*Overview*

The HP StorageWorks 8000 Enterprise Virtual Array (EVA8000) is the largest of three new members in the EVA family - the EVA4000, the EVA6000 and the EVA8000. The EVA8000 is a high performance, high capacity and high availability "virtual" RAID storage solution for the high-end, business critical, marketplace that removes the time, space and cost boundaries of traditionally architected storage. The EVA8000 is designed for the data center where there is a critical need for improved storage utilization and scalability while meeting application specific demands for consistently high transaction I/O and MB data rate performance, seamless capacity expansion, instantaneous replication, and simplified storage administration.
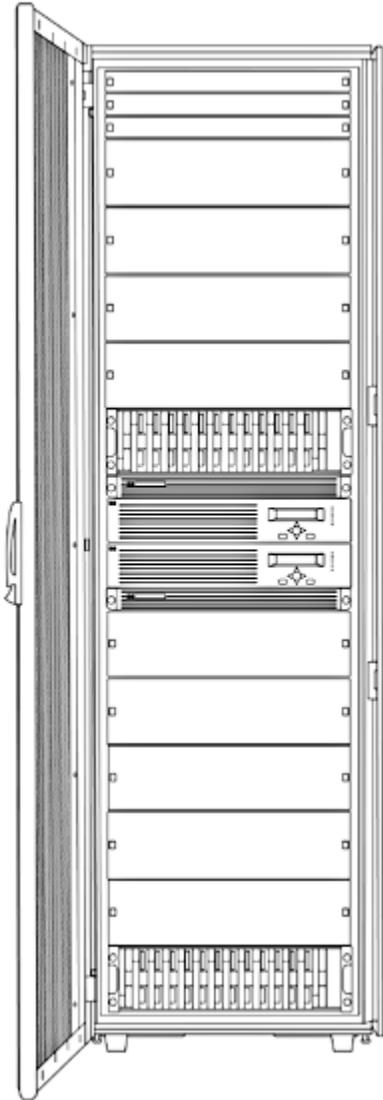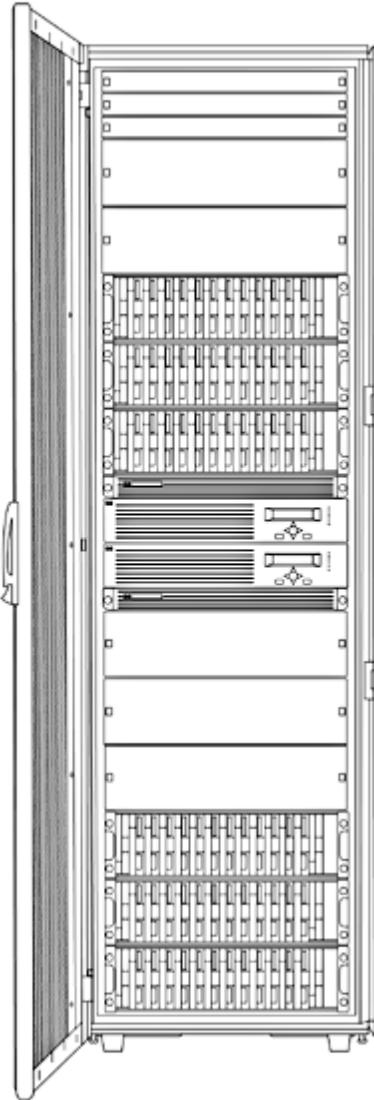
EVA8000 2C2D   EVA8000 2C6D   EVA8000 2C12D
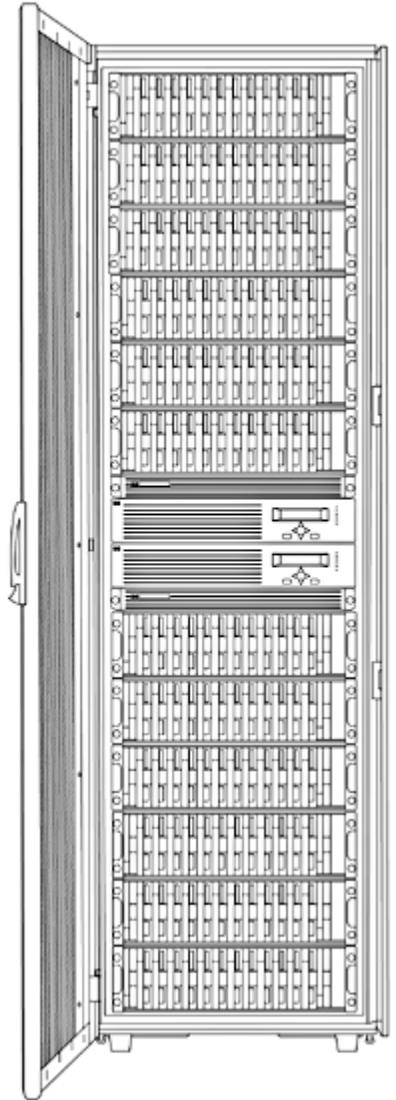
What's New

