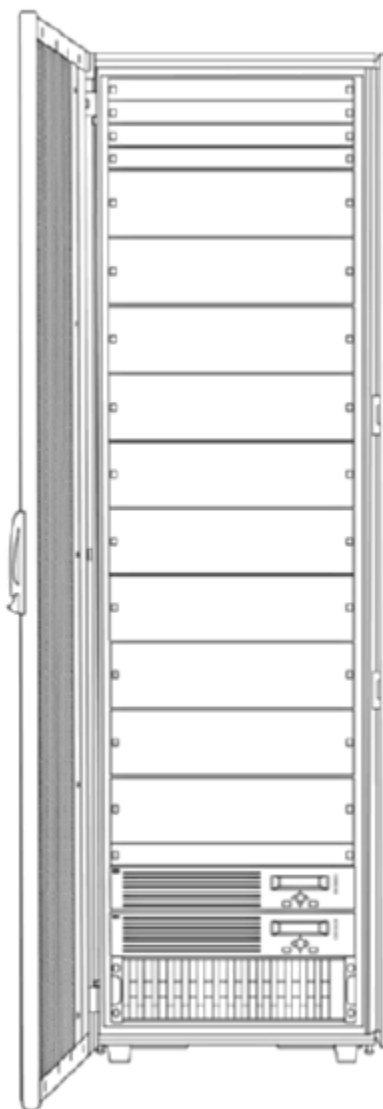## Overview

The HP StorageWorks 4000 Enterprise Virtual Array is one of three next generation storage array products. Designed specifically for customers in the mid-range marketplace, by offering a high performance, high availability "virtual" array storage solution. Not only does this solution save 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 achieve highest level of productivity.

The EVA4000 is designed for the data center where there is a critical need for improved storage utilization and scalability. The EVA4000 meets application specific demands for transaction I/O performance for the mid-range customer. It provides easy capacity expansion, instantaneous replication, and simplified storage administration. The EVA4000 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 and software product services. This ranges from the new Foundation Service Solution, the base level of service included with every EVA, to Critical Service, the support for mission critical environments.

EVA4000 2C1D

Overview

What's New

The new EVA4000 Array:

- EVA4000 2C1D Array, with a pair of HSV200 controllers, one M5314A disk drive enclosure, mounting hardware and cables for factory built configurations
- New and improved M5314A 14-bay disk drive enclosure, with mounting hardware and cables, for expanded factory built configurations or for field upgrades
- EVA4000/6000 Controller Pair, with a pair of HSV200 controllers, mounting hardware and cables for field installation
- HP StorageWorks EVA4000/6000/8000 v5.0a controller media kit (XCS v5.030)
- EVA Dual Loop Switch Option
- Support for many of the industry popular multi-pathing software solutions
- Support EVA iSCSI solution offering
- HP Systems Insight Manager included with EVA4000

Product Highlights

EVA4000 Capabilities
- Support for up to 4 drive enclosures per EVA4000.
- Support for up to 14 disk drives per disk drive enclosure.
- Support from 8 to 56 drives per EVA4000.
- Support from 0.57 TB to 16.8 TB per EVA4000.
- Support for dual-ported 2 Gb/s FC disk drives and dual-ported Fibre Attached.
- Support for Direct Attach connection to Windows servers without the need for SAN switches.
- Technology Adapted (FATA) drives.
- Management of up to 1024 virtual disks (256 per HBA) ranging in size from 1 GB to 2 TB per
- Virtual disk, in 1GB increments.
- Dynamic capacity expansion (in 1 GB increments).
  NOTE: Requires Host Operating System Support.
- Virtual disk data load leveling (non-disruptive background activity).
- Distributed sparing of disk capacity.
- Support for Continuous Access remote replication (synchronous and asynchronous).
- Support for Business Copy EVA Snapshot (Vsnap) and Snapclone.
- Dual redundant controller operation for increased fault tolerance.
- Multiple Bus Failover Support using industry popular multiple path software.
- 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 (Vraid0, Vraid1, Vraid5).
- Support for local replication between Vraid types using Vsnap or Snapclone within a disk group or using Snapclone across disk groups
- Non-disruptive XCS software upgrade capability (enhanced rolling upgrade).
- 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).
- Command View EVA GUI Interface for management and monitoring (manages up to 16 EVAs).

Enterprise Virtual Array Product Packaging
The EVA4000 packaging consists of a 4U FC dual HSV200 controller assembly and 14-bay HP StorageWorks Model M5314A FC Drive Enclosures. The controller and drive enclosures are independent of each other to allow a wide range of configuration options. The EVA4000 is designed to address moderate capacity needs ranging (from 0.57 - 16.8 TB) as well as high performance options in commercial environments. The bundled models are factory rack-mounted in either an EVA cab (based on the HP rack 10000 series - choice of 42U, 36U and 22U heights) or Rack System/E cabinets (choice of 41U, 33U and 25U heights) via the Factory Integration process (See Configuration Information and Configuration Rules, for details). The Controller Pair Assembly, M5314A Drive Enclosures, and Optional FC Loop Switches are available to accommodate adding EVA4000 subsystems to existing EVA4000 configurations and to support qualifying customer-supplied racks.

Multi-Vendor Platform
The EVA 4000 provides support for industry-leading Operating System platforms including: HP-UX, HP OpenVMS, HP Tru64 UNIX, Windows 2000 Server & Advanced Server, Windows 2003 Standard/Enterprise (32/64-bit) and Extended/DataCenter (64-bit), Sun Solaris, Linux, and IBM AIX.
(Support for Novell NetWare and VMware is planned for August 2005.)
NOTE: See Operating System, Cluster and High Availability Compatibility matrix above for Operating System version detail.

Product Highlights

Designed for No-Single-Point-of-Failure
The EVA4000 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.

Disaster Tolerant Replication (Software option)
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. 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. 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://h18006.www1.hp.com/products/storageworks/solutions/dtmysapeva/index.html

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Local Replication Solutions (Software options)
The HP StorageWorks Business Copy is a local replication application for the EVA4000. It incorporates Virtually Capacity-free Snapshot 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.

HP OpenView Storage Volume Growth provides the ability to easily expand basic disk volumes on Windows 2000 or Windows Storage Server 2003 systems without disrupting the application environment or impact the user's data. This host based product supplements the volume expansion capabilities of the Enterprise Virtual Array providing a complete end to end solution.

