

Overview

The EVA4400 offers an easily deployed enterprise class virtual storage array for midsized customers at an affordable price. With built in virtualization, it is designed to improve capacity utilization and be easy to manage, which lowers the cost of ownership compared to traditional arrays. It has high performance, scales easily, and is highly reliable and available. The availability is built on the EVA1100/6100/8100 architecture that offers 99.999% availability and a dual redundant design. It provides broad operating system support with proven integration with major applications, such as Microsoft Exchange, Oracle and SAP. The EVA4400 has robust local and remote replication capabilities with HP Business Copy EVA and HP Continuous Access EVA software.

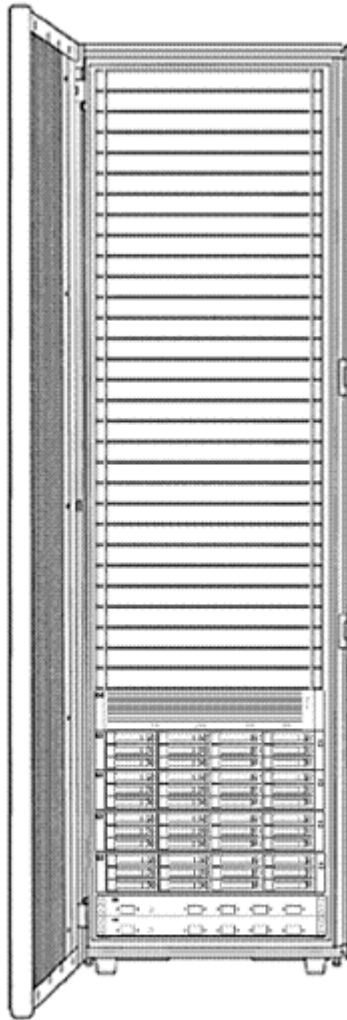
The EVA4400 delivers real value to customers with cost savings that include easy set up, installation and configuration, and self-repair capabilities. EVA4400 also offers an embedded switch version and tiered storage, so you can match the value of data to your business needs with support for solid state drives, high-performing fibre channel drives or lower priced FATA drives. With the flexibility to attach to iSCSI and FC SAN networks, you can deploy networking technologies that make sense for your environment. With Command View management software and storage provisioning capabilities of Dynamic Capacity Management software, customers spend less time managing their storage and more time managing their business.

EVA4400 Starter Kits provide the easiest way to order, set up and install the EVA4400. EVA4400 Starter Kits offer midsize customers with limited storage administration resources, an affordable single part number array package with enterprise-class array functionality that's simple to order, simple to deploy, and simple to manage. Designed to reduce the complexity and total cost of ownership of traditional arrays, the EVA4400 is ideal for customers who are looking for a reliable, available, and cost effective storage solution. EVA4400 Starter Kits include disk drives and Command View EVA unlimited license.

HP offers a full spectrum of complimentary HP StorageWorks EVA hardware, software products, solutions and HP services for the EVA4400 including FCoE and iSCSI connectivity, file services and application integration. In addition, the EVA's 3 year 9 x 5 next business day warranty provides the base level of service to which you can add appropriate service options. HP Services provide additional offerings up to Critical Service, the support for mission critical environments.



Overview



EVA4400 2C4D

NOTE: If a customer has a specific racking requirement they should use the Factory Express option to define the configuration.

What's New

- HP Insight Control Storage Module for vCenter allows customers to monitor and manage storage associated with VMware virtual machines
- New EVA4400 Starter Kits with 300GB 15K or 600GB 10K HDDs
 - Including HP StorageWorks Command View EVA Unlimited License
 - HP Data Protector Trial License
- HP StorageWorks MPX200 FC/FCoE/iSCSI offering allows hundreds of servers to be connected to the EVA cost effectively using FCoE and iSCSI in addition to Fibre Channel and offers an incredible value to customers. These configurations provide unified block storage (10GbE, 1GbE iSCSI, Fibre Channel and Fibre Channel over Ethernet (FCoE) for up to 4 arrays
 - Optional SAN over WAN (FCIP) connectivity
 - Optional Heterogeneous Data Migration

Product Highlights

	EVA4400	EVA6400	EVA8400
Controller Model	HSV300	HSV400	HSV450
Virtual Controller Software (XCS)	XCS v9.5xx	XCS v9.5xx	XCS v9.5xx
Management Software	Command View EVA v9.2	Command View EVA v9.2	Command View EVA v9.2
Virtual Server Technology Support	VMware, Microsoft Hyper-V, Citrix XenServer, RHEL Virtualization and Oracle Virtual Machine	VMware, Microsoft Hyper-V, Citrix XenServer, RHEL Virtualization and Oracle Virtual Machine	VMware, Microsoft Hyper-V, Citrix XenServer, RHEL Virtualization and Oracle Virtual Machine
Application Environment	Oracle, SAP, Microsoft Exchange, SQL	Oracle, SAP, Microsoft Exchange, SQL	Oracle, SAP, Microsoft Exchange, SQL
Local Data Replication - HP StorageWorks Business Copy EVA	Yes	Yes	Yes
Remote Data Replication - HP StorageWorks Continuous Access EVA	Yes	Yes	Yes
Command View EVA Array management and configuration support	Up to 16 EVAs	Up to 16 EVAs	Up to 16 EVAs
Application block and file storage	Yes	Yes	Yes
O/S Support	HP-UX HP OpenVMS Windows 2003 Windows 2008 Windows Server 2008 HyperV Sun Solaris Linux IBM AIX Novell NetWare VMware Apple Mac OSX Xen	HP-UX HP OpenVMS Windows 2003 Windows 2008 Windows Server 2008 HyperV Sun Solaris Linux IBM AIX VMware Apple Mac OSX Xen	HP-UX HP OpenVMS Windows 2003 Windows 2008 Windows Server 2008 HyperV Sun Solaris Linux IBM AIX VMware Apple Mac OSX Xen
RAID supported	Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5, Vraid 6 & Cross Vraid Snaps	Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5, Vraid 6 & Cross Vraid Snaps	Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5, Vraid 6 & Cross Vraid Snaps
LUN size	Up to 32TB	Up to 32TB	Up to 32TB
Number of controllers	2	2	2
Cache (per controller pair)	4GB	8GB	14 or 22GB
Battery Back-up Cache	Yes, up to 96 hours	Yes, up to 96 hours	Yes, up to 96 hours
Host Connectivity	Fibre Channel, FCoE, iSCSI and Direct Connect	Fibre Channel, FCoE, iSCSI and Direct Connect	Fibre Channel, FCoE, iSCSI and Direct Connect
Number of Host Supported (Single Path/Dual Path)	256	256	256
Host Ports (per controller pair)	4 or 2 embedded FC switches with ten 8Gb/s FC SAN ports per controller	8	8
Host Port Speed	4 Gb	4 Gb	4 Gb



Product Highlights

Device Connectivity	Redundant FC-AL pairs from each controller to switched JBOD for redundant paths to dual drive ports	Redundant FC-AL pairs from each controller to switched JBOD for redundant paths to dual drive ports	Redundant FC-AL pairs from each controller to switched JBOD for redundant paths to dual drive ports
Device Ports (per controller pair)	4	8	12
Device Port Speed	4 Gb	4 Gb	4 Gb
Device Path Aggregate Bandwidth	16 Gb	32 Gb	48 Gb
Switched device shelves (M6412)	1 to 8	2 to 18	3 to 27
Drives per enclosure	12	12	12
Drive types (mixed in any enclosure)	Solid State Drives (SSD), High Performance Fibre Channel and Fibre Attached Technology Adapted (FATA)	Solid State Drives (SSD), High Performance Fibre Channel and Fibre Attached Technology Adapted (FATA)	Solid State Drives (SSD), High Performance Fibre Channel and Fibre Attached Technology Adapted (FATA)
Supported disks, minimum	6 SSD, 8 FC and FATA	6 SSD, 8 FC and FATA	6 SSD, 8 FC and FATA
Supported disks, maximum	8 SSD, 96 FC and FATA	8 SSD, 216 FC and FATA	8 SSD, 324 FC and FATA
Capacity	.4 to 96TB	.4 to 216TB	.4 to 324TB
Drive capacities and speeds	72GB SSD 300GB 10K rpm 450GB 10K rpm 600GB 10K rpm 300GB 15K rpm 450GB 15K rpm 600GB 15K rpm 1TB FATA	72GB SSD 300GB 10K rpm 450GB 10K rpm 600GB 10K rpm 300GB 15K rpm 450GB 15K rpm 600GB 15K rpm 1TB FATA	72GB SSD 300GB 10K rpm 450GB 10K rpm 600GB 10K rpm 300GB 15K rpm 450GB 15K rpm 600GB 15K rpm 1TB FATA
JBOD Support (behind XP)	Yes	Yes	Yes
Drive Interface (per controller)	Two 4Gb/s FC-AL ports per controller in redundant pairs, two paths to each dual ported drive	Four 4Gb/s FC-AL ports per controller in redundant pairs, two paths to each dual ported drive	Six 4Gb/s FC-AL ports per controller in redundant pairs, two paths to each dual ported drive
Variable Speed Redundant Blowers	Yes	Yes	Yes
Environmental Monitoring Unit	Monitors Power and Temperature	Monitors Power and Temperature	Monitors Power and Temperature
Regulatory approvals	UL, CSA, TUV, FCC, CE MARK, CTICK, BSMI, VCCI	UL, CSA, TUV, FCC, CE MARK, CTICK, BSMI, VCCI	UL, CSA, TUV, FCC, CE MARK, CTICK, BSMI, VCCI
Fibre Channel Switches & Directors	Optical Switches and Directors: http://h18006.www1.hp.com/storage/saninfrastructure/switches.html		
Warranty	3-3-3 9x5 NBD for the array; 3-0-0 parts only for the disk drives		

* More EVA4400 performance information is available at: www.hp.com/go/eva4400, Resource Library.

