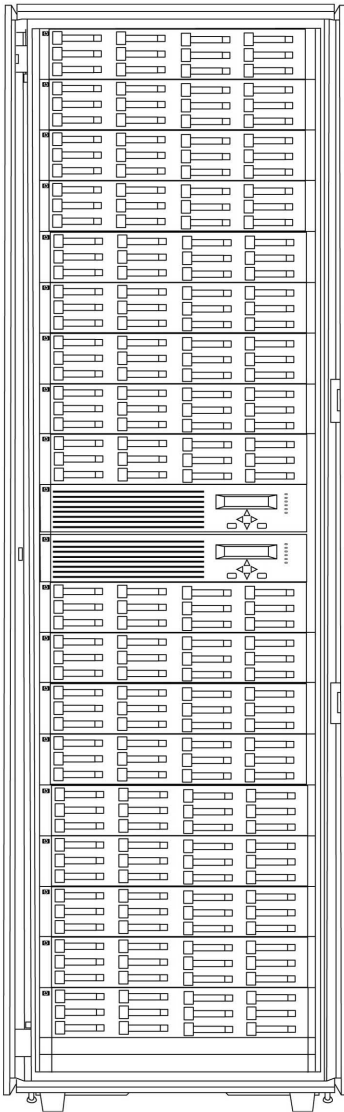
### Overview

The HP StorageWorks 6400/8400 StorageWorks Enterprise Virtual Array (EVA) family is an enterprise class storage array system designed to aggregate and automate your array management tasks to manage more storage capacity with fewer resources. The EVA is designed specifically for customers in the business critical, enterprise marketplace and is a scalable, highly available and highly reliable "virtual" array storage solution. The EVA6400/8400 saves time, space and costs compared to traditionally architected storage. It is supported by a powerfully simple suite of management software making it easy for users to provision storage and to achieve the highest level of productivity.

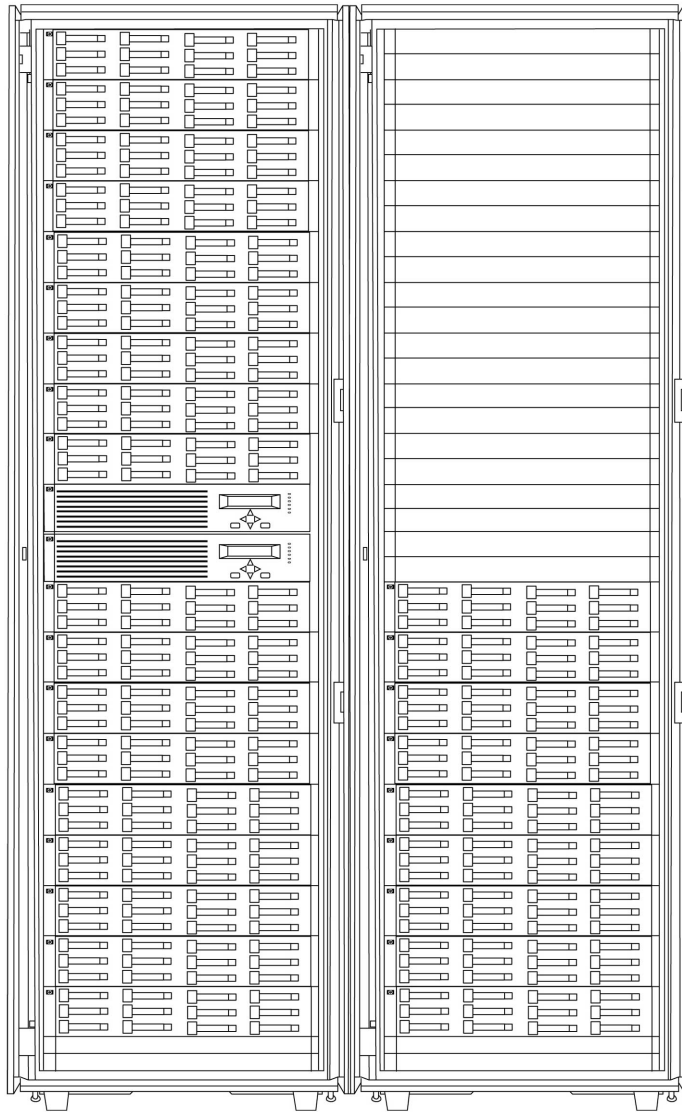
The HP StorageWorks 6400/8400 Enterprise Virtual Array family is designed for the data center where there is a critical need for improved storage utilization and scalability. The EVA meets application specific demands for transaction I/O performance for mid-range and enterprise customers. It provides easy capacity expansion, instantaneous replication and simplified storage administration. The Enterprise Virtual Array combined with HP StorageWorks Command View EVA software provides a comprehensive solution designed to simplify management and maximize performance.

HP offers a full spectrum of complimentary HP StorageWorks EVA hardware, software product, solutions and HP services. This includes the EVA4400 for affordable, fast and easy small SAN deployment; the MPX200 Multifunction Router provides 1 GbE and 10 GbE iSCSI, EVA iSCSI Connectivity Option, Business Copy EVA, Continuous Access EVA, Dynamic Capacity Management and solution integration. With HP Storage Essentials Standard Edition SRM Software, you can also have an affordable and complete Storage Resource Management solution to efficiently manage EVA and server infrastructure via a unified and integrated secure web-based tool set. In addition, the EVA warranty offering provides the base level of service to which you can add appropriate service options. HP Services provide additional offerings up to Critical Service, the support for mission critical environments.

## Overview



**EVA6400 2C18D**



**EVA8400 2C27D**

These drawings are informational only. The actual configuration may differ depending on the number of disk enclosures chosen and the components being racked with the EVA. The EVA6400 can support up to 18 drive enclosures for a total of 216 disks. The EVA8400 can support up to 27 drive enclosures in two racks for a total of 324 disks. (If a customer has a specific racking requirement they should use the Factory Express option to define the configuration.)

## What's New

- Support for new Low-Power Fibre Channel hard disk drives - 300GB 10K, 450GB 10K and 600GB 10K
- Support for the HP StorageWorks MPX200 Multifunction Router
  - provides 1 GbE and 10 GbE iSCSI connectivity to the EVA
  - enables modular multi-protocol SAN designs with increased scalability, stability, and ROI on storage infrastructure.

### Product Highlights

|   | <b>EVA4400</b>   | <b>EVA6400</b>   | <b>EVA8400</b>   |
|---|--|--|--|
| <b>Controller Model</b>   | HSV300   | HSV400   | HSV450   |
| <b>Virtual Controller Software (XCS)</b>  | XCS v9.5   | XCS v9.5   | XCS v9.5   |
| <b>Management Software Application Environment Support</b>  | Command View EVA v9.0<br>Oracle, SAP, Microsoft Exchange, SQL  | Command View EVA v9.0<br>Oracle, SAP, Microsoft Exchange, SQL  | Command View EVA v9.0<br>Oracle, SAP, Microsoft Exchange, SQL  |
| <b>Virtual Server Technology Support</b>  | VMware, Microsoft Hyper-V, Citrix XenServer, RHEL<br>Virtualization and Oracle Virtual Machine   | VMware, Microsoft Hyper-V, Citrix XenServer, RHEL<br>Virtualization and Oracle Virtual Machine   | VMware, Microsoft Hyper-V, Citrix XenServer, RHEL<br>Virtualization and Oracle Virtual Machine   |
| <b>Local Data Replication -- HP StorageWorks Business Copy EVA Remote Data Replication -- HP StorageWorks Continuous Access EVA</b> | Yes  | Yes  | Yes  |
| <b>Command View EVA Array management and configuration support Application block and file storage O/S Support*</b>                  | up to 16 EVAs<br>Yes<br>HP-UX<br>HP OpenVMS<br>Windows 2003<br>Windows 2008<br>Windows Server 2008 HyperV<br>Sun Solaris<br>Linux<br>IBM AIX<br>VMware<br>Apple Mac OSX<br>Xen | up to 16 EVAs<br>Yes<br>HP-UX<br>HP OpenVMS<br>Windows 2003<br>Windows 2008<br>Windows Server 2008 HyperV<br>Sun Solaris<br>Linux<br>IBM AIX<br>VMware<br>Apple Mac OSX<br>Xen | up to 16 EVAs<br>Yes<br>HP-UX<br>HP OpenVMS<br>Windows 2003<br>Windows 2008<br>Windows Server 2008 HyperV<br>Sun Solaris<br>Linux<br>IBM AIX<br>VMware<br>Apple Mac OSX<br>Xen |
| <b>RAID supported</b>   | Vraid 0, Vraid1, Vraid 0+1, Vraid 5, Vraid 0+5, Vraid 6 & Cross Vraid Snaps  | Vraid 0, Vraid1, Vraid 0+1, Vraid 5, Vraid 0+5, Vraid 6 & Cross Vraid Snaps  | Vraid 0, Vraid1, Vraid 0+1, Vraid 5, Vraid 0+5, Vraid 6 & Cross Vraid Snaps  |
| <b>LUN size</b>   | Up to 32TB   | Up to 32TB   | Up to 32TB   |
| <b>Number of controllers Cache (per controller pair)</b>  | 2<br>4GB   | 2<br>8GB   | 2<br>14 or 22GB  |
| <b>Battery Back-up Cache</b>  | Yes, up to 96 hours  | Yes, up to 96 hours  | Yes, up to 96 hours  |
| <b>Host Connectivity</b>  | Fibre Channel, iSCSI and Direct Connect  | Fibre Channel, iSCSI and Direct Connect  | Fibre Channel, iSCSI and Direct Connect  |
| <b>Number of Host Supported (Single Path/Dual Path)</b>   | 512/256  | 512/256  | 512/256  |



### Product Highlights

|  |   |  |  |
|--|---|--|--|
| <b>Host Ports</b><br>(per controller pair)     | 4 or 2 embedded FC switches with ten 8Gb/s FC SAN ports per controller  | 8  | 8  |
| <b>Host Port Speed</b>                         | 4 Gb  | 4 Gb   | 4 Gb   |
| <b>Device Connectivity</b>                     | Redundant FC-AL pairs from each controller to switched JBOD for redundant paths to dual drive ports   | Redundant FC-AL pairs from each controller to switched JBOD for redundant paths to dual drive ports                        | Redundant FC-AL pairs from each controller to switched JBOD for redundant paths to dual drive ports                        |
| <b>Device Ports</b><br>(per controller pair)   | 4   | 8  | 12   |
| <b>Device Port Speed</b>                       | 4 Gb  | 4 Gb   | 4 Gb   |
| <b>Device Path Aggregate Bandwidth</b>         | 16 Gb   | 32 Gb  | 48 Gb  |
| <b>Switched device shelves</b> (M6412-A)       | 1 to 8  | 2 to 18  | 3 to 27  |
| <b>Drives per enclosure</b>                    | 12  | 12   | 12   |
| <b>Drive types</b><br>(mixed in any enclosure) | Solid State Disks (SSD), High Performance Fibre Channel and Fibre Attached Technology Adapted (FATA)  | Solid State Disks (SSD), High Performance Fibre Channel and Fibre Attached Technology Adapted (FATA)                       | Solid State Disks (SSD), High Performance Fibre Channel and Fibre Attached Technology Adapted (FATA)                       |
| <b>Supported disks, minimum</b>                | 6 SSD, 8 FC and FATA  | 6 SSD, 8 FC and FATA   | 6 SSD, 8 FC and FATA   |
| <b>Supported disks, maximum</b>                | 8 SSD, 96 FC and FATA   | 8 SSD, 216 FC and FATA   | 8 SSD, 324 FC and FATA   |
| <b>Capacity</b>                                | .4 to 96TB  | .4 to 216TB  | .4 to 324TB  |
| <b>Drive capacities and speeds</b>             | 72GB SSD<br>300GB 10K rpm<br>400GB 10K rpm<br>450GB 10K rpm<br>600GB 10K rpm<br>146GB 15K rpm<br>300GB 15K rpm<br>450GB 15K rpm<br>1TB FATA | 72GB SSD<br>300GB 10K rpm<br>450GB 10K rpm<br>600GB 10K rpm<br>146GB 15K rpm<br>300GB 15K rpm<br>450GB 15K rpm<br>1TB FATA | 72GB SSD<br>300GB 10K rpm<br>450GB 10K rpm<br>600GB 10K rpm<br>146GB 15K rpm<br>300GB 15K rpm<br>450GB 15K rpm<br>1TB FATA |
| <b>JBOD Support</b> (behind XP)                | Yes   | Yes  | Yes  |
| <b>Drive Interface</b> (per controller)        | Two 4Gb/s FC-AL ports per controller in redundant pairs, two paths to each dual ported drive  | Four 4Gb/s FC-AL ports per controller in redundant pairs, two paths to each dual ported drive                              | Six 4Gb/s FC-AL ports per controller in redundant pairs, two paths to each dual ported drive                               |
| <b>Variable Speed Redundant Blowers</b>        | Yes   | Yes  | Yes  |
| <b>Environmental Monitoring Unit</b>           | Monitors Power and Temperature  | Monitors Power and Temperature   | Monitors Power and Temperature   |
| <b>Regulatory approvals</b>                    | UL, CSA, TUV, FCC, CE MARK, CTICK, BSMI, VCCI   | UL, CSA, TUV, FCC, CE MARK, CTICK, BSMI, VCCI  | UL, CSA, TUV, FCC, CE MARK, CTICK, BSMI, VCCI  |

### Fibre Channel Switches & Directors

Optical Switches and Directors:

<http://h18006.www1.hp.com/storage/saninfrastructure/switches.html>

**NOTE:** See Operating System, Cluster and High Availability Compatibility matrix for Operating System version detail.



### Product Highlights

#### EVA Capabilities

- Virtualization abilities allow for easy management and excellent capacity utilization
- Scale and re-configure your EVA capacity as your business grows and changes
- Excellent reliability and availability established for the EVA architecture. HP's data shows that most customers are achieving 99.999% availability with the EVA 4100/6100/8100
- Support for integrated application (block) and file storage solution with EVA file services offerings
- Support for dual-ported 4 Gb/s FC disk drives and 2 Gb/s dual-ported Fibre Attached Technology Adapted (FATA) drives and dual ported Solid State Disks (SSD)
- Support for Direct Attach connection to Windows storage servers without the need for SAN switches. SAN support for integrated EVA iSCSI connectivity options with Windows, HP OVMS, Linux, Apple Mac OS X, Microsoft Windows, Sun Solaris, and VMware.
- Supports up to 2048 LUNs (up to 256 per HBA) ranging in size from 1GB to 32TB per Virtual disk, in 1GB increments.
- Dynamic Capacity Management support to expand LUNs up to 2TB (in 1GB increments) and shrink LUNs 2TB or less.  
**NOTE: Requires Host Operating System Support.**
- Virtual disk data load leveling (non-disruptive background activity)
- Distributed sparing of disk capacity
- Proactive migration of data from a failing drive into unused space or spare space
- Redundant FC-AL loops from each controller to dual disk ports
- Support for HP StorageWorks Continuous Access EVA remote replication (synchronous and asynchronous).
- Support for remote replications between current EVA generations
- Migration support via remote replications between current and earlier EVA generations
- Support for Data-in-place upgrades from EVA4400 to EVA6400 and EVA8400 or EVA6400 to EVA8400
- Support for HP StorageWorks Business Copy EVA (Snapshot, and Vsnap (virtually capacity free snapshots), Snapclone, MirrorClone and Cross Vraid snapshots and Snapclone).
- Dual redundant controller operation for increased fault tolerance.
- Multiple Bus Failover Support using industry popular multiple path software.  
**NOTE: Requires native OS multi-pathing support.**
- Battery-Back-Up for controller cache memory
- Asynchronous Disk Swap (hot swap)
- Clustered Server Support
- Mirrored Write-Back Cache Support
- Read-Ahead and Adaptive Read Caching Support
- Virtual RAID Arrays (Vraid 0, Vraid 1, Vraid 0+1, Vraid 5, Vraid 0+5, Vraid 6 & Cross Vraid Snaps)
- Support for local replication between Vraid types using Vsnap or Snapclone within a disk group or using Snapclone across disk groups (and Cross Vraid Snapshot and Snapclone)
- Online XCS software upgrade capability
- Online drive firmware upgrade capability
- Supports connection of up to 256 hosts
- Multi-Vendor Platform Support
- Controller Password Protection for Configuration Control
- Selective Storage Presentation and SAN-based Data Zoning (through switches).
- HP StorageWorks Command View EVA GUI Interface for management and monitoring (manages up to 16 EVAs).
- Monitor and control health, HP EVA end-to-end SAN performance and monitoring, storage utilization and reporting for all key HP EVA and SAN infrastructure including servers, storage, HP MSA, HP EML E-series tape, HP ProLiant Storage Servers (NAS), HBAs, switches, applications and monitor the entire backup from a single interface with HP Storage Essentials SRM Standard Edition Software

### Product Highlights

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**Enterprise Virtual Array Product Packaging** The EVA Product Family consists of the EVA4400, EVA6400 and EVA8400. They utilize the 12 bay M6412A disk enclosure and the same family of Fibre Channel disks. These disks consist of dual ported fibre channel solid state disk, high performance fibre channel disks and Fiber Attached Technology Adapted (FATA) disks.