EVA iSCSI Solution
A powerful solution which provides iSCSI connectivity to an EVA without the need to install extensive Fibre Channel infrastructure. The iSCSI EVA solution brings the powerfully simple EVA, with industry leading disk utilization and ease of use, to the iSCSI market. EVA in an iSCSI environment offers the standard high availability features and can be connected to both an iSCSI network as well as a Fibre Channel SAN. The EVA product family includes the data replications offerings of Business Copy EVA and Continuous Access EVA. Basic Business Copy local data replication and basic Continuous Access remote replication functionality, within the EVA, can be used for data acquired over the iSCSI link.

For companies that have not had the resources or expertise to deploy a Fibre Channel Storage Area Network architecture, They can now deploy an iSCSI EVA storage solution that connects application hosts to storage using an Ethernet-based network. This solution enables companies to realize better storage utilization, simplified management, and resulting cost savings that can be achieved from consolidating storage and centralizing management while leveraging their existing Ethernet infrastructure as a storage network.

Consisting of an EVA, HP ProLiant DL380 G4 or DL585 Storage Server and the HP ProLiant iSCSI Feature Pack this product combination creates an iSCSI storage solution that is capable of hosting application storage (block), file, and print services on a single platform. The iSCSI Feature Pack is powerful and easy-to-use software that adds iSCSI target functionality to HP ProLiant Storage Server (NAS) devices. Unlike environments with separate file, print, email, and database servers, or environments using proprietary technologies, this approach delivers single-platform manageability, easy scalability, and centralized backup. It provides investment protection by enabling low-cost storage consolidation using industry-standard hardware and software on existing Ethernet infrastructure. The DL380 and DL585 ProLiant Storage Servers are the perfect platforms from which to run Command View EVA, You can stretch your investment even further when you

Product Highlights

combine iSCSI connectivity, EVA management and NAS file and print serving capabilities in the same server.

The HP iSCSI Storage Server solution is ideal for small or medium businesses that wish to take advantage of the simplification of storage consolidation and are application-focused on Microsoft® Exchange, Microsoft® SQL, or Oracle Database. It is easy-to-use and affordable, yet delivers powerful functionality usually reserved for higher-priced and more complex storage architectures. For more information:
http://h18006.www1.hp.com/products/storage/software/inas/smbconsolidation.html
http://h18006.www1.hp.com/products/storage/software/inas/index.html
http://h18006.www1.hp.com/storage/storageservers.html

EVA with HP Systems Insight Manager	EVA with HP Systems Insight Manager
	Enclosed as an accessory with all StorageWorks arrays is HP Systems Insight Manager (SIM). HP SIM is the foundation for HP's unified server-storage strategy -- it is packaged as a no-cost, customer installable management application and is derived from the heritage of Compaq Insight Manager, HP Toptools, 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.
Multi-Server Shared Support for Storage Consolidation	Heterogeneous and homogeneous host support provides the ability to share storage between multiple servers. The EVA4000 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). Secure Path is not required for single pathing. 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

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 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 EMEA customers with predicable growth that need ease of acquisition of capital equipment, Capacity-based Payments offered by HP should be proposed.
- For even further demanding financial needs of customers, HP Financial Services are ready to craft a customized solution for them.

Please contact your local HP representative for further information

10K rpm Drive Support   The EVA4000 supports 72 GB, 146 GB, and 300 GB 10K rpm dual-ported 2 Gb/s FC disk drives at full-rated transfer rates. An HSV200 controller pair will support up to 56 disk drives of single or mixed drive capacities and types (high performance and FATA). HP recommends using the same drive type (the same capacity) within a disk group because virtualization allocates space proportionate to the highest capacity drive with in the group.

15K rpm Drive Support   The EVA4000 supports 72 GB, and 146 GB 15K rpm dual-ported 2 Gb/s FC disk drives at full-rated transfer rates. HP recommends using the same drive type (the same capacity) within a disk group because virtualization allocates space proportionate to the highest capacity drive within the group.

FATA Drive Support   The EVA4000 supports 250 GB dual ported 2 Gb/s Fibre Attached Technology Adapted (FATA) disk. An EVA4000 will support up to 56 total disk drives. The EVA4000 can be configured with any combination of FATA and high performance disk drives; total raw capacity will vary based upon the redundancy (Vraid) selected. Minimum of eight FATA drives are required when using FATA disks in a configuration.

Fibre Channel Technology   The EVA4000 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 EVA4000 with XCS v5.030 for HSV200 is 2 Gb/s enabled on each FC path, but will also support 1 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).

Fibre Channel Switch/Director Support   Support for up to twenty FC switches operating at 1 Gb/s and FC switches operating at 2 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. The EVA4000 supports 2 Gb/s FC enabled with XCS v5.030.
For more information on specific support specifications see the following Switch URL:
http://h18006.www1.hp.com/storage/saninfrastructure/switches.html

QuickSpecs

Product Highlights

Transfer Speeds	The EVA4000 has two FC host interfaces per HSV200 controller; four for a controller pair. Each controller-to-host interface is 2 Gb/s. The controllers are also compatible with 1 Gb/s and 2 Gb/s FC switches, HBAs, servers and other storage solutions.

Each HSV200 controller pair interfaces with from one to four M5314A drive enclosures and up to 56 disk drives. With dual device ports per controller and dual FC I/O modules per drive enclosure, each controller can connect to each FC drive A and B port. So each controller has a redundant path to each drive. |
| **Easy Installation** | The EVA4000 models ship from the factory fully configured. After unpacking, they can be plugged into power sources, connected to the FC SAN, enabled and configured with the Storage Management Appliance and they are ready for use. |
| **Fault Recovery -- HP Continuous Access EVA for Disaster Tolerance Applications** | HP StorageWorks Continuous Access EVA remote copy functionality is available with this release of XCS v5.0. For additional information about Continuous Access visit:
http://h18006.www1.hp.com/storage/software.html

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).

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://h18006.www1.hp.com/products/storageworks/solutions/dtmysapeva/index.html |
| **High Availability/ Fault Tolerance/ Hot pluggable support** | All EVA4000s are configured with dual HSV200 controllers that operate in a redundant mode. Each controller has two Fibre Channel (FC) host ports. 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 or in Secure Path software. Each controller has two FC device ports. Each port connects to one FC I/O module on a drive enclosure. Up to four drive enclosures can be connected in a FC loop arrangement with a controller pair and connect to one port of up to 56 drives. With the two FC ports per controller, each controller can connect to both ports on up to 56 disk drives for redundant paths to all 56 drives. Each controller also has dual redundant hot plug power supplies and dual redundant hot plug blowers. Each controller has a hot plug cache battery to maintain cache contents for up to 96 hours in case of a total power failure.