EVA 4400 Capabilities

- Easy to install and configure in just a few hours (factory configured unit) with the SmartStart configuration utility*
- Virtualization abilities allow for easy management and excellent capacity utilization
- Start small and increase capacity as the business grows
- Business application and HP BladeSystem Matrix integration
- Excellent reliability and availability. HP's data shows that most customers are achieving 99.999% availability with the EVA 4x00/6x00/8x00
- Support for integrated application (block) and file storage solution with EVA file services offerings
- Support for dual-ported 4 Gb/s FC disk drives and 4 Gb/s dual-ported Fibre Attached



Product Highlights

- Technology Adapted (FATA) drives and dual ported Solid State Drives (SSD)
- Array management flexibility with optional deployments of:
 - Array Based Management with Command View / ABM
 - Server Based Management with Command View / SBM**
- Support for Direct Attach connection to Windows, HP-UX, and Linux servers, without the need for SAN switches, with Command View / ABM
- SAN support for integrated EVA iSCSI connectivity options with Windows and Linux, Apple Mac OS X, Microsoft Windows, Sun Solaris, VMware.
- Management of up to 1024 virtual disks (256 per HBA), for the EVA4400, ranging in size from 1GB to 32TB per Virtual disk, in 1GB increments.
- Dynamic Capacity Management support to expand (in 1GB increments) and shrink LUNs up to 2TB.
NOTE: Requires Host Operating System Support.
- Virtual disk data load leveling (non-disruptive background activity)
- Distributed sparing of disk capacity
- Redundant FC-AL loops from each controller to dual disk ports
- Support for remote replications between current EVA generations
- Migration support via remote replications between current and earlier EVA generations
- Dual redundant controller operation for increased fault tolerance
- Robust local and remote replication capabilities with Business Copy and Continuous Access EVA
- High availability with hot plug drives, power supplies, fans, and industry failover software
- Multiple Bus Failover Support using industry popular multiple path software.
NOTE: Requires native OS multi-pathing support.
- Battery-Back-Up for controller cache memory
- Asynchronous Disk Swap (hot swap)
- Clustered Server Support
- Mirrored Write-Back Cache Support
- Read-Ahead and Adaptive Read Caching Support
- Hardware based Virtual RAID (Vraid) provides improved RAID performance and the benefits of virtualization to grow and shrink RAID volumes (Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5, Vraid 6 & Cross Vraid Snaps)
NOTE: Vraid0 should be used with care in select application. It provides no data redundancy and can result in data loss.
- Support for local replication between Vraid types using Vsnap or Snapclone within a disk group or using Snapclone across disk groups (and Cross Vraid Snapshot and Snapclone)
- Online XCS software upgrade capability
- Online drive firmware upgrade capability
- Supports connection of up to 256 hosts
- Multi-Vendor Platform Support
- Controller Password Protection for Configuration Control
- Selective Storage Presentation and SAN-based Data Zoning (through switches).
- HP StorageWorks Command View EVA GUI Interface for management and monitoring (manages up to 16 EVAs).
- Monitor and control health, HP EVA end-to-end SAN performance and monitoring, storage utilization and reporting for all key HP EVA and SAN infrastructure including servers, storage, HP MSA, HP EML E-series tape, HP ProLiant Storage Servers (NAS), HBAs, switches, applications and monitor the entire backup from a single interface with HP Storage Essentials

*For more information on SmartStart, for EVA see:

http://h18000.www1.hp.com/products/storageworks/evasmartstart/relatedinfo.html?jumpid=reg_R1002_USEN

** For more information on Command View, see:



Product Highlights

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

EVA4400 Product Packaging

The EVA4400 packaging consists of a 2U FC dual HSV300 controller assembly and 2U 12-bay Model M6412A FC drive enclosures. (The M6412A drive enclosure is also used by the EVA6400 and EVA8400.) The EVA4400 is also available with an embedded SAN switch for each controller, for a total of two redundant switches per enclosure. This SAN switch is an 8Gb/s, 10 port B-series FC switch for a total of 20 SAN ports per EVA4400 enclosure.

EVA4400 configurations allow a wide range of configuration options, including flexible factory rack-mounting options in either a standard 42U cabinet (based on the HP 10000 G2 Series Rack) or a choice of 42U extended and 36U and 22U heights. EVA4400 is also available in pre-configured Starter Kit configurations.

Embedded SAN Switch Options

In addition to providing twenty 8Gb/s FC SAN port connectivity, the embedded SAN Switches have optional software components for:

- Adaptive Networking
- ISL Trunking
- Advanced Performance Monitoring
- Fabric Watch
- Extended Fabric

For more information on these software component options, see:

http://h18006.www1.hp.com/storage/networking/b_switches/index.html and look for HP StorageWorks B-Series 8/8 SAN Switch information.

Multi-Vendor Platform

The EVA4400 provides support for industry-leading Operating System platforms including:

- HP-UX
- HP OpenVMS
- Windows Server 2003
- Windows Server 2008
- Windows Server 2008 HyperV
- Sun Solaris
- Linux
- IBM AIX
- Novell NetWare
- VMware
- Apple Mac OSX
- Xen

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

Designed for No-Single-Point-of-Failure

The EVA family's redundant architecture and value added software is designed to eliminate single-points-of-failure from server to storage in clustered or single server configurations with multi-pathing.



Product Highlights

HP SmartStart for EVA configuration utility

The EVA4400 is easily installable in a few to several hours, depending on the complexity of the configuration, using HP SmartStart configuration utility for EVA Storage. For Windows 2003 and 2008 application servers, SmartStart software installs HBA drivers, Multi-pathing I/O (MPIO) drivers, the Storage System Scripting Utility (SSSU) for Windows, Command View EVAperf, installs Command View EVA on a Windows Server 2003 management server and helps provision the EVA4400 storage.

Installation and Startup

Smaller less complex EVA4400 configurations are customer installable with HP SmartStart. For more complex environments, an Installation & Start-up service is recommended or may be required. HP recommends the purchase of the following Installation & Startup services:

- For an EVA4400 into heterogeneous server environments, including installation of controllers, drive enclosures, disk drives, installation of Command View / SBM and HP's Remote Connectivity Support Pack (RSP), purchase the EVA4400 Installation and Startup Service - HA114A1 #58D.
- For factory configured, factory racked EVA orders and when final installation of just the pre-configured EVA hardware at the customer site is required, purchase the Basic I&S service - HA113A1 #58D.
- For factory configured, factory racked EVA orders, without an existing Command View management server, purchase the Command View Installation and Startup - HA124A1 #5AS. This service includes LUN design and implementation, HP Insight Remote Support software, and customer orientation training.
- For Continuous Access configurations, purchase the HP Data Replication Solution Service- Continuous Access.
- For Replication Solutions Manager, purchase the HP Data Replication Solution Service - Continuous Access EVA or Business Copy EVA.

NOTE: Customers who have completed the necessary training or who have gained the necessary experience with these environments may decide to not purchase the recommended Installation and Startup services. However some installation and startup services are required.

HP requires the purchase of Installation & Startup services when using:

- Storage Essentials, purchase the Storage Essentials Solution Service.
- Continuous Access, purchase the HP Data Replication Solution Service Continuous Access EVA.

NOTE: A comprehensive list of Installation & Start-up services can be found at: www.hp.com/hps/storage



Product Highlights

Remote Replication Solutions

(Software options)

HP StorageWorks Continuous Access provides disaster tolerant replication across a Fibre Channel SAN. Continuous Access EVA performs real-time replication between HP StorageWorks Enterprise Virtual Arrays of the current and earlier generations. Continuous Access EVA provides the highest level of FC SAN data protection to customers in order to meet disaster tolerant business continuity implementation goals. Through the use of MAN/WAN Fibre Channel SAN extensions, Continuous Access EVA provides 24x7 protections against disaster like scenarios, in campus, metro or continental networks. Thus, enabling business protection against unforeseen events. For additional information about Continuous Access EVA visit: <http://h18006.www1.hp.com/storage/software.html>

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

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

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

The IP Distance Gateway uses the FCIP (Fibre Channel Internet Protocol) standard to extend SAN connectivity over the WAN.

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

http://h18006.www1.hp.com/storage/disk_storage/index.html

Local Replication Solutions

(Software options)

The HP StorageWorks Business Copy is a local replication application for the EVA family. It incorporates Virtually Capacity-free Snapshot (Vsnap), standard snapshots and Snapclone capabilities. Business Copy EVA creates point-in-time copies of storage volumes, called Business Continuance Volumes (BCVs) using the snapshot and cloning capabilities of the array firmware and provides multi-array local mirror management. 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. Additional features include licensing based on replicated (not total raw) capacity and a new improved management interface.



