

Overview

The HP StorageWorks Enterprise Virtual Array 3000 (EVA3000) is the mid-range member of the HP StorageWorks Enterprise Virtual Array. The EVA3000 is a high performance, high availability "virtual" RAID storage solution serving the middle tier of the enterprise class marketplace that removes the time, space and cost boundaries of traditionally architected storage. The EVA3000 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.

The EVA3000 provides a service portfolio combining hardware and service into a single part number to rapidly deploy the EVA and maintain a solid storage platform. HP offers a full spectrum of complimentary EVA hardware and software product service solutions ranging from the three year Foundation Service Solution, the base level of service included in most EVA offerings, to Critical Service, HP's support for mission critical environments.

What's New

- EVA3000/5000 Series v4.0 Controller Media (VCS v4.0) provides support for:
- Industry popular multipathing
- Business Copy enhancements - 3-phase snapclone, instant restore and RSM Topology Manager
- Availability enhancements

Models

Enterprise Virtual Array 3000 Independent Bundles	Factory Integration is required for bundled models. The EVA3000 offers a choice of cabinets which must be ordered separately (Use the 325584-888 factory integration part number with your order). The EVA3000 Models are modular, scalable, no-single-point-of-failure storage solutions, which provide disaster tolerance and business continuance support for storage consolidation on heterogeneous SANs.	
2C1D EVA3000 Models	EVA3000 2C1D-C with Foundation Service Solution NOTE: Includes one 3U Controller assembly with two HSV100 controllers w/redundant power supplies, one M5314A 3U Dual-redundant FC loop 14-bay disk enclosure & appropriate mounting rails	AD543A*
	EVA3000-D Starter Kit with 3 year 9x5 next day business day warranty NOTE: Includes one 3U Controller assembly with two HSV100 controllers w/redundant power supplies, one M5314A 3U Dual-redundant FC loop 14-bay disk enclosure & appropriate mounting rails, 8x 146 GB 10K rpm HDDs, 4x1 TB Command View licenses, factory integrated. NOTE: This offering is supported only for factory integration. It is available worldwide.	AF919A*

Enterprise Virtual Array 3000 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 EVA3000 components to existing EVA3000 storage configurations or into on-site customer-supplied racks.

Product Highlights

Unique Customer Benefits/Value

- Outstanding self-tuning performance ensures consistency in meeting application service level agreements, allowing your users/clients to accomplish more in less time, scale capacity on-demand and minimize data administration overhead.
- State-of-the-art controller software with virtualization technology helps improve performance, increases disk utilization efficiency, and allows for easy dynamic storage expansion, all of which helps lower costs.
- Virtually Capacity- Free Snapshot (Vsnap) function can save storage administrators significant disk space and improve disk utilization efficiency.
- Virtually Instantaneous Snapclone copy capability allows immediate use of the clone copy and can save customers significant savings of time.
- Enhanced versatility and cost effectiveness provided by the ability to perform Snapclones between high performance disks and the FATA disks.
- EVA allows for increased flexibility and improved capacity utilization by supporting changing the Vraid type with Cross Vraid Snapshot and Snapclone, within the same disk group and Cross Vraid Snapclone across disk groups. Cross Vraid Snapclone also supports changing the Vraid type when Snapcloning from a high performance disk group to a FATA disk group.
- Single part number, integrated modules make ordering easy and assures that the storage solution meets customer requirements upon arrival
- Easy to use management tools which allow management of larger SAN configurations with more servers and more storage solutions, reduces management time up to 15x and substantially lowers costs
- EVA Foundation Services solution quickly deploys a highly available Enterprise Virtual Array storage platform into production and delivers ongoing hardware and VCS support.
- Through the EVA's no charge Instant Support Enterprise Edition (ISEE) remote monitoring capabilities, the EVA has the ability to provide self-monitoring and diagnosis and it will transmit status information to an HP service center for proactive problem resolution.

Enhance EVAs inherent features with these HP products and services for added value:

- The HP StorageWorks Business Copy EVA
 - Comes complete with an improved User Interface and
 - Supports Virtually Capacity Free Snapshot (Vsnap) function which can save customers significant disk space and improve disk utilization efficiency
 - Includes Virtually Instantaneous Snapclone copy capability allowing immediate use of the clone copy providing customers significant time savings
- Leading edge HP Continuous Access EVA perform point-in-time local replication with highly available Fibre Channel (FC) multi-path support, dual FC fabric nearline data protector and campus, metro or continental SAN extensions.
- Business application specific solutions, in line with HP Information Lifecycle Management strategy, that support your business goals and help with the challenge of data management:
 - Rapid Backup for mySAP Business Suite on EVA
 - Disaster Tolerance Solution for mySAP Business Suite on EVA
- HP Critical Service (CS) for EVA is a comprehensive support solution designed for businesses running mission critical applications which cannot tolerate downtime without significant business impact. HP Critical Service provides the right combination of proactive and reactive services designed to maximize availability and performance. This includes a 6-hour call to repair commitment. Availability is limited. Certain qualifications are required for eligibility.

Product Highlights

Fibre Channel Technology

The EVA3000 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; 300 meters @ 2 Gb using short wave multi-mode cable and up to 10 kilometers (6.21 miles) @ 1 Gb when using long wave cable. The EVA3000 with VCS is 2 Gb enabled on each FC path, but will also support 1 Gb FC paths for backwards compatibility. Storage Area Networks (SANs) can be constructed using FC switches for fabric connectivity (currently up to a maximum of 20 FC switches supported).