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**EVA6400 and EVA8400 Product Packaging** The EVA6400 is designed to address moderate capacity and performance needs ranging (from 2 to 18 drive enclosures, .4 - 216TB). The EVA6400 packaging consists of a 4U FC dual HSV400 controller assembly and 2 to up to a full rack (18) M6412 12-bay FC Drive Enclosures. The EVA8400 is designed to address moderate to large capacity with high performance needs ranging (from 3- 27 drive enclosures, .4 - 324TB). The EVA8400 packaging consists of a 4U FC dual HSV450 controller assembly with either 14GB or 22GB of cache and from 3 to up to a 27 M6412 12-bay FC Drive Enclosures in a two racks.

The EVA6400 and EVA8400 configurations allow a wide range of configuration options. The EVA offer flexible factory rack-mounting options in either a standard 42U cabinet (based on the HP 10000 G2 Series Rack- or a choice of 42U extended, 36U and 22U heights). Factory racking options allow the, EVA6400 and EVA8400 to be factory integrated into cabinets with a wide variety of other HP offerings such as servers and tape back-up offerings. The EVAs also support other HP field racking choices such as the 5642 (42U) Rack Cabinet System and qualified customer-supplied racks.

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**Multi-Vendor Platform** The EVA6400/EVA8400 provide support for industry-leading Operating System platforms including:

- HP-UX
- HP OpenVMS
- Windows Server 2003
- Windows Server 2008
- Windows Server 2008 Hyper-V
- Sun Solaris
- Linux
  - Red Hat
  - SUSE/SLES (including Open Enterprise Server)
  - Oracle Enterprise Linux
- IBM AIX
- VMware
- Apple Mac OSX
- Xen
  - Citrix Xen
  - RHEL Virtualization
  - Oracle Virtual Machine

**NOTE:** See [Operating System, Cluster and High Availability Compatibility matrix for Operating System version detail.](#)

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### Product Highlights

**Designed for No-Single Point-of-Failure**—The EVA family's redundant architecture and value added software is designed to eliminate single-points-of-failure from server to storage in clustered or single server configurations with multi-pathing.

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**Remote Replication Solutions**  
(Software options)

HP StorageWorks Continuous Access provides disaster tolerant replication across a Fibre Channel SAN. Continuous Access EVA performs real-time replication between HP StorageWorks Enterprise Virtual Arrays of the current and earlier generations. Continuous Access EVA provides the highest level of FC SAN data protection to customers, in order to meet disaster tolerant business continuity implementation goals. Through the use of MAN/WAN Fibre Channel SAN extensions, Continuous Access EVA provides 24x7 protections against disaster like scenarios, in campus, metro or continental networks. Thus, enabling business protection against unforeseen events.

HP StorageWorks Disaster Tolerant Solution for mySAP Business Suite on EVA offers a business continuance solution for SAP environments, where data integrity and value added functionality are high priorities. Information on implementing remote mirroring of an SAP database as part of an overall data protection strategy with SAP applications can be found at:

<http://h71028.www7.hp.com/erc/downloads/4aa1-5683Enw.pdf>

The HP StorageWorks IP Distance Gateway provides SAN over WAN connectivity for protecting and replicating data between EVA systems. By connecting islands of SANs over WANs, the IP Distance Gateway enables CA replication (Asynchronous and Synchronous), SAN device sharing, data migration and other long distance data services. At the core of providing long distance data services is the ability to copy, move and replicate data locally and over long distances. However, SANs have limited distance capabilities (10km) and IT managers need to share, protect and move data over greater distances than 10km, routers and switches that link SANs over IP WANs is the weapon of choice for most IT managers. The IP Distance Gateway uses the FCIP (Fibre Channel Internet Protocol) standard to extend SAN connectivity over the WAN.

- Low Cost SAN over WAN Connectivity
- High Performance with data compression and load balancing
- Support for FCIP for SAN extension
- Bridges SANs for all FC Fabrics
- Supports two Ethernet and two Fibre Channel ports
- Concurrent FC and IP traffic in High Availability mode
- Integrated management with HP StorageWorks mpx Manager
- Supports High Availability Options
- Fabric and Direct Attach support

[http://h18006.www1.hp.com/storage/disk\\_storage/index.html](http://h18006.www1.hp.com/storage/disk_storage/index.html)

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### Product Highlights

#### Disaster Tolerant Solutions (Software options)

HP Metrocluster with Continuous Access EVA and Continentalclusters are integrated solutions that offer minimal downtime by rapid site recovery with automatic failover of application services (via Serviceguard) and automatic data consistency checking and read/write enabling of remotely mirrored storage in the event of a fault, failure, or disaster recovery.

**NOTE:** Metrocluster and Continentalclusters will be available following the introduction of the EVA6400/8400. Check the following URL for more information and availability:  
<http://h71028.www7.hp.com/enterprise/cache/4171-0-0-0-121.html>

HP StorageWorks Cluster Extension EVA software is a full-site disaster tolerance solution designed for mid-range storage array implementation. A disaster tolerant solution for Windows 2003 and Linux environments, Cluster Extension EVA integrates, automates, and synchronizes server cluster failover operations with the remote replication management capabilities of HP Continuous Access EVA for a disaster tolerant solution for EVA arrays whether used as primary storage or in a tiered-storage configuration.  
<http://www.hp.com/go/clxeva>

HP StorageWorks Disaster Tolerant Solution for mySAP Business Suite on EVA offers a business continuance solution for SAP environments, where data integrity and value added functionality are high priorities. Best practices for implementing remote mirroring of an SAP database as part of an overall data protection strategy with SAP applications can be found at:  
<http://h71028.www7.hp.com/erc/downloads/4aa1-5683enw.pdf>

#### Local Replication Solutions (Software options)

The HP StorageWorks Business Copy is a local replication application for the EVA family. It incorporates Virtually Capacity-free Snapshot (Vsnaps), standard snapshots and Snapclone capabilities with an improved user interface to assist the storage administrator. This product is indispensable for critical data center operations such as non-disruptive backups, frequent snapshots of high value databases, and data mining. The bottom line benefits include improved disk capacity utilization and increased business continuity, data availability, and productivity savings.

#### Capacity Management

HP StorageWorks EVA Dynamic Capacity Management Software is a comprehensive software solution that automates storage provisioning and improves capacity utilization on the HP StorageWorks Enterprise Virtual Array (EVA) family. Designed for the enterprise market, EVA Dynamic Capacity Management Software uses advanced automation to automatically "right-size" the file system and storage volumes to ensure the highest levels of capacity utilization are achieved while reducing ongoing storage administration needs. For more information, visit:  
[http://h18006.www1.hp.com/products/storage/software/eva\\_dcm/index.html](http://h18006.www1.hp.com/products/storage/software/eva_dcm/index.html).

### Product Highlights

#### Replication Management

HP Business Copy EVA and HP Continuous Access EVA comes complete with HP Replication Solutions Manager, a graphical user interface and scripting environment, that greatly simplifies storage management by creating, running, and managing storage replication jobs using controller based snapshots, clones and remote mirroring.

With HP Replication Solutions Manager users easily can manage both remote and local replication across the full EVA product family. By virtually removing the complexity associated with both small and large replication environments, point-in-time copies and remote replication are managed and configured with just a few mouse clicks. To assist the user, Information on the replication environment is presented in a variety of views, including an interactive topology manager that allows each user to select their viewing preference. In addition, HP Replication Solutions Manager provides a scripting interface for additional flexibility.

#### Application Integration with Oracle

As an option to HP Business Copy EVA, the user can simply replicate an Oracle database. HP Replication Solutions Manager will provide a graphical interface to view the components of the database to be replicated, and allow selection of a specified database. The replication manager will automatically suspend the Oracle application, and take a point in time copy (local or remote) of all associated array virtual disks. The replication manager will provide the option to restart the original Oracle database after the replicas have been initiated on the array. The user will be able to utilize the replication manager to present the replica to another host.

#### Application Solutions

The EVA is the ideal solution for customers running Oracle, Microsoft, SAP environments and those customers who are deploying virtual server technologies like VMware, Hyper-V, Xen and Oracle Virtual Machine. HP StorageWorks Enterprise Virtual Arrays (EVA) delivers virtual storage for the midsize customer with enhanced performance, better capacity utilization, and easier management of on-demand storage activities.

For customers, one of the greatest concerns is always database performance. With larger LUNS and Solid State Disk (SSD) built into the HP EVA, customers get industry leading, super fast performance along with the scalability, availability, and ease of management capabilities they have come to expect from HP Storage Solutions. Everything a customer depends on when managing their most critical business asset...business data.

HP has developed an in-depth understanding of Oracle, Microsoft, SAP, and VMware technology by extensive lab-testing best practices with HP EVAs, HP servers, and management software; high availability and disaster recovery solutions; and backup and recovery on the Oracle, Microsoft, and SAP application platforms. As a result, our customers can expect a wide range of operational and business benefits where they can:

- Achieve optimal performance on an Oracle, Microsoft, SAP platforms
- Minimize back-up windows and simplify recovery of their database and/or application
- Significantly improve Exchange messaging recovery points and recovery time
- Get predictable operational results
- Reduce implementation costs and risks
- Gain optimum return on Oracle, Microsoft, and SAP investments

To learn more about specific HP Storage Solutions that are built with Oracle, Exchange, SAP environments in mind, visit the solution sites supporting each of these applications.

HP Storage for Oracle hyperlink to: <http://www.hp.com/storage/oracle>

HP Storage for Microsoft SQL Server hyperlink to: <http://www.hp.com/storage/sqlserver>

### Product Highlights

HP Storage for Microsoft Exchange hyperlink to: <http://www.hp.com/storage/exchange>

HP Storage for SAP hyperlink to: <http://www.hp.com/storage/sap>

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#### **EVA with HP Storage Essentials Storage Resource Management Software Family**

HP Storage Essentials SRM Enterprise Suite and HP Storage Essentials SRM Standard Edition Software integrates with HP Systems Insight Manager to provide advanced server and storage management capabilities. HP Storage Essentials Suite Software features a base management console and an expanding portfolio of value-add plug-ins to assist in managing EVA across the enterprise.

HP Storage Essentials Suite delivers integrated heterogeneous and multivendor functionality for network (Arrays, DAS, SAN, NAS, HBAs, switches) management, storage resource management, reporting, capacity metering, provisioning and application infrastructure monitoring.

<http://h18006.www1.hp.com/products/storage/software/e-suite/index.html>

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#### **HP Storage Essentials SRM Performance Pack Software and EVA (end-to end EVA SAN Performance Management)**

HP Storage Essentials SRM Performance Pack Software combined with Storage Essentials SRM Enterprise Edition Software monitors performance along the complete path of business applications through underlying storage area networks (SAN) components, including host server, host bus adapter (HBA), fabric switch and Enterprise Virtual Array. A unified and simplified interface, helps EVA administrators increase efficiency, troubleshoot performance bottlenecks faster, and quickly visualize the big performance picture of their EVA storage, hosts and SAN infrastructure with real-time monitoring, historical trend analysis and trend extrapolation.

The SRM Performance Pack Software can be ordered separately on a per EVA basis for existing Storage Essentials SRM Enterprise Edition SRM customers, and for Storage Essentials SRM Standard Edition customers the SRM Standard Edition LTU includes licensing to monitor up to 3 HP EVAs. For more information on HP Storage Essentials SRM Standard Edition Software visit:

<http://h18006.www1.hp.com/products/storage/software/std-suite/index.html>

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#### **HP Standard Edition SRM Software and EVA**

HP Storage Essentials Standard Edition Storage Resource Management Software and Systems Insight Manager with Command View EVA software provides a total solution that allows midsize businesses with limited IT staff to see the big picture (storage-servers-infrastructure) thereby reducing SAN complexity by depending on Excel spreadsheets or whiteboards to track and manage SAN storage and infrastructure. It supports Windows and Linux servers with small to medium HP storage based SANs including HP EVA, HP MSA, HP NAS, HP EML Tape, HBAs and fabric devices. HP Standard Edition SRM Software unified server and storage tool-set automates complex and manual storage process and tasks with auto discovery, visualization and topology mapping for quick device identification, integrated NAS and SAN management, business application monitoring including Oracle, Microsoft SQL, Sybase, InterSystems Caché, Microsoft Exchange Server and SAP Adaptive Computing Controller (ACC) environments path dependency identification, and end-to-end EVA SAN performance monitoring and analysis. For more information on HP Storage Essentials SRM Standard Edition Software visit:

<http://h18006.www1.hp.com/products/storage/software/std-suite/index.html>

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### Product Highlights

#### HP StorageWorks 12000 Virtual Library System EVA Gateway

Expanding the power of the HP StorageWorks Enterprise Virtual Array (EVA), the HP StorageWorks 12000 Virtual Library System EVA Gateway accelerates backup performance in complex SAN environments while improving overall reliability. Integrating seamlessly into existing backup applications and processes by emulating popular tape libraries and tape drive formats, the HP VLS12000 EVA Gateway matches the existing data protection environment, removing the need to change backup software or monitoring policies. Additionally, because the VLS EVA Gateway uses HP EVAs as the storage pool, ease of use is maintained throughout the system. By emulating multiple tape drives simultaneously, more backup jobs can be done in parallel resulting in reduced backup times and, because the data resides on disk, single file restores are exceptionally fast.

The HP Virtual Library System EVA Gateway simplifies your SAN environment by providing more virtual devices and leveraging existing switches and HP EVA infrastructure. The result is the ability to vastly increase scale yet reduce the complexity of shared storage while maintaining the manageability of the system. As your environment changes, the HP Virtual Library System EVA Gateway adapts to it - host masking and mapping ensure that only the appropriate hosts have access to the HP Virtual Library System.