Product Highlights

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

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

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

HP Insight Control Storage Module for vCenter

HP Insight Control Storage Module for vCenter is used to reference the stand-alone storage installation and the storage components within the overall plug-in package

Storage Module for vCenter support for the EVA allows customers who are using the VMware vSphere management console, vCenter, to monitor and manage the storage associated with VMware virtual machines. The HP EVA can be added to vCenter, allowing vCenter administrators to list LUN/volume connections, determine the storage attributes associated with virtual machines, and monitor the arrays.

- Monitor the status and health of HP StorageWorks arrays to provide health and status on their EVA
- Manage LUN / volume connections from VMs and ESX servers to the arrays provides the location and attributes of the EVA within the SAN
- Identifies what storage features are available to allow administrators to match the features available on the EVA to their requirements
- Supports mixed array environments including EVA, P4300/4500, MSA and/or XP

Storage Module for vCenter is downloadable from Software Depot:
<http://h20293.www2.hp.com/portal/swdepot/displayProductsList.do?category=NAS>

For more information on HP Insight Control Storage Module for vCenter visit: www.hp.com/go/vmware



Product Highlights

Capacity Management

HP StorageWorks EVA Dynamic Capacity Management Software is a comprehensive software solution that automates storage provisioning and improves capacity utilization on the HP StorageWorks Enterprise Virtual Array (EVA) family. Designed for the enterprise market, EVA Dynamic Capacity Management Software uses advanced automation to automatically "right-size" the file system and storage volumes to ensure the highest levels of capacity utilization are achieved while reducing ongoing storage administration needs. For more information about DCM, please see the following:
http://h18000.www1.hp.com/products/storage/software/eva_dcm/index.html

Application Solutions

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

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

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

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

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

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

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

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



Product Highlights

EVA with HP Storage Essentials Storage Resource Management Software Suite

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

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

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

HP Standard Edition SRM Software and EVA

HP Storage Essentials Standard Edition Storage Resource Management Software and Systems Insight Manager with Command View EVA / SBM software provides a total solution that allows midsize businesses with limited IT staff to see the big picture (storage-servers-infrastructure) thereby reducing SAN complexity by not having to depend on Excel spreadsheets or whiteboards to track and manage SAN storage and infrastructure. It supports Windows and Linux servers with small to medium HP storage based SANs including HP EVA, HP MSA, HP NAS, HP EML Tape, HBAs and fabric devices. HP Standard Edition SRM Software unified server and storage tool-set automates complex and manual storage process and tasks with auto discovery, visualization and topology mapping for quick device identification, integrated NAS and SAN management, business application monitoring including Oracle, Microsoft SQL, Sybase, InterSystems Caché, Microsoft Exchange Server and SAP Adaptive Computing Controller (ACC) environments path dependency identification, and end-to-end EVA SAN performance monitoring and analysis. For more information on HP Storage Essentials SRM Standard Edition Software visit: <http://h18006.www1.hp.com/products/storage/software/std-suite/index.html>

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

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

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

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



Product Highlights

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

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

The HP Virtual Library System EVA Gateway offers advanced features such as Automigration which allows users to move data under the control of the VLS from the VLS storage to tape or another VLS. The VLS EVA Gateway will also be able to take advantage of data deduplication when that feature is launched in early 2008. For more information on the VLS EVA Gateway, please visit the link below: http://h18006.www1.hp.com/storage/disk_storage/disk_to_disk/vls/12000vls/index.html

EVA FCoE/iSCSI Connectivity

EVA4400 FCoE/iSCSI support is available through the EVA4400 iSCSI Connectivity Option (iSCSI) and the MPX200 Multifunction Router (FC/FCoE/iSCSI). These powerful solution provides connectivity to an EVA4400 utilizing the EVA's existing Fibre Channel infrastructure.

An EVA with multi-protocol support also provides network storage at reduced infrastructure costs. Small and medium businesses now have a lower entry point to take advantage of SAN benefits. Large enterprises may also deploy multi-protocol SANs in departments and remote offices.

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

Key Benefits:

- Delivering SAN-like benefits over the Ethernet IP network, the HP StorageWorks MPX200 Multifunction Router enables access to block storage across up to 4 EVA storage systems from an Ethernet IP network.
- Extend access to FC SANs across Ethernet networks with the virtues of an FC SAN including:
 - Consolidated storage
 - Improved disk utilization
 - Improved IT efficiency
- Provides customers a flexible and cost effective way to connect stranded servers to existing Fibre



Product Highlights

Channel storage, increasing return on investment. Allows hundreds of servers to be cost effectively connected to the EVA using FCoE/iSCSI in addition to Fibre Channel.

- Unmatched performance: 8 Gbps Fibre Channel, FCoE, 1 GbE and 10 GbE iSCSI connectivity deliver best in class performance.
- FCIP for SAN over WAN:
- Data Migration: MPX200 can now enable customers to migrate their data between heterogeneous storage arrays (offline) Fully integrated EVA and MPX management with Command View EVA

For more information and operating system support:

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

The EVA also supports X Series Network Storage Systems connected as file/print/iSCSI gateways. The HP StorageWorks X1800, X3400, X3800 Network Storage Systems each feature Microsoft's Windows Storage Server 2008 operating system that includes Microsoft iSCSI Software Target as a standard feature. Microsoft iSCSI Software Target leverages existing management expertise and inexpensive Ethernet infrastructure to deliver IP-based block access to an EVA or Fibre Channel SAN. So X Series Network Storage Systems with iSCSI target functionality not only add file and print services to your EVA investment, but they help you save even more by enabling tiered (Fibre Channel and iSCSI) block access for application servers.

In addition, any X Series Network Storage Systems are a perfect platform from which to run Command View EVA. You stretch your investment even further when you host EVA management, file and print services, and iSCSI connectivity all from the same X Series Network Storage Systems gateway solution.

For more information: <http://www.hp.com/go/X1000>

EVA File Services

The HP StorageWorks 4400 Scalable NAS File Services offers scalable file serving performance for medium-sized customers that cannot afford any downtime for their business-critical applications. The HP 4400 Scalable NAS File Services is a fully factory configured storage solution that includes an HP StorageWorks Enterprise Virtual Array 4400 (EVA4400) with dual array controllers and 5.4TB of storage, two high performance file serving nodes, redundant Fibre Channel switches, management and replication software, and support for Windows or Linux. The HP 4400 Scalable NAS File Services does not have a single point of failure. It allows customers to transparently increase application throughput far in excess of traditional NAS products and easily grow storage capacity online without service disruption. The HP 4400 Scalable NAS File Services offers great total cost of ownership with a low initial purchase price and a shared data architecture that yields lower management expenses from a single shared pool of file serving nodes and storage

For more information:

http://h18006.www1.hp.com/products/storageworks/scnas_4400/index.html

ProLiant Storage Server Gateways

Select ProLiant Storage Servers can be connected to an EVA to add file, print, management, and/or iSCSI services and boost the value of your array investment. ProLiant DL380 G5 SAN Gateway and SB460c SAN Gateway Storage Servers are designed to provide highly-available additional data services to an EVA array or SAN, and both feature Microsoft's Windows Unified Data Storage Server 2003 operating system that includes a cluster license and Microsoft iSCSI Software Target standard. ProLiant Storage Servers can host Command View EVA / SBM as well, making them an affordable and flexible way to add functionality and value to your EVA investment.



Product Highlights

For more information: <http://www.hp.com/go/storageservers>

EVA with HP Systems Insight Manager Software

HP SIM is the foundation for HP's unified server-storage strategy - it is packaged as value add software with EVA, it is a management application and it 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>

HP StorageWorks and Data Protector Software

By combining the EVA with Data Protector software, administrators can avoid many of the challenges associated with virtual server backup:

- Server performance degradation as backups impact both the physical server and all of its virtual machines
- Time, effort and risk associated with restoring crash-consistent backups that result from many current virtual backup methods
- The complexity associated with using different tools to back up virtual and physical servers

By providing seamless integration, HP leverages the strengths of both its hardware and software to provide the most complete and integrated solution for virtual server backup in the industry. Separately, HP EVA and HP Data Protector solve critical needs that enable customers to achieve the true benefits that virtualized environments offer, increasing efficiency and lowering costs. Together, HP provides an end to end solution that is completely automated, managed and controlled from one user interface, for complete, fast data protection with no impact to the virtual environment. HP is the only vendor providing this level of automation for VMware or Hyper-V.

Data Protector provides robust support for virtual environments and allows customers to choose any hypervisor. For VMware and Microsoft virtual environments, the EVA + Data Protector's ZDB/IR offer a particularly powerful solution. In Hyper-V environments, the Data Protector Zero Downtime Backup agent creates transportable VSS snapshots which are made available for Instant Recovery. All operations are performed with zero impact to the Hyper-V host server and virtual machines. For VMware environments, the ZDB/IR agent first takes a snapshot of data on the virtual machine (VM) and migrates the snapshot to a proxy host. Backup operations are then performed on the snapshot. ZDB enables customers to instantly copy data to disk and then, at their convenience, back up that disk copy to tape. This "staged backup" process enables business applications to stay online 7x24, maintain business-critical application performance, and protect critical data. These solutions allows administrators to avoid many of the challenges associated with virtual server backup:

- Impact-free backup at all layers
- No load on the servers or VMs
- Instantaneous recovery of all application data
- Manage everything from one, easy-to-use interface, without scripts or 3rd party utilities

More Information:



Product Highlights

<http://h71028.www7.hp.com/enterprise/w1/en/software/information-management-data-protector.html>

Single-pathing (Single HBA per host)

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

Enclosure Capacity

The EVA4400 provides one of the highest density disk storage solutions in its class of product. The EVA4400 can be configured in 18U of rack space with eight 2U 12-bay M6412A FC disk enclosures for a maximum capacity of 96 disk drives and a maximum storage capacity of 96 TB of disk capacity. The EVA4400 supports the HP 10000 G2 series racks.