The new EVA8000 Array

- Three base models: 2C2D, 2C6D and 2C12D
- Each model comes installed in a 42U graphite cabinet, with a pair of HSV210 controllers, 2, 6 or 12 M5314A disk drive enclosures (depending on the model), a set of four FC-AL switches (in 2C6D and 2C12D models, and optional for 2C2D model), mounting hardware and cables.
- New and improved M5314A 14-bay disk drive enclosure, with mounting hardware and cables, for expanded factory built configurations or for field upgrades
- EVA8000 Controller Pair, with a pair of HSV210 controllers, mounting hardware and cables for field installation
- HP StorageWorks EVA4000/6000/8000 v5.0a controller media kit (XCS v5.030)
- Support for many of the industry popular multi-pathing software solutions
- Support EVA iSCSI solution offering
- HP Systems Insight Manager included with EVA8000

Product Highlights

Fibre Channel (FC) Technology	The EVA 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 EVA8000 with EVA XCS v5.0 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 8, 16, 32 or 64-port FC switches for fabric connectivity (currently up to a maximum of 20 FC Switches supported). The EVA8000 can support up to 240 FC disk drives at 2 Gb/s transfer rates.
Enterprise Virtual Array Product Packaging	The EVA8000 packaging consists of a 4U FC HSV210 dual controller assembly, 14-bay HP StorageWorks Model M5314A FC Drive Enclosures, four FC Loop Switches (optional for 2C2D model, standard for 2C6D and 2C12D models) packaged in a 42U cabinet. The controller and drive enclosures are independent of each other to allow a wide range of configuration options. The EVA8000 is designed to address moderate to large capacity needs ranging (from 2 - 18 drive enclosures, 0.56 - 72 TB) as well as high performance options in commercial environments. The models are factory rack-mounted in a 42U EVA cab (based on the HP rack 10000 series) via the Factory Integration process (See Configuration Information and Configuration Rules, for details).
Multi-Vendor Platform	The EVA8000 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 for Operating System version detail.
Designed for No-Single-Point-of-Failure	The EVA8000 redundant architecture and value added software eliminates single points of failure from server to storage in clustered or single server configurations with multiple pathing.
Disaster Tolerant Replication (Software option)	HP StorageWorks Continuous Access EVA 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

Product Highlights

Local Replication Solutions (Software options)

The HP StorageWorks Business Copy EVA is a local replication application for the EVA8000. It incorporates Virtually Capacity-free Snapshot and Snapclone capabilities with an excellent 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 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 EVA 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 G4 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 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

Product Highlights

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 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 data 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.

Enclosure Capacity

The EVA8000 provides one of the highest density disk storage solutions in the industry with up to 168 disk drives per cabinet along with four FC loop switches. The 42U Graphite EVA8000 cabinets support up to twelve 3U 14-bay M5314A FC disk enclosures for a maximum capacity of 168 disk drives and a maximum storage capacity of 50.4 TB of disk capacity using 300 GB high performance drives and a pair of HSV210 controllers. An expansion cabinet allows users to expand with another six enclosures for a total of up to eighteen disk enclosures, up to 240 disks, and up to 72 TB per EVA8000.