The M5314A FC drive enclosure has dual redundant hot plug FC I/O 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. 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) to monitor and report the condition of the power supplies and fans. The EMU can be replaced without affecting I/O operations.

The FC disk drives have dual FC ports which can be redundantly accessed by each controller. The drives are hot plug. The drives can be arranged, using redundant Vraid1 or Vraid5 protection, so that a drive failure will not cause loss of data. Optional virtual sparing can be configured so that a drive failure will trigger an automatic rebuild of the Vraid1 or Vraid5 protection using the virtual spare.

All EVA4000s 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 |

Product Highlights

customer should provide redundant power from independent power circuit breakers, independent power lines from the power company and even independent power companies.

Integration	All EVA4000 models are 2 Gb/s FC Switched Fabric "enabled" and can operate on 2 Gb/s or 1 Gb/s FC Switched Fabric SANs. They can co-exist in the same FC SAN with EVA3000 and EVA5000 FC storage solutions and many other SAN devices.
Manageability	HP StorageWorks Command View EVA provides the capability to manage the EVA4000 and is installed on an existing Storage Management Appliance, a management server or a NAS server. This powerful tool provides an easy mechanism to manage up to 16 EVA units in a SAN configuration. Command View EVA is purchased separately from the XCS media kit.
Performance	Fibre Channel host connections provide up to 200 MB bandwidth for each path. Each controller has two Fibre Channel host ports (four ports in a redundant pair of controllers) assuring the availability of bandwidth for the most demanding applications. In addition, up to 4 GB of data and control cache per controller pair ensures high performance. Dual mirrored port write caching capability, with battery backed cache, maintains optimal availability while assuring data integrity in the event of a failure.
Scalability	A storage management server can manage up to 16 EVA controller pairs (EVA 3000s, EVA5000s, EVA4000s, EVA6000s and/or EVA8000s) in any one fabric. An EVA4000 controller pair will support up to 256 host connections (up to 1024 HBAs); and will scale up to 56 disks (14TB using 250 GB FATA disk drives, and 16.8 TB using 300 GB high performance disk drives). Factory integration options allow even greater configuration flexibility. Data center managers can customize storage configurations, using the residual cabinet U space to mount Storage Management servers, switches, HP-UX servers (in Rack System/E cabs only) or additional storage, and have the peace of mind that it is built with HP factory precision manufacturing.
Servers Supported – Single and Clustered	HP servers (HP-UX, ProLiant, AlphaServers) X86 servers Dell servers Sun servers IBM servers
EVA4000 Required Software	HP StorageWorks EVA4000/6000/8000 v5.0a controller media kit (XCS v5.30) The HSV200 controller (for the EVA4000) utilizes XCS v5.0a firmware **NOTE:** As a convenience for customers, the EVA4000 ships with XCS pre-installed. HP StorageWorks EVA4000/6000/8000 v5.0a controller media kit contains XCS v5.020 and v5.030 firmware.
Supported Software	HP StorageWorks Command View EVA, http://h18006.www1.hp.com/products/storage/software/cmdvieweva/index.html HP StorageWorks Continuous Access EVA, http://h18006.www1.hp.com/products/storage/software/conaccesseva/index.html HP StorageWorks Business Copy EVA, http://h18006.www1.hp.com/products/storage/software/bizcopyeva/index.html HP StorageWorks Fast Recovery Solution for Windows 2003, http://h18006.www1.hp.com/products/storage/software/frs2003/index.html

Product Highlights

HP StorageWorks Secure Path,
http://h18006.www1.hp.com/products/storage/software/securepath/index.html

HP StorageWorks Multi-Path failover software,
http://h18006.www1.hp.com/products/storage/software/multipathoptions/index.html

HP StorageWorks Enterprise Modular Library E-Series,
http://h18006.www1.hp.com/products/storageworks/emleseries/index.html

HP StorageWorks Enterprise File Services Clustered Gateway,
http://h18006.www1.hp.com/products/storageworks/efs/index.html

EVA and Value-added Software Compatibility

Model	VCS Software	Command View EVA	Continuous Access	Business Copy
EVA4000	EVA4000/6000/8000 v5.0a controller media kit (XCS V5.030)	Command View EVA v4.1*	Continuous Access EVA V2.1	Business Copy EVA v3.0
*NOTE: Command View EVA V4.0 is compatible with VCS V5.030 at the versions original functionality levels. For full support of VCS V5.030 Command View EVA v4.1 is required.				

Operating Systems, Cluster and High Availability Compatibility

Operating System	Versions Supported	Cluster Server or High Availability Software	HA Versions Supported	Failover Software
Microsoft Windows	Windows 2000 Server SP4 Windows 2000 Advanced Server SP4 Windows 2003 Standard Edition (32/64-bit) (and SP1) Windows 2003 Enterprise Edition (32/64-bit) (and SP1) Windows Extended Systems (64-bit) Windows 2003 DataCenter Edition (64-bit)	Microsoft Cluster Server (MSCS) is provided for ProLiant servers and other x86 platforms	Windows 2000 Advanced Server SP4 Windows Server 2003 Enterprise Edition Windows 2003 DataCenter Edition (64-bit)	MPIO DSM Full Feature for Windows (Available on HP web)
HP-UX	v11.00 (PA-RISC) v11i v1 (PA-RISC) v11i v2PI (PA-RISC & IA64)	HP ServiceGuard (without Metro or Continental clusters) Veritas Foundation Suite/HA	11.14 11.15 11.16 3.5 (v11i v1) 4.1 (11i.v2PI for IA64 only)*	PV-Links, Native in OS Secure Path V3.0F for HP-UX Veritas DMP 3.5 (v11i v1) Veritas DMP 4.1 (11.23PI for IA64 only)*
Linux	Red Hat EL Advanced Server 2.1(32/64-bit) - U5, U6 Red Hat EL Advanced Server 3.0 (32/64-bit)- U3, U4 Red Hat EL Advanced Server 4.0 (32/64-bit) United Linux 1.0 (32/64-	HP ServiceGuard for Linux	11.16	Qlogic Failover driver 7.xx.xx for Redhat EL AS 2.1 & 3.0 and United Linux 1.0 Qlogic Failover driver 8.0x.xx for Redhat EL AS 4.0 and SUSE/SLES9