Solid State Drive Support

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

SSD are supported with Vraid 5 only. SSDs are supported with Business Copy EVA, but are not currently supported with Continuous Access EVA.

10K rpm Drive Support

The EVA supports the 300GB, 450GB, and 600GB reduced power 10K rpm dual-ported 4 Gb/s FC disk drives. The EVA4400 supports up to 96 disk drives. The EVA4400 array supports single or mixed drive capacities and types (SSDs, high performance, and FATA) within an enclosure. HP recommends using the same drive type (the same capacity) within a disk group because virtualization allocates space proportionate to the highest capacity drive within the group. A minimum of eight high performance Fibre Channel drives are required in a configuration using high performance drives.

15K rpm Drive Support

The EVA also supports 146GB, 300GB, 450GB, and 600GB 15K rpm dual-ported 4 Gb/s FC disk drives. The EVA arrays support single or mixed drive capacities and types (SSDs, high performance and FATA) within an enclosure. HP recommends using the same drive type (the same capacity) within a disk group because virtualization allocates space proportionate to the highest capacity drive within the group. A minimum of eight high performance Fibre Channel drives are required in a configuration using high performance drives.



Product Highlights

FATA Drive Support

The EVA supports 1TB dual ported 4 Gb/s Fibre Attached Technology Adapted (FATA) disks. An EVA will support a full configuration of FATA disk drives. The EVA4400 Starter Kits and the EVA4400 can be configured with any combination of FATA and high performance disk drives; total raw capacity will vary based upon the redundancy (Vraid) selected. A minimum of eight FATA drives are required in a configuration using FATA drives.

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

FATA drives are not recommended in Continuous Access applications as the remote storage location for local data residing on standard higher speed disk drives. Continuous Access tends to perform fairly high duty cycle random writes to the remote disk array. Matching remote FATA drives with local FC drives will impact the performance of your application, and will adversely impact the reliability of the FATA drives.

Fibre Channel Technology

The EVA4400 models are 4Gb/s FC Switched Fabric enabled and are compatible with 8Gb/s, 4Gb/s or 2Gb/s FC Switched Fabric SANs with XCS v9.0. They can co-exist in the same FC SAN with EVA3000/5000 or EVA4x00/6x00/8x00 FC storage solutions and many other SAN devices. The EVA4400 with embedded switch model is 8Gb/s FC ready. The embedded switch is an 8Gb/s, 10 port B-series SAN switch for a total of 20 ports per controller enclosure.

The EVA4400 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, 150 meters @ 4 Gb/s and up to 10 kilometers (6.21 miles) @ 1 Gb/s when using long wave cable. Storage Area Networks (SANs) can be constructed using FC switches/directors for fabric connectivity. HP StorageWorks SAN B-series and C-series switches and directors provide exceptional connectivity while increasing the effective bandwidth of the network. Supported SAN features include Zoning for communication isolation and Inter-Switch Links (hops) up to 10 km.

For more information on specific support specifications see the following SAN Infrastructure URL: <http://h18006.www1.hp.com/storage/saninfrastructure/switches.html>

Transfer Speeds

The EVA4400 Starter Kits and EVA4400 have two FC host ports per HSV300 or HSV300-S controller; four for a controller pair. Each controller-to-host interface is 4 Gb/s. The HSV300 and HSV300-S controllers are compatible with 2 Gb/s and 4 Gb/s FC switches (if required), HBAs, servers and other storage solutions.

Each EVA controller pair interfaces with the M6412A drive enclosures. With 2 device ports per controller and dual FC I/O modules per drive enclosure, each controller has two connections to each FC drive A and B port. So each controller has a redundant path to each drive.

Easy Installation

The EVA4400 can ship from the factory fully configured. After unpacking, it can be plugged into power sources, connected to the FC SAN, enabled and configured using HP SmartStart for EVA Storage and Command View EVA and it is ready for use. Installation and start-up services are not required but are available separately.



Product Highlights

High Availability/ Fault Tolerance/ Hot pluggable support

All EVA4400s are configured with dual HSV controllers that operate in a redundant mode. Each EVA4400 controller has two FC device ports. For EVA4400, in the event of a path failure, the alternate paths to the controller can be utilized with the use of multi-path software in the Operating System software or in Secure Path software.

On the EVA4400, each port connects to one FC I/O module on a drive enclosure. Up to eight drive enclosures can be connected in a FC loop arrangement with a controller pair and connect to one port of up to 96 drives. With the two FC ports per controller, each controller can connect to both ports on up to 96 disk drives for redundant paths to all 96 drives.

The HSV300 controllers also have dual redundant hot plug power supplies and dual redundant hot plug blowers. Each controller has hot plug cache batteries to maintain cache contents for up to 96 hours in case of a total power failure.

The M6412 FC drive enclosure has dual redundant hot plug FC I/O modules that allow the controllers to distribute I/Os between the two modules and provides redundant paths should either FC I/O module become unavailable. The enclosure also has dual redundant hot plug power supplies and dual hot plug blowers. Environmental Monitoring Unit (EMU) functionality is built into the I/O module in the enclosure and monitors and reports the condition of the power supplies and fans.

The FC and FATA disk drives have dual FC ports which can be redundantly accessed by each controller. The drives are hot plug. The drives can be configured, 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 and to each power supply of the drive enclosures. Each cabinet power cord can be connected to independent power sources. For maximum availability, a customer should provide redundant power from independent power circuit breakers, independent power lines from the power company and even independent power companies.

The EVA4400 with embedded switch model also includes two 10 port 8Gb/s FC SAN B-series switches.

EVA Manageability

HP StorageWorks Command View EVA provides the capability to manage the EVA Array family in a SAN or direct connect Fibre Channel host attach configuration. HP Command View EVA software runs on a variety of server configurations using Windows Server 2003. HP StorageWorks X1800, X3400, X3800 Network Storage Systems are the perfect platforms from which to run Command View EVA. HP StorageWorks Network Storage Systems allow you to stretch your investment by combining EVA management, file and print services, and iSCSI connectivity all on the same platform.

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



Product Highlights

Performance

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

Each HSV300 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. For the Embedded Switch controllers, the host ports are connected internally to the embedded switches and are not available externally. Twenty 8Gb/s SAN ports are available externally for SAN connections.

In addition, up to 4GB of cache per controller pair ensures high performance.

Scalability

A storage management server can manage up to 16 EVA controller pairs (EVA4400, EVA3000s, EVA5000s, EVA4x00s, EVA6x00s and/or EVA8x00s) in any one fabric. An EVA4400 controller pair will support up to 256 multi-path host connections (up to 1024 HBAs).

The EVA4400 will scale up to 96 disks (96TB using 1TB FATA disk drives, and 57.6TB using 600 GB high performance disk drives).

Configure to Order (CTO) options and the HP 10000 G2 Series Racks allow even greater server and device integration, flexibility and scalability for the EVA4400. Data center managers can customize server, storage and back-up configurations as well as using the residual cabinet U space to mount management servers, switches and have the peace of mind that it is built with HP factory precision manufacturing.

EVA as Virtualized Storage behind the XP

HP Storage Works EVA4400 disk arrays can be connected as external storage devices behind the HP StorageWorks XP family of disk arrays.

The XP24000/XP20000 simplifies the management of heterogeneous SAN environments through its ability to support up to 247 PB/ 96 PB respectively of external storage—all configured 'behind' a single XP. XP External Storage software uses advanced virtualization technology to allow storage administrators to host XP Disk Array LUNs on externally attached disk arrays. Any Fibre Channel port from any CHA pair installed in any slot can be used to connect to external storage.

Instead of seeing a confusing collection of dissimilar arrays, host systems perceive all the data to be stored inside the XP disk array. In effect, the XP becomes the storage controller for a flexible, multi-tiered collection of storage with a range of cost and performance capabilities. By configuring current or legacy storage systems behind a single XP24000/XP20000, data can be moved back and forth dynamically across tiers, all of which is invisible to the applications.

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

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

For more information please refer to the XP24000/20000 External Storage web page at:
<http://h18006.www1.hp.com/products/storage/software/extstxp/index.html>



Product Highlights

Servers Supported – Single and Clustered

HP servers (HP-UX, ProLiant, ProLiant Storage Servers, AlphaServers)
X86 servers
Dell servers
Sun servers
IBM servers
Apple XsApple Servers (PowerPC and Intel)
Fujitsu Siemens & Primergy Servers (Bx6x0, Rx and Tx)

EVA Required Software

HP StorageWorks EVA4400 ships with XCS v9.340 factory installed on new EVAs. XCS v9.340 also supports the EVA6400/8400. The base XCS License to use for the EVA is contained in the hardware shipment.

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

NOTE: Review the [Release Notes and Upgrading Product Software](#) documentation and compatibility requirements of all installed Array Integrated Software completely before upgrading. Downgrading the EVA4400 from XCS v9.5xx to v9.0xx is not supported.