Product Highlights

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

EVA8000 Capabilities

- Support for up to 240 disk drives per EVA8000 controller pair.
- Support for up to 14 devices per disk enclosure,
- Support for up to 12 disk enclosures in a cabinet and up to 18 disk enclosures per controller pair (with an expansion cabinet).
- Support for up to 168 devices per 42U EVA cabinet and up to 240 with a utility cabinet.
- Support for dual-ported 2 Gb/s FC disk drives and dual-ported Fibre Attached 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
- Support for Direct Attach connection to Windows servers without the need for SAN switches.
- 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 HP StorageWorks Continuous Access EVA remote replication (synchronous and asynchronous).
- Support for HP StorageWorks Business Copy EVA Snapshot (Vsnap) and Snapclone.
- Dual redundant controller operation for increased fault tolerance
- Industry popular multiple bus failover support
  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 (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 upgrades).
- 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).

QuickSpecs

Product Highlights

10K rpm Drive Support
The EVA8000 supports 72 GB, 146 GB, and 300 GB 10K rpm dual-ported 2 Gb/s FC disk drives at full-rated transfer rates. An EVA controller pair will support up to 240 disk drives of single or mixed drive capacities and types (high performance and FATA).

15K rpm Drive Support
The EVA8000 supports 72 GB and 146 15K rpm dual ported 2 Gb/s FC disk drives at full rated transfer rates. An EVA8000 controller pair will support up to 240 disk drives of single or mixed drive capacities.

FATA Drive Support
The EVA8000 supports 250 GB dual ported 2 Gb/s Fibre Attached Technology Adapted (FATA) disk. An EVA8000 controller pair will support up to 240 total disk drives.

Fibre Channel Technology
The EVA8000 takes advantage of the benefits of 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 EVA8000 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 FC SAN 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 EVA8000 supports 2 Gb/s FC. For more information on specific support specifications see the following Switch URL:
http://h18006.www1.hp.com/storage/saninfrastructure/switches.html

Transfer Speeds
The EVA8000 has four FC host interfaces per HSV210 controller; eight 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 HSV210 controller pair interfaces with four FC-AL switches which in turn interface with up to 240 disk drives. With the FC-AL switches, 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 EVA8000 predefined 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 a storage management server and they are ready for use. Installation and start-up services are part of the EVA Foundation Service Solution warranty.

Product Highlights

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 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 EVA8000s are configured with dual HSV210 controllers that operate in a redundant mode. Each controller has four 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 four FC device ports. Each port connects to a FC loop switch which in turn connects up to one FC I/O module on up to nine drive enclosures and to one port of up to 120 disk drives. With the four FC ports, each controller can connect to both ports on up to 240 disk drives for redundant paths to all 240 drives. Each controller also has 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 M5314A FC drive enclosure has dual redundant hot plug FC IO 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.

EVA8000 configurations, with more than four drive enclosures, are configured with two pairs of FC-AL switches connected between the two controllers and the drive enclosures. Up to nine drive enclosures can be redundantly connected to each pair of switches, which are redundantly connected to each controller. Each loop switch is independently powered and cooled. Should one loop switch fail, it can be replaced while I/Os continue through the remaining redundant loop switch.

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 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, to each power supply of the drive enclosures and to two of the four FC loop switches. 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.

Integration

All EVA8000 models can interface with 2 Gb/s or 1 Gb/s capable FC Switched Fabric SANs. They can co-exist in the same FC SAN with EVA3000/5000 and/or EVA4000/6000 FC storage solutions.