Enterprise Virtual Array Product Packaging

The EVA3000 packaging consists of a 3U FC dual 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 EVA3000 is designed to address moderate capacity needs ranging (from 1 - 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 & Configuration Rules, for details). The Controller Pair Assembly and Accessory Kit are available to accommodate adding EVA3000 subsystems to existing EVA3000 configurations and to support qualifying customer-supplied racks.

Multi-Vendor Platform

Support for industry-leading Operating System platforms including: HP-UX, HP Tru64 UNIX, HP OpenVMS, Windows 2000 (Advanced Server), Windows Server 2003 (Enterprise Edition), Sun Solaris, Linux, Novell NetWare, VMware and IBM AIX.

No-Single-Point-of-Failure

The EVA3000 redundant architecture and value added software eliminate single-points-of-failure from server to storage in clustered or single server configurations with multi-pathing.

Disaster Tolerant Replication

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.

Lite - Arrays - EVA3000 (Software option)

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 (and Business Copy Upgrade) is a local replication application for the EVA3000. 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.
- HP StorageWorks Rapid Backup for mySAP Business Suite on EVA enhances backup procedures of SAP applications on the HP StorageWorks Enterprise Virtual Arrays. This solution minimizes the impact on operations during backup to minutes - no matter which database size is in use. More information can be found at:
<http://h18006.www1.hp.com/products/storageworks/solutions/rbmysapeva/index.html>

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>

EVA with HP Systems Insight Manager

EVA with HP Systems Insight Manager



Product Highlights

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 Tootools, and HP Servicecontrol. HP SIM runs on HP Windows, Linux, and HP-UX and provides discovery and identification, fault management, security administration, asset reporting, and centralized configuration management across heterogeneous servers, storage and infrastructure. HP SIM is easily extensible, integrating other HP management products and value-add plug-ins such as the ProLiant Essentials, Integrity Essentials, and Server Essentials.

HP SIM relies on industry standards like SMI-S, SNMP, SSH, WBEM, and WMI to detect and report heterogeneous device attributes. HP SIM may also be configured to launch array specific applications for configuration, reporting and replication. For more information on HP Systems Insight Manager see:

<http://www.docs.hp.com/en/netsys.html>

Clustered Server and High Availability System Support

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

Multi-Server Shared Support for Storage Consolidation

Heterogeneous and homogeneous host support provides the ability to share storage between multiple servers. The EVA3000 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) is supported with VCS for all supported Operating Systems. 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 repaired or replaced.

Enclosure Capacity

The cabinets afford customers additional internal space for racking servers, switches or additional storage subsystems and HP OpenView Storage Management Appliance (Storage Management Appliance). Many configuration options are available and all may be factory integrated.

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

Product Highlights

EVA3000 Capabilities

- Up to 14 devices per disk enclosure
- Support for dual-ported 2 Gb FC disk drives and dual-ported Fibre Attached Technology Adapted (FATA) drives
- 2 Gb host support
- Management of up to 512 virtual disks (256 per HBA) ranging in size from 1 GB to 2 TB per virtual disk
- Dynamic capacity expansion (allocate capacity 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 EVA 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
- 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)
- Non-disruptive VCS software upgrade capability (online 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)

Solution Capacity

Model	Number of Drive Bays	Maximum Capacities (GB)				
		Raw Capacity*				
		36 GB	72 GB	146 GB	300 GB	250 GB FATA
EVA3000 2C1D-C & D Models	14	0.5 TB	1.0 TB	2.0 TB	4.0 TB	3.5 TB
All EVA3000 2C2D-C Models	28	1.0 TB	2.0 TB	4.0 TB	8.4 TB	7 TB
All EVA3000 2C2D-C Models w/(2) optional drive enclosures	56	2.0 TB	4.1 TB	8.2 TB	16.8 TB	14 TB
*NOTE: Usable disk capacity varies based upon the redundancy utilized by the customer and Vraid use.						

10K rpm Drive Support The EVA3000 supports 36 GB, 72 GB, 146 GB, and 300 GB 10K rpm dual-ported 2 Gb FC disk drives at full-rated transfer rates. An HSV100 controller pair will support up to 56 disk drives of single or mixed drive capacities and types (high performance and FATA). VCS v3.020 controller software is the minimum required software to support the 300GB disks. 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 EVA3000 supports 36 GB, 72 GB, and 146 GB 15K rpm dual-ported 2 Gb 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 with in the group. VCS V3.020 controller software is the minimum required software to support the 146 GB 15K rpm disk.

Product Highlights

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- FATA Drive Support** The EVA3000 supports 250 GB dual ported 2 Gb Fibre Attached Technology Adapted (FATA) disk. An EVA3000 controller pair will support up to 56 total disk drives. The EVA3000 can be configured with any combination of FATA and high performance disk drives; total raw capacity will vary based upon the redundancy (Vraid) selected. VCS v3.020 controller software is the minimum required software to support the 250 GB FATA disks. Minimum of eight FATA drives are required when using FATA disks in a configuration.
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- Fibre Channel Switch Support** Support for up to twenty FC switches operating at 1 Gb and FC switches operating at 2 Gb 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 EVA3000 supports 2 Gb FC enabled.
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- Transfer Speeds** The EVA3000 has two FC ports per HSV100 controller. Each controller-to-host interface is 2 Gb enabled. With dual 2 Gb host interfaces per controller, the controllers are capable of 8 Gb aggregate data transfer rates. The controllers are also compatible with 1 Gb and 2 Gb FC switches, HBAs, servers and other storage solutions. Each HSV100 controller pair interfaces with up to 56 disk drives over two 2 Gb FC-AL loops for an aggregate data transfer rate of 8 Gb.
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- Easy Installation** The EVA3000 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 management server running Microsoft® Windows® or an existing HP OpenView Storage Management Appliance and Command View and they are ready for use. See the Command View EVA specifications at <http://h18006.www1.hp.com/products/storage/software/cmdvieweva/index.html> for support information.
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- Fault Tolerance** Redundant drive enclosure power supplies, blowers, controllers, cache battery backup, distributed hot spare disks and a multi-level Vraid architecture (Vraid0 - no redundancy, Vraid1 - high redundancy and Vraid5 - medium redundancy levels) ensure fault tolerance against system outages and data loss.
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- Fault Recovery -- HP Continuous Access EVA for Disaster Tolerance Applications** HP StorageWorks Continuous Access EVA remote copy functionality is available with this release of VCS. For additional information about Continuous Access visit: <http://h18006.www1.hp.com/storage/software.html>
- 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).
- 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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Product Highlights