Product Highlights

	bit) - UL1.0/SLES8 SP3 SUSE/SLES9 (32/64-bit)		
HP Tru64 UNIX	v5.1-2b	HP TruClusters	5.1b	Native in OS
HP OpenVMS	7.3-2 8.2	OpenVMS Clusters	7.3-2 with FIBRE_SCSI-V0200) 8.2	Native in OS
Sun Solaris	8 9 10	SunCluster VERITAS Foundation Suite/HA	3.1 3.5, 4.0, 4.1*	MPxIO for Solaris, Native in OS Veritas DMP 3.5, 4.0, 4.1*
IBM AIX	5.2 5.3	HACMP	5.1, 5.2	MPIO for IBM AIX, Native in OS
Novell NetWare	5.1 6.5	NetWare cluster server	1.01 1.7	MPIO for NetWare, Native in OS
VMware	ESX GSX WSX	-	-	MPIO for VMWare, Native in OS

* Planned for August Availability

Cabinet Density	A single 42U EVA cabinet can house up to 42.0 TB of raw capacity (using 300 GB disks) by adding additional EVA4000 subsystems. A single 41U Rack System/E cabinet can house up to 37.8 TB of raw capacity (using 300 GB disks) by adding additional EVA4000 subsystems
Power Distribution	EVA cabs (based on the HP 10,000 Series Rack) are equipped with suitable 0U Power Distribution Units (PDUs) according to the voltage used in the country the solution is ordered. These PDUs allow redundant power and are located in the bottom and back of the cabinet for power cable entrance by the floor. The PDUs are 220/240V and 100V. The 220/240V PDUs are 0U high with a total of two AC power cords extending outside the cabinet. The EVA 36U and 42U 100V PDU Cabinets supports a **not to exceed** power draw of 127V AC at 24 Amps (per PDU pair, there are 2 PDU pairs per cabinet.
	Various PDU sizes are available with the Rack System/E as well as additional accessory choices such as blanking panels, doors and sides. For redundancy, order PDUs in quantities of two. The Rack System/E provides the added capability of integrating HP-UX servers, switches, as well as additional EVA4000 components (chose the PDU with the appropriate amperage for optional and additional components).
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.

Models

Enterprise Virtual Array 4000 Independent Bundles	All EVA4000 models includes Installation and Startup service, 2 years of XCS virtual controller software phone-in support and updates, automated event notification and remote problem intervention, and 4-hour onsite response reactive hardware support- at no additional charge. Factory Integration is required for all factory built models	

The EVA4000 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.

EVA4000 2C1D Model	**EVA4000 2C1D Array**	AD554A
	Includes one 4U Controller assembly with two HSV200 controllers, one M5314A 3U 14-bay disk drive enclosure, cables, and appropriate mounting hardware.	

NOTE: A cabinet must be ordered with this selection.

Additional M5314A disk drive enclosures may be added to a maximum of four disk drive enclosures.

Multiple EVA4000s can be configured in a single cabinet.

Service and Support, HP Care Pack, and Warranty Information

HP Care Pack Services HP Care Pack Services offer upgraded service levels to extend and expand your standard product warranty with easy to buy, easy to use support packages that help you make the most of your hardware and software investments. They let you choose the support levels that meet your business requirements, from basic to mission-critical. They help you contain total cost of ownership.

HP Care Pack warranty extensions can be purchased along with HP products to cost-effectively upgrade or extend your warranty. For many products, post-warranty HP Care Pack Services are available when your original warranty has expired.

Why purchase an HP Care Pack service?

Your standard warranty protects against product defects. HP Care Pack Services help you guard against unplanned downtime, which can reduce your productivity and profitability. These convenient service packages:

- Protect your investment in HP products
- Provide consistent, predictable levels of support across your entire department or business
- Ease budget planning with fixed-cost support that includes parts and labor
- Give you direct access to proven technical and problem-solving expertise
- Offer a choice of response-time and repair-time commitments
- Deliver prompt, measurable results
- Are available whenever and wherever you do business

HP Care Pack availability may vary by country and product.

Supporting your Adaptive Enterprise journey

HP Services helps you make the Adaptive Enterprise real for your organization. The breadth, depth, and quality of HP hardware and software support services can help you **improve the performance** of your IT support processes and resolve the complex software and hardware problems that tax user productivity. HP Care Pack services help you **increase IT environment stability**, efficiency, and agility from the desktop to the data center, and improve the productivity of your employees.

Warranty and Services Included with the Product EVA4000 factory warranty includes Array Installation and Startup Service, 2-year hardware support, with 4-hour response on a 24x7 basis as well as 2-year, 24x7 XCS phone-in support and updates.

HP warrants only that the Software media will be free of physical defects for a period of ninety (90) days from delivery.

In countries where available, your HP Limited Warranty includes Customer Self Repair warranty services. Please refer to HP's Limited Warranty Statement for further details: 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

Service and Support, HP Care Pack, and Warranty Information

Recommended Services	HP SAN Solution Service	• Quickly realize the benefit of your SAN investment while reducing overall cost of ownership • Fast, expert implementation that guards against unexpected compatibility issues, minimizes disruption to your business and optimizes performance • Provides a fully installed, configured and documented SAN with scalability that allows for additional capacity as your business grows
	HP Critical Services	• Boost business productivity through increased server, storage, networking, and applications availability • Minimize business losses caused by IT downtime • Reduce risk and improve efficiency by proactively managing changes across your IT environment • Resolve complex problems quickly through direct access to HP Services expertise and hands-on assistance • Rapidly access single-source support from a team familiar with your business and technology infrastructure • Free your IT staff to focus on strategic business issues
	HP Proactive 24	• Enhanced operational effectiveness and availability with proactive problem identification and solutions recommendations • Partner with technical experts who help coordinate support, provide hands-on assistance, and share industry best practices and HP know-how with your staff • Rapidly access single-source support spanning your environment from servers to storage to networking • Obtain personalized services tailored to your business environment and objectives • Anticipate necessary change - and execute it correctly the first time • Efficiently manage infrastructure resources to meet your performance objectives
	HP Support Plus 24	• 24x7 4-hr. onsite hardware support • Material and parts included • Work to completion for hardware support • 24x7 2-hr response XCS phone-in assistance • Remote problem diagnosis & support • Escalation management • Software product and documentation updates • License to use and copy software product updates • Software electronic support
	HP Software Maintenance Service	• Improve the productivity of system managers and operators • Improve system performance and reduce downtime due to software defects • Expedite problem resolution through expert-level technical resources • Enjoy consistent service coverage across geographically dispersed sites • Update HP and selected third-party software at a predictable cost • Take advantage of subscription savings on software updates • Keep your license compliancy up-to-date

Service and Support, HP Care Pack, and Warranty Information

Available HP Care Pack Services

Extend your product warranty with a wide choice of cost-saving support packages.