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

HP StorageWorks Command View EVA is required software for the EVA4400. HP Command View EVA requires a License to use (LTUs) equal to, or greater than the total raw capacity of each array.

Install and configure Command View / SBM and the EVA 4400 with HP SmartStart for EVA Storage. Order this media kit when ordering an EVA4400.

EVA StorageWorks EVA Software Selector

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

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



Product Highlights

	EVA Device and Configuration Management	Backup Solutions	Business Continuity/ Local Mirroring	Disaster Recovery/ Remote Mirroring	Storage Resource Management	Unified Server and Storage Management	Application Integration
HP Command View EVA	X (Required)						
HP SmartStart	X						
HP Business Copy EVA		X					X
HP Continuous Access EVA				X			
Dynamic Capacity Manager	X						
HP Storage Essentials Suite (Heterogeneous, multivendor)	X End to end provisioning (hosts, infrastructure, storage)	X End to end backup monitoring/ reporting			X Discovery, topology, monitoring, events, applications, NAS/SAN, File monitoring, reporting, Performance, monitor host clusters		X monitor applications and associated storage/infrastructure (Oracle, Microsoft Exchange Server, Sybase, Microsoft SQL, InterSystems Cache' database and SAP ACC)
HP Storage Essentials Standard Edition SRM Software (Small to medium HP Storage-based SANs)	Discovery, topology	X Backup monitoring/ reporting			X monitoring, events, applications, NAS/SAN, File monitoring, reporting, EVA Performance, monitor host clusters	X	X (Oracle, Exchange, Sybase, MS SQL)
HP Data Protector		X	X				X
HP Systems Insight Manager	In-context launch of CV EVA, SAN discovery, monitoring, asset, config., security					X (Included with EVA)	
HP Storage Mirroring				X			



Product Highlights

EVA and Value-added Software Compatibility

Model	XCS Software	HP Command View EVA*	HP Continuous Access EVA**	HP Business Copy EVA**	HP Replication Solution Manager (RSM)***
EVA4400	EVA4400 v9.0 (XCS 9.0)	Command View EVA / SBM v8.0 or Command View EVA / ABM v8.1	Continuous Access EVA	Business Copy EVA	Replication Solution Manager v4.0
EVA4400	EVA4400 v9.5 (XCS 9.5)	Command View EVA / SBM v9.0 or Command View EVA / ABM v9.0	Continuous Access EVA	Business Copy EVA	Replication Solution Manager v5.0
EVA4400	EVA4400 v9.5 (XCS 0952200)	Command View EVA / SBM v9.0 & v9.1 or Command View EVA / ABM v9.0 & v9.1	Continuous Access EVA	Business Copy EVA	Replication Solution Manager v5.0
EVA4400	XCS V9.522	Command View EVA v9.2****	Continuous Access EVA	Business Copy EVA	Replication Solution Manager v 5.0
EVA4400	XCS V9.534	Command View EVA v9.2****	Continuous Access EVA	Business Copy EVA	Replication Solution Manager v 5.0

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

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

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

****Command View V9.2 is required to support the MPX200.

Operating Systems, Cluster and High Availability Compatibility

Operating System	Versions Supported		Cluster Server or High Availability Software	HA Versions Supported	Failover Software
Microsoft Windows 2003 32-bit	All Editions - See SPOCK for details	SP1, R2; SP2	Microsoft Cluster Server (MSCS) (2003)	Windows Server 2003	Full featured MPIO, v3.02/V4.00 available from HP (2003, 2008)
Microsoft Windows 2003 x64	All Editions - See SPOCK for details	SP1, R2; SP2	Microsoft Failover Clusters	Windows Server 2008	



Product Highlights

Microsoft Windows 2003 IA64	All Editions - See SPOCK for details	SP1; SP2 ; R2	(MFCFS) (2008) Veritas Storage Foundation & HA Solutions for Windows	See SPOCK for details	Microsoft DSM from Microsoft (2008) See SPOCK for details
Microsoft Windows 2008 32-bit, x64* Including Hyper-V	All Editions - See SPOCK for details	SP1, SP2, R2			
Microsoft Windows 2008 IA64*	All Editions - See SPOCK for details	SP1, SP2, R2			
HP-UX	11i v1 (PA-RISC) 11i v2 (PA-RISC & Integrity) 11i v3 (PA-RISC & Integrity)		HP ServiceGuard Veritas Storage Foundation & HA Solutions	11.16 11.17 11.18 11.19	HP-UX 11.iv3 has OS native multi-path, pvlincs native in HP-UX and Veritas DMP
Linux	Red Hat EL Advanced Server 4.7, 4.8 (IA32, IA64 & x64) Red Hat EL Advanced Server 5.3, 5.4 (IA32, IA64 & x64) SUSE/SLES9 (IA32, IA64 & x64)- SP4 (Includes Open Enterprise Server Linux) SUSE/SLES10 (IA32, IA64 & x64)- SP1, 2 & 3 (Includes Open Enterprise Server Linux) SUSE/SLES11 (IA32, IA64 & x64)- (Includes Open Enterprise Server Linux) Oracle Enterprise Linux V4, 5		HP ServiceGuard for Linux Veritas Storage Foundation & HA Solutions RedHat Cluster Services Novell HA Extensions	11.18 See SPOCK for versions	QLogic Failover driver, available from HP, Emulex MultiPulse available from HP (RHEL 4.7 and 4.8) and Device Mapper v4.4.0 Enablement Kit from HP
Apple Mac OS X	10.5 10.6		N/A	N/A	ATTO FC HBA driver
HP OpenVMS	Alpha: 7.3-2, 8.2, 8.3, 8.4 Integrity/Itanium: 8.3, 8.3-1H1, 8.4		HP OpenVMS Clusters	7.3-2 8.2 8.2-1 8.3 8.3-1h1 8.4	Native in OS
Sun Solaris	9 (SPARK) 10 (Proliant, SPARC, x64 & x86)		SunCluster Veritas Storage Foundation & HA Solutions	3.2 See SPOCK for versions	MPxIO for Solaris, Native in OS Veritas DMP 5.0
IBM AIX	5.2 5.3 6.1		HACMP Veritas Storage Foundation & HA Solutions	Native in OS See SPOCK for versions	MPIO for IBM AIX, Native in OS Veritas DMP 5.0
VMware	ESX Server 3.0.x, 3.5 and 4.0		MSCS Clustering	See SPOCK for versions	See SPOCK for versions



Product Highlights

Xen	Citrix XenServer V4.1, 5.0 and 5.5 RHEL Virtualization V5.2 Oracle Virtual Machine SUSE Linux Enterprise Server 11 Xen	Citrix HP ServiceGuard for Linux (RHEL and Oracle Virtual Machine)	V5.0 SGLX 11.18	See SPOCK for Guest OS support Native Device Mapper MPIO (Citrix and RHEL)
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*For more specific information on supported versions see the OS support matrix at: <http://spock.corp.hp.com/>

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

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

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

Racking Guidelines and Power Distribution

Power Distribution Units (PDUs) are configured according to the voltage used in the country when the solution is ordered. These PDUs provide redundant power. They are located in the bottom and back of the cabinet, taking 1U of rack space.

For the EVA4400, a variety of HP 10000 G2 Series Rack offerings and integration options are available. The EVA configurator tools utilize a 42U HP 10000 G2 Series Rack as the standard recommendation and will provide a 200 - 240V PDU and country specific power cords. However, the EVA4400 configurations can be customized to meet a wide variety of customer needs. The height, width (including the 800mm wide rack) and types of rack and PDUs can be modified based upon the specific customer need. If other devices, such as servers, switches or back-up devices are to be installed with the EVA, this can be specified and the cabinets and PDUs can be modified to support the configuration. The EVA4400 also supports 22U and 36U racks. The 47U rack is also supported, but not factory configured, because of the cabinet height, which creates shipping difficulties. It must be assembled on site.

For more information on the HP rack offerings, please see the following URL:
<http://h18004.www1.hp.com/products/servers/proliantstorage/racks/index.html>

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

For more information on the 5642 rack, please see the following URL:
<http://h18004.www1.hp.com/products/servers/proliantstorage/racks/5000series/5642/index.html>

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

For more information on PDU support, please see the following URL:
<http://h18004.www1.hp.com/products/servers/proliantstorage/power-protection/pdu.html>

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

NOTE: The EVA does not support communication with an Uninterruptable Power Supply (UPS) device. However, an EVA can be used with a UPS to extend the cache hold-up time of the EVA past the 96 hours provided by the cache batteries. The EVA Power Calculator will allow customers to approximate the electrical load for a given EVA configuration for facilities planning purposes and UPS sizing.

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



Product Highlights

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

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



Family Information

Warranty and Services Included with the Product The EVA4400 comes with a 3-year HP's Global Limited Warranty and Technical Support, which includes 3 years 9x5 hardware support, with next business day (NBD) response.

HP's warranty and support features:

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

The EVA Fibre Channel Disk Drive warranty is 3 years, parts only.

Online Support

HP online support capabilities include a variety of self-help tools, troubleshooting assistance, and access to the patch database, firmware/software update packages and documentation. Register with the HP Business Support Center and the IT Resource Center to receive product specific and proactive notifications for the EVA4400. For more information go to: www.hp.com/support or: www.itrc.hp.com.