Product Highlights

Manageability	HP StorageWorks Command View EVA provides the capability to manage the EVA8000 and is installed on the Storage Management Appliance or management 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/s bandwidth for each path. Each controller 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 8 GB of data and control cache per controller pair ensures high performance. Dual mirrored port write caching capability, with battery backed cache, maintains optimal performance while assuring data integrity in the event of a failure.
Scalability	A storage management server can manage up to 16 EVA controller pairs (EVA3000s, EVA5000s, EVA4000s, EVA6000s and/or EVA8000s) in any one fabric. An EVA8000 controller pair will support up to 256 host connections (up to 1024 HBAs). An EVA8000 will scale up to 168 disks in a single cabinet. With the addition of an optional utility cabinet, an EVA8000 will scale up to 240 disks. Configure to Order (CTO) options allow even greater flexibility and scalability. With the new EVA8000 2C2D, 2C6D, and 2C12D, customers can configure their new EVA8000 units from HP manufacturing with additional drive enclosures for a total of 12 drive enclosures. Factory integration supports integration from the EVA8000 closest to the desired customer configuration. For example, a 2C12D should be ordered if a customer wants 12 drive enclosures shipped integrated from manufacturing, not a 2C6D with six additional drive enclosures. Existing 2C2D or 2C6D customers can also purchase additional drives and enclosures to be installed on-site by HP Services. And, customers can purchase an EVA utility cabinet to configure up to 18 drive enclosures per EVA8000 controller pair (with an expansion cab) either at the factory or installed on-site by HP Services.
Servers Supported – Single and Clustered	HP servers (HP-UX, ProLiant, AlphaServers) X86 servers Dell servers Sun servers IBM servers
EVA8000 Required Software	HP StorageWorks EVA4000/6000/8000 v5.0a controller media kit (XCS v5.30) The HSV210 controller (for the EVA8000) utilizes XCS v5.0a firmware NOTE: As a convenience for customers, the EVA6000 ships with XCS pre-installed. HP StorageWorks EVA4000/6000/8000 v5.0a controller media kit contains XCS v5.020 and v5.030 firmware

Product Highlights

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

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
EVA8000	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.				

Cabinet Density   A single 42U EVA cabinet can house up to 50.4 TB of raw capacity (using 300 GB disks). With an expansion cabinet, up to 72.0 TB of raw capacity can be supported by a single pair of controllers.

Power Distribution   EVA cabinets 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. The 220/240V PDUs are 0U high with a total of two AC power cords extending outside the cabinet. This allows for the addition of additional EVAs or other equipment to the cabinet.

Total Cost of Ownership   The EVA8000 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 duplicate capacity requirements can be eliminated, resulting in fewer/smaller storage acquisitions.

Operating Systems, Cluster and High Availability Compatibility

Product Highlights

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-bit) - UL1.0/SLES8 SP3 SUSE/SLES9 (32/64-bit)	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
HP Tru64 UNIX	v5.1-2b	HP TruClusters	5.1b	Native in OS
HP OpenVMS	7.3-2 8.2	OpenVMS Clusters	7.2-2 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

Models

HP StorageWorks 8000 Enterprise Virtual Array (EVA8000) Models	All EVA8000 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 EVA8000 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.	

Models in 42U cabinets without loop switches - Model 2C2D

EVA8000 2C2D 60Hz 42U Cabinet	A 4U controller assembly with two HSV210 controllers and two M5314A 3U dual-redundant FC Loop 14-bay disk enclosures in a 42U Storage Cabinet. It can be Factory Configured with additional drive enclosures. For configurations with more than four Drive enclosures the FC loop switches must be included. It can also be field upgraded up to a 2C12D configuration with the addition of drive enclosures and FC loop switches.	AD518A
EVA8000 2C2D 50Hz 42U Cabinet	A 4U controller assembly with two HSV210 controllers and two M5314A 3U dual-redundant FC Loop 14-bay disk enclosures in a 42U Storage Cabinet. It can be Factory Configured with additional drive enclosures. For configurations with more than four Drive enclosures the FC loop switches must be included. It can also be field upgraded up to a 2C12D configuration with the addition of drive enclosures and FC loop switches.	AD519A

Models in 42U cabinets with loop switches - Model 2C6D

EVA8000 2C6D 60Hz 42U Cabinet	A 4U controller assembly with two HSV210 controllers, six M5314A 3U dual-redundant FC Loop 14-bay disk enclosures, and four 12-port FC loop switches in a 42U Storage Cabinet. It can be Factory Configured with additional drive enclosures. It can also be field upgraded up to a 2C12D configuration with the addition of drive enclosures.	AD520A
EVA8000 2C6D 50Hz 42U Cabinet	A 4U controller assembly with two HSV210 controllers, six M5314A 3U dual-redundant FC Loop 14-bay disk enclosures, and four 12-port FC loop switches in a 42U Storage Cabinet. It can be Factory Configured with additional drive enclosures. It can also be field upgraded up to a 2C12D configuration with the addition of drive enclosures.	AD521A