HP Care Pack Services are sold by HP and HP authorized enterprise and commercial resellers. Services for customers purchasing via direct and enterprise resellers are quoted using HP order configuration tools. Additional information about HP Care Pack Service features and benefits is available at http://www.hp.com/hps/carepack/services/.

Key for HP Care Pack Service availability in the table below:
E = Service available for customers purchasing direct and via enterprise resellers
C = Service available for customers purchasing via commercial resellers
N/A = Service not applicable

HP Care Pack Services Deployment and Per Event Services	Service Available
HP Installation	N/A
HP Installation & Startup	Included
HP Implementation	E

For more information about Deployment and Per Event Services for HP Storage, visit http://www.hp.com/hps/storage/.

HP Care Pack Services Availability Services	1 yr	3 yr	4 yr	5 yr
HP 4 Hr, 24x7 Hardware Support	N/A	E/C	E/C	E/C
HP Software Support	E/C	E/C	E/C	E/C
HP Software Support 24x7	E/C	E/C	E/C	E/C
HP Support Plus	E/C	E/C	E/C	E/C
HP Support Plus 24	E/C	E/C	E/C	E/C
HP Proactive Essentials 24x7 Unlimited	E/C	E/C	E/C	E/C
HP Proactive 24 Service	E	E	E	E
HP Critical Service	E	E	E	E

To find HP Care Pack Services available via HP authorized commercial resellers, visit http://h30125.www3.hp.com/csn/salesmktg/elfpack/elf_nonlkup_ctrylang.asp?code=ELNL

Deployment and Per Event Service Descriptions

Availability Assessment for SANs

- Recommendations for reducing or eliminating risks to the availability of your SAN infrastructure.

SAN Solution Service

- You get a powerful network storage solution up-and-running quickly and efficiently with minimum disruption and rapid returns on your SAN investment.

Data Migration

- Transfers your critical information to a new or reconfigured storage array in an open systems environment - across a data center or around the world.

Data Replication Solution Service

- Ensures a timely, cost-effective deployment of your data replication solution cuts risk and shortens your time-to-results.

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

Instant Support Enterprise Edition (ISEE)
HP Instant Support Enterprise Edition (ISEE) provides a single remote monitoring and support solution for your IT data center. ISEE uses continuous hardware event monitoring and automated notification to identify and prevent potential critical problems.

ISEE is a feature of HP Hardware Support Onsite Service with Next-Day response or better, Proactive Essentials, Proactive 24, Critical Service and warranty support for the selected products.

For more information or to download ISEE, visit http://www.hp.com/go/instantsupport

HP Education Services	Training for the Enterprise Virtual Array is now offered as part of HP comprehensive curriculum of HP Storage, Storage Management, and IT Service Management courses. These courses will provide the training required to realize the full potential of your HP EVA Virtual Array storage solutions, optimize your systems and SAN for highest efficiency, and achieve better return on your IT investments.

For more information about HP Education Services for Storage and SAN, visit
http://education.hp.com/curr-storsan.htm

Awards	HP IT Resource Center (ITRC) and HP Business Support Center (BSC) were selected as two of the Association of Support Professional's (ASP) Top Ten award winners in its seventh annual Ten Best Web Support Sites competition for 2004, an award that showcases excellence in online service and support. http://www.hp.com/hpinfo/newsroom/press/2004/040616a.html

HP earned the No. 1 ranking in customer satisfaction among vendors of corporate information technology (IT) service and support, according to the newly released Technology Business Research Inc.'s Corporate IT Service and Support survey covering the first quarter of 2004. http://www.hp.com/hpinfo/newsroom/press/2004/040624a.html

Service and Support, HP Care Pack, and Warranty Information

Additional Services Information

For more information about Deployment, Per Event, Consulting and Education services for HP Storage, visit: http://www.hp.com/hps/storage/

For more information about HP Care Pack Services for Storage, visit: http://www.hp.com/hps/carepack/storage/cp_networked.html

For more information about HP Storage Software, services and updates, visit: http://h18006.www1.hp.com/storage/software.html

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

QuickSpecs

Family Information

Model	EVA4000	EVA6000	EVA8000	EVA8000 With expansion cabinet
Drive Interface	Dual ported 2 Gb/s FC-AL	Dual ported 2 Gb/s FC-AL	Dual ported 2 Gb/s FC-AL	Dual ported 2 Gb/s FC-AL
Controller Software	XCS v5.030	XCS v5.030	XCS v5.030	XCS v5.030
Cache per controller pair	4GB	4GB	8GB	8GB
RAID Support	Vraid0, Vraid1 and Vraid5	Vraid0, Vraid1 and Vraid5	Vraid0, Vraid1 and Vraid5	Vraid0, Vraid1 and Vraid5
Host ports	Four 2 Gb/s FC	Four 2 Gb/s FC	Eight 2 Gb/s FC	Eight 2 Gb/s FC
Device ports	Four 2 Gb/s FC-AL	Four 2 Gb/s FC-AL	Eight 2 Gb/s FC-AL	Eight 2 Gb/s FC-AL
Device FC-AL switches	0	2	4	4
Maximum Drives per model	56	112	168	240
Redundant Controllers	Yes	Yes	Yes	Yes
Drive Capacities	72 10K rpm 146 GB 10K rpm 300 GB 10K rpm 72 GB 15K rpm 146 GB 15K rpm 250 GB FATA	72 10K rpm 146 GB 10K rpm 300 GB 10K rpm 72 GB 15K rpm 146 GB 15K rpm 250 GB FATA	72 10K rpm 146 GB 10K rpm 300 GB 10K rpm 72 GB 15K rpm 146 GB 15K rpm 250 GB FATA	72 GB 10K rpm 146 GB 10K rpm 300 GB 10K rpm 72 GB 15K rpm 146 GB 15K rpm 250 GB FATA

Configuration Information and Configuration Rules

Step 1 – Choose a Rack - Base and Factory Integration Information

Factory Integration　Start your order by choosing a rack to house your EVA4000. You can choose either an EVA cab (based on the 10,000 series rack) or a Rack System/E racking system. For details in configuring and ordering the Rack System/E, refer to the Configuration and User Guide in the Information Library at the Rack Solutions webpage http://www.hp.com/go/enclosures.