Remote Support

HP designed the EVA4400 with support capability to facilitate remote monitoring and email notification of array errors/events. To take full advantage of HP's remote support solutions and maximize the service delivery experience, these features must be enabled at time of installation. Additional fault monitoring software is included in the EVA software media kit.

Technical Phone Support

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

Customer Self Repair (customer installed replacement parts)

HP designed the EVA4400 to enable the highest degree of Customer Self Repair and parts replacements. This feature enables maximum support flexibility, while minimizing unit down time. Customer Self Repair parts come with step by step instructions with additional assistance available online or by phone.

Required Customer Self-Repair (Replacement) Parts List:

- Hard disk drives with drive firmware code load.
- Controller enclosure power supply.
- Controller enclosure fan.
- Controller management module
- Controller cache battery
- Disk enclosure power supply.
- Disk enclosure fan.
- Bezels.

Optional Customer Self-Repair Parts List:

- Controller module.



Family Information

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

Part replacement videos can be viewed at: <http://hp.com/go/sml>. For the EVA4400, select Storage, then EVA Disk Arrays, then HP StorageWorks 4400 Enterprise Virtual Array, then the particular resource needed.

Software Warranty

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

On-site Warranty Service

The HP EVA4400 comes with 3 year on-site warranty support, for those service events not remedied either remotely or through use of customer self-repair replaceable parts. On-site service is made available at HP's discretion and scheduled during standard office hours.

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

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

HP warrants the HP 10000 G2 Series Rack according to the standard rack product warranty. Please refer to product specification for further details: <http://h18004.www1.hp.com/products/servers/proliantstorage/racks/index.html>

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

Your storage is evolving. Get scalable support that evolves with it. HP Care Pack Services is an easy-to-buy, easy-to-use portfolio of packaged services covering your lifecycle needs. You can rely on our highly skilled, HP certified professionals to offer a breadth of expertise across leading storage technologies, and work side by side with you for optimal results. Partner with HP Technology Services to boost availability and avoid costly downtime by mitigating technology-related business risks. To help take the worry out of deploying, supporting and managing your storage technologies, we've designed a portfolio of service options that are as flexible, scalable and affordable as our storage.

Protect your business beyond the warranty

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

Extending warranties with HP Care Pack Services

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

Provide consistent, predictable levels of support across your entire department or business



Family Information

Give you direct access to proven technical and problem-solving expertise
 Offer a choice of response-time and repair-time commitments
 Are available whenever and wherever you do business

For many products, post-warranty HP Care Pack Services are available when your original warranty has expired. Choose the support levels that meet your business requirements, from basic to mission-critical. In the new world of business technology, when your technology has to work for your business to work, who can you trust to make your technology work? HP Technology Services, the trusted business technology experts who manage your technology in action, because when technology works, business works.

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

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

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

3-Year HP Support Plus 24 3-Year HP Support Plus 24 provides integrated hardware and software support services designed specifically for your technology. HP Services engineers deliver reactive onsite hardware support and over-the-phone software support around-the-clock.

HP StorageWorks EVA 4400 Disk Array Installation and Startup Service HP StorageWorks EVA 4400 Disk Array Installation and Startup Service provides deployment of your EVA 4400 Disk Array, Command View EVA and remote support tools into your storage environment to help get you up and running quickly.

Product Number	Product Name	Service Name	Care Pack Services Product # and Band	Alternate Care Pack Services Product #
		HP StorageWorks EVA 4400 Disk Array Installation and Startup Service	HA114A1-58D	UD493E
AG637B	HP EVA4400 Dual Controller Array	3-Year HP Support Plus 24	HA110A3-13F	
		HP 3Y 4h 24x7 EVA4400 Dual Ctrl HW Supp		UQ309E
AG805C	HP EVA4400 Dual Controller w/Switch & 8Gb/s SFPs	3-Year HP Support Plus 24	HA110A3-13G	
		HP 3Y 4h 24x7 EVA4400 with Switch HW Sup		UQ324E
BS194A	HP EVA4400 Starter Kit 300GB 15K Factory integrated	3-Year HP Support Plus 24	HA110A3-2FD	UX292E
BS195A	HP EVA4400 Starter Kit 300GB 15K Field installed	3-Year HP Support Plus 24	HA110A3-2FD	UX292E



Family Information

AJ699B	HP EVA4400 SAN Starter Kit 450GB 10K Factory integrated	3-Year HP Support Plus 24	HA110A3-13K	UQ393E
AJ700B	HP EVA4400 SAN Starter Kit 450GB 10K Field installed	3-Year HP Support Plus 24	HA110A3-13K	UQ393E
BS196A	HP EVA4400 Starter Kit 600GB 10K Factory integrated	3-Year HP Support Plus 24	HA110A3-2FE	UX306E
BS197A	HP EVA4400 Starter Kit 600GB 10K Field Installed	3-Year HP Support Plus 24	HA110A3-2FE	UX306E
AJ697B	HP EVA4400 Starter Kit 450GB 10K Factory integrated	3-Year HP Support Plus 24	HA110A3-13L	UQ405E
AJ698B	HP EVA4400 Starter Kit 450GB 10K Field Installed	3-Year HP Support Plus 24	HA110A3-13L	UQ405E
AJ711B	HP 450GB 10K FC EVA M6412A Enclosure HDD	3-Year HP Support Plus 24	HA110A3-13H	
		HP 3Y 4h 24x7 EVA 146/300/400G HWSup		UQ354E
AG691B	HP 1TB FATA EVA M6412A Enclosure HDD	3-Year HP Support Plus 24	HA110A3-13J	
		HP 3Y 4h 24x7 EVA 450-1TB HW Supp		UQ375E
AJ713A	HP StorageWorks EVA4400 iSCSI Connectivity Option	3-Year HP Support Plus 24	HA110A3-83F	
		HP 3y 24x7 EVA iSCSI cnct opt HW Supp		UF064E
AJ714A	HP StorageWorks EVA4400 iSCSI Connectivity Upgrade Option	3-Year HP Support Plus 24	HA110A3-83F	
		HP 3y 24x7 EVA iSCSI cnct opt HW Supp		UF064E
AP766B	HP EVA M6412A 300GB 10K 4Gb Fibre Channel Dual Port Hard Disk drive	3-Year HP Support Plus 24	HA110A3-13H	



Family Information

		HP 3Y 4h 24x7 EVA 146/300/400G HWSup		UQ354E
AJ711B	HP EVA M6412A 450GB 10K 4Gb Fibre Channel Dual Port Hard Disk Drive	3-Year HP Support Plus 24	HA110A3-13H	
		HP 3Y 4h 24x7 EVA 146/300/400G HWSup		UQ354E
AP731B	HP EVA M6412A 450GB 10K 4Gb Fibre Channel Dual Port Hard Disk drive	3-Year HP Support Plus 24	HA110A3-13J	
		HP 3Y 4h 24x7 EVA 450-1TB HW Supp		UQ393E
AP732B	HP EVA M6412A 600GB 10K 4Gb Fibre Channel Dual Port Hard Disk Drive	3-Year HP Support Plus 24	HA110A3-13J	
		HP 3Y 4h 24x7 EVA 450-1TB HW Supp		UQ393E
AG690B	HP EVA M6412A 300GB 15K 4Gb Fibre Channel Dual Port Hard Disk Drive	3-Year HP Support Plus 24	HA110A3-13H	
		HP 3Y 4h 24x7 EVA 146/300/400G HWSup		UQ354E
AG803B	HP EVA M6412A 450GB 15K 4Gb Fibre Channel Dual Port Hard Disk Drive	3-Year HP Support Plus 24	HA110A3-13J	
AJ872B	HP EVA M6412A 600GB 15K 4Gb Fibre Channel Dual Port Hard Disk Drive	3-Year HP Support Plus 24	HA110A3-13J	UQ354E
		HP 3Y 4h 24x7 EVA 450-1TB HW Supp		UQ375E
AG691B	HP EVA M6412A 1TB FATA Fibre Channel Dual Port Hard Disk Drive	3-Year HP Support Plus 24	HA110A3-13J	



Family Information

		HP 3Y 4h 24x7 EVA 450-1TB HW Supp		UQ375E
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Service information for additional products referenced in this QuickSpecs can be found in their individual QuickSpecs.

Related Services

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

HP Proactive Select Service HP Proactive Select Service improves IT performance and manageability through the use of cost effective flexible proactive services. This proactive service allows you to accelerate the ROI of your technology environment, by tailoring specific services to more quickly take advantage of your investment.

HP Entry Storage Data Migration Service for Windows HP Entry Storage Data Migration Service for Windows offers you a cost competitive and convenient way to accommodate data migration triggered by a need to refresh or consolidate storage, or to create different storage tiers. This service offers a migration cost in line with the costs of storage products in small and medium-sized storage environments. The service is delivered via a skilled HP service specialist with special consideration for data availability, integrity, and ongoing operational performance during the transfer process

Product Number	Product Name	Service Name	Care Pack Services Product # and Band	Alternate Care Pack Service Product #
		HP Proactive Select Service	Contact your HP sales rep or Channel Partner for assistance	Contact your HP sales rep or Channel Partner for assistance
		HP Entry Storage Data Migration Service for Windows	Contact your HP sales rep or Channel Partner for assistance	Contact your HP sales rep or Channel Partner for assistance

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. 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 o Collaboration with other business and IT profession also Download of patches and drivers
- Access to diagnostic tools
- Proactive notification of relevant information
- Access to certain features of the support portal requires an HP service agreement.