High Availability

All EVA3000 models provide redundant cooling, power redundancy and environmental monitoring. Drives and most solution components are hot swappable. Each solution is configured with dual controllers that operate in dual redundant mode. Each controller has a pair of FC host ports. In the event of a path failure, the alternate path to the controller can be utilized with the use of multi-path software in the Operating System or in Secure Path software. The M5314A FC drive enclosure also supports dual redundant FC loops that provide load balancing and redundant paths should either FC loop become unavailable. The M5314A also has a mini FC hub on each FC loop; so that the FC loop can be rerouted should the next enclosure (disk or controller) in the loop become unavailable.

Hot Pluggable Support

The M5314A FC Drive Enclosure supports hot plug (power on) removal or insertion of FC high performance disk drives and FATA disk drives.

Integration

All EVA3000 models are 2 Gb FC Switched Fabric "enabled" and can operate on 2 Gb or 1 Gb FC Switched Fabric SANs. They can co-exist in the same FC SAN with EVA4000, EVA5000, EVA6000, EVA8000, MA6000/MA8000/EMA12000/EMA16000 FC and RA8000/ESA12000 FC storage solutions.

Manageability

A management server is required on the SAN running Microsoft® Windows® or an existing HP OpenView Storage Management Appliance I, II, or III is required to manage EVA models. HP StorageWorks Command View EVA provides the capability to manage the EVA3000 and is installed on the management server or Storage Management Appliance. This powerful tool provides an easy mechanism to manage up to 16 EVA units in a SAN configuration. HP Command View EVA is purchased separately from the VCS 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, 2.5 GB of cache per controller pair ensures high performance. Mirrored write caching capability maintains optimal availability while assuring data integrity in the event of a failure.

Scalability

An EVA3000 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 HDDs, and 16.8 TB using 300 GB high performance HDDs). 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 Appliances, 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
Bull Escala Servers

Product Highlights

EVA3000 Required Software

EVA3000/5000 Series v4.0 Controller Media Kit
The HSV100 controller (for the EVA3000) utilizes VCS v4.0 firmware, and Continuous Access EVA and Business Copy EVA as optional value added software. For host connections, select the Operating System kit from the web site appropriate for your operating system and VCS version you are using.

NOTE: As a convenience for customers the EVA3000 ships with VCS v3.028 pre-installed. EVA3000/5000 Series v4.0 Controller Media Kit contains both v4.0 and v3.028 firmware allowing the customer to choose the VCS version supporting their multipathing configuration.

NOTE: HP Command View EVA v4.1 is required to operate with the components of the EVA3000/5000 Series v4.0 Controller Media (VCS v4.0) kit. This kit is sold separately from the VCS kit. For more information on this product please see:

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

NOTE: Choosing industry popular multipathing support with VCS v4.0 may require operating system and or HBA changes. Customers desiring to run VCS at v4.0 should indicate this when they contact HP Customer Services for installation assistance.

EVA User Interface

Command View EVA v4.1 is REQUIRED to operate the EVA3000 with VCS v4.0 and must be separately purchased from the VCS kit.

For more information on this product please see:

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

NOTE: The EVA3000 will not operate without Command View EVA.

Supported Software

HP StorageWorks Business Copy EVA (BC); HP StorageWorks Fast Recovery Solutions (FRS); HP OpenView Storage Area Manager suite; HP OpenView Storage Volume Growth; HP OpenView Storage Virtual Replicator; and HP StorageWorks Secure Path for HP-UX. Visit the HP storage software website - http://www.hp.com/storage/software_index.html - for additional information.

EVA and Value-added Software Compatibility

Model	VCS Firmware	Command View EVA	Continuous Access	Business Copy
EVA3000 & EVA 5000	VCS v3.0d (VCS V3.025) for HSV110 (includes V3.014 and V3.020)	Command View EVA v4.0	Continuous Access EVA5000 v1.1, V1.0 License	Business Copy EVA5000 v2.2, V3.0 license
EVA3000 & EVA5000	VCS v3.0e (VCS v3.028) VCS for EVA3000/5000	Command View EVA v4.1*	Continuous Access EVA3000 v1.1, v1.0, License	Business Copy EVA3000 v3.0 license
EVA3000 & EVA5000	VCS v4.0 for EVA3000/5000	Command View EVA 4.1	Continuous Access EVA3000 v2.1License	Business Copy EVA3000 v3.1 license

***NOTE:** Command View EVA V4.0 are compatible with VCS V3.028 at the versions original functionality levels. For full support of VCS V3.028 Command View EVA v4.1 is required.