CTO Factory integration part number (Required)

United States, Latin America	325584-888

Primary Configuration Rules　**Use of the Factory Integration part number is required for component integration.** One of the EVA cabs or Rack System/E cabinets must be purchased to obtain a cabinet with the appropriate PDU for this storage product. PDUs for Rack System/E Cabinets are purchased separately. Additional EVA4000 bundles and drive enclosures may be ordered for multiple subsystem integration at the factory. Additional cabs are required to house configurations beyond the U-space of the initial cabinet.

The EVA4000 controller pair assembly is available for field installation. The EVA4000 controller pair assembly should be ordered for field installation. HP Global Services will perform the on-site installation when an EVA4000 controller pair assembly is ordered.

The HP 5642 rack and rack accessories 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.

Each controller pair (whether factory integrated or field installed) will support a maximum of four drive enclosures. When calculating available U-space, assume that no space will be placed between the mounted components.

EVA Cabinets　**Metallic graphite cabs with redundant PDUs**

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

42U EVA cab 60 Hz (based on Series 10,000 rack system)	338042-B21
42U EVA cab 50 Hz (based on Series 10,000 rack system)	338043-B21
36U EVA cab 60 Hz (based on Series 10,000 rack system)	338044-B21
36U EVA cab 50 Hz (based on Series 10,000 rack system)	338045-B21
22U EVA cab 60 Hz (based on Series 10,000 rack system)	338046-B21
22U EVA cab 50 Hz (based on Series 10,000 rack system)	338047-B21
HP StorageWorks 42U 100V EVA cabinet	AD572A
HP StorageWorks 36U 100V EVA cabinet	AD573A

HP Rack 5642 System

5642 (42U) Rack Cabinet System	358254-B21

For additional cabinet accessories see:
http://h18000.www1.hp.com/products/quickspecs/12074

Rack System/E Cabinets

HP Rack System/E41 (41U)	A4902A
HP Rack System/E41 (41U)	A4902D
HP Rack System/E33 (33U)	A4901A
HP Rack System/E33 (33U)	A4901D
HP Rack System/E25 (25U)	A4900A

PDU for Rack System/E Cabinets　Various PDU sizes are available with the Rack System/E as well as additional accessory choices such as blanking panels, doors and sides. For redundancy, order PDUs in quantities of two. Refer to the Configuration and User Guide in the Information Library at the Rack Solutions webpage:
http://www.hp.com/go/enclosures.

Configuration Information and Configuration Rules

Field Installation	Please refer to the Expansion options (Step 4) - listed in the Configuration Information and Configuration Rules - for details on components available for field installation. These components are useful for adding EVA4000 components to existing EVA4000 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 visit http://www.hp.com/go/eva4000. **NOTE:** Also refer to Step 4 for ordering instructions and components that accommodate on-site installation of EVA4000 subsystems into customer-supplied racks.

Step 2 – Select Base Model - Base and Factory-Integration Information

EVA4000 Models	The following models are available worldwide - each includes HW, varied storage capacity, and Installation and Startup service, 3 years of Virtual Controller Software (XCS) phone-in support and updates, automated event notification and remote problem intervention, and 4-hour onsite response reactive hardware support.	
EVA4000 2C1D Models	EVA4000 2C1D **NOTE:** Includes one 4U Controller assembly with two HSV200 controllers w/redundant power supplies, one M5314A 3U Dual-redundant FC loop 14-bay disk enclosure and appropriate mounting rails.	AD554A
EVA4000 Field Installation	Please refer to the Expansion options (Step 4) - listed in the Configuration Information and Configuration Rules - for details on components available for field installation. These components are useful for adding EVA4000 components to existing EVA4000 storage configurations or into on-site customer-supplied racks.	

Step 3 – Required Options

Drives are orderable two ways - either with the purchase of an array, or as add-on drives for arrays already installed. There are different product numbers for Upgrade drives than Initial-installation drives

		Not for use in EMEA	EMEA Only
HP StorageWorks FC Drives - Factory installation	**NOTE:** Four (4) disk drives, either size/type, are required per disk enclosure per system. A minimum of eight (8) disk drives are required per EVA4000.		
	72 GB 10K rpm dual-port 2 Gb/s FC-AL 1-inch (2.54 cm) drive	238921-B23*	238921-B22*
	146 GB 10K rpm dual-port 2 Gb/s FC-AL 1-inch (2.54 cm) drive	293556-B23*	293556-B22*
	300 GB 10K rpm dual-port 2 Gb/s FC-AL 1-inch (2.54 cm) drive	364622-B23*	364622-B22*
	72 GB 15K rpm dual-port 2 Gb/s FC-AL 1-inch (2.54 cm) drive	293568-B23*	293568-B22*
	146 GB 15K rpm dual-port 2 Gb/s FC-AL 1-inch (2.54 cm) drive	364621-B23*	364621-B22*
HP StorageWorks FATA Drives - Factory installation	250 GB FATA disk dual-port 2GB FC Hybrid disk drive factory integrated	364437-B23*	364437-B22*
	NOTE: Minimum order requirement, with the first installation of 250GB FATA add-on drives on an EVA, a minimum of 8 FATA drives are required to create the new NearOnline disk group.		
	*NOTE: 0D1 will appear after this part number on your sales order indicating factory integration		

Configuration Information and Configuration Rules

FC cable - 1 Gb to 2 Gb/s (optional) (LC to SC)	**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 be connected to the controllers. New switches utilize a Small Form-Factor Profile (SFP) connector. The SFP connector can support 2 Gb I/Os and/or 1 Gb I/Os, but the device connected to it may not currently be enabled for 2 Gb. The SFP connector is also referred to as an LC connector. The older large form factor 1 Gb connector is also referred to as an SC connecter.

NOTE: The 2 Gb SFPs on the ports of the EVA4000 HSV100 controllers are a smaller form factor than 1 Gb SFPs. One of these cables (either LC to SC or LC to LC) is required per FC port of each HSV100 controller. Four required per HSV100 controller pair.

FC Short Wave 2-Meter Cable, LC/SC (1 Gb to 2 Gb)	221691-B21
FC Short Wave 5-Meter Cable, LC/SC (1 Gb to 2 Gb)	221691-B22
FC Short Wave 15-Meter Cable, LC/SC (1 Gb to 2 Gb)	221691-B23
FC Short Wave 30-Meter Cable, LC/SC (1 Gb to 2 Gb)	221691-B26
FC Short Wave 50-Meter Cable, LC/SC (1 Gb to 2 Gb)	221691-B27

FC cable - 2 Gb/s to 2 Gb/s (optional)(LC to LC)

NOTE: The 2 Gb SFPs on the ports of the EVA4000 HSV100 controllers are a smaller form factor than 1 Gb SFPs. One of these cables (either LC to SC or LC to LC) is required per FC port of each HSV100 controller. Four required per HSV100 controller pair.