The HP Virtual Library System EVA Gateway offers advanced features such as Automigration which allows users to move data under the control of the VLS from the VLS storage to tape or another VLS. The VLS EVA Gateway also supports accelerated deduplication which delivers fast backup performance since the deduplication process does not impact the backup. For more information on the VLS EVA Gateway, please visit the link below:

[http://h18006.www1.hp.com/storage/disk\\_storage/disk\\_to\\_disk/vls/12000vls/index.html](http://h18006.www1.hp.com/storage/disk_storage/disk_to_disk/vls/12000vls/index.html)

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**EVA iSCSI Connectivity** EVA iSCSI support is available through the HP StorageWorks MPX200 Multifunction Router and the EVA iSCSI Connectivity Option. These powerful solution provides iSCSI connectivity to an EVA utilizing the EVA's existing Fibre Channel infrastructure.

The HP StorageWorks MPX200 Multifunction Router extends the FC SAN investment with integrated multi-protocol support, allowing customers to incorporate iSCSI servers without requiring additional storage arrays or management costs. The MPX200 offers simultaneous iSCSI and Fibre Channel support with 10GbE and 8Gb/s FC technology, providing modular multi-protocol SAN designs with increased scalability, stability, ROI and simpler to manage, secure storage solution for virtualized server environments. MPX 200's enterprise-class high-availability design provides dual hot-plug power supplies and router blades for no single point of failure. MPX200, integrated in same rack, allows customers to connect up to 4 EVA's to a single MPX200, reducing the complexity and cost of iSCSI connectivity to EVA storage arrays

The HP StorageWorks MPX200 Multifunction Router provides 1 GbE and 10 GbE iSCSI connectivity to the EVA and enables modular multi-protocol SAN designs with increased scalability, stability, and ROI on storage infrastructure.

The MPX200 Multifunction Router enables organizations to integrate low-cost Ethernet connected servers with an EVA storage system by bridging the iSCSI protocol to the Fibre Channel protocol. This capability allows iSCSI servers to leverage shared SAN resources, improving asset utilization and enabling new applications. This integration greatly reduces the cost of connecting servers to centrally managed storage and helps provide a cost-effective solution to introduce utility computing into the enterprise.

An EVA with multi-protocol support also provides network storage at reduced infrastructure costs. Small and medium businesses now have a lower entry point to take advantage of SAN benefits.

### Product Highlights

Large enterprises may also deploy multi-protocol SANs in departments and remote offices.

#### Key Benefits:

- Delivering SAN-like benefits over the Ethernet IP network, the HP StorageWorks MPX200 Multifunction Router enables access to block storage across up to 4 EVA storage systems from an Ethernet IP network.
- Provides customers a flexible and cost effective way to connect stranded servers to existing Fibre Channel storage, increasing return on investment.
- Enterprise-class high availability design provides dual hot-plug power supplies and router blades for no single point of failure.
- Modular software and hardware design enables easy upgrades to enable additional protocols or to add more ports.
- Unmatched performance: 8 Gbps Fibre Channel, 1 GbE and 10 GbE iSCSI ports deliver best in class performance.
- Advanced installation and configuration wizards allow set up in less than 25 minutes.
- Power efficient: typically dissipates 200W for a dual blade configuration.
- Extend access to FC SANs across Ethernet networks with the virtues of an FC SAN including:
  - Consolidated storage
  - Improved disk utilization
  - Improved IT efficiency

The HP StorageWorks EVA iSCSI Connectivity Option extends the advantages of Fibre Channel SANs into smaller departments and remote locations. This EVA option allows customers to incorporate iSCSI servers within SANs without requiring additional storage arrays or management costs. Use the EVA's Command View software to manage the iSCSI connectivity to the array and mount the iSCSI device in the same rack as the array.

For more information and operating system support:

<http://h18006.www1.hp.com/products/storageworks/evaiscsiconnect/index.html>

The EVA also supports select ProLiant Storage Servers (i.e. NAS) connected as file/print/iSCSI gateways. The ProLiant DL380 G5 x64 SAN Storage Server and DL585 G2 Storage Server each feature Microsoft's Windows Unified Data Storage Server 2003 operating system that includes Microsoft iSCSI Software Target standard, while other DL380 G5 Storage Server models offer optional support for Microsoft iSCSI Software Target. Microsoft iSCSI Software Target leverages existing management expertise and inexpensive Ethernet infrastructure to deliver IP-based block access to an EVA or Fibre Channel SAN. So ProLiant Storage Servers with iSCSI target functionality not only add file and print services to your EVA investment, but they help you save even more by enabling tiered (Fibre Channel and iSCSI) block access for application servers.

In addition, any ProLiant DL380 G5 Storage Server or DL585 G2 Storage Server is a perfect platform from which to run Command View EVA. You stretch your investment even further when you host EVA management, file and print services, and iSCSI connectivity all from the same ProLiant Storage Server gateway solution.

For more information:

<http://h18006.www1.hp.com/storage/nas.html>

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

### Product Highlights

#### EVA File Services

File services for the EVA are supported through the use of the EFS Clustered Gateway. Using File services with the EVA eliminates having to manage silos of storage, File Services for the EVA creates a single, integrated storage solution that provides both easy to manage application (block) services and scalable files services.

This solution can serve both block and file data concurrently with high availability and scalable performance. The solution is supported by a powerfully simple suite of management software making it easy for users to achieve high levels of productivity.

File services through the EFS Clustered Gateway supports mid-range and enterprise customers wanting a single storage solution for their block and file data, improved storage utilization, scalable throughput performance to meet application specific demands for consistent high transaction I/O, easy capacity expansion, instantaneous replication, simplified storage administration and high availability. Customers can use this solution to consolidate their individual silos of storage to gain flexibility, reduce IT costs and complexity as compared to traditionally architected storage solutions.

The EVA and file services solution supports both CIFS (windows) and NFS file serving. The components can be factory integrated into the HP EVA6400/8400 arrays. The components required to implement file services on the EVA are:

- Two EFS Clustered Gateway serving nodes
- One Ethernet Switch
- Two 8Gb FC Switches
- Installation and Startup

A file service solution provides the following benefits:

- Integrates and simplifies providing a single storage solution for application (block) and file data delivering high utilization and lower TCO
- Uses a single set of management tools that can be invoked from anywhere, anytime, resulting in a very operationally efficient environment to manage.
- Combines state-of-the-art application (block) data performance and file serving performance, that can scale as needs dictate, offers customer's aggregate performance levels far in excess of traditional file servers and NAS appliances.
- Additional capacity can be added quickly and easily with any combination of high performance Fibre Channel and/or low cost FATA drives.
- Uses state-of-the-art virtualization which improves performance, disk usage and TCO while the single, shared pool of storage allows for easy dynamic expansion, which automatically distributes data to avoid potential hot spots.
- With fully redundant components such as SAN switches, array controllers, and file serving nodes built into every unit, this solution is perfect for demanding mid-range and enterprise storage applications.

For more information:

[http://h18006.www1.hp.com/products/storageworks/efs/index.html?jumpid=reg\\_r1002\\_usen](http://h18006.www1.hp.com/products/storageworks/efs/index.html?jumpid=reg_r1002_usen)  
<http://h18006.www1.hp.com/products/storageworks>

### Product Highlights

#### EVA with HP Systems Insight Manager Software

HP SIM is the foundation for HP's unified server-storage strategy - it is packaged as value add software with EVA, it's a management application and is derived from the heritage of Compaq Insight Manager, HP Tootools, and HP Servicecontrol. HP SIM runs on HP Windows, Linux, and HP-UX and provides discovery and identification, fault management, security administration, asset reporting, and centralized configuration management across heterogeneous servers, storage and infrastructure. HP SIM is easily extensible, integrating other HP management products and value-add plug-ins such as the ProLiant Essentials, Integrity Essentials, and Server Essentials.

HP SIM relies on industry standards like SMI-S, SNMP, SSH, WBEM, and WMI to detect and report heterogeneous device attributes. HP SIM may also be configured to launch array specific applications for configuration, reporting and replication. For more information on HP Systems Insight Manager see: <http://www.docs.hp.com/en/netsys.html>

#### Clustered Server and High Availability System Support

Dual and multi-node cluster support is provided for host level fault tolerance and high system availability. See the Operating System, Cluster and High Availability Compatibility table for operating system specific support.

#### Factory Express

A portfolio of customized factory and deployment solutions from the desktop to the data center. Configure an entire datacenter in a single rack with HP Factory Express.

Configure your entire order including EVAs, Storage Area Network, POD, servers and backup in a rack, AND securely load your data prior to shipment saving time and money by providing a fully configured greener solution.

Factory Express most popular services for server and storage:

- Image Loading
- Asset Tagging & Labeling
- Image Recovery
- Custom System Settings
- 3rd Party Components
- Rack Integration
- Blades Integration

For more information visit: [www.hp.com/go/factory-express](http://www.hp.com/go/factory-express)  
[http://h71028.www7.hp.com/enterprise/cache/97688-0-0-0-121.html?jumpid=reg\\_r1002\\_usen](http://h71028.www7.hp.com/enterprise/cache/97688-0-0-0-121.html?jumpid=reg_r1002_usen)

#### Multi-Server Shared Support for Storage Consolidation

Heterogeneous and homogeneous host support provides the ability to share storage between multiple servers. The EVA provides storage access control (i.e. Selective Storage Presentation or LUN masking) assuring that a host cannot access data belonging to a different host. SAN-based zoning is also supported.

#### Single-pathing (Single HBA per host)

Single-pathing (or single HBA per host) support is provided for all supported operating systems (but may be version dependent). Use of single-pathing, which does not offer a redundant path option, should be used with care. Failure of the single HBA will result in loss of access for that host until the HBA is replaced.

### Product Highlights

**Enclosure Capacity** The EVA provides a high density disk storage solution. The EVA6400 and EVA8400 in the 42U HP 10000 G2 Series Rack supports up to 18 2U 12-bay M6412-A FC disk enclosures for a maximum capacity of 216 disk drives and a maximum storage capacity of 216 TB in a single rack. For the EVA8400 an expansion cabinet allows users to expand with another 9 enclosures for a total of up to 27 disk enclosures, providing support for up to 324 disks, and up to 324TB.

**Utility Pricing solutions for StorageWorks EVA** HP offers a spectrum of offerings allowing customers to align their payments according to the usage of storage capacity.

- For customers requiring assistance in managing their storage infrastructure, Managed Storage Solution (MSS) meets that need while providing the option to acquire storage on a utility model. Customers have the ability to choose other options like Backup/Restore, Data Availability, Local Copy and Remote Copy services. All these capabilities are offered at a \$/GB/Month fee.
- For customers that want to build and manage their own storage utility, Utility Ready Storage (URS) provides customers with storage that never runs out; priced as the customer uses it; and is easy to procure. URS pricing is based on \$/GB/Month of average allocated capacity over the customer's minimum commitment. URS provides a unique opportunity to allow customers access to storage when they need it, permitting them to adapt to their changing business needs.
- For customers whose need is best described by predictable growth, Pay per forecast (PPF), offered from HP Financial Services, is an ideal fit. It is a step lease based solution where the payments are structured upfront according to the customer's forecasted growth.
- For even further demanding financial needs of customers, HP Financial Services are ready to craft a customized solution for them.

**NOTE:** Support for Utility Ready Storage will be available after the introduction of the EVA6400 and EVA8400. Please contact your local HP representative for further information

### Solid State Disk Support

The EVA supports 72GB dual ported solid state fibre channel disk drives. The EVA arrays will support mixed drive types (solid state disks, high performance and FATA) within an enclosure, The solid state disk requires its own disk group. The minimum number of SSDs supported is 6 and the maximum is 8 per array.

**NOTE:** SSDs support only Vraid 5 and some Business Copy features (Snapshots and MirrorClone) for local replication.

**High Performance Fibre Channel Drives (10K 15K rpm) Support** The EVA supports 400 GB 10K rpm dual-ported 4 Gb/s FC and 146 GB, 300GB and 450GB 15K rpm dual-ported 4 Gb/s FC disk drives. The minimum number of high performance fibre channel drives supported on an EVA is 8.

The EVA arrays will support single or mixed drive capacities and types (solid state disks, high performance and FATA) within an enclosure. HP recommends using the same drive capacity type within a disk group because virtualization allocates space proportionate to the highest capacity drive within the group.

### Product Highlights

**FATA Drive Support** The EVA supports 1TB dual ported 4 Gb/s Fibre Attached Technology Adapted (FATA) disk. An EVA will support a full configuration of FATA disk drives. A minimum of eight FATA drives are required in a configuration.

FATA drives are designed for lower duty cycle applications such as near on-line data replication for back-up. These drives should not be used as a replacement for EVA's high performance, standard duty cycle, Fibre Channel drives. Doing so could shorten the life of the drive.

Please see the following URL for more information on FATA drives, their uses and their benefits:  
<http://h71028.www7.hp.com/ERC/downloads/5982-7353EN.pdf>

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### Fibre Channel Technology

The EVA6400/8400 takes advantage of the benefits of Fibre Channel (FC) in distance, performance and connectivity. The use of optical Fibre cabling allows distances between connected segments of a SAN to be up to 500 meters @ 1 Gb/s; 300 meters @ 2 Gb/s using short wave multi-mode cable and up to 10 kilometers (6.21 miles) @ 1 Gb/s when using long wave cable. The EVA6400/8400 are 4 Gb/s enabled on each FC path, but will also support 2 Gb/s FC paths for backwards compatibility. Storage Area Networks (SANs) can be constructed using FC switches/directors for fabric connectivity (currently up to a maximum of 20 FC switches supported).

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### Fibre Channel Switch/Director Support

Support for up to twenty FC switches operating at 2 Gb/s and 4 Gb/s allow the full benefits of a storage area network (SAN), providing exceptional connectivity while increasing the effective bandwidth of the network. Supported SAN features include Zoning for communication isolation and Inter-Switch Links (hops) up to 10 km. For more information on specific support specifications see the following Switch URL:

<http://h18006.www1.hp.com/storage/saninfrastructure/switches.html>

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### Transfer Speeds

The EVA6400/8400 has four FC host interfaces per HSV400/450 controller; eight for a controller pair. Each controller-to-host interface is 4 Gb/s. The controllers are also compatible with 2 Gb/s, 4 Gb/s and 8 Gb/s FC switches, HBAs, servers and other storage solutions.

Each EVA controller pair interfaces with M6412 drive enclosures through redundant fibre channel arbitrated loops. With 4 per HSV400 for EVA6400 and 6 per HSV450 for EVA8400 device ports and dual FC I/O modules per drive enclosure, each controller can connect to each FC drive A and B port via redundant fibre channel loops. Each controller has a redundant path to each drive.

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### Easy Installation

Installation and start-up services are part of the EVA6400 and EVA8400 warranty.

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### Product Highlights

**Fault Recovery -- HP Continuous Access EVA for Disaster Tolerance Applications** HP StorageWorks Continuous Access EVA remote copy functionality is available for use with the EVA6400/8400 arrays. Continuous Access EVA is a controller-based application that performs real-time replication between HP StorageWorks Enterprise Virtual Arrays. The solution is enhanced to perform remote replication, and deliver high data availability and performance to users on Fibre Channel based campus, metro or continental Storage Area Networks (SANs). For additional information about Continuous Access EVA visit: <http://h18006.www1.hp.com/storage/software.html>

HP StorageWorks Disaster Tolerant Solution for mySAP Business Suite on EVA offers a business continuance solution for SAP environments, where data integrity and value added functionality are high priorities. Best practices for implementing remote mirroring of an SAP database as part of an overall data protection strategy with SAP applications can be found at: <http://h71028.www7.hp.com/erc/downloads/4aa1-5683enw.pdf>

**High Availability/ Fault Tolerance/ Hot pluggable support** All EVA are configured with dual HSV controllers that operate in a redundant mode. Each controller has four redundant Fibre Channel (FC) host ports. Each EVA6400 and EVA8400 controller has four FC host ports per controller. In the event of a path failure, the alternate paths to the controller can be utilized with the use of multi-path software in the Operating System software or Secure Path software.