Operating Systems, Cluster and High Availability Compatibility with VCS v4.0

Operating System	Versions Supported	Cluster Server or High Availability Software	HA Versions Supported	Failover Software
Microsoft Windows	Windows 2000 Server SP4, Update Roll Up 1 for SP4 Windows 2000 Advanced Server SP4, Update Roll Up 1 for	Microsoft Cluster Server (MSCS) is provided for ProLiant servers and other x86 platforms	(Clustering Supported Operating Systems) Windows 2000 Advanced Server SP4, Update Roll Up 1 for SP4	MPIO DSM Full Feature v1.0 for Windows (Available on HP web)

Product Highlights

	<p>SP4</p> <p>Windows 2003 Standard Edition (32/x64 & IA64) (and SP1)</p> <p>Windows 2003 Enterprise Edition (32/x64 & IA64) (and SP1)</p> <p>Windows 2003 DataCenter Edition (IA64) SP1 Available Q106</p>		<p>Windows 2003 Enterprise Edition (32/x64 & IA64) (and SP1)</p> <p>Windows 2003 DataCenter Edition (IA64) Available Q106</p>	
HP-UX	v11i v1 (PA-RISC) v11i v2 (PA-RISC & Integrity)	HP ServiceGuard VERITAS Foundation Suite/HA	11.15 11.16 11.17 3.5 (v11i v1)	PV-Links, Native in OS Secure Path V3.0F SP1 for HP-UX VERITAS DMP 3.5 DMP(v11i v1)
Linux	Red Hat EL Advanced Server 2.1(x86 32-bit, Integrity) - U7 or later Red Hat EL Advanced Server 3.0 (x86 32- & 64-bit, Integrity)- U5 or later Red Hat EL Advanced Server 4.0 (x86 32- & 64-bit, Integrity) U2 or later United Linux 1.0 (x86 32-bit, Integrity) - UL1.0/SLES8 SP4 SUSE/SLES9 (x86 32-& 64-bit, Integrity) SP2	HP ServiceGuard for Linux*	A.11.15 supports SLES8 SP4 A11.16 supports RHEL 4 U1, RHEL3 U5 and SLES 9 SP1 A.11.14 supports RHEL2.1 U5	Qlogic Failover driver 7.05. 00p8 or later for Redhat EL AS 2.1 & 3.0 and United Linux 1.0 Qlogic Failover driver 8.00.02p11 or later for Redhat EL AS 4.0 and SUSE/SLES9
HP Tru64 UNIX	v5.1B-2 v5.1B-3	HP TruClusters	5.1b	Native in OS
HP OpenVMS	7.3-2 (Alpha) 8.2 (Alpha and Integrity IA64) 8.2-1 (Integrity IA64)	OpenVMS Clusters	7.3-2 (Alpha) 8.2 (Alpha and Integrity IA64) 8.2-1 (Integrity IA64)	Native in OS
Sun Solaris	8 9 10	SunCluster VERITAS Foundation Suite/HA	3.1 4.0	MPxIO for Solaris, Native in OS VERITAS DMP 3.5, 4.0
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 2.5.2 (GSX & WSX Application support)			MPIO for VMware, Native in OS

*NOTE: Service Guard certification matrix available at:

<ftp://ftp.compaq.com/pub/solutions/enterprise/ha/linux/svcguard-certmatrix.pdf>



Product Highlights

Cabinet Density

A single 42U EVA cabinet can house up to 46.2 TB of raw capacity (using 300 GB disks) by adding additional EVA3000 subsystems. A single 41U Rack System/E cabinet can house up to 42.0 TB of raw capacity (using 300 GB disks) by adding additional EVA3000 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 are **not to exceed** power draw of 127V AC at 24Amps (per PDU pair); there are 2 PDU pairs per cabinet.

This allows for the addition of additional EVAs or other equipment to the 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 EVA3000 components (choose 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.

Service and Support, HP Care Pack, and Warranty Information

EVA3000 Product Warranty

The Foundation Service Solution is included with some of the EVA3000 bundle models and the EVA3000 Controller Pair Assembly (unless otherwise noted). This factory warranty includes 3-year hardware support, with 4-hour response on a 24x7 basis as well as 3-year, 24x7 VCS phone-in support and updates. In addition, the EVA Foundation Service Solution includes Array Installation and Startup Service.

Maintenance releases, bug fixes and patches for VCS will be available to warranty/support customers on the HP web site at:

<http://h18006.www1.hp.com/products/sanworks/softwaredrivers/vcs/index.html>

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 additional information on foundation services, EVA product warranty and add-on options warranties, please refer to the URL listed below: http://www.hp.com/hps/index_support.html

If you have specific questions about service and support contact your local HP representative.

Contact information for your local area can be found at:

http://welcome.hp.com/country/us/eng/contact_us.html

EVA3000-D Starter Kit Product Warranty

The EVA3000-D Starter Kit includes 3-year 9x5 basis hardware support, with next business day response. Standard 90 day software media defect warranty for the Hp Storage Works Command View software.

NOTE: This offering is supported only for factory integration. It is available worldwide.

EVA Support Options offered at no charge

EVA Remote Support Tools

As a no charge option*, HP will install remote service tools for any EVA under warranty or service support. These tools will enable self-monitoring and diagnosis. The EVA will transmit status information to an HP service center or to the customer for proactive problem resolution

*Contact your local Services department for more details.