Model 2C12D

EVA8000 2C12D 60Hz 42U Cabinet	A 4U controller assembly with two HSV210 controllers, twelve M5314A 3U dual-redundant FC Loop 14-bay disk enclosures, and four 12-port FC loop switches in a 42U Storage Cabinet.	AD522A
EVA8000 2C12D 50Hz 42U Cabinet	A 4U controller assembly with two HSV210 controllers, twelve M5314A 3U dual-redundant FC Loop 14-bay disk enclosures, and four 12-port FC loop switches in a 42U Storage Cabinet.	AD523A

42U utility cabinets for use with EVA8000 above.

EVA 42U Graphite Utility Cabinet, 60Hz	A 42U Graphite Storage Cabinet with dual 60Hz PDUs. (M5314A 3U dual-redundant FC Loop 14-bay disk enclosures FC interconnect cables are purchased separately).	289191-B23
EVA 42U Graphite Utility Cabinet, 50Hz	A 42U Graphite Storage Cabinet with dual 50Hz PDUs. (M5314A 3U dual-redundant FC Loop 14-bay disk enclosures FC interconnect cables are purchased separately).	289191-B24

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

EVA8000 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

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QuickSpecs

HP StorageWorks 8000 Enterprise Virtual Array

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

hp invent

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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

Service and Support, HP Care Pack, and Warranty Information

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.

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

Service and Support, HP Care Pack, and Warranty Information

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

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 Base Model

CTO Factory integration part number (Required)

United States, Latin America

Base Models	Select one	
	Models in 42U cabinets without loop switches	
EVA8000 2C2D 60Hz 42U Cabinet	A 4U controller assembly with two HSV210 controllers, two M5314A 3U dual-redundant FC Loop 14-bay disk enclosures, 42U Graphite Storage Cabinet. EVA8000 includes Foundation Service Solution. Can be Factory Configured with additional drive enclosures. For configurations with more than four Drive enclosures the FC loop switches must be included. It can also be field upgraded up to a 2C12D configuration with the addition of drive enclosures and FC loop switches.	AD518A
EVA8000 2C2D 50Hz 42U Cabinet	A 4U controller assembly with two HSV210 controllers, two M5314A 3U dual-redundant FC Loop 14-bay disk enclosures, 42U Graphite Storage Cabinet. Can be Factory Configured with additional drive enclosures. For configurations with more than four Drive enclosures the FC loop switches must be included. It can also be field upgraded up to a 2C12D configuration with the addition of drive enclosures and FC loop switches.	AD519A
	Models in 42U cabinets with loop switches	
EVA8000 2C6D 60Hz 42U Cabinet	A 4U controller assembly with two HSV210 controllers, six M5314A 3U dual-redundant FC Loop 14-bay disk enclosures, four 12-port FC loop switches, 42U Storage Cabinet. Can be Factory Configured with additional drive enclosures. It can also be field upgraded up to a 2C12D configuration with the addition of drive enclosures.	AD520A
EVA8000 2C6D 50Hz 42U Cabinet	A 4U controller assembly with two HSV210 controllers, six M5314A 3U dual-redundant FC Loop 14-bay disk enclosures, four 12-port FC loop switches, 42U Storage Cabinet. Can be Factory Configured with additional drive enclosures. It can also be field upgraded up to a 2C12D configuration with the addition of drive enclosures.	AD521A
EVA8000 2C12D 60Hz 42U Cabinet	A 4U controller assembly with two HSV210 controllers, twelve M5314A 3U dual-redundant FC Loop 14-bay disk enclosures, four 12-port FC loop switches, 42U Storage Cabinet.	AD522A
EVA8000 2C12D 50Hz 42U Cabinet	A 4U controller assembly with two HSV210 controllers, twelve M5314A 3U dual-redundant FC Loop 14-bay disk enclosures, four 12-port FC loop switches, 42U Storage Cabinet.	AD523A
	42U Graphite utility cabinets for use with EVA8000 above.	
EVA 42U Graphite Utility Cabinet, 60Hz	NOTE: 42U Graphite Storage Cabinet, (M5314A 3U dual-redundant FC Loop 14-bay disk enclosures FC interconnect cables are purchased separately).	289191-B23
EVA 42U Graphite Utility Cabinet, 50Hz	NOTE: 42U Graphite Storage Cabinet, (M5314A 3U dual-redundant FC Loop 14-bay disk enclosures FC interconnect cables are purchased separately).	289191-B24