To access the support portal, visit: <http://www.hp.com/support>

Remote Support Technology (RST)-HP Remote Support Pack

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



Family Information

for onsite and remote management.

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

Customer Technical Training

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

HP Services Awards

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

Additional Services Information

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

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

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



Configuration

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

Models

Enterprise Virtual Array 4400 Independent Components	The following components are available worldwide. The EVA4400 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.	
EVA4400 Dual Controller Array	HP StorageWorks 4400 Dual Controller Enterprise Virtual Array One 2U controller enclosure with two HSV300 controller module, mounting hardware, cables, controller mounting. Order one unit for each EVA4400 array configuration.	AG637B
EVA4400 Controller Pair Enclosure with embedded switch	HP StorageWorks EVA4400 Dual Controller Enterprise Virtual Array w/Embedded Switch One 2U Controller Enclosure with two HSV300-S controller modules, mounting hardware, cables, and controller mounting. Each controller module also includes an 8Gb/s 10 port B-series SAN switch, for a total of two switches and 20 ports per controller enclosure. Also included are four 8Gb/s SFPs. Per controller enclosure; 8 total. Additional 4Gb/s or 8Gb/s SFPs can be purchased separately. Order one unit for each EVA4400 array configuration. The embedded switches come with full fabric scalability enabled, licenses and docs. The included software has Advanced Fabric OS, Advanced Web Tools and Advanced Zoning 0514. Embedded switches support N_port_ID virtualization (NPIV), required for HP BladeSystem c-Class Virtual Connect Fibre Channel module connectivity See below for optional switch software.	AG805C
HP StorageWorks EVA 4400 300GB 15K HDD Starter Kit, Field install	EVA4400 Starter Kit includes one EVA4400 Dual Controller array with redundant power supplies, one M6412A 12-bay HDD enclosure with appropriate mounting rails, XCS 9.5xx firmware, 8x300 GB 15K rpm HDDs, Command View EVA (1) Unlimited license. Command View Media kit and HP SmartStart for HP EVA Storage are required and must be purchased separately.	BS195A
HP StorageWorks EVA 4400 300GB 15K HDD Starter Kit, Factory integrated	EVA4400 Starter Kit includes one EVA4400 Dual Controller array with redundant power supplies, one M6412A 12-bay HDD enclosure with appropriate mounting rails, XCS 9.5 firmware, 8x300 GB 15K rpm HDDs, Command View EVA (1) Unlimited license. Command View Media kit and HP SmartStart for HP EVA Storage are required and must be purchased separately. NOTE: requires rack purchase	BS194A
HP StorageWorks EVA 4400 450GB 10K HDD Starter Kit, Field install	EVA4400 Starter Kit includes one EVA4400 Dual Controller array with redundant power supplies, one M6412A 12-bay HDD enclosure with appropriate mounting rails, XCS 9.5 firmware, 8x450 GB 10K rpm HDDs, Command View EVA 9.2 Media CD, and (1) Unlimited license and HP SmartStart for HP EVA Storage.	AJ698B
HP StorageWorks EVA 4400 450GB 10K HDD Starter Kit, Factory integrated	EVA4400 Starter Kit includes one EVA4400 Dual Controller array with redundant power supplies, one M6412A 12-bay HDD enclosure with appropriate mounting rails, XCS 9.5 firmware, 8x450 GB 10K rpm HDDs, Command View EVA 9.2 Media CD and (1) Unlimited license and SmartStart for HP EVA Storage. NOTE: requires rack purchase	AJ697B



Configuration

HP StorageWorks EVA 4400 600GB 10K HDD Starter Kit, Field install	EVA4400 Starter Kit includes one EVA4400 Dual Controller array with redundant power supplies, one M6412A 12-bay HDD enclosure with appropriate mounting rails, XCS 9.5xx firmware, 8x600 GB 10K rpm HDDs, Command View EVA (1) Unlimited license. Command View Media kit and HP SmartStart for HP EVA Storage are required and must be purchased separately.	BS197A
HP StorageWorks EVA 4400 600GB 10K HDD Starter Kit, Factory integrated	EVA4400 Starter Kit includes one EVA4400 Dual Controller array with redundant power supplies, one M6412A 12-bay HDD enclosure with appropriate mounting rails, XCS 9.5 firmware, 8x600 GB 10K rpm HDDs, Command View EVA (1) Unlimited license. Command View Media kit and HP SmartStart for HP EVA Storage are required and must be purchased separately. NOTE: requires rack purchase	BS196A
M6412A FC Drive Enclosures & Accessories	HP StorageWorks M6412A Fibre Channel Drive Enclosure Select up to eight M6412A drive enclosures to expand EVA4400 configurations. Drive enclosures may be: <ol style="list-style-type: none">1. Ordered for on-site capacity additions to existing EVA4400 configurations.2. Ordered for field installation of complete EVA4400 configurations in conjunction with the EVA4400 Starter Kits.3. Installed by HP manufacturing into EVA configurations by ordering the enclosure with the factory integration part number (#0D1). This drive enclosure is compatible with EVA4400 arrays only. Up to eight drive enclosures are supported with each pair of HSV300 or HSV300-S controllers. The M6412A is a 2U dual-redundant FC Loop 12-bay disk enclosure with mounting hardware, and the necessary copper FC cables for connecting to an HSV300 or HSV300-S Controller pair. NOTE: The M6412A drive enclosure meets the very latest RoHS (Restriction of Hazardous Substance) requirements. The M6412 met an earlier version of the RoHS requirements. They are functionally equivalent otherwise. NOTE: A minimum of 8 disk drives per Fibre Channel type or FATA drive type are required per EVA4400 when using those drive types; a minimum of 6 Solid State Drives are required per EVA4400 when using those drive types.	AG638B

Expansion Options

The EVA4400 Dual Controller array can be added on-site into existing EVA configurations (or qualified rack systems), using the AG637A SKU. Additional M6412A drive enclosures (AG638A) can be ordered to expand an EVA4400 configuration.

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

Up to eight drive enclosures are supported with each pair of HSV300 controllers. The M6412A is a 2U dual-redundant FC Loop 12-bay disk enclosure with mounting hardware, and the necessary copper FC cables for connecting to an HSV300 Controller pair.

Order additional hard disk drives using the SKU's listed in Step 5. The EVA4400 supports up to 96 hard disk drives.

NOTE: Minimum of 8 disk drives per Fibre Channel or FATA drive types per



Configuration

EVA4400.

Step 2 - Choose a Rack - Base and Factory Integration Information

Factory Integration

Choose a rack to house your EVA4400 based on the HP 10000 G2 Series Rack.

NOTE: The 10000 G2 Series Rack is the only series supported for factory configuration.

Primary Configuration Rules

Use of the EVA4400 Factory Integration part number is required for component integration. The EVA4400 will be configured into a 42U HP 10000 G2 Series Rack with the appropriate PDU. If other products such as servers or back-up products are included in the cab a different PDU will be added (if required) or can be chosen from a list of appropriate offerings shown in the configuration tool. HP 10000 G2 Series Rack must be purchased. Additional EVA4400 controller enclosures and drive enclosures may be ordered for multiple subsystem integration at the factory. The 5642 (42U) Rack Cabinet System is supported for field installation. This rack may be purchased along with EVA component pieces for assembly in the field. The HP 5642 rack system is an entry level rack with sufficient features for easy access and ease of use.

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

HP 10000 Series G2 Racks

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

HP Rack 10642 G2 Shock (42U)	AF002A
HP Rack 10642 G2 w/Extn Shock (42U)	AF004A
HP Rack 10636 G2 Shock (36U)	AF012A
HP Rack 10636 G2 w/Extn Shock (36U)	AF014A
HP Rack 10622 G2 Shock (22U)	AF021A
HP Rack 10636 G2 Modular Cooling System (MCS) Shock (42U)	AF098A
HP Rack 10842 G2 800mm Wide Shock (42U)	AF042A

For more information on the HP rack offerings, please see the following URL:
<http://h18004.www1.hp.com/products/servers/proliantstorage/racks/index.html>

For PDUs, see:

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

HP PDU Pivot Kit

Used to reclaim 2U of space in a 10000 G2 Series Rack with EVA4400 configurations. This kit allows the PDUs to be placed in the back of the rack without requiring any rack U space.

AG730A

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

HP Rack 5642 System for Field Installation only

5642 (42U) Rack Cabinet System

358254-B21

For more information on this rack, please see:

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



Configuration

Step 3 - Firmware and Management Software

Controller Firmware and Installation and Management Software HP StorageWorks EVA4400 is factory installed with XCS v9.534. Media kits and licenses are required to support HP Command View EVA, HP Continuous Access EVA and HP Business Copy EVA. EVA4400 Starter Kits contain (1) Command View EVA unlimited license for EVA4400.

HP StorageWorks EVA4400 XCS v9.5xx controller media download is available from HP.com. These downloads are available as archival media for the EVA4400 from the following link:
<http://h18006.www1.hp.com/products/storageworks/eva/index.html>

HP Command View EVA / SBM v9.2 or / ABM v9.2 supports the EVA4400 and XCS V9.534. An HP Command View License-to-Use (LTU) must be purchased for each EVA controller pair. Each HP EVA must be licensed with the appropriate HP Command View LTU(s) to be in compliance with the End User License Agreement (EULA) and the Command View license monitoring function.