EVA Support Options offered a la carte

HP Proactive Essentials (PE)

Support designed to enhance the EVA Foundation Solution with essential aspects of proactive support for the array including:

- Assigned Account Manager
- Semi-annual support planning meetings
- Ongoing account and change management
- Storage/SAN firmware recommendations

Proactive Essentials support for the SAN is recommended for any SAN switch connected to an EVA3000/5000

HP Proactive 24 Service (P24)

- This level of support will enhance the EVA Foundation Solution with proactive support designed to help customers avoid potential problems. P24 for the array includes: Assigned Account Manager
- Documented Account Support Plan
- Quarterly activity reporting
- Semi-annual support planning meetings
- Ongoing Account and Change Management
- Storage/SAN firmware recommendations

Proactive 24 support for the SAN is recommended for any SAN switch connected to an EVA3000/5000

HP Critical Services (CS)

Critical Service is designed for Business Critical environments. Critical Service enhances the EVA Foundation Solution with the following elements to maximize uptime.

- Business Collaboration & Technical Advice

Service and Support, HP Care Pack, and Warranty Information

- Account Support Plan
- Annual Availability Checkup
- Quarterly Support Activity Review
- Quarterly Support Planning and Review Sessions
- Quarterly OS/OE Patch Analysis and Management
- Quarterly Storage/SAN Firmware and Software Analysis and Management
- Technical Services
- Annual Storage High Availability Assessment
- Site Environmental Survey
- Electronic Information Support
- Software Updates
- Education Planning Assistance

Assigned Customer Support Team

- Account Support Consultant
- Remote Support Account Advocate
- Hardware Support Specialist

Rapid Reactive Support

- Critical Response
- Dedicated Phone Number
- Immediate Response / Intervention by HP-certified hardware and software specialists
- Dispatch of HA-trained hardware specialists for critical hardware problems
- Six-hour hardware Call-to-Repair Commitment
- Accelerated Escalation Management
- Enhanced Parts Inventory Management
- Flexible Call Submittal

HP Mission Critical Partnership

HP Mission Critical Partnership (MCP) is the highest level of Mission Critical Support available from HP. It is designed to enable an IT department to meet its most demanding commitments and to support your key mission-critical applications or critical IT services where specific service-level agreements (SLAs) have been made to end users or clients. HP Mission Critical Partnership is ideal where any disruption to the IT infrastructure would have an impact on the financial position or market credibility of your company or IT department.

Other services to be considered with EVA solutions

Availability Assessment Services for SAN

The HP Availability Assessment Service for SAN is designed to help a customer understand and enhance the high availability characteristics of a new storage area network (SAN). The customer's SAN infrastructure will be reviewed at a high level and a report produced identifying key issues affecting the availability of the SAN to end-users. Areas of risk will be identified and recommendations made to start addressing those risks. The availability that can be expected from the proposed HP SAN hardware and software will be modeled, along with a single what-if variation based on recommendations resulting from the risk analysis.

Availability Management Services for SAN

The Availability Management Service for SAN applies an established proactive and best practice approach to assist customers in the ongoing maintenance of availability levels in their SAN infrastructure. This service complements the standard remedial and added value software and hardware services by providing a focus on the key areas of IT Management best practices to sustain and align the availability of the customer's business critical systems requirements. Contact your local Services department for more details.

Service and Support, HP Care Pack, and Warranty Information

HP SAN Solution Service	The HP SAN Solution Service provides for the implementation of Fibre switches in a storage area network (SAN) environment. The three levels of this service are based on the size and complexity of your SAN environment.
HP Data Migration Service	For Open Systems, Mainframe and Mixed environments you can safely transport your information from your retired storage hardware to a new EVA. Move your mission critical data without the concern of interrupting your day-to-day operations. Help eliminate unexpected surprises and complexities with the total solution, the HP Data Migration Service. Speed up the process and increase the efficiency of migrating your information across a data center or around the globe, using LAN, WAN, or SAN connectivity, with the assistance of our highly trained storage experts
HP Data Replication Solution Service - Continuous Access EVA Implementation	HP Data Replication Solution Services provides implementation and verification of the Continuous Access (CA) feature of the EVA storage array. The service is offered at three service levels, ranging from basic installation to more comprehensive implementation that can be tailored to meet the specific needs of your storage environment.
HP Storage Optimization Service	Our storage specialists and technical site assessors will collaborate with your designated IT storage administration staff to gain a thorough understanding of your business needs and heterogeneous storage environment. Focusing specifically on areas of exposure in your EVA storage/SAN environment, we will document in detail the architecture of the storage/ SAN configuration, including hosts; SAN interconnect devices, and any application-critical storage devices. Using industry-leading best practices as the framework, our storage specialists will identify potential weaknesses that may adversely affect the SAN/storage environment. We will deliver a comprehensive report that details your existing storage architecture and provides recommendations for improving efficiency and performance and evolving your storage environment to support your business needs.
HP Oracle9i RAC Express Service (US and Canada only)	<p>HP Oracle9i RAC express service should be purchased en lieu of SAN Solution Service. As part of the HP Oracle9i RAC solution service, the install and configuration normally provided by the SAN Solution Service is performed by HP's solution architects and consultants in addition to the following tasks:</p> <ul style="list-style-type: none">● Evaluate the business objectives for the Oracle9i RAC solution and make recommendations for additional platform clustering software as applicable given your availability requirements● Tailor the service to your exact needs● Evaluate the application environment for compatibility and best performance with the Oracle9i RAC solution● Evaluation and examination of the application and data model for scalability and performance● Architect and design the Oracle9i RAC database cluster● Install, configure and customize Oracle9i RAC software per the design● Optionally provide integration with enterprise management solutions such as HP OpenView using the Oracle SPI● Optionally provide integration with enterprise backup solutions for HP (Data Protector), Legato (Networker) and VERITAS (Netbackup)● Optionally provide integration with HP's market leading partitioning and resource and workload management tools (PRM and WLM)● Optionally provide performance tuning or capacity planning, including tuning of the database parameters, transactions, operating system and storage devices