2-meter LC-LC Multi-Mode Fibre Cable	221692-B21
5-meter LC-LC Multi-Mode Fibre Cable	221692-B22
15-meter LC-LC Multi-Mode Fibre Cable	221692-B23
30-meter LC-LC Multi-Mode Fibre Cable	221692-B26
50-meter LC-LC Multi-Mode Fibre Cable	221692-B27

Controller Firmware

NOTE: One media kit is required per HSV200 controller pair. XCS v5.030 is needed to support Continuous Access EVA and Business Copy EVA. Command View EVA V4.1 is required and is sold separately.
OPTIONAL SOFTWARE: EVA4000 optional software can be found a the following URL: http://h18006.www1.hp.com/storage/software.html

HP StorageWorks EVA4000/6000/8000 v5.0a controller media kit	T4256B

High Availability Software

Industry popular multiple path software is supported on the EVA4000. 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:

- Full feature MPIO DSM for Windows
- Native pvlinks for HP-UX
- Veritas DMP for HP-UX
- QLogic Failover driver for Linux
- Native MPxIO for Solaris
- Veritas DMP for Solaris
- Native MPIO for AIX
- Native failover with OpenVMS
- Native failover with Tru64
- Native MPIO for NetWare (Planned for August)
- Native MPIO for VMware (Planned for August)

Configuration Information and Configuration Rules

EVA Storage Management / User Interface	**NOTE:** Command View v4.1 is required to support the EVA4000 with XCS v5.030 running on either a management server or application host running Microsoft Windows or the HP OpenView Storage Management Appliance is required per SAN fabric containing an Enterprise Virtual Array.

Storage Management Appliance

The HP OpenView Storage Management Appliance is a combined hardware and software solution that provides a centralized point for configuration, management and monitoring of storage elements, including switches and storage devices, while simplifying management tasks and reducing cost. It offers a comprehensive and cost-effective configuration, monitoring and storage management solution for the multiple platform SAN. Designed to connect directly to a SAN fabric, the Storage Management Appliance is a host-independent system that performs management functions without requiring host computers.

HP StorageWorks Command View EVA is purchased separately from the Storage Management Appliance. See the HP Command View EVA QuickSpecs for detailed support and configuration information: http://h18006.www1.hp.com/products/storage/software/cmdvieweva/index.html

Windows based management server

HP StorageWorks Command View EVA v4.1 supports installation on a server running Microsoft Windows.

See the HP StorageWorks Command View EVA QuickSpecs for detailed support and configuration information:
http://h18006.www1.hp.com/products/storage/software/cmdvieweva/index.html

Step 4 – Expansion Options

The EVA4000/6000 Controller Pair assembly is for on-site installation into existing EVA4000 configurations (or qualified rack systems) by HP Global Services. The physical configuration services for the EVA4000/6000 Controller Pair and up to four M5314A FC drive enclosures, as well as installation and startup services, are included when you purchase the controller pair assembly component.

Optional Controllers and Accessories	EVA4000/6000 Controller Pair assembly Solution: One 4U Controller assembly with two HSV200 controllers, mounting hardware, cables, Installation and Startup service, 2 years of EVA4000/6000/8000 controller software (XCS) phone-in support and updates, automated event notification and remote problem intervention, and 4-hour onsite response reactive hardware support included with this component.	AD525A

M5314A FC Drive Enclosures & Accessories	Select M5314A drive enclosures to expand EVA4000 configurations: Drive enclosures may be:

1. Ordered for on-site capacity additions to existing EVA4000 2C1D configurations.
2. Ordered for field installation of complete EVA4000 configurations in conjunction with the EVA4000/6000 controller pair assembly into the supported HP cabinets and racks described in Step One or into qualified 3rd party rack systems by HP Global Services.
3. Installed by HP manufacturing into 2C1D configurations by ordering the enclosure with the factory integration part number.

Up to four drive enclosures are supported with each pair of HSV200 controllers.

The M5314A is a 3U dual-redundant FC Loop 14-bay disk enclosure with mounting hardware, and the necessary copper FC cables for connecting to an HSV200 Controller pair.
NOTE: Minimum of four disk drives, any size/type, are required per disk enclosure per factory configured enclosures.

M5314A FC Drive Enclosure Contains drive enclosure, mounting hardware and cables.	AD542A*

Configuration Information and Configuration Rules

Dual FC Loop Switch Option	Select the EVA Dual FC Loop Switch Option for EVA4000 configurations when future expansion greater than a 2C4D configuration is expected.

The EVA Dual FC Loop Switch Option can also be field installed to an EVA4000 to upgrade to an EVA6000.

EVA Dual FC Loop Switch Option   AD557A*
Contains two FC loop switches, mounting hardware and cables.
***NOTE:** 0D1 will appear after this part number on your sales order when factory integration is indicated.

Step 5 – Optional Components and Software

Optional Software for EVA4000

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).

Continuous Access EVA provides customers with the highest level of storage data protection capabilities to meet their business continuity implementation goals. Customers can achieve a competitive advantage by combining disaster-tolerant solutions and disaster-tolerant managed services into their planning and daily routines, ensuring the data's security, availability and integrity.

Continuous Access EVA delivers local copy with Snapshot XCS Controller Software and virtualization interoperability protect against disaster like scenarios, saving time and money while maintaining the flow of information across the enterprise. Continuous Access EVA is an irreplaceable component for protecting any business, yours especially.
Continuous Access EVA is sold by utilized capacity. 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 EVA4000 array providing Snapshot and clone set-up and management. Business Copy EVA creates point-in-time copies of storage volumes, called Business Continuance Volumes (BCVs) using the snapshot and cloning capabilities of the array firmware and provides multi-array local mirror management. Additional features of the new product include licensing based on replicated (not total raw) capacity and a new improved management interface.