EVA6400/8400 device ports connect to the FC I/O module on each drive enclosure via a fibre channel arbitrated loop. Up to nine enclosures can be connected in a redundant FC loop arrangement

The EVA6400, with four fibre channel device ports per HSV400 controller, supports 2 redundant fibre channel loops. Each controller can connect to both ports on up to 216 drives.

The EVA8400, with 6 device ports per HSV450 controller, supports 3 redundant fibre channel loops (6 loops total). Each controller can connect to both ports on up to 324 drives.

The HSV controllers also have dual redundant hot plug power supplies and dual redundant hot plug blowers. Each controller has hot plug cache batteries to maintain cache contents for up to 96 hours in case of a total power failure.

The M6412-A FC drive enclosure has dual redundant hot plug FC I/O/Environmental Monitoring Unit (EMU) modules that allow the controllers to distribute I/Os between the two modules and provides redundant paths should either FC I/O module become unavailable and the EMU functionality allows you to monitor and report the condition of the power supplies and fans. . The enclosure also has dual redundant hot plug power supplies and dual hot plug blowers. The enclosure also has a hot plug Environmental Monitoring Unit (EMU) The M6412-A drive enclosure provides point to point connectivity within the enclosure.

The SSD, FC and FATA disk drives have dual FC ports which can be redundantly accessed by each controller. The drives are hot plug. The EVA, as a virtualized array, always provides striping of the drives across the entire disk group. The drives can then be arranged, using redundant Vraid 1, Vraid 5 or Vraid 6 protection, so that a drive failure will not cause loss of data. SSDs support Vraid 5. Optional distributed sparing (virtual sparing) can be configured so that a drive failure will trigger an automatic rebuild of the Vraid 1 or Vraid 5 data set into spare space. The EVA sparing protection will utilize available disk space in the disk group and when that is exhausted, the established virtual spare space. This methodology of using unused capacity can give customers the ability to have many disk worth of spare space for maximum data availability, protection and peace of mind.

### Product Highlights

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All EVAs have dual redundant power distribution. Two independent power cords distribute power through two Power Distribution Units (PDUs) to each side of the EVA cabinets and to each power supply of the controllers and to each power supply of the drive enclosures. Each cabinet power cord can be connected to independent power sources. For maximum availability, a customer should provide redundant power from independent power circuit breakers, independent power lines from the power company and even independent power companies.

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#### Integration

HP EVA6400/8400 models are 4Gb/s FC Switched Fabric "enabled" and can operate on 8Gb/s, 4Gb/s or 2Gb/s FC Switched Fabric SANs. They can co-exist in the same FC SAN with previous generations of EVA, FC storage solutions and many other SAN devices.

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#### EVA Manageability

HP StorageWorks Command View EVA provides the capability to manage the EVA Array family in a SAN or direct connect Fibre Channel host attach configuration. HP Command View EVA software runs on a variety of server configurations using Windows Server 2003. ProLiant DL380 G5 and DL585 G2 Storage Servers are the perfect platforms from which to run Command View EVA. ProLiant Storage Server gateway models (including the DL380 G5 x64 SAN Storage Server and DL585 G2 Storage Server) allow you to stretch your investment by combining EVA management, file and print services, and iSCSI connectivity all on the same platform.

The powerful Command View EVA provides an easy mechanism to manage up to 16 EVA units in a SAN configuration. Industry leading security enhancements in Command View now allows administrators to take advantage of Windows domains and local groups. Command View integrates with Windows Active Directory to authorize and authenticate users. In addition, all user actions and events that change system state are logged. Administrators can now use the audit logging capabilities to provide an audit trail. The Command View EVA media kits and license are required with all EVA models. HP Command View EVA requires a License to use (LTUs) equal to, or greater than the total raw capacity of each array.

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#### Performance

Fibre Channel host connections provide up to 400MB/s bandwidth for each path. Dual mirrored port write caching capability, with battery backed cache, maintains optimal availability while assuring data integrity in the event of a failure.

Each HSV400 controller (for EVA6400 configurations) has four Fibre Channel host ports (eight ports in a redundant pair of controllers) assuring the availability of bandwidth for the most demanding applications. In addition, up to 4GB of cache per controller pair ensures high performance.

Each HSV450 controller (for EVA8400 configurations) has four Fibre Channel host ports (eight ports in a redundant pair of controllers) assuring the availability of bandwidth for the most stringent applications. In addition, up to 22GB of cache per controller pair ensures high performance.

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### Product Highlights

#### Scalability

A storage management server can manage up to 16 EVA controller pairs (EVA4400/6400/8400, EVA4100/6100/8100s), EVA4000/6000/8000 and EVA3000/5000s in any one fabric. An EVA controller pair will support up to 256 host connections (up to 1024 HBAs).

The EVA6400 will scale up to 216 disks in a single rack (216TB using 1TB FATA disk drives, and 97TB using 450 GB high performance disk drives).

The EVA8400 will scale up to 216 disks in a single rack and with the addition of an expansion rack, up to 324 disks (324TB using 1TB FATA disk drives, and 146TB using 450GB high performance disk drives).

Configure to Order (CTO) options and the HP 10000 G2 Series Racks allow even greater server and device integration, flexibility and scalability for the EVA6400/8400. Data center managers can customize server, storage and back-up configurations as well as use any available cabinet U space to mount Storage Management servers, switches and have the peace of mind that it is built with HP factory precision manufacturing.

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#### EVA as Virtualized Storage behind the XP

HP StorageWorks EVA6400/8400 disk arrays can be connected as external storage devices behind HP StorageWorks XP disk arrays.

The XP24000/XP20000 simplifies the management of heterogeneous SAN environments through its ability to support up to 247 PB/ 96 PB respectively of external storage—all configured 'behind' a single XP. XP External Storage software uses advanced virtualization technology to allow storage administrators to host XP Disk Array LUNs on externally attached disk arrays. Any Fibre Channel port from any CHA pair installed in any slot can be used to connect to external storage EVA. With external EVA storage, XP presents multiple tiers of storage to a wide range of host systems. Instead of seeing a confusing collection of arrays, host systems perceive all the data to be stored inside the XP disk array. In effect, the XP disk array becomes the storage controller for a flexible, multi-tiered collection of EVAs with a range of cost and performance capabilities. By configuring EVA storage arrays behind a single XP24000/XP20000, data can be moved back and forth dynamically across tiers, all of which is invisible to the applications.

The XP12000's virtualization feature also reduces the total cost of storage ownership by:

- Exploiting common storage management across multiple vendors' systems
- Easily deploying a dual-vendor policy
- Facilitating simpler and lower cost data migrations
- Increasing storage utilization
- Extending the life of legacy storage

For more information please refer to the HP StorageWorks XP External Storage Software web page at: <http://h18006.www1.hp.com/products/storage/software/extstxp/index.html>.

### Product Highlights

|   |   |
|---|---|
| <b>Servers Supported - Single and Clustered</b> | HP servers (HP-UX, ProLiant, AlphaServers)            |
|   | X86 servers   |
|   | Dell servers  |
|   | Sun servers   |
|   | IBM servers   |
|   | Apple XsApple Servers (PowerPC and Intel)             |
|   | Fujitsu Siemens & Primergy Servers (Bx6x0, Rx and Tx) |

**EVA Required Software** HP StorageWorks EVA6400/8400 ships with XCS V9.5 factory installed on new EVAs. XCS V9.5 also supports the EVA4400. The base XCS End User License for the EVA is contained in the hardware shipment.

XCS v9.5 controller media download is available from HP.com. These downloads are available for upgrades of existing EVA4400 or as archival media for the EVA6400/8400. The EVA Release Notes and Upgrading Product software Guide are also available from the same location.

**NOTE:** Review the Release Notes and Upgrading Product Software documentation and compatibility requirements of all installed Array Integrated Software completely before upgrading. Downgrading the EVA4400 from XCS v9.5 is not supported.

XCS V9.5 is available for download at the "software & drivers" link:  
<http://h18006.www1.hp.com/products/storageworks/eva/index.html>

HP StorageWorks Command View EVA is required software for all EVA models. HP Command View EVA requires a License to use (LTUs) equal to, or greater than the total raw capacity of each array.

**NOTE:** The minimum supported version of XCS on the EVA6400/8400 is XCS V9.5

**HP StorageWorks EVA Software Selector** The following matrix will assist in identifying some of the complimentary HP software products can be used along with the EVA to support various business applications. Please see your Sales Representative, or go to: <http://www.hp.com/> for more information on these valuable HP software products.

Just click on the product name and you will be linked to the product specification URL.

|  | EVA Device and Configuration Management | Backup Solutions | Business Continuity/ Local Mirroring | Disaster Recovery/ Remote Mirroring | Storage Resource Management | Unified Server and Storage Management | Application Integration |
|--|---|------------------|--------------------------------------|-------------------------------------|-----------------------------|---------------------------------------|-------------------------|
| <a href="#">HP Command View EVA</a>      | X<br>(Required)                         |                  |                                      |                                     |                             |                                       |                         |
| <a href="#">HP Business Copy EVA</a>     |   | X                | X                                    |                                     |                             |                                       | X                       |
| <a href="#">HP Continuous Access EVA</a> |   |                  |                                      | X                                   |                             |                                       |                         |
| <a href="#">Dynamic Capacity Manager</a> | X                                       |                  |                                      |                                     |                             |                                       |                         |



### Product Highlights

|  |   |  |   |   |   |                          |   |
|--|---|--|---|---|---|--------------------------|---|
| <b>HP Storage Essentials Suite</b><br>(Heterogeneous, multivendor)                                 | X<br>End to end provisioning (hosts, infrastructure, storage)                           | X<br>End to end backup monitoring/ reporting |   |   | X<br>Discovery, topology, monitoring, events, applications, NAS/SAN, File monitoring, reporting, Performance, monitor host clusters |                          | X<br>monitor applications and associated storage/ infrastructure (Oracle, Microsoft Exchange Server, Sybase, Microsoft SQL, InterSystems Cache' database and SAP ACC) |
| <b>HP Storage Essentials Standard Edition SRM Software</b> (Small to medium HP Storage-based SANs) | Discovery, topology   | X<br>Backup monitoring/ reporting            |   |   | X<br>monitoring, events, applications, NAS/SAN, File monitoring, reporting, EVA Performance, monitor host clusters                  | X                        | X<br>(Oracle, Exchange, Sybase, MS SQL)   |
| <b>HP Data Protector</b>   |   | X  | X |   |   |                          | X   |
| <b>HP Systems Insight Manager</b>  | In-context launch of CV EVA, SAN discovery, monitoring, asset, configuration., security |  |   |   |   | X<br>(Included with EVA) |   |
| <b>HP Cluster Extension EVA</b>  |   |  |   | X |   |                          |   |
| <b>HP Metrocluster/ Continentalcluster with Continuous Access EVA</b>                              |   |  |   | X |   |                          |   |
| <b>HP Storage Mirroring</b>  |   |  |   | X |   |                          |   |

## Product Highlights

### EVA and Value-added Software Compatibility

| Model             | XCS Software | HP Command View EVA*  | HP Continuous Access EVA** | HP Business Copy EVA** | HP Replication Solution Manager (RSM)*** |
|-------------------|--------------|-----------------------|----------------------------|------------------------|--|
| EVA4400/6400/8400 | XCS V9.5     | Command View EVA v9.0 | Continuous Access EVA      | Business Copy EVA      | Replication Solution Manager v 5.0       |

\*HP StorageWorks Command View EVA is required software for all EVA models. HP Command View EVA requires a License to use (LTUs) equal to, or greater than the total raw capacity of each array. If the EVA does not have the proper licensed capacity it will be in violation of the End User License Agreement (EULA).

\*\*HP StorageWorks Continuous Access EVA and HP StorageWorks Business Copy EVA requires a License to use (LTUs) equal to, or greater than the total usable amount of data being replicated on each array. If the EVA does not have the proper licensed capacity it will be in violation of the End User License Agreement (EULA).

\*\*\*HP StorageWorks Replication Solutions Manager Software provides a powerfully simple graphical user interface (GUI) to create, manage and configure local and remote replication on the entire EVA family. The RSM Software provides a centralized management interface that integrates with HP Business Copy EVA Software and HP Continuous Access EVA Software for local and remote replication, resulting in a unique, cost effective disaster recovery solution.

### Operating Systems, Cluster and High Availability Compatibility

| Operating System                           | Versions Supported   |              | Cluster Server or High Availability Software              | HA Versions Supported  | Failover Software   |
|--|--|--------------|---|--|---|
| Microsoft Windows 2003/32-bit              | Standard Enterprise  | SP1, R2; SP2 | Microsoft Cluster Server (MSCS)                           | Windows Server 2003 Enterprise Edition Windows 2003 DataCenter Edition (64-bit)* | Full featured MPIO, v3.02.00 available from HP (2003, 2008) and Microsoft DSM from Microsoft (2008) |
| Microsoft Windows 2003/x64                 | Standard Enterprise  | SP1, R2; SP2 |   |  |   |
| Microsoft Windows 2003/IA64                | Enterprise DataCenter  | SP1; SP2     |   |  |   |
| Microsoft Windows 2008 32-bit, x64*        | Standard Enterprise  |              | Veritas Foundation Suite/HA                               | 5.0, 5.1 (Windows 2003)<br>5.1 (Windows 2008)                                    |   |
| Microsoft Windows 2008 IA64*               | Enterprise   |              |   |  |   |
| Microsoft Windows Server 2008 Hyper-V, x64 | Standard Enterprise  |              |   |  |   |
| HP-UX                                      | 11i v1 (PA-RISC)<br>11i v2 (PA-RISC & Integrity)<br>11i v3 (PA-RISC & Integrity) |              | HP ServiceGuard****<br><br>Veritas Foundation Suite/HA*** | 11.16<br>11.17<br>11.18<br>5.0 (11iv2, 3)  | HP-UX 11.iv3 has OS native multi-path, pvlincs native in HP-UX and Veritas DMP; HP Secure Path 3.0F |



### Product Highlights

|                |  |   |   |  |
|----------------|--|---|---|--|
| Linux          | Red Hat EL Advanced Server 4.6, 4.7 (IA32, IA64 & x64)<br>Red Hat EL Advanced Server 5.1, 5.2 (IA32, IA64 & x64)<br>SUSE/SLES9 (IA32, IA64 & x64)- SP3, SP4 (Includes Open Enterprise Server Linux)<br>SUSE/SLES10 (IA32, IA64 & x64)- SP1, SP2 (Includes Open Enterprise Server Linux)<br>Oracle Enterprise Linux V4, 5 | HP ServiceGuard for Linux****<br><br>VERITAS Foundation Suite/HA for Linux*** | 11.18<br><br>5.0 (SLES9, 10 & RHEL 4, 5 x64 only)*          | QLogic Failover driver, available from HP, Emulex MultiPulse available from HP and Device Mapper v4.2.0 Enablement Kit from HP |
| Apple Mac OS X | 10.4<br>10.5   | N/A   | N/A   | ATTO FC HBA driver   |
| HP OpenVMS     | Alpha: 8.2, 8.3<br>Integrity: 8.2-1, 8.3, 8.3-1H1  | HP OpenVMS Clusters   | 8.2<br>8.2-1<br>8.3<br>8.3-1h1                              | Native in OS   |
| Sun Solaris    | 9 (SPARC)<br>10 (SPARC & x86)  | SunCluster<br>VERITAS Foundation Suite/HA***                                  | 3.2<br>5.0 (9 & 10)   | MPxIO for Solaris, Native in OS<br>Veritas DMP 5.0   |
| IBM AIX        | 5.2<br>5.3<br>6.1  | HACMP<br>VERITAS Foundation Suite/HA***                                       | Native in OS<br>5.4 (AIX 5.2 & 3)<br>5.4.1 (AIX 6.1)<br>5.0 | MPIO for IBM AIX, Native in OS<br>Veritas DMP 5.0  |
| VMware         | ESX Server 3.0.2, 3.0.3, and 3.5   | MSCS Clustering**   | Windows Server 2003 Enterprise Edition                      | Windows Server 2003 Enterprise Edition   |
| Xen            | Citrix XenServer V4.1, 5.0<br>RHEL Virtualization V5.2<br>Oracle Virtual Machine   | Citrix<br>HP ServiceGuard for Linux (RHEL and Oracle Virtual Machine)         | V5.0<br>SGLX 11.18  | Native Device Mapper MPIO (Citrix and RHEL)  |

\*For more specific information on supported versions of Windows 2008, see the OS support matrix at: [hp.com](http://hp.com)

\*\*For more detailed information on Cluster Server Support see the VMware Release Notes

\*\*\*Follows initial release, check posted Operating Specific Release Notes or software documentation for support.