QuickSpecs

Configuration Information and Configuration Rules

Step 2 - Required Options (For Pre-Defined Models)

HP StorageWorks FC Drives - Factory installation	**NOTE:** Four disk drives, either size/type, are required per disk enclosure per system.		
	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*
	NOTE: Four disk drives, either size/type, are required per disk enclosure per system.		
HP StorageWorks FATA Drives - Factory installation	250 GB FATA disk dual-port 2Gb/s 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 these part numbers (xxxxxx-B22) and xxxxxx-B23) on your sales order indicating factory integration. The OD1 modifier is available against xxxxxxx-B22 parts in EMEA only.

NOTE: Before selecting the FC cables to connect between the controllers and the SAN switches, please 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/s I/Os and/or 1Gb/s I/Os, but the device connected to it may not currently be enabled for 2 Gb/s. The SFP connector is also referred to as an LC connector (not SC). The older large form factor 1 Gb/s connector is also referred to as an SC connecter.

For more information on switch specification see the following Switch URL:
http://h18006.www1.hp.com/storage/saninfrastructure/switches.html

FC cable - 1 Gb/s to 2 Gb/s (LC to SC)	(The 2 Gb/s GBICs on the ports of the EVA8000 HSV210 controllers are a smaller form factor than 1 Gb/s GBICs. One of these cables (either LC to SC or LC to LC) is required per FC port of each HSV210 controller. Four required per HSV210 controller pair.)	
	FC Short Wave 2-Meter Cable, LC/SC (1 Gb/s to 2 Gb/s)	221691-B21
	FC Short Wave 5-Meter Cable, LC/SC (1 Gb/s to 2 Gb/s)	221691-B22
	FC Short Wave 15-Meter Cable, LC/SC (1 Gb/s to 2 Gb/s)	221691-B23
	FC Short Wave 30-Meter Cable, LC/SC (1 Gb/s to 2 Gb/s)	221691-B26
	FC Short Wave 50-Meter Cable, LC/SC (1 Gb/s to 2 Gb/s)	221691-B27

Configuration Information and Configuration Rules

FC cable - 2 Gb/s to 2 Gb/s (LC to LC)	(The 2 Gb/s GBICs (SFP - Small Form-Factor Profile) on the ports of the EVA8000 HSV210 controllers are a smaller form factor than 1 Gb/s GBICs. One of these cables (either LC to SC or LC to LC) is required per FC port of each HSV210 controller. Four required per HSV210 controller pair.)	
	2-meter LC-LC Multi-Mode Fibre Cable	221692-B21
	5-meter LC-LC Multi-Mode Fibre Cable- This is the recommended cab-to-cab cable for interconnecting drive enclosures in an expansion cab to FC loop switches in an adjacent cab.	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

One XCS media kit is required per HSV210 controller pair. XCS v5.030 is needed to support the EVA8000. Command View EVA v4.1 is also required.

OPTIONAL SOFTWARE for use with the EVA8000 can be found at 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, Multiple Path Support

Industry popular multiple path software is supported on the EVA8000. 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 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 Open VMS
- 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 EVA8000 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 Command View EVA v4.1 QuickSpec 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 Server.