Business Copy EVA is sold by utilized capacity. See the product URL for ordering information and part numbers:
http://h18000.www1.hp.com/storage/software.html

Configuration Information and Configuration Rules

Optional Hardware Accessories

StorageWorks FC Drives - Upgrade installation	300 GB 10K rpm dual-port 2 Gb FC-AL 1-inch (2.54 cm) drive	364622-B22
	146 GB 10K rpm dual-port 2 Gb FC-AL 1-inch (2.54 cm) drive	293556-B22
	72 GB 10K rpm dual-port 2 Gb FC-AL 1-inch (2.54 cm) drive	238921-B22
	146 GB 15K rpm dual-port 2 Gb FC-AL 1-inch (2.54 cm) drive	364621-B22
	72 GB 15K rpm dual-port 2 Gb FC-AL 1-inch (2.54 cm) drive	293568-B22
	NOTE: These drives are for on-site install only. For Factory integration of drives see Step 3.	
HP StorageWorks FATA Drives - Upgrade installation	250 GB FATA disk dual-port 2Gb/s FC Hybrid disk drive upgrade	364437-B22
	NOTE: These drives are for on-site install only. For Factory integration of drives see Step 3.	

Non-HP Rack installation	For racks other than those specifically stated within the EVA4000 product set, please visit the EVA4000 web page for details on rack and power specifications: http://www.hp.com/go/eva4000	

FC cable - Copper SFP	The following cables are used with the M5314 drive enclosure but are not necessary for new installations. These cables are for use inside the cab between the controllers and drive enclosures.	
	Cable FC Copper SFP .6m	321624-B21
	Cable FC Copper SFP 2m	324394-B21

SAN 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

Controller Model	HSV200
Controller Cache	2 GB per controller standard
Battery Backup for Cache	Yes, up to 96 hours
Virtual Controller Software (VCS)	HP StorageWorks EVA4000/6000/8000 v5.0a controller media kit
Host Interface	Fibre Channel Switched Fabric
Host Ports per Controller	Dual 2 Gb/s FC enabled (running at 1 Gb/s with 1 Gb/s switches and HBAs)
Drive Interface	Two 2 Gb/s FC-AL ports per controller in redundant pairs
RAID Levels	Vraid0, Vraid1, Vraid5
Maximum Disks Supported	56 per Controller Pair
Non-RAID JBOD Support	No
Fibre Channel Switches & Directors	Optical Switches and Directors http://h18006.www1.hp.com/storage/saninfrastructure/switches.html
O/S Support	HP-UX, HP OpenVMS, HP Tru64, Windows 2000 Server & Advanced Server, Windows 2003 Standard/Enterprise (32/64-bit) and Extended/DataCenter (64-bit), Sun Solaris, Linux, and IBM AIX. (Support for Novell NetWare and VMware is planned for August 2005.) **NOTE:** See Operating System, Cluster and High Availability Compatibility matrix above for Operating System version detail.
Sustained I/O and MB Throughput	Up to 141K IOPS and up to 335 MB/s throughput per Controller Pair
Redundant Blowers	Yes
Environmental Monitoring Unit	Yes. Monitors Power and Temperature
Regulatory approvals	UL, CSA, TUV, FCC, CE MARK, CTICK, BSMI, VCCI
Management Software	Command View EVA v4.1 used with the Storage Management Appliance software v2.1 running on the HP OpenView Storage Management Appliance (SMA) or with a server in the SAN running Microsoft.
Disk Drives, Interface	Dual-port 2 Gb/s FC-AL
Operating environment	**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
Non-HP rack requirements	For detailed information on determining compatibility of a non-HP rack, please visit http://h18006.www1.hp.com/products/storageworks/eva4000/index.html.

Technical Specifications

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

AC plug type (quantity 2)	North America – 3 wire NEMA No. L6-30R, 30 amp (208 to 240V 60Hz 30A)
	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
Maximum Input Current	20.0 amps on 2 power cords (AC failover condition)

NOTE: This data represents fully populated drive shelves with 10K rpm disk drives. Other drive types may vary slightly.

		208 Volts				230 Volts			
		2C1D	**2C2D**	**2C3D**	**2C4D**	**2C1D**	**2C2D**	**2C3D**	**2C4D**
Typical	**Total System Wattage**	507	883	1260	1637	507	883	1260	1637
	Total System BTU/hour	1729	3014	4300	5585	1729	3014	4300	5585
	Input Current (A) - Typical per system	2.5	4.4	6.3	8.2	2.3	4.0	5.7	7.4
	In Rush Current (A)	98	132	170	220	104	147	190	244
Failover Mode	**Input Current (A) - Maximum per system**	2.0	3.3	4.6	5.9	1.9	3.1	4.3	5.4

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)

Physical Dimensions	Height in/cm	Width in/cm	Depth in/cm	Max Weight lb/kg	Req. Front Clearance in/cm	Req. Rear Clearance in/cm
42U EVA cab 60/50 Hz	78.7/199.9	24/60.96	39.7/100.8	283/128	30/76.2	18/45.72
36U EVA cab 60/50 Hz	68.6/174.24	24/60.96	39.7/100.8	248.112*	30/76.2	18/45.72
22U EVA cab 60/50 Hz	43/109.22	24/60.96	39.7/100.8	202/92*	30/76.2	18/45.72
Rack System/E, 41U	77.20/196.11	23.47/59.62	39.22/99.62	221/100.45**	30/76.2	30/76.2
Rack System/E, 33U	63.20/160.55	23.47/59.62	39.22/99.62	197/89.55**	30/76.2	30/76.2
Rack System/E, 25U	49.20/124.99	23.47/59.62	39.22/99.62	148/67.13**	30/76.2	30/76.2
EVA4000/6000 Controller Pair	7.0/17.78	17.6/44.70	27.5/69.85	120/54.55	N/A	N/A
M5314A Drive Enclosure	5.25/13.34	19.0/42.26	20/50.8	71/32.21	N/A	N/A

*without EVA components
**without PDUs or EVA components

QuickSpecs

Technical Specifications

Shipping Dimensions (with packaging)	Height in/cm	Width in/cm	Depth in/cm	Max Loaded Weight (with packaging) lb/kg
42U EVA cab 60/50 Hz	86/218.4	36/91.44	48/121.92	335/152*
36U EVA cab 60/50 Hz	75.25/191.14	36/91.44	48/121.92	300/136*
22U EVA cab 60/50 Hz	52.25/132.72	36/91.44	48/121.92	251/114*
Rack System/E, 41U	84.5/214.63	36/91.44	48/121.92	372.5/169.3**
Rack System/E, 33U	73.5/186.69	36/91.44	48/121.92	336.5/152.95**
Rack System/E, 25U	58.5/148.59	36/91.44	48/121.92	298/135.17**
EVA4000/6000 Controller Pair	27.5/ 69.85	24/57.6	40/101.6	165/75.0
M5314A Drive Enclosure	34.25/87	12.25/31.12	34.25/87	96/43.54

*without EVA components
**without PDUs or EVA components