\*\*\*\* For more specific information on supported versions check posted Operating Specific Release Notes or software documentation for support

### Cabinet Density

A single 42U EVA cabinet can house up to 216TB of raw capacity (using 1TB FATA disks).

**NOTE:** Maximum cabinet capacity will vary based available upon U space. The total number of controllers, enclosures supported and other devices.

### Product Highlights

**Racking Guidelines and Power Distribution** Power Distribution Units (PDUs) are configured according to the voltage used in the country when the solution is ordered. These PDUs provide redundant power. They are located in the bottom of the rack, taking 2U of rack space. To reclaim the 2U of rack space required by the PDUs, they may be moved to the rear of the rack using the PDU Pivot Bracket Kit. It is factory or field installable.

For the EVA6400/8400 a variety of HP 10000 G2 Series Rack offerings and integration options are available. The EVA configurator tools utilize a 42U HP 10000 G2 Series Rack as the standard recommendation and will provide a 220/240V PDU and country specific power cords. Both the height and types of rack and PDUs can be modified based upon the specific customer need. If other devices, such as servers, switches or back-up devices, are to be installed with the EVA; this can be specified and the cabinets and PDUs can be modified to support the configuration. The EVA6400/8400 also supports 22U and 36U racks. The 47U rack is also supported, but not factory configured, because of the cabinet height, which creates shipping limitations. It must be assembled on site.

For more information on configuration and PDU support for the 10000 G2 Series Rack please see the following URL:

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

The EVA also supports the 5642 (42U) Rack Cabinet System as a field installed option.

For more information on the 5642 rack, please see the following URL:

<http://h18004.www1.hp.com/products/servers/proliantstorage/racks/5000series/5642/index.html>

Other PDUs, besides the 200 - 240 V single-phase default PDU, are also supported. This includes 100 - 127 volt single-phase, 200 - 240 volt three-phase, and 380 - 415 volt three-phase PDUs. Monitored PDUs are also supported.

For more information on PDU support, please see the following URL:

<http://h18004.www1.hp.com/products/servers/proliantstorage/power-protection/pdu.html>

**NOTE:** When adding additional devices to existing racks ensure that the installed PDUs will support the new power requirements.

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### Total Cost of Ownership

The unique virtual architecture allows up to twice the normal effective capacity utilization of traditionally architected storage offerings. And with Virtually Capacity-Free Snapshot (Vsnap), significant duplicate capacity requirements can be eliminated resulting in fewer/smaller storage acquisitions.

The EVA has one of the highest density disk storage solutions in the industry. Additionally, the unique virtual architecture allows up to twice the normal effective capacity utilization of traditionally architected storage offerings. And with the virtually Capacity-Free Snapshot (Vsnap), FATA disk drives and the ability to change Vraid types, significant amount of duplicate capacity requirements can be eliminated, resulting in fewer/smaller storage acquisitions.

### Service and Support, HP Care Pack, and Warranty Information

**HP Care Pack Services** HP Care Pack Services. Scalable, Flexible, Dependable. Like your storage.

Your storage is evolving. Get scalable support that evolves with it. HP Care Pack Services is an easy-to-buy, easy-to-use portfolio of packaged services covering your lifecycle needs. You can rely on our highly skilled, HP certified professionals to offer a breadth of expertise across leading storage technologies, and work side by side with you for optimal results. Push services beyond expectations and choose support that meets the changing needs of your business with the same reliability, scalability and flexibility you demand of your storage.

Protect your business beyond the warranty

Standard warranty protects against product defects and some causes of downtime. HP Care Pack Services helps you proactively guard against unplanned downtime which can reduce your productivity and profitability. By using a standard approach to warranty uplifts, such as HP Care Pack Services, customers can be more sure of consistency of operations for both mission-critical and standard business computing.

"Extending warranties with HP Care Pack Services"

The key to normalizing the warranty of combined solutions-is making service uplift simple: HP Care Pack Services. This portfolio of predefined packages, extending across the entire IT lifecycle, offering consulting, education, technical support, optimization, risk assessment, and more. It's entirely flexible allowing customers to extend the cover to the precise level of support required. Customer's standard hardware warranty, for example, can be upgraded to next-business-day response, to same-day coverage, or even to a committed six-hour call-to-repair service available 24 hours every day of the week."

- Provide consistent, predictable levels of support across your entire department or business
- Give you direct access to proven technical and problem-solving expertise
- Offer a choice of response-time and repair-time commitments
- Are available whenever and wherever you do business

For many products, post-warranty HP Care Pack Services are available when your original warranty has expired. Choose the support levels that meet your business requirements, from basic to mission-critical. <http://www.hp.com/hps/storage>

**NOTE:** Care Pack Services availability may vary by product and country.

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**Warranty and Services Included with the Product** The EVA6400/8400 comes with a 3-year HP's Global Limited Warranty and Technical Support, which includes 3-years 9x5 hardware support, with next business day (NBD) response.

HP's warranty and support features:

- Online Business Support Center and IT Resource Center
- Remote Support
- Technical Phone Support
- Customer Self Repair (see list below)
- Software Limited Warranty
- On-site Warranty Service

The EVA Fibre Channel hard disk drive (HDD) warranty is 3years, parts only.

### Service and Support, HP Care Pack, and Warranty Information

#### For bundled deployment (I&S) service:

Your HP storage product includes deployment which helps you improve the productivity of your technical staff and allows your IT resources to stay focused on their core tasks and business priorities. HP deployment helps ensure that your product is installed smoothly, efficiently, and with minimal disruption of your IT and business operations.

You'll benefit from:

- Specialized expertise for a complex, one-time task
- Reduced implementation time, impact and risk to your storage environment
- Shortened time-to-ROI
- Product knowledge gained during orientation session

#### For bundled Hardware Support (4-Hour 24x7 Same Day):

Your HP storage product includes world-class round-the-clock hardware support, providing increased equipment availability and productivity through rapid-response onsite and remote support. 24x7 Hardware Support benefits include:

- Prompt service for your storage product
- Easy-to-use onsite services
- Improved hardware performance and uptime
- Increased return on your HP hardware investments

#### Online Support

HP online support capabilities include a variety of self-help tools, troubleshooting assistance, and access to the patch database, firmware/software update packages and documentation. Register with the HP Business Support Center and the IT Resource Center to receive product specific and proactive notifications for the EVA6400/8400. For more information go to: [www.hp.com/support](http://www.hp.com/support) or: [www.itrc.hp.com](http://www.itrc.hp.com).

#### Remote Support

HP designed the EVA6400/8400 with support capability to facilitate remote monitoring and email notification of array errors/events. To take full advantage of HP's remote support solutions and maximize the service delivery experience, these features must be enabled at time of installation. Additional fault monitoring software is included in the EVA software media kit.

#### Technical Phone Support

24x7 telephone technical support is available to assist with Hardware warranty related troubleshooting and issue resolution. Call HP warranty support: 1-800-474-6836. Qualified technical resources will be your first point of contact to assist with your service request.

#### Customer Self Repair (customer installed replacement parts)

HP designed the EVA6400/8400 to enable the highest degree of Customer Self Repair and parts replacements. This feature enables maximum support flexibility, while minimizing unit down time. Customer Self Repair parts come with step by step instructions with additional assistance available online or by phone.

Required Customer Self-Repair (Replacement) Parts List:

- Hard disk drives with drive firmware code load.

## Service and Support, HP Care Pack, and Warranty Information

- Controller enclosure power supply.
- Controller enclosure fan.
- Controller management module
- Disk enclosure power supply.
- Disk enclosure fan.
- Bezels.

### Optional Customer Self-Repair Parts List:

- Controller cache battery.
- Controller module.
- Controller cache memory (DIMM).
- Internal enclosure boards and cables
- Fiber channel Transceivers.
- Fiber channel transceivers cables.

Part replacement videos can be viewed at: <http://hp.com/go/sml>. For the EVA6400/8400, select Storage, then EVA Disk Arrays, then HP StorageWorks EVA6400/8400 Enterprise Virtual Array, then the particular resource needed.

### Software Warranty

If the removable HP Software media on which HP distributes the software proves to be defective in materials or workmanship within 90-days of purchase, return the media to HP for replacement.

### On-site Warranty Service

The HP EVA6400/8400 comes with 3-year on-site warranty support, for those service events not remedied either remotely or through use of customer self-repair replaceable parts. On-site service is made available at HP's discretion and scheduled during standard office hours.

For more information about HP's Global Limited Warranty and Technical Support, visit: <http://h18006.www1.hp.com/products/storageworks/warranty.html>

For more information about HP's Global Limited Warranty and Technical Support, visit: [ftp://ftp.compaq.com/pub/products/storageworks/warranty/en\\_321708-008.pdf](ftp://ftp.compaq.com/pub/products/storageworks/warranty/en_321708-008.pdf)

HP warrants the HP 10000 G2 Series Rack according to the standard rack product warranty. Please refer to product specification for further details:

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

## Recommended Services **HP Care Pack Services recommended for optimal satisfaction of all deployments of your product.**

3-Year HP Proactive 24 3-Year HP Proactive 24 Service (P24) is an integrated hardware and software support solution, which combines industry leading technical assistance with proactive account services to cover the entire IT infrastructure and to improve the stability, availability, and operational effectiveness of the IT environment.

<http://h71028.www7.hp.com/ERC/downloads/5981-9842EN.pdf>

| Product Number | Product Name                 | Service Name           | Care Pack Services Product # and Band |
|----------------|------------------------------|------------------------|---------------------------------------|
| AJ757A         | HP EVA 6400 Array            | 3-Year HP Proactive 24 | HA111A3-9DP                           |
| AJ758A         | HP EVA 8400 14GB Cache Array | 3-Year HP Proactive 24 | HA111A3-9DQ                           |



### Service and Support, HP Care Pack, and Warranty Information

|        |   |                        |             |
|--------|---|------------------------|-------------|
| AJ847A | HP EVA 8400 22GB Cache Array            | 3-Year HP Proactive 24 | HA111A3-9DR |
| AG638B | HP M6412A Fibre Channel Drive Enclosure | 3-Year HP Proactive 24 | HA111A3-9DS |
| AR055A | HP EVA M6412 72GB FC 2 port SSD         | 3-Year HP Proactive 24 | HA111A3-9BC |

### HP Care Pack Services Recommended Part Numbers

| Product Number | Product Name   | Service Name              | Care Pack Services Product # and Band |
|----------------|--|---------------------------|---------------------------------------|
|                |  | HP Installation Service   | HA113A1-5JQ                           |
| AP771A         | HP MPX200 Multifunction Router 1GbE Base                 | 3-Year HP Support Plus 24 | HA110A3-1LQ                           |
| AP772A         | HP MPX200 Multifunction Router 1GbE Upgrade Blade        | 3-Year HP Support Plus 24 | HA110A3-1LQ                           |
| AP773A         | HP MPX200 Multifunction Router 10-1GbE Base              | 3-Year HP Support Plus 24 | HA110A3-1LR                           |
| AP774A         | HP MPX200 Multifunction Router 10-1GbE Upgrade Blade     | 3-Year HP Support Plus 24 | HA110A3-1LR                           |
| AE324A         | HP StorageWorks EVA iSCSI Connectivity Option            | 3-Year HP Proactive 24    | HA111A3-83F                           |
| AE325A         | HP StorageWorks EVA iSCSI Connectivity Upgrade Option    | 3-Year HP Proactive 24    | HA111A3-83F                           |
| AH814B         | HP StorageWorks 12000 Virtual Library System EVA Gateway | 3-Year HP Proactive 24    | HA111A3-80Q                           |
| AG680A         | HP StorageWorks IP Distance Gateway                      | 3-Year HP Proactive 24    | HA111A3-87V                           |
| AG681A         | HP StorageWorks IP Distance Gateway                      | 3-Year HP Proactive 24    | HA111A3-87V                           |

## Service and Support, HP Care Pack, and Warranty Information

### Related Services

Services that will enhance the user experience in many product deployments.

- HP SAN Solution Service  
 HP SAN Solution Service - a scalable service providing specialized expertise in storage area network planning and configuration. Service ensures your SAN is configured for high performance and availability and is integrated with your applications, management environment, and business processes.  
<http://h71028.www7.hp.com/ERC/downloads/5981-8527EN.pdf>
- HP Data Migration Service  
 HP Data Migration Service helps you move critical business information while decreasing the risk of data loss, minimizing threats to data integrity, and avoiding productivity-sapping performance interruptions.  
<http://h71028.www7.hp.com/ERC/downloads/5982-4107EN.pdf>
- HP Assessment Service for SANs  
 HP Assessment Service for SANs offers customized technical and operational guidance to customers with a deployed storage area network (SAN) infrastructure, and provides recommendations to help improve availability levels and ongoing management of your SAN environment.  
<http://h71028.www7.hp.com/ERC/downloads/4AA1-2941ENW.pdf>

| Service Name  | Care Pack Services Product # and Band                       | Alternate Care Pack Service Product #                       |
|---|---|---|
| HP SAN Solution Service                                       | Contact your HP sales rep or Channel Partner for assistance | Contact your HP sales rep or Channel Partner for assistance |
| HP Data Migration Service                                     | Contact your HP sales rep or Channel Partner for assistance | n/a   |
| HP Assessment Service for SANs                                | HE807A1   | n/a   |
| HP Data Replication Solution Services - CA for EVA            | Contact your HP sales rep or Channel Partner for assistance | n/a   |
| HP Data Replication Solution Services Business Copy for EVA   | Contact your HP sales rep or Channel Partner for assistance | n/a   |
| HP Command View EVA (CV EVA) Installation and Startup Service | HA124A1-5AS   | UD490E  |
| Data Sanitation Service                                       | Contact your HP sales rep or Channel Partner for assistance | n/a   |

### Service and Support, HP Care Pack, and Warranty Information

#### eSupport

HP eSupport is a portfolio of technology-based services that assist you with managing your business environment - from the desktop to the data center.