Service and Support, HP Care Pack, and Warranty Information

- Test the implemented environment against predefined failure scenarios
- Provide engagement management for coordination of HP consultants
- Provide mentoring and documentation for the new high availability environment

Availability Assessment Services for SAN The HP Availability Assessment Service for SAN is designed to help a customer understand and enhance the high availability characteristics of a new storage area network (SAN). The customer's SAN infrastructure will be reviewed at a high level and a report produced identifying key issues affecting the availability of the SAN to end-users. Areas of risk will be identified and recommendations made to start addressing those risks. The availability that can be expected from the proposed HP SAN hardware and software will be modeled, along with a single what-if variation based on recommendations resulting from the risk analysis.

HP EVA Training

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.

HP has over 25 years experience in delivering effective product education through delivery methods designed to meet your company's needs.

- Printed job aids
- Self-paced online training
- The HP Virtual Classroom, allowing many kinds of training, presentation and ad hoc collaboration to take place online across long distances, providing individualized attention without the cost and time away from the workplace associated with classroom training
- Traditional classroom training at HP sites, or at the locations of HP partners
- Classroom training delivered at customer locations
- Customized education, based on HP's standard courses but with customer-specified timelines, topics and or levels of detail

For more information about our courses see:
http://www.education.hp.com/storage_array.htm

Family Information

Model	EVA3000 2C1D	EVA3000 2C2D	EVA3000 2C4D
Drive Interface	Dual ported 2 Gb FC-AL	Dual ported 2 Gb FC-AL	Dual ported 2 Gb FC-AL
Controller Software	VCS v4.0	VCS v4.0	VCS v4.0
Cache per controller	1.25 GB	1.25 GB	1.25 GB
RAID Support	Vraid0, Vraid1 and Vraid5	Vraid0, Vraid1 and Vraid5	Vraid0, Vraid1 and Vraid5
Channels	Four 2 Gb FC-AL	Four 2 Gb FC-AL	Four 2 Gb FC-AL
Maximum Drives per cabinet	14	28	56
Maximum drives with optional CTO M5314A drive enclosures	56	56	Not Applicable
Maximum Capacity per cabinet	4.2 TB	8.4TB	16.8TB
Maximum capacity with optional CTO M5314A drive enclosures	16.8 TB	16.8TB	16.8TB
Redundant Controllers	Yes	Yes	Yes
Drive Capacities	36 GB 10K rpm 72 GB 10K rpm 146 GB 10K rpm 300 GB 10K rpm 36 GB 15K rpm 72 GB 15K rpm 146 GB 15K rpm 250 GB FATA	36 GB 10K rpm 72 GB 10K rpm 146 GB 10K rpm 300 GB 10K rpm 36 GB 15K rpm 72 GB 15K rpm 146 GB 15K rpm 250 GB FATA	36 GB 10K rpm 72 GB 10K rpm 146 GB 10K rpm 300 GB 10K rpm 36 GB 15K 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 EVA3000. 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		325584-888
United States, Latin America		
Primary Configuration Rules	Use of the Factory Integration part number is required for component integration. EVA3000 bundles MUST be ordered with a rack. 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 EVA3000 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 EVA3000 controller pair assembly is available for field installation. The EVA3000 controller pair assembly (in conjunction with a controller accessory kit) should be ordered for field installation. HP Global Services will perform the on-site installation when an EVA3000 controller pair assembly is ordered. 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	
EVA version of the Series 10,000 rack system	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, quartz)	A4902A
	HP Rack System/E41 (41U, graphite)	A4902D
	HP Rack System/E33 (33U, quartz)	A4901A
	HP Rack System/E33 (33U, graphite)	A4901D
	HP Rack System/E25 (25U, quartz)	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 .	
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 EVA3000 components to existing EVA3000 storage configurations or into on-site customer-supplied racks.	

Configuration Information and Configuration Rules

Non-HP rack and power requirements For detailed information on determining compatibility of a non-HP rack, please visit <http://h18006.www1.hp.com/products/storageworks/eva3000/specifications.html>. Also refer to Step 4 for ordering instructions and components that accommodate on-site installation of EVA3000 subsystems into customer-supplied racks.

Step 2 – Modular Solutions - Base and Factory-Integration Information

EVA3000 Models

The following models are available worldwide - each includes HW, varied storage capacity, and Installation & Startup service, 3 years of Virtual Controller Software (VCS) phone-in support and updates, automated event notification and remote problem intervention, and 4-hour onsite response reactive hardware support (except as noted on the EVA3000-D Starter Kit).

NOTE: These offerings require the cabinet be ordered separately.

2C1D EVA3000 Models

EVA3000 2C1D-C with Foundation Service Solution

AD543A*

NOTE: Includes one 3U Controller assembly with two HSV100 controllers w/redundant power supplies, one M5314 3U Dual-redundant FC loop 14-bay disk enclosure & appropriate mounting rails.

EVA3000-D Starter Kit

The following model is available worldwide - it includes hardware and software, the EVA has 3 years of 9x5 next business day support, automated event notification and remote problem intervention. Command View EVA carries the standard media defect software warranty.

Please see the Command View EVA Quick Spec for more detailed information.