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 3 - Configure-to-Order, Required

If you do not wish to have optional components such as additional drive enclosures, switches or drives assembled at the factory, simply list your selections on your sales order without the CTO factory integration part number

CTO Factory integration part number

North America and Latin America   258158-888

Step 4 -Optional Components and Software

Optional Software for EVA8000

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 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 HP StorageWorks Business Copy EVA 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. 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.

Configuration Information and Configuration Rules

Local Replication Software HP StorageWorks Business Copy EVA is a local replication software product for the EVA8000 array providing Snapshot and clone set-up and management. Business Copy 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

Optional Hardware Accessories

Hard Drives

72 GB 10K rpm dual-port 2 Gb/s FC-AL 1-inch (2.54 cm) drive	238921-B22
146 GB 10K rpm dual-port 2 Gb/s FC-AL 1-inch (2.54 cm) drive	293556-B22
300 GB 10K rpm dual-port 2 Gb/s FC-AL 1-inch (2.54 cm) drive	364622-B22
72 GB 15K rpm dual-port 2 Gb/s FC-AL 1-inch (2.54 cm) drive	293568-B22
146 GB 15K rpm dual-port 2 Gb/s FC-AL 1-inch (2.54 cm) drive	364621-B22

NOTE: These drives are for on-site install only. For Factory integration of drives see Step 3.

FC Drive Enclosures

Select M5314A drive enclosures to expand any Enterprise Virtual Array. Drive enclosures for new Enterprise Virtual Arrays are installed by HP manufacturing. Drive enclosures for existing Enterprise Virtual Arrays are installed on-site by HP Global Services. It is recommended that drive enclosures be added in pairs to a maximum of 12 per cabinet.

M5314A Drive enclosure for all EVAs

M5314A dual FC loop 14-bay drive enclosure with mounting hardware and all the necessary interconnect cables.	AD542A

NOTE: 0D1 will appear after this part number on your sales order when factory integration is indicated.

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.

Enterprise Virtual Array Graphite Utility Cabinet

The EVA8000 customers have the option to mount supporting SAN equipment, the SAN Appliance and/or supported SAN Switches, in the utility cabinet.

EVA 42U Graphite Utility Cabinet, 60Hz (with two 0U PDUs and eight power strips)	289191-B23
EVA 42U Graphite Utility Cabinet, 50Hz (with two 0U PDUs and eight power strips)	289191-B24

Configuration Information and Configuration Rules

Enterprise Virtual Array Expansion Cabinet Example Configurations

Expansion Cabinet Components	0C6D	0C12D	Description
289191-B23	1	1	EVA 42U Graphite Utility Cabinet, 60Hz
289191-B24	1	1	EVA 42U Graphite Utility Cabinet, 50Hz
336881-B21	1	2	Can bus to Can bus cable
AD542A	6	12	M5314A FC Drive Enclosure
345580-B21	6	12	Cable Kit, Expansion Cab Drive Shelf

FC Loop Switch Kit	The EVA8000 2C2D customers have the option to convert to a 2C6D - or 2C12 with the installation, by trained Service Engineers, of the FC Loop Switch Option. This option is mandatory when upgrading the 2C2D to 5 shelves or higher.	
	EVA8000 FC Loop Switch Option	AD553A
	Contains four FC loop switches, mounting hardware and cables.	
	NOTE: This kit is mandatory when upgrading the 2C2D to 5 shelves or higher. 3U spare space is required to install the FC Loop Switch Kit.	

2 Gb/s SFP (Small Form- Factor Profile) Transceiver	2 Gb/s SFP Fibre Channel Transceiver Kit	221470-B21
	NOTE: Used on switches with SFP Ports.	