#### Support Portal

The HP support portal provides one-stop access to the information, tools and services you need to manage the daily operations of your IT environment.

Features include:

- Access to self-solve tools (including search technical knowledge base)
- Efficient logging and tracking of support cases
- Collaboration with other business and IT professionals
- Download of patches and drivers
- Access to diagnostic tools
- Proactive notification of relevant information

Access to certain features of the support portal requires an HP service agreement. To access the support portal, visit: <http://www.hp.com/support>

#### Remote Support Technology (RST)-HP Remote Support Pack

Taking a more proactive approach to IT support, the HP Remote Support pack plug-in module easily integrates with HP Systems Insight Manager to provide a powerful, unified "single pane of glass" solution for onsite and remote management.

HP Remote Support Pack enhances HP Systems Insight Manager with intelligent event diagnosis plus the automatic submission of hardware event notifications securely to HP support, including acknowledgment and status returns. It adds remote configuration collections to allow the delivery of assessment and proactive services for your SAN storage and HP-UX environments.

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#### Customer Technical Training

Consider education as an integral part of your strategy to get the best return on investment for your HP storage solution. HP offers a variety of training courses on storage software, networking, archiving and disk storage systems. Our classes are available in many delivery modalities from traditional instructor-led courses at one of our 80 training centers worldwide to on-site training customized to your needs or online. [www.hp.com/learn/storage](http://www.hp.com/learn/storage)

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#### HP Services Awards

HP Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and award reflect our services team's dedications, technical expertise, professionalism and uncompromising commitment to customer satisfaction. For a list of all our awards, please visit: <http://h20129.www2.hp.com/services/cache/77318-0-0-225-121.html>.

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#### Additional Services Information

For more information about HP Care Pack Services for Storage, please visit:

<http://www.hp.com/hps/storage>

If you have specific questions, contact your local HP representative. Contact information for a representative in your area can be found at "Contact HP" <http://www.hp.com>

## Configuration Information and Configuration Rules

### Step 1 - Choose an EVA Model Base and Factory-Integration Information

#### Models

**Enterprise Virtual Array 6400/8400 Independent Components** The following components are available worldwide. The EVA6400 and EVA8400 models are modular and scalable storage solutions designed to have no-single-point-of-failure, which provide disaster tolerance and business continuance support for storage consolidation on heterogeneous SANs.

|   |   |        |
|---|---|--------|
| <b>HP StorageWorks EVA6400 Dual Controller Array</b>            | HP StorageWorks EVA6400 Dual Controller Array<br>Includes one 4U Controller assembly with two HSV400 controllers mounting hardware cables and controller mounting. Order one unit for each EVA6400 array configuration.   | AJ757A |
| <b>HP StorageWorks EVA8400 14GB Cache Dual Controller Array</b> | HP StorageWorks EVA8400 14GB Cache Dual Controller Array<br>Includes one 4U Controller assembly with two HSV450 controllers mounting hardware cables and controller mounting. Order one unit for each EVA8400 array configuration.  | AJ758A |
| <b>HP StorageWorks EVA8400 22GB Cache Dual Controller Array</b> | HP StorageWorks EVA8400 22GB Cache Dual Controller Array<br>Includes one 4U Controller assembly with two HSV450 controllers mounting hardware cables and controller mounting. Order one unit for each EVA8400 array configuration.  | AJ847A |
| <b>M6412-A FC Drive Enclosures &amp; Accessories</b>            | <p>HP StorageWorks M6412-A Fibre Channel Drive Enclosure</p> <p>For factory racking select up to:</p> <ul style="list-style-type: none"> <li>● A minimum of 1 and up to 8 M6412-A drive enclosures for an EVA4400 (HSV300 and HSV300-S)</li> <li>● A minimum of 2 and up to 18 M6412-A enclosures EVA6400 (HSV400)</li> <li>● A minimum of 3 and up to 18 M6412-A enclosures EVA8400 (HSV450) in a single rack</li> <li>● A minimum of 3 and up to 27 M6412-A enclosures EVA8400 (HSV450) in two racks</li> </ul> <p>Drive enclosures may also be:</p> <ul style="list-style-type: none"> <li>● Ordered for on-site capacity additions to existing EVA4400/6400/8400 configurations.</li> <li>● Ordered for field installation of complete EVA4400/6400/8400</li> <li>● Installed by HP manufacturing into EVA configurations by ordering the enclosure with the factory integration part number (#0D1).</li> </ul> <p>This drive enclosure is compatible with EVA4400/6400/8400 arrays only.</p> <p>The M6412 is a 2U dual-redundant FC Loop 12-bay point to point disk enclosure with mounting hardware, and the necessary copper FC cables for connecting to an HSV Controller pair.</p> | AG638B |

## Configuration Information and Configuration Rules

**NOTE:** An EVA requires a minimum of 8 disk drives per Fibre Channel or FATA drive type or 6 solid state disks per EVA4400/6400/8400.

**Enterprise Virtual Array Field Installation** Please refer to the Expansion options (Step 8) - listed in the Configuration Information and Configuration Rules - for details on components available for field installation. These components are useful for adding EVA components to existing EVA storage configurations or into on-site customer-supplied racks.

## Step 2 - Choose File Services and EVA Connectivity Options

The EVA file services and EVA iSCSI offerings provide superior storage consolidation, management and total cost of ownership. The EVA file services offerings support both block and file data concurrently with high availability and scalable performance. The HP StorageWorks MPX200 Multifunction Router and EVA iSCSI Connectivity Option extends the FC SAN investment with integrated multi-protocol support, allowing customers to incorporate iSCSI servers without requiring additional storage arrays or management costs

For information on ordering file services components see:

[http://h18000.www1.hp.com/products/quickspecs/12667\\_div/12667\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12667_div/12667_div.html)

<http://h18006.www1.hp.com/products/storageworks>

### The EVA iSCSI Connectivity Options supports Windows and Linux environments

**HP StorageWorks MPX200 Multifunction Router** HP StorageWorks MPX200 Multifunction Router 1 GbE Base Chassis AP771A  
Includes:

- (1) chassis,
- (1) 1 GbE blade,
- rail kit,
- accessory kit and
- documentation.
- Includes redundant power supplies.

HP Storage Works MPX200 Multifunction Router 1 GbE Upgrade Blade. AP772A  
Includes:

- (1) 1 GbE blade
- accessory kit
- documentation

For multi-path (redundant blade for high availability) order both part numbers. The second hardware blade installs into the chassis that is included with AP771A or AP773A.

**NOTE:** HP recommends use of the same blade option type (1 GbE or 10 - 1GbE) in a common chassis to ensure balanced performance in a redundant configuration.

HP StorageWorks MPX200 Multifunction Router 10 - 1 GbE Base Chassis AP773A  
Includes:

- (1) chassis
- (1) 10 - 1 GbE blade
- rail kit
- accessory kit



## Configuration Information and Configuration Rules

- documentation.
- Includes redundant power supplies.

HP Storage Works MPX200 Multifunction Router 10 - 1 GbE Upgrade Blade. AP774A  
Includes:

- (1) 10 - 1 GbE blade
- accessory kit
- documentation

For multi-path (redundant blade for high availability) order both part numbers. The second hardware blade installs into the chassis that is included with AP773A or AP771A.

**NOTE:** HP recommends use of the same blade option type (1 GbE or 10 - 1GbE) in a common chassis to ensure balanced performance in a redundant configuration.

### HP StorageWorks iSCSI Connectivity Option

HP StorageWorks EVA iSCSI Connectivity Option AE324A

Order this part for all new installations. Includes One unit, shelf, brackets, copper FC cables and documentation.

Includes one unit to mount in existing shelf and documentation

HP StorageWorks EVA iSCSI Connectivity Upgrade Option AE325A

For multi-path (dual unit high availability) order both part numbers. (The second hardware unit installs into the shelf that ships with AE324A.)

**NOTE:** For more information on the iSCSI Connectivity Options:  
<http://h18006.www1.hp.com/products/storageworks/evaiscsiconnect/index.html>

### The EVA Connectivity and Back-up offerings

#### HP StorageWorks 12000 Virtual Library System EVA Gateway

Expanding the power of the HP StorageWorks Enterprise Virtual Array (EVA), the HP StorageWorks 12000 Virtual Library System EVA Gateway accelerates backup performance in complex SAN environments while improving overall reliability. For more information on the VLS EVA Gateway, please visit see:  
[http://h18006.www1.hp.com/storage/disk\\_storage/disk\\_to\\_disk/vls/12000vls/index.html](http://h18006.www1.hp.com/storage/disk_storage/disk_to_disk/vls/12000vls/index.html) AH814B

#### HP StorageWorks IP Distance Gateway SAN over WAN connectivity, enables EVA Continuous Access replication over WAN (Asynchronous and Synchronous)

HP StorageWorks IP Distance Gateway AG680A  
Order this part for all new installations. Includes One unit, shelf, brackets and documentation.

HP StorageWorks IP Distance Gateway AG681A  
Includes One unit to mount in existing shelf and documentation  
For multi-path (dual unit high availability) order both part numbers. This second hardware unit installs into the shelf that ship with AG680A.

**NOTE:** For more information on the IP Distance Gateway:  
[http://h18006.www1.hp.com/storage/disk\\_storage/index.html](http://h18006.www1.hp.com/storage/disk_storage/index.html)

#### 8Gb Switches and Directors

Brocade 8/12c SAN Switch for HP BladeSystem c-Class AJ820A

Brocade 8/24c SAN Switch for HP BladeSystem c-Class AJ821A



## Configuration Information and Configuration Rules

|  |        |
|--|--------|
| Brocade 8/24c SAN Switch PowerPack+ for HP BladeSystem c-Class             | AJ822A |
| HP StorageWorks 8/8 Base (0) e-port SAN Switch                             | AM866A |
| HP Storage Works 8/8 (8) Full Fabric Ports Enabled SAN Switch              | AM867A |
| HP Storage Works 8/24 Base (16) Full Fabric Ports Enabled SAN Switch       | AM868A |
| HP StorageWorks 8/40 Power Pack+ (24) Full Fabric Ports Enabled SAN Switch | AM870A |
| HP StorageWorks 8/40 Base (24) Full Fabric Ports Enabled SAN Switch        | AM869A |
| HP StorageWorks 8/80 Power Pack+ (48) Full Fabric Ports Enabled SAN Switch | AM872A |
| HP StorageWorks 8/80 Base (48) Full Fabric Ports Enabled SAN Switch        | AM871A |
| HP StorageWorks DC SAN Backbone Director Power Pack+                       | AK857A |
| HP StorageWorks DC04 SAN Director Power Pack+                              | AR479A |
| HP StorageWorks DC04 SAN Director  | AR478A |
| HP StorageWorks 8Gb Simple SAN Connection Kit                              | AK241A |
| HP StorageWorks 8/20q Fibre Channel Switch (16 ports enabled)              | AK242A |
| HP StorageWorks 8/20q Fibre Channel Switch (8 ports enabled)               | AQ233A |
| HP MDS 9513 with Fabric2 Module  | AJ905A |
| HP MDS 9509 W/Supervisor 2 Dir Switch                                      | AE389A |
| HP MDS 9506 W/Supervisor 2 Dir Switch                                      | AE388A |
| HP MDS 9222i Multiservice Fabric Switch                                    | AG851A |

### StorageWorks B-series FC switch options

|   |  |        |
|---|--|--------|
| <b>StorageWorks B-series 8-24 Port SAN Switch Power Pack+ Upgrade LTU</b> | Adaptive Networking, Fabric Watch, ISL Trunking, Advanced Performance Monitoring | T5524A |
|---|--|--------|

### Optional switch software

|  |            |
|--|------------|
| ISL Trunking   | 324506-B21 |
| Extended Fabric  | 324505-B21 |
| Fabric Watch   | 324504-B21 |
| Advanced Performance Monitoring                          | 324507-B21 |
| HP B-series 8-24 Pt Adaptive Networking LTU              | T5524A     |
| HP B-Series Power Pack+ Upgrade                          | T5521A     |
| Fabric Manager, v5.x Base Edition (10 domains)           | T4270A     |
| Fabric Manager, v5.x Enterprise Edition                  | T4269A     |
| Fabric Manager, v4 to v5 Enterprise License Upgrade      | T4272A     |
| Fabric Manager, v4 to v5 Base License Upgrade            | T4271A     |
| Fabric Manager, v5 base to v5 enterprise upgrade license | T4273A     |

**NOTE:** For more information on these software component options, see: [http://h18006.www1.hp.com/storage/networking/b\\_switches/index.html](http://h18006.www1.hp.com/storage/networking/b_switches/index.html) and look for HP StorageWorks B-Series 8/8 SAN Switch information.

## Step 3 - Choose a Rack - Base and Factory Integration Information



## Configuration Information and Configuration Rules

**Factory Integration** Start your order by choosing a rack to house your EVA6400/8400 based on the HP 10000 G2 Series Rack.  
**NOTE:** The 10000 G2 Series Rack is the only series supported for factory configuration.

**Primary Configuration Rules** Use of the EVA Factory Integration part number is required for component integration. The EVA6400/8400 may be configured into a 42U HP 10000 G2 Series Rack with the appropriate PDU for the highest density in a Factory Integrated solution. If other products such as servers or back-up products are included in the cab a different PDU will be specified (if required) or can be chosen from a list of appropriate offerings shown in the configuration tool.

The minimum EVA6400/8400 factory configured rack space required is:

| EVA     | Controller Assembly | PDUs | Minimum number of M6412 | M6412 U space | Total U Space |
|---------|---------------------|------|-------------------------|---------------|---------------|
| EVA6400 | 4U                  | 1U   | 2                       | 4U            | 9U            |
| EVA8400 | 4U                  | 1U   | 3                       | 6U            | 11U           |

**NOTE:** the 1U of space required by the PDU may be reclaimed by using the EVA Pivot Hinge.

HP 10000 G2 Series Rack must be purchased. Additional EVA6400/8400, arrays and drive enclosures may be ordered for multiple subsystem integration at the factory. Additional racks are required to house configurations beyond the U-space of the initial cabinet. Ballast and stabilizers will be offered through the configurator tools for use when required.

The EVA6400 and EVA8400 array controllers are also available for field installation. HP Global Services or a trained EVA service provider can perform the on-site installation.

The 5642 (42U) Rack Cabinet System is supported for field installation. This rack may be purchased along with EVA component pieces for assembly in the field. The HP 5642 rack system is an entry level rack with sufficient features for easy access and ease of use.

When calculating available U-space, assume that no space will be placed between the mounted components. For redundancy, order PDUs in quantities of two. Refer to the Configuration and User Guide in the Information Library at the Rack Solutions webpage.