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

NOTE: This offering requires the cabinet be ordered separately and is supported only for factory integration. It is available worldwide.

EVA3000-D Starter Kit with 3 year 9x5 next day business day warranty

AF919A*

NOTE: Includes one 3U Controller assembly with two HSV100 controllers w/redundant power supplies, one M5314 3U Dual-redundant FC loop 14-bay disk enclosure & appropriate mounting rails, 8x 146 GB 10K rpm HDDs, 4x1 TB Command View licenses, factory integrated.

Enterprise Virtual Array 3000 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 EVA3000 components to existing EVA3000 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

Configuration Information and Configuration Rules

		Not for use in EMEA	EMEA Only
HP StorageWorks FC Drives - Factory installation	300 GB 10K rpm dual-port 2 Gb FC-AL 1-inch (2.54 cm) drive	364622-B23*	364622-B22*
	146 GB 10K rpm dual-port 2 Gb FC-AL 1-inch (2.54 cm) drive	293556-B23*	293556-B22*
	72 GB 10K rpm dual-port 2 Gb FC-AL 1-inch (2.54 cm) drive	238921-B23*	238921-B22*
	146 GB 15K rpm dual-port 2 Gb FC-AL 1-inch (2.54 cm) drive	364621-B23*	364621-B22*
	72 GB 15K rpm dual-port 2 Gb FC-AL 1-inch (2.54 cm) drive	293568-B23*	293568-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 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		

FC cable - 1 Gb to 2 Gb (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 connector.		
	NOTE: The 2 Gb SFPs on the ports of the EVA3000 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 to 2 Gb (optional)(LC to LC)	NOTE: The 2 Gb SFPs on the ports of the EVA3000 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 VCS media kit is required per HSV100 controller pair. EVA3000/5000 Series v4.0 Controller Media Kit is needed to support the newest features, such as optional Continuous Access EVA and Business Copy EVA. Command View EVA 4.1 is required.		
	OPTIONAL SOFTWARE: EVA3000 optional software can be found at the following URL: http://h18006.www1.hp.com/storage/software.html		
	EVA3000/5000 Series v4.0 Controller Media Kit (VCS media kit is required)		T3588D

Configuration Information and Configuration Rules

Operating System Solution Kits for use with VCS v3.0e EVA3000 v3.02x platform kits are required to support VCS V3.028. They are downloadable at no cost. EVA3000 support is available for the following Operating Systems: HP-UX; HP OpenVMS; HP Tru64; Windows; Sun Solaris; Linux; IBM AIX ; Novell NetWare
Individual kits can be downloaded at: <http://www.hp.com/storage/evaplatformkit>

High Availability Software Industry popular multiple path software is supported on the EVA3000. 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 plinks 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
- Native MPIO for VMware

HP StorageWorks Secure Path Software is used to manage multiple paths between hosts and storage systems. Secure Path enables high availability through robust path management and optimizes performance with I/O load balancing. Secure Path support is available for HP-UX.

Refer to <http://h18004.www1.hp.com/products/sanworks/secure-path/index.html> for ordering information and ordering information.

Management Server

- One management server or application host in the SAN running Command View EVA is required per SAN fabric containing an Enterprise Virtual Array).
- A server running Microsoft Windows Server is required to run Command View EVA in the SAN fabric

See the Command View EVA QuickSpecs for detailed support and configuration information:

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

Configuration Information and Configuration Rules

Step 4 – Expansion Options

The EVA3000 controller pair assembly is for on-site installation into existing EVA3000 configurations (or qualified rack systems) by HP Global Services. The physical configuration service for the EVA3000 controller pair and up to four M5314A FC drive enclosures, as well as installation and startup services, is included when you purchase the controller pair assembly component. The EVA3000 Controller Pair Assembly and Controller Accessory Kit must be purchased together to enable EVA3000 subsystem installation.

Optional Controllers and Accessories	EVA3000 Controller pair assembly with Foundation Service Solution: One 3U Controller assembly with two HSV100 controllers w/redundant power supplies, on-site rack mounting, Installation & Startup service, 3 years of Virtual Controller Software (VCS) phone-in support and updates, automated event notification and remote problem intervention, and 4-hour onsite response reactive hardware support included with this component.	344818-B21
	EVA3000 Controller Accessory Kit : 2x 2m copper cables, 1x 0.6m copper cable, 3 can bus modules, and a universal rail kit for controller pair rack-mounting	345438-B21

NOTE: One per EVA3000 Controller Pair Assembly.

M5314A FC Drive Enclosures & Accessories

Select M5314A drive enclosures to expand EVA3000 configurations: Drive enclosures may be:

1. Ordered for on-site capacity additions to existing 2C1D and 2C2D EVA3000 configurations.
2. Ordered for field installation of complete EVA3000 configurations in conjunction with the EVA3000 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 2C2D configurations by ordering the enclosure with the factory integration part number in conjunction with one of the High Performance or NearOnline bundles.

Up to four drive enclosures are supported with each pair of HSV100 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 HSV100 Controller pair. The M5314A is compatible with the EVA3000/4000/5000/6000/8000s

NOTE: Minimum of four disk drives, any size/type, are required per disk enclosure per factory configured enclosures.

M5314A FC Drive Enclosure

AD542A

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

Configuration Information and Configuration Rules

Step 5 – Optional Components and Software

Optional Software for EVA3000

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 Virtual Controller Software (VCS) 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 EVA3000 array providing Snapshot and clone set-up and management. Business Copy EVA creates point-in-time copies of storage volumes, called Business Continuance Volumes (BCV's) 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

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 FC Hybrid disk drive upgrade	364437-B22
NOTE: These drives are for on-site install only. For Factory integration of drives see Step 3.		
Mounting Accessories	Universal Rail Kit for M5x14 drive enclosure	345439-B21
NOTE: Allows mounting of existing 5114 & 5214 enclosures into 10K, 11K or System/E racks.		