Fibre Channel Cables, 1 Gb/s (used between 1 Gb/s (LFF connectors) switches and HBAs)	FC Short Wave 2-Meter Cable	234457-B21
	FC Short Wave 5-Meter Cable	234457-B22
	FC Short Wave 15-Meter Cable	234457-B23
	FC Short Wave 30-Meter Cable	234457-B24

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

Model	8000 Enterprise Virtual Array (EVA8000)
Controller Model	HSV210
Controller Cache	4GB 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	Four 2 Gb/s FC enabled (running at 1 Gb/s with 1 Gb/s switches and HBAs)
Drive Interface	Four 2 Gb/s FC-AL ports per controller in redundant pairs
RAID Levels	Vraid0, Vraid1, Vraid5
Maximum Disks Supported	240 per Controller Pair (168 in one cabinet, expandable to 240 with an optional expansion cabinet.)
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 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.
Sustained I/O and MB Throughput	Greater than 200,000 IOPs and over 1500 MB/s throughput per controller pair with four FC loops switches
Redundant Blowers	Yes
Environmental Monitoring Unit	Yes. Monitors Power and Temperature
Regulatory approvals	UL, CSA, TUV, FCC, CE MARK, CTICK, BSMI, VCCI
Management Software	HP StorageWorks Command View EVA v4.1 (provided in the HP StorageWorks Command View EVA Software media kit) is used with an existing Storage Management Appliance, software v2.1, or with a server in the SAN running Microsoft Windows.
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

QuickSpecs

HP StorageWorks 8000 Enterprise Virtual Array

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
	BTU rating	11,604 BTU per hour
	Nominal airflow	660 cubic ft/minute
	Wattage	3600 Watts maximum
	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

NOTE: This data represents fully populated drive shelves with 10K rpm disk drives. Other drive types may vary slightly.		208 Volts					230 Volts				
		2C2D	2C6D	2C8D	2C10D	2C12D	2C2D	2C6D	2C8D	2C10D	2C12D
Typical*	Total System Wattage	1023	2530	3284	4037	4920	1023	2530	3284	4037	4920
	Total System BTU/hour	3492	8633	11204	13775	16789	3492	8633	11204	13775	16789
	Input Current (A) - Typical per system	5.1	12.6	16.4	20.1	24.5	4.6	11.4	14.8	18.2	21.6
	In Rush Current (A)	132	280	363	451	528	147	311	403	500	586
Failover Mode	Input Current (A) - Maximum per system	3.3	8.3	10.8	13.1	15.5	3.1	7.5	9.5	12.1	14.0

This data represents fully populated drive shelves with 10K rpm disk drives. Other drive types may vary slightly.
(*) 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
EVA8000 2C2D (42U Graphite cab)	78.75 (200.03)	23.7 (60.3)	40.2 (102.2)	537 (244.1)	30 (76.2)	30 (76.2)
EVA8000 2C6D (42U Graphite cab)	78.75 (200.03)	23.7 (60.3)	40.2 (102.2)	854 (308.2)	30 (76.2)	30 (76.2)
EVA8000 2C12D (42U Graphite cab)	78.75 (200.03)	23.7 (60.3)	40.2 (102.2)	1290 (586.4)	30 (76.2)	30 (76.2)
EVA8000 Utility Cab (42U Graphite cab)	78.75 (200.03)	23.7 (60.3)	40.2 (102.2)	300 (136)	30 (76.2)	30 (76.2)
M5314A Drive Enclosure	5.25 (13.34)	19.0 (42.26)	20 (50.8)	71 (32.21)	N.A.	N.A.

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Technical Specifications

Shipping Dimensions (with packaging)	Height in/cm	Width in/cm	Depth in/cm	Max Loaded Weight (with packaging) lb/kg
EVA8000 2C2D (42U Graphite cab)	84.63 (214.96)	35.5 (90.17)	46.5 (118.11)	650 (295)
EVA8000 2C6D (42U Graphite cab)	84.63 (214.96)	35.5 (90.17)	46.5 (118.11)	967 (440)
EVA8000 2C12D (42U Graphite cab)	84.63 (214.96)	35.5 (90.17)	46.5 (118.11)	1403 (638)
EVA Utility Cab (42U Graphite cab)	84.63 (214.96)	35.5 (90.17)	46.5 (118.11)	335 (152)
M5314A Drive Enclosure Kits	34.25 (87)	12.25 (31.12)	34.25 (87)	96 (43.54)
FC Loop Switch Kit (for 2C6D or 2C12D)	32.0 (81.28)	25.0 (63.5)	22.1 (56.1)	76 (34.5)