### HP 10000 Series G2 Racks

**NOTE:** The number of subsystems varies and is determined by the interior U-space of the cab.

|                                     |        |
|-------------------------------------|--------|
| HP Rack 10642 G2 Shock (42U)        | AF002A |
| HP Rack 10642 G2 w/Extn Shock (42U) | AF004A |
| HP Rack 10636 G2 Shock (36U)        | AF012A |
| HP Rack 10636 G2 w/Extn Shock (36U) | AF014A |
| HP Rack 10622 G2 Shock (22U)        | AF021A |



## Configuration Information and Configuration Rules

HP Rack 10636 G2 Modular Cooling System (MCS) Shock (42U) AF098A  
 HP Rack 10842 G2 800mm Wide Shock (42U) AF042A

For PDUs and cabinet accessories see:

<http://h18004.www1.hp.com/products/servers/proliantstorage/racks/10000g2series.html>

For more information on the HP rack offerings, please see the following URL:

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

**HP Rack 5642 System for Field Installation only** 5642 (42U) Rack Cabinet System 358254-B21  
 For additional cabinet accessories see:  
[http://h18004.www1.hp.com/products/quickspecs/12074\\_div/12074\\_div.html](http://h18004.www1.hp.com/products/quickspecs/12074_div/12074_div.html)

**Field Installation** Please refer to the Expansion options (Step 8) - listed in the Configuration Information and Configuration Rules - for details on components available for field installation. These components are useful for adding EVA4400/6400/8400 components to existing storage configurations or into on-site customer-supplied racks.

**Non-HP rack and power requirements** For detailed information on determining compatibility of a non-HP rack, please review the information included in the EVA User Guide which can be found at <http://www.hp.com/go/eva>.

**NOTE:** Also refer to Step 8 for ordering instructions and components that accommodate on-site installation of EVA4100/6100/8100 subsystems into customer-supplied racks.

**HP ProLiant Storage Servers and supported Fibre Channel HBAs** Select HP ProLiant Storage Servers (plus a Fibre Channel HBA) add file and print services to an EVA or Fibre Channel SAN. ProLiant DL380 G5 x64 SAN Storage Server and DL585 G2 Storage Server gateways each feature Microsoft's Windows Unified Data Storage Server 2003 operating system that also includes Microsoft iSCSI Software Target and a cluster license standard (Microsoft iSCSI Software Target is optional for other DL380 G5 Storage Server models). In addition, any ProLiant DL380 G5 Storage Server or DL585 G2 Storage Server is a perfect platform from which to run Command View EVA. You stretch your investment even further when you host EVA management, file and print services, and iSCSI connectivity all from the same ProLiant Storage Server gateway solution.

HP ProLiant DL380 G5 Base Storage Server AG815A

**NOTE:** Microsoft Windows Storage Server 2003 R2 Standard x64 Edition O/S

HP ProLiant DL380 G5 1.16TB SAS Storage Server AG816A

**NOTE:** Microsoft Windows Storage Server 2003 R2 Standard x64 Edition O/S

HP ProLiant DL380 G5 x64 SAN Storage Server AG771A

**NOTE:** Microsoft Windows Unified Data Storage Server 2003 Enterprise x64 Edition O/S

HP ProLiant DL585 G2 Storage Server AG630A

**NOTE:** Microsoft Windows Unified Data Storage Server 2003 Enterprise x64 Edition O/S

HP StorageWorks 81E 8Gb PCI-e FC HBA AJ762A

HP StorageWorks 82E 8Gb Dual-port PCI-e FC HBA AJ763A



### Configuration Information and Configuration Rules

|   |        |
|---|--------|
| HP StorageWorks 82Q 8Gb Dual Port PCI-e FC HBA        | AJ764A |
| HP StorageWorks 81Q PCI-e FC HBA                      | AK344A |
| HP StorageWorks FC2142SR 4Gb PCIe HBA                 | A8002A |
| HP StorageWorks FC2242SR Dual Channel 4 Gb PCIe HBA   | A8003A |
| HP StorageWorks FC1142SR 4Gb PCIe HBA                 | AE311A |
| HP StorageWorks FC1242SR Dual Channel 4 Gb PCIe HBA   | AE312A |
| HP StorageWorks FC2143 4Gb PCI-X 2.0 HBA              | AD167A |
| HP StorageWorks FC2243 Dual Channel 4Gb PCI-X 2.0 HBA | AD168A |
| HP StorageWorks FC1143 4Gb PCI-X 2.0 HBA              | AB429A |
| HP StorageWorks FC1243 Dual Channel 4Gb PCI-X 2.0 HBA | AE369A |

## Step 4 - Firmware

**Controller Firmware** HP StorageWorks EVA6400/8400 is factory installed with XCS v9.5. Separate Media kits and licenses are required to support HP Command View EVA, HP Continuous Access EVA and HP Business Copy EVA.

HP StorageWorks EVA4400/6400/8400 XCS v9.5 controller media download is available from HP.com. These downloads are available as archival media from the following link:

<http://h18006.www1.hp.com/products/storageworks/eva/index.html>

HP Command View EVA V9.0 is mandatory to support the EVA6400/8400 and XCS V9.5. An HP Command View License-to-Use (LTU) must be purchased for each EVA controller pair. Each HP EVA must be licensed with the appropriate HP Command View LTU(s) to be in compliance with the End User License Agreement (EULA) and the Command View license monitoring function.

The Command View licensed capacity per EVA must be equal to, or greater than the total raw capacity of each EVA. HP Command View EVA may be purchased in increments of a 1TB LTU (one or multiple 1TB LTUs based upon the EVA's raw capacity), or an HP Command View Unlimited Capacity LTU may be purchased which will support up to the maximum raw storage capacity of the EVA.

**OPTIONAL SOFTWARE:** EVA6400/8400 optional software can be found at the following URL: <http://h18006.www1.hp.com/storage/software.html>

## Configuration Information and Configuration Rules

### Step 5 - Hard Disk Drives

Drives are orderable at the time the array is purchased, or can be added in the future when additional capacity is required. Use these SKUs whenever ordering hard disk drives for the EVA4400/6400/8400, either for factory integration or when adding additional capacity. Note that these SKU's apply ONLY to the EVA4400/6400/8400 and can't be used with other EVA models.

#### HP StorageWorks FC and FATA Drives

**NOTE:** A minimum of eight (8) high performance FC or FATA or 6 solid state disks drives are required per EVA6400/8400.

|   |        |
|---|--------|
| HP StorageWorks 72GB 4Gb Dual Port FC EVA M6412 SSD                   | AR055A |
| HP StorageWorks 300GB 10K 4Gb Dual Port FC EVA M6412 Hard Disk Drive  | AP766B |
| HP StorageWorks 400GB 10K 4Gb Dual Port FC EVA M6412 Hard Disk Drive  | AJ711B |
| HP StorageWorks 450GB 10K 4Gb Dual Port FC EVA M6412 Hard Disk Drive  | AP731B |
| HP StorageWorks 600GB 10K 4Gb Dual Port FC EVA M6412 Hard Disk Drive  | AP732B |
| HP StorageWorks 146GB 15K 4Gb Dual Port FC EVA M6412 Hard Disk Drive  | AG556B |
| HP StorageWorks 300GB 15K 4Gb Dual Port FC EVA M6412 Hard Disk Drive  | AG690B |
| HP StorageWorks 450 GB 15K 4Gb Dual Port FC EVA M6412 Hard Disk Drive | AG803B |
| HP StorageWorks 1TB FATA Dual Port EVA M6412 Enc Hard Disk Drive      | AG691B |

**NOTE:** 0D1 will appear after this part number to indicate factory integration where appropriate

Bulk Pack Shipping Option

519137-B21

Customers ordering disk drives that are not factory configured have the option of getting the drives shipped in a bulk pack package in quantities of 10 drives per package.

**NOTE:** All drives ordered with a disk drive bulk pack option must be the same type per bulk pack. One bulk pack must be ordered for each 10 drives. The drive part numbers must be entered directly after the bulk pack part number.

**NOTE:** Quantities of disk drives ordered that are are not multiples of 10 will be shipped in individual drive shipping packages.

**NOTE:** 0D1 will appear after the disk drive part number to indicate that the drives are linked to the bulk pack.

**NOTE:** Bulk pack is not available for Solid State Disks

**NOTE:** Bulk pack option available in Americas Region.

### Step 6 - Cables and SFPs

#### HP StorageWorks EVA Loopback Connector

HP StorageWorks EVA Loopback Connector  
Contains one Loopback connector. The loopback connector is used when an EVA host port is not cabled to a switch or HBA (for direct connect).

AJ706A

**NOTE:** All EVA host ports must be filled with either a cable or loopback connector.

#### FC cable - Copper SFP

The following cables are used with the M6412 drive enclosure but are not necessary for new installations. These cables are for use inside the cab between the controllers and drive enclosures if replacement cables are required

Cable FC Copper SFP .6m

321624-B21

Cable FC Copper SFP 2m

324394-B21

#### FC cable - 1 Gb to 2 Gb/s (optional)

**NOTE:** Before selecting the FC cables to connect between the controllers and the switches, check to see what kind of connectors are on the switches that will



## Configuration Information and Configuration Rules

|   |   |
|---|---|
| <b>(LC to SC)</b>                                     | <p>be connected to the controllers. The SFP connector can support 8Gb I/Os, 4Gb I/Os, 2Gb I/Os and/or 1Gb I/Os.</p> <p><b>NOTE:</b> One of these cables (either LC to SC or LC to LC) is required per FC port of each HSV controller.</p> <p>FC Short Wave 2-Meter Cable, LC/SC (1Gb to 2Gb) 221691-B21</p> <p>FC Short Wave 5-Meter Cable, LC/SC (1Gb to 2Gb) 221691-B22</p> <p>FC Short Wave 15-Meter Cable, LC/SC (1Gb to 2Gb) 221691-B23</p> <p>FC Short Wave 30-Meter Cable, LC/SC (1Gb to 2Gb) 221691-B26</p> <p>FC Short Wave 50-Meter Cable, LC/SC (1Gb to 2Gb) 221691-B27</p>  |
| <b>FC cable - 2Gb/s to 2Gb/s (optional)(LC to LC)</b> | <p><b>NOTE:</b> SFP - Small Form-Factor Profile on the ports of the EVA4x00/6x00/8x00. One of these cables (LC to LC) is required per FC port of each HSV controller.</p> <p>2-meter LC-LC Multi-Mode Fibre Cable 221692-B21</p> <p>5-meter LC-LC Multi-Mode Fibre Cable 221692-B22</p> <p>15-meter LC-LC Multi-Mode Fibre Cable 221692-B23</p> <p>30-meter LC-LC Multi-Mode Fibre Cable 221692-B26</p> <p>50-meter LC-LC Multi-Mode Fibre Cable 221692-B27</p>   |
| <b>FC cable - 8Gb/s to 8Gb/s (optional)(LC to LC)</b> | <p><b>NOTE:</b> SFP - Small Form-Factor Profile on the ports of the EVA4x00/6x00/8x00. One of these cables (LC to LC) is required per FC port of each HSV controller.</p> <p>15-meter Multi-mode OM3 LC/LC FC Cable AJ837A</p> <p>30-meter Multi-mode OM3 LC/LC FC Cable AJ838A</p>   |
| <b>Disk drive Bulk Pack shipping</b>                  | <p>Bulk Pack Shipping Option 519137-B21</p> <p>Customers ordering disk drives that are not factory configured have the option of getting the drives shipped in a bulk pack package in quantities of 10 drives per package.</p> <p><b>NOTE:</b> All drives ordered with a disk drive bulk pack option must be the same type per bulk pack. One bulk pack must be ordered for each 10 drives. The drive part numbers must be entered directly after the bulk pack part number.</p> <p><b>NOTE:</b> Quantities of disk drives ordered that are not multiples of 10 will be shipped in individual drive shipping packages.</p> <p><b>NOTE:</b> 0D1 will appear after the disk drive part number to indicate that the drives are linked to the bulk pack.</p> <p><b>NOTE:</b> Bulk pack option available in Americas Region.</p> |

## Configuration Information and Configuration Rules

### Step 7 - Management and High Availability Software

#### EVA Storage Management / User Interface

**NOTE:** Command View v9.0 runs on either a management server or application host running Microsoft Windows or the HP OpenView Storage Management Appliance. One management server or application host is required per SAN fabric containing an Enterprise Virtual Array.

An HP Command View License-to-Use (LTU) must be purchased for each EVA controller pair. Each HP EVA must be licensed with the appropriate HP Command View LTU(s) to be in compliance with the End User License Agreement (EULA). The licensed capacity per EVA must be equal to, or greater than the total raw capacity of each EVA. HP Command View EVA may be purchased in increments of a 1TB LTU (one or multiple 1TB LTUs based upon the raw capacity), or an HP Command View Unlimited Capacity LTU may be purchased which will support up to the maximum raw storage capacity of the EVA.

See the HP StorageWorks Command View EVA QuickSpecs for detailed licensing, support and configuration information:

<http://h18006.www1.hp.com/products/storage/software/cmdvieweva/index.html>

#### High Availability Software

Industry popular multiple path software is supported on the EVA6400/8400. This software is used to manage multiple paths between hosts and storage systems. It enables high availability through path management and I/O load balancing. Multiple Path support is available for the following Operating Systems:

- HP-UX - HP-UX 11.31 has OS native multi-path, pvlinks native in HP-UX and Veritas DMP; HP Secure Path 3.0F
- Windows - Full featured MPIO, v3.00.00 available from HP and Microsoft DSM from Microsoft
- Linux - QLogic Failover driver, available from QLogic /HP, Emulex MultiPulse available from Emulex/HP and Device Mapper v4.0 Enablement Kit from HP
- OpenVMS - native in OS
- AIX - MPIO native in OS
- Solaris - MPxIO native in OS, Veritas DMP available from Veritas
- NetWare - MPIO native in OS
- VMware - MPIO native in OS
- Apple Mac - OS X - Included with ATTO HBA driver
- Xen -Native Device Mapper MPIO

Refer to: <http://h18006.www1.hp.com/products/storage/software/multipathoptions/index.html>

## Configuration Information and Configuration Rules

### Step 8 - Expansion Options

The EVA6400/8400 Controller Array can be added on-site into existing EVA configurations (or qualified rack systems), Additional M6412 drive enclosures (AG638B) can be ordered to expand an EVA4400/6400/8400 configuration:

1. Ordered for on-site capacity additions to existing EVA4400/6400/8400 configurations.
2. Ordered for field installation of complete EVA4400/6400/8400 configurations HP cabinets and racks described in Step 3 or into qualified 3rd party rack systems by HP Global Services.
3. Installed by HP manufacturing into EVA configurations by ordering the enclosure with the factory integration part number.

Up to eighteen drive enclosures are supported with each pair of HSV400 and up to 27 drive enclosures are supported with each pair of HSV450 controllers. The M6412 is a 2U dual-redundant FC Loop 12-bay switched disk enclosure with mounting hardware, and includes the necessary copper FC cables for connecting to an HSV400/450 Controller pair.

Order additional hard disk drives using the SKU's listed in Step 5.

**Enterprise Virtual Array Racking for Expansion** The EVA customers have the option to mount supported devices in the rack used for EVA8400 expansion.

|   |                    |
|---|--------------------|
| EVA 42U HP 10000 G2 Series Rack   | AF002A             |
| Power requirements vary based on the equipment to be placed in the rack and the country power supply. Options are:  |                    |
| HP PDU Pivot Kit  | AG730A             |
| May be used when expanding an existing EVA6400/8400 to reclaim 2U of space in a 10000 G2 Series Rack.   |                    |
| Modular PDU 24A Low Volt, NA/JPN  | 252663-D71<br>#0D2 |
| Modular PDU 24A HV, NA/JPN  | 252663-D72<br>#0D2 |
| Modular PDU 32A HV, INTL  | 252663-B31<br>#0D2 |
| <b>NOTE:</b> #0D2 feature code designates the PDUs are mounted horizontally in the bottom of the rack on real rail, above any UPS, and occupies 2U EIA space. |                    |
| Low voltage PDU 252663-D71 requires additional power distribution module AF500A. (1) AF500A supports 2 PDUs. Each PDU requires a quantity of 2 AF500As.       | AF500A             |

#### Enterprise Virtual Array Expansion Cabinet Example Configurations for EVA8400

| Expansion Cabinet Components | EVA6400 0C9D                     | EVA8400 0C9D                     | Description                             |
|------------------------------|----------------------------------|----------------------------------|---|
| AF002A                       | 1                                | 1                                | EVA 42U HP 10000 G2 Series Rack         |
| 252663-XXX                   | 2 (minimum HV)<br>4 (minimum LV) | 2 (minimum HV)<br>4 (minimum LV) | Country/component requirement specific  |
| AP712A*                      | 2                                | 3                                | HP EVA8400 Expansion Rack Accessory Kit |
| AG638B                       | 9                                | 9                                | M6412-A FC Drive Enclosure              |

\* Use 1 AP712A per each of the first 3 shelves in an expansion rack.