Configuration Information and Configuration Rules

Non-HP Rack installation	For racks other than those specifically stated within the EVA3000 product set, please visit the EVA3000 web page for details on rack and power specifications: http://h18006.www1.hp.com/products/storageworks/eva3000/specifications.html	
FC cable - Copper SFP	The following cables are used with the M5314A 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
Enterprise Cable Management Kits	EVA models employ some cable management hardware to help keep the FC cables neat and to help maintain the proper bend radius. Some of this same cable management hardware, plus some additional hardware, is being made available for use with the 41U Graphite metallic cabinet where SAN switches with many FC cables can benefit from the cable management hardware. The three kits, with some helpful hints for use, are listed below.	
FC Cable Routing Spools	12 cable routing spools are included in the kit. This kit should be used in conjunction with the two "rail" kits below. One kit should be sufficient for a cabinet full of switches.	293357-B21
Rail-to-Rail FC Cable Routing	Two rail-to-rail routing brackets and 12 Velcro ties are include in the kit. This kit should be used with the older 1 Gb SAN switches - 8, 16, 8-EL and 16-EL. One kit should be sufficient for up to 32 FC ports - four 8-ports switches or two 16-port switches. This kit should not be used with the newer switches, which are fairly deep as there is not sufficient cabinet depth to fit.	293358-B21
Side-Rail FC Cable Routing HW	Six side rail routing brackets with eight Velcro ties are included in the kit. This kit should be used on the newer SAN switches, the 2/x switches, the SAN Director 64, and the HP StorageWorks Core Switch 2/64. One kit should be sufficient for up to six (6) 2/16 SAN switches or one (1) 64-port Director or Core switch.	293359-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	HSV100	
Controller Cache	1.25 GB per controller standard	
Battery Backup for Cache	Yes, up to 96 hours	
Virtual Controller Software (VCS)	VCS v4.0 media kit for EVA3000 and EVA5000 (HSV100 and HSV110 Controllers)	
Host Interface	Fibre Channel Switched Fabric	
Host Ports per Controller	Dual 2 Gb FC enabled (running at 1 Gb with 1 Gb switches and HBAs)	
Drive Interface	Two 2 Gb 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	64, 32, 16, and 8-Port Optical	
O/S Support	HP-UX, HP Tru64 UNIX, HP OpenVMS, Windows 2000, Windows Storage Server 2003, Sun Solaris, Linux, IBM AIX, NetWare, VMware 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 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 is used with a storage server running Microsoft Windows (see Command View EVA specifications at) http://h18006.www1.hp.com/products/storage/software/cmdvieweva/index.html or a Storage Management Appliance software v2.1 in the SAN.	
Disk Drives, Interface	Dual-port 2 Gb 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/eva3000/specifications.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		
		2C4D	2C3D	2C2D	2C4D	2C3D	2C2D
Typical	Total System Wattage	1332	1042	766	1326	1034	774
	Total System BTU/hour	4549	3558	2616	4529	3532	2644
	Input Current (A) - Typical per line	3.5	2.7	2.0	3.2	2.5	1.9
	In Rush Current (A)	220	170	132	244	190	147
Failover Mode	Input Current (A) - Maximum per line	5.9	4.6	3.3	5.4	4.3	3.1
Typical is described as a system in normal steady state operation. (i.e. both PDU's 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 Hz	78.7/199.9	24/60.96	39.7/100.8	283/128	30/76.2	18/45.72
42U EVA cab 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 Hz	68.6/174.24	24/60.96	39.7/100.8	248.112	30/76.2	18/45.72
36U EVA cab 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 Hz	43/109.22	24/60.96	39.7/100.8	202/92	30/76.2	18/45.72
22U EVA cab 50 Hz	43/109.22	24/60.96	39.7/100.8	202/92	30/76.2	18/45.72
EVA3000 Controller Pair Assembly	5.25/13.34	19/48.26	22/55.88	58.5/26.54	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

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 Hz	86/218.4	36/91.44	48/121.92	335/152
42U EVA cab 50 Hz	86/218.4	36/91.44	48/121.92	335/152
36U EVA cab 60 Hz	75.25/191.14	36/91.44	48/121.92	300/136
36U EVA cab 50 Hz	75.25/191.14	36/91.44	48/121.92	300/136
22U EVA cab 60 Hz	52.25/132.72	36/91.44	48/121.92	251/114
22U EVA cab 50 Hz	52.25/132.72	36/91.44	48/121.92	251/114
EVA3000 Controller Pair Assembly	34/ 86.36	22/55.88	31/78.7	86/39.01
Controller Accessory Kit	2.75/6.98	15/38.1	30/76.2	28/12.7
M5314 Drive Enclosure	34.25/87	12.25/31.12	34.25/87	96/43.54
Rail Kit for M5114A – 10K	6.5/16.51	5/12.7	28.75/73.03	4.4/1.9
FC Cable Routing Spools	21.1/53.6	11.4/28.96	3.8/9.65	3/1.4
Rail-to-Rail FC Cable Routing	21.1/53.6	11.4/28.96	3.8/9.65	3/1.4
Side-Rail FC Cable Routing	14.6/37.08	8.8/22.4	4.0/10.16	2/0.9

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