**NOTE:** Supports a minimum of 1 up to 9 enclosures in each expansion rack



### Configuration Information and Configuration Rules

| EVA4400 Upgrade                                 | EVA6400 | EVA8400 | SKUs Required         |
|---|---------|---------|-----------------------|
| HP EVA6400 Controller Array                     | Yes     | N/A     | AJ757A                |
| HP EVA8400 Controller Array                     | N/A     | Yes     | AJ758A or AJ847A      |
| HP StorageWorks EVA4400/6400/8400 XCS v9.5      | Yes     | Yes     | Download <sup>3</sup> |
| Command View EVA                                | Yes     | Yes     | See URL <sup>1</sup>  |
| Command View Licenses                           | Yes     | Yes     | See URL <sup>1</sup>  |
| Business Copy EVA                               | Yes     | Yes     | See URL <sup>2</sup>  |
| Business Copy Upgrade license                   | Yes     | Yes     | See URL <sup>2</sup>  |
| Continuous Access EVA                           | Yes     | Yes     | See URL <sup>2</sup>  |
| Continuous Access EVA Upgrade license           | Yes     | Yes     | See URL <sup>2</sup>  |
| HP Services assessment and upgrade installation | Yes     | Yes     | See URL <sup>2</sup>  |

#### NOTES:

<sup>1</sup>Proper Command View licensing requires a License To Use (LTUs) equal to or greater than the total raw capacity of each array and may be purchased in additive increments of 1TB or Unlimited LTUs). Correct model and capacity licensing is required.

<sup>2</sup> Correct model and capacity licensing is required.

<http://h18006.www1.hp.com/storage/software.html>

<http://www.hp.com/hps/storage/>

<http://h18006.www1.hp.com/products/storageworks/eva/>

<sup>3</sup>XCS comes factory installed on the EVA. Archival or upgrade copies of the firmware may be downloaded at this site.

<http://h18006.www1.hp.com/products/storageworks/eva/index.html>

**NOTE:** When upgrading from an EVA4400 with embedded switch a separate switch must be utilized.

| EVA6400 Upgrade                                 | EVA8400 | SKUs Required         |
|---|---------|-----------------------|
| HP EVA8400 Controller Array                     | Yes     | AJ758A or AJ847A      |
| HP StorageWorks EVA4400/6400/8400 XCS v9.5      | Yes     | Download <sup>3</sup> |
| Command View EVA                                | Yes     | See URL <sup>1</sup>  |
| Command View Licenses                           | Yes     | See URL <sup>1</sup>  |
| Business Copy EVA                               | Yes     | See URL <sup>2</sup>  |
| Business Copy Upgrade license                   | Yes     | See URL <sup>2</sup>  |
| Continuous Access EVA                           | Yes     | See URL <sup>2</sup>  |
| Continuous Access EVA Upgrade license           | Yes     | See URL <sup>2</sup>  |
| HP Services assessment and upgrade installation | Yes     | See URL <sup>2</sup>  |

#### NOTES:

<sup>1</sup>Proper Command View licensing requires a License To Use (LTUs) equal to, or greater than the total raw capacity of each array and may be purchased in additive increments of 1TB or Unlimited LTUs). Correct model and capacity licensing is required.

<sup>2</sup> Correct model and capacity licensing is required.

<http://h18006.www1.hp.com/storage/software.html>

<http://www.hp.com/hps/storage/>

<http://h18006.www1.hp.com/products/storageworks/eva/>

<sup>3</sup>XCS comes factory installed on the EVA. Archival or upgrade copies of the firmware may be downloaded at this site.



## Configuration Information and Configuration Rules

### Step 9 - Optional Components and Software

**Remote Replication Software** HP StorageWorks Continuous Access EVA is a controller-based application that performs real-time replication between HP StorageWorks enterprise virtual arrays. The solution is enhanced to perform remote replication, and deliver high data availability and performance to users on Fibre Channel based campus, metro or continental metro or continental Storage Area Networks (SANs).

For more information, see Continuous Access description earlier in this document. Please see the product URL for ordering information and part numbers:  
<http://h18006.www1.hp.com/storage/software.html>

**Local Replication Software** HP StorageWorks Business Copy EVA is a local replication software product for the EVA family providing Snapshot and clone set-up and management. Business Copy EVA is sold by utilized capacity. For more information, see the Business Copy description earlier in this document. See the product URL for ordering information and part numbers:  
<http://h18000.www1.hp.com/storage/software.html>

**Capacity Management Software** HP StorageWorks EVA Dynamic Capacity Management Software is a comprehensive software solution that automates storage provisioning and improves capacity utilization on the HP StorageWorks Enterprise Virtual Array (EVA) family. For more information, see the DCM description earlier in this document. See the product URL for ordering information and part numbers:  
[http://h18000.www1.hp.com/products/quickspecs/12815\\_div/12815\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12815_div/12815_div.html)

**Storage Resource Management Software** (HP Standard Edition SRM Software) HP Storage Essentials Standard Edition Storage Resource Management Software allows midsize businesses with limited IT staff to see the big picture thereby reducing SAN complexity. For more information, see the Storage Essentials product description earlier in this document.

**Standard Edition SRM Media and License to Use (LTU)**

|  |         |
|--|---------|
| HP Storage Essentials Standard Edition SRM Media Kit | T5314AA |
| HP Storage Essentials Standard Edition SRM LTU       | T5315AA |

**Add on Storage Essentials Suite plug-in licensing available to Standard Edition**

|   |         |
|---|---------|
| HP Storage Essentials NAS Manager 1 TB LTU        | T4294AA |
| HP Storage Essentials File System Viewer 1 TB LTU | T4292AA |
| HP Storage Essentials Database Viewer 1 MAL LTU   | T4289AA |
| HP Storage Essentials Exchange Viewer 1 MAL LTU   | T4288AA |
| HP Storage Essentials Backup Manager 1 TB LTU     | T4295AA |

**VMware Site Recovery Manager** VMware Site Recovery Manager (SRM) is designed to automate the recovery process and the remote replication of HP StorageWorks Continuous Access EVA with StorageWorks Enterprise Virtual Arrays. The solution provides central management through VMware Virtual Center and enables more frequent testing. This solution also leverages your existing recovery site hardware to reduce operational cost of training. It is a solution that is fully integrated with HP servers, HP Storage and HP Services, providing mid-market customers with a total business continuity solution. For more information: [www.hp.com/go/storage/vmware](http://www.hp.com/go/storage/vmware)

**NOTES:**

1. Refer to the HP Standard Edition SRM Software QuickSpec for product and licensing details:  
<http://h18006.www1.hp.com/products/storage/software/e-suite/index.html>
2. Standard Edition SRM LTU contains bundled licensing comprising of Edition 150 MAPs, 3TBs of File System Viewer, NAS Manager, and 1 MAL for either the Exchange Viewer or the Database Viewer. This is a customer choice.



### Configuration Information and Configuration Rules

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#### Optional Hardware Accessories

##### Non-HP Rack installation

For racks other than those specifically stated within the EVA4100/6100/8100 product set, please visit the EVA web page for details on rack and power specifications: <http://www.hp.com/go/eva>

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#### SAN Infrastructure Components

The HP StorageWorks SAN integrates best-in-class storage networking components to deliver a complete connectivity platform for end-to-end network storage solutions. HP's fabric portfolio includes: HBA's, directors, switches, SAN extenders, NAS heads, iSCSI routers, and fabric software. HP SAN Infrastructure components deliver the network storage infrastructure for the Adaptive Enterprise.

For details on SAN infrastructure components and storage compatibility information, please visit: <http://hp.com/go/san>.

## Technical Specifications

### EVA6400 and EVA8400

**Operating Temperature** 50° to 95° F (10° to 35° C) - Reduce rating by 1° F for each 1000 ft altitude (1.8° C/1,000 m)

**Shipping Temperature** -40° to 150° F (-40° to 66° C)

**Humidity** 10% to 90% non-condensing

**Shipping Humidity** 5% to 90% non-condensing

**Altitude** Up to 8,000 ft (2,400 m)

**Air Quality** Not to exceed 500,000 particles per cubic foot of air at a size of 0.5 micron or larger

**Power Data** (North America/Europe/Japan) **maximum configuration**

**AC plug type** North America-3 wire NEMA No. L6-30P, 30 Amp (208 to 240V, 50-60Hz 30A)

(quantity 2) Europe - 3 wire, 2 pole IEC 309, 30 amp, (220 to 240V 50Hz 32A)

**Number of phases** Single

**Rated current** 17A @ 200V-240V AC, 60Hz total, 4.25 A per power cord

**Nominal Line Voltage** North America - 208 or 230V

Europe - 230V

Japan - 206V

**Range Line Voltage** 187 to 256V

**Line Frequency** North America 60Hz, Europe 50Hz, Japan 50 or 60 Hz

### Enterprise Virtual Array 6400

**NOTE:** This data represents fully populated drive shelves with 15K rpm disk drives. Other drive types may vary slightly.

|          |                                 | EVA 6400 |      |       |       |       |
|----------|---------------------------------|----------|------|-------|-------|-------|
|          |                                 | 2C2D     | 2C8D | 2C12D | 2C14D | 2C18D |
| Typical  | Total System Watts              | 746      | 2284 | 3309  | 3821  | 4847  |
|          | Total System BTU/hour           | 2544     | 7789 | 11284 | 13032 | 16527 |
|          | Input Current (A) per plug 208V | 1.9      | 5.8  | 8.4   | 9.7   | 12.3  |
|          | Input Current (A) per plug 230V | 1.7      | 5.2  | 7.6   | 8.7   | 11.1  |
|          | Input Current (A) per plug 115V | 1.7      | 5.1  | 7.4   | 8.5   | 10.8  |
|          | Input Current (A) per plug 100V | 2.0      | 5.9  | 8.6   | 9.9   | 12.6  |
|          | Inrush Current per plug 208V    | 116      | 153  | 178   | 190   | 216   |
| Failover | Total System Watts              | 677      | 2077 | 3022  | 3596  | 4441  |
|          | Input Current (A) at 208V       | 3.3      | 10.5 | 15.3  | 17.7  | 22.5  |
|          | Input Current (A) at 230V       | 3.0      | 9.5  | 13.8  | 15.9  | 20.3  |
|          | Input Current (A) at 115V       | 3.0      | 9.3  | 13.5  | 15.6  | 19.8  |
|          | Input Current (A) at 100V       | 3.5      | 10.8 | 15.7  | 18.2  | 23.1  |

This data represents fully populated drive shelves with 15K rpm disk drives. Other drive types may vary slightly. For more detailed information on a specific configuration and drives please utilize the EVA Power Calculator at:

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

**NOTE:** Typical is described as a system in normal steady state operation. (I.E., both PDUs operating normally, the array reading/writing to disk drives in a production environment)

### Enterprise Virtual Array 8400



## Technical Specifications

|  |  |       |       |       |        |        |       |      |
|--|--|-------|-------|-------|--------|--------|-------|------|
| <b>NOTE:</b> This data represents fully populated drive shelves with 15K rpm disk drives. Other drive types may vary slightly.   |  | 2C3D  | 2C9D  | 2C18D | 2C21D* | 2C27D* | 3D**  | 9D** |
| <b>Typical</b>   | <b>Total System Watts</b>              | 1010  | 2546  | 4855  | 5623   | 7160.7 | 768   | 2306 |
|  | <b>Total System BTU/hour</b>           | 3444  | 8682  | 16554 | 19175  | 24418  | 2621  | 7864 |
|  | <b>Input Current (A) per plug 208V</b> | 2.6   | 6.4   | 12.3  | N/A    | N/A    | 1.9   | 5.8  |
|  | <b>Input Current (A) per plug 230V</b> | 2.3   | 5.8   | 11.1  | N/A    | N/A    | 1.8   | 5.3  |
|  | <b>Input Current (A) per plug 115V</b> | 2.2   | 5.7   | 10.8  | N/A    | N/A    | 1.7   | 4.4  |
|  | <b>Input Current (A) per plug 100V</b> | 2.6   | 6.6   | 12.6  | N/A    | N/A    | 2.0   | 5.1  |
|  | <b>Inrush Current per plug 208V</b>    | 122.0 | 160.0 | 215   | NA     | N/A    | 110.0 | 153  |
| <b>Failover</b>  | <b>Total System Watts</b>              | 906.5 | 2323  | 4453  | 5162   | 6580.5 | 709   | 2127 |
|  | <b>Input Current (A) at 208V</b>       | 4.6   | 11.8  | 22.5  | N/A    | N/A    | 3.6   | 10.8 |
|  | <b>Input Current (A) at 230V</b>       | 4.2   | 10.6  | 20.4  | N/A    | N/A    | 3.2   | 9.7  |
|  | <b>Input Current (A) at 115V</b>       | 4.0   | 10.4  | 19.8  | N/A    | N/A    | 3.2   | 7.8  |
|  | <b>Input Current (A) at 100V</b>       | 4.7   | 12.1  | 23.1  | N/A    | N/A    | 3.7   | 9.1  |
| * Any system over 2C18D requires 2 cabinets; total power is given for both cabinets.   |  |       |       |       |        |        |       |      |
| ** For line cord current and inrush data for the 2C21D or 2C27D systems use the 2C18D information for the 1st cabinet and the 3D or 9D information for the second cabinet. |  |       |       |       |        |        |       |      |

## Enterprise Virtual Array EVA6400/8400 Product Dimensions, Weight and Clearance

| Physical Dimensions              | Height<br>in/cm | Width<br>in/cm | Depth<br>in/cm | Max Weight<br>lb/kg | Req. Front<br>Clearance<br>in/cm | Req. Rear<br>Clearance<br>in/cm |
|----------------------------------|-----------------|----------------|----------------|---------------------|----------------------------------|---------------------------------|
| EVA6400/8400<br>Controller Array | 7.0/17.78       | 17.6/44.70     | 27.5/69.85     | 120/54.55           | N/A                              | N/A                             |
| M6412-A Drive<br>Enclosure       | 3.5/8.89        | 17.6/44.70     | 23.75/60.33    | 57/25.86            | N/A                              | N/A                             |
| FC or FATA drives for<br>M6412-A | N/A             | N/A            | N/A            | 1.9/.86             | N/A                              | N/A                             |
| SSD for M6412-A                  | N/A             | N/A            | N/A            | 1.1/.5              | N/A                              | N/A                             |
| HP Rack 10642 G2<br>Shock (42U)  | 78.7/200        | 24/59.7        | 39.691/101.5   | 253/114.84          | 30/76.2                          | 30/76.2                         |

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For hard drives, 1 GB = 1 billion bytes. Actual formatted capacity is less.