The Command View licensed capacity per EVA must be equal to, or greater than the total raw capacity of each EVA. HP Command View EVA may be purchased in increments of a 1TB LTU (one or multiple 1TB LTUs based upon the EVA's raw capacity), or an HP Command View Unlimited Capacity LTU may be purchased which will support up to the maximum raw storage capacity of the EVA. The license to use requirements are the same whether using Command View EVA SBM and/or ABM. One license applies to both.

OPTIONAL SOFTWARE: EVA4400 optional software can be found at the following URL:
<http://h18006.www1.hp.com/storage/software.html>

HP SmartStart for EVA configuration utility

Install and configure the EVA4400 using HP SmartStart for EVA Storage configuration utility, which runs on Windows Server systems. This software installs necessary drivers on Windows Server 2003 and 2008 application servers and Command View EVA / SBM v9.0 or v9.1 on a Windows Server 2003 management server, as well as provisions the storage. During installation, click to accept the terms of the HP SmartStart for EVA* Storage configuration utility End User License Agreement (EULA). No separately orderable LTU is required for HP SmartStart for EVA Storage.

*For more information on SmartStart, see:
http://h18000.www1.hp.com/products/storageworks/evasmartstart/relatedinfo.html?jumpid=reg_R1002_USEN



Configuration

Step 4 - Hard Disk Drives

Drives are orderable at the time the array is purchased, or can be added in the future when additional capacity is required. Use these SKUs whenever ordering hard disk drives for the EVA 4400, either for factory integration or when adding additional capacity. Note that these SKUs apply ONLY to the EVA4400 and can't be used with other EVA models.

HP StorageWorks FC and FATA Drives

NOTE: A minimum of eight (8) high performance FC or FATA or 6 solid state drives are required per EVA4400.

HP StorageWorks 72GB 4Gb dual port FC EVA M6412A SSD	AR055A
HP EVA M6412A 300GB 10K 4Gb Fibre Channel Dual Port Hard Disk Drive	AP766B
HP EVA M6412A 450GB 10K 4Gb Fibre Channel Dual Port Hard Disk Drive	AP731B
HP EVA M6412A 600GB 10K 4Gb Fibre Channel Dual Port Hard Disk Drive	AP732B
HP EVA M6412A 146GB 15K 4Gb Fibre Channel Dual Port Hard Disk Drive	AG556B
HP EVA M6412A 300GB 15K 4Gb Fibre Channel Dual Port Hard Disk Drive	AG690B
HP EVA M6412A 450GB 15K 4Gb Fibre Channel Dual Port Hard Disk Drive	AG803B
HP EVA M6412A 600GB 15K 4Gb Fibre Channel Dual Port Hard Disk Drive	AJ872B
HP EVA M6412A 1TB FATA Fibre Channel Dual Port Hard Disk Drive	AG691B

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

Disk drive Bulk Pack shipping

Bulk Pack Shipping Option

519137-B21
(Americas & APJ only)

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

NOTE: All drives ordered with a disk drive bulk pack option must be the same type per bulk pack. One bulk pack must be ordered for each 10 drives. The drive part numbers must be entered directly after the bulk pack part number. 0D1 will appear after the disk drive part number to indicate that the drives are linked to the bulk pack. The bulk pack shipping option is for the Americas and APJ regions only.

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



Configuration

Step 5 - Cables and SFPs

FC cable – Copper SFP	The following cables are used with the M6412 drive enclosure but are not necessary for new installations. These cables are for use inside the cab between the controllers and drive enclosures if replacement cables are required	
	Cable FC Copper SFP 0 .6m	321624-B21
	Cable FC Copper SFP 2m	324394-B21
8 Gb/s SFP (Small Form-Factor Profile model Transceiver)	HP 8Gb Shortwave B-series FC SFP+ 1 Pack for use with EVA4400 embedded switch	AJ716A
8 Gb/s SFP (Small Form-Factor Profile model Transceiver)	HP 8Gb Longwave B-series FC SFP+ 1 Pack for use with EVA4400 embedded switch	AJ717A
4 Gb/s SFP (Small Form-Factor Profile model Transceiver)	HP 4Gb Shortwave B-series FC SFP 1 Pack for use with EVA4400 embedded switch	AJ715A
FC cable – 1 Gb to 2 Gb/s (optional) (LC to SC)	<p>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. The SFP connector can support 8Gb I/Os, 4Gb I/Os, 2Gb I/Os and/or 1Gb I/Os.</p> <p>NOTE: One of these cables (either LC to SC or LC to LC) is required per FC port of each HSV controller.</p>	
	FC Short Wave 2-Meter Cable, LC/SC (1Gb to 2Gb)	221691-B21
	FC Short Wave 5-Meter Cable, LC/SC (1Gb to 2Gb)	221691-B22
	FC Short Wave 15-Meter Cable, LC/SC (1Gb to 2Gb)	221691-B23
	FC Short Wave 30-Meter Cable, LC/SC (1Gb to 2Gb)	221691-B26
	FC Short Wave 50-Meter Cable, LC/SC (1Gb to 2Gb)	221691-B27
FC cable - OM2 LC-LC type cables	<p>NOTE: SFP - Small Form-Factor Profile on the ports of the EVA4x00/6x00/8x00. One of these cables (LC to LC) is required per FC port used of each HSV controller.</p>	
	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
FC cable - OM3 LC-LC type cables	.5 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ833A
	1 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ834A
	2 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ835A
	5 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ836A
	15 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ837A
	30 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ838A
	50 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ839A



Configuration

Step 6 - Optional Software

Remote Replication Software HP StorageWorks Continuous Access EVA is a controller-based application that performs real-time replication between HP StorageWorks enterprise virtual arrays. For more information, see Continuous Access description earlier in this document. Please see the product URL for ordering information and part numbers:
<http://h18006.www1.hp.com/storage/software.html>

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

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

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

Standard Edition SRM Media and License to Use (LTU)

HP Storage Essentials Standard Edition SRM Media Kit T5314AA

HP Storage Essentials Standard Edition SRM LTU T5315AA

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

HP Storage Essentials NAS Manager 1 TB LTU T4294AA

HP Storage Essentials File System Viewer 1 TB LTU T4292AA

HP Storage Essentials Database Viewer 1 MAL LTU T4289AA

HP Storage Essentials Exchange Viewer 1 MAL LTU T4288AA

HP Storage Essentials Backup Manager 1 TB LTU T4295AA

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

NOTES:

1. Refer to the HP Standard Edition SRM Software QuickSpec for product and licensing details:

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

2. Standard Edition SRM LTU contains bundled licensing comprising of Edition 150 MAPs, 3TBs of File System Viewer, NAS Manager, and 1 MAL for either the Exchange Viewer or the Database Viewer. This is a customer choice.

HP Data Protector Software HP Data Protector Software provides an end to end solution that is completely automated, managed and controlled from one user interface, for complete, fast data protection with no impact to the virtual environment. HP is the only vendor providing this level of automation for VMware or Hyper-V.

More Information:

<http://h71028.www7.hp.com/enterprise/w1/en/software/information-management-data-protector.html>



Configuration

Step 7 - Optional Hardware

The EVA File Services and EVA iSCSI Connectivity options provides superior storage consolidation, management and total cost of ownership. The EVA File Services support both block and file data concurrently with high availability and scalable performance. The EVA iSCSI Connectivity Option extends the FC SAN investment with integrated multi-protocol support, allowing customers to incorporate iSCSI servers without requiring additional storage arrays or management costs

Ordering an EVA-File Server or iSCSI Connectivity Option is easy. The EVA File Services and iSCSI Connectivity Option will be factory integrated into EVA4400 configurations.

The EVA File Services Option is available in two file serving protocols, NFS (Linux) or CIFS (Windows).

HP EVA for Windows File Services Factory Integration Includes, two HP DL380G5-WSS Clustered Gateway nodes, one J4900BZ HP ProCurve Ethernet 2626 switch, two A7984A HP StorageWorks 4/8 Base SAN switches, sixteen A7446B HP 4Gb Short Wave Transceivers, Ethernet interconnect cables between the internal modules, FC interconnect cables between the internal modules, power cords for all modules, and mounting hardware for all modules. Factory Integrated hardware, Installation and Startup. AG686A

NOTE: Requires the purchase of an EVA4400 on the same order. One EVA- File Services can support multiple EVA arrays.

NFS File Services

HP EVA for Linux File Services Includes, two HP DL380G5-SL Clustered Gateway nodes, one J4900BZ HP ProCurve Ethernet 2626 switch, two A7984A HP StorageWorks 4/8 Base SAN switches, sixteen A7446B HP 4Gb Short Wave Transceivers, Ethernet interconnect cables between the internal modules, FC interconnect cables between the internal modules, power cords for all modules, and mounting hardware for all modules. Factory Integrated hardware, Installation and Startup. AG687A

NOTE: Requires the purchase of an EVA4400 on the same order. One EVA- File Services can support multiple EVA arrays.

HP 4400 Scalable NAS File Services Base Model

The HP StorageWorks 4400 Scalable NAS File Services offers scalable file serving performance for medium-sized customers that cannot afford any downtime for their business-critical applications. The HP 4400 Scalable NAS File Services is a fully factory configured storage solution that includes an HP StorageWorks Enterprise Virtual Array 4400 (EVA4400) with dual array controllers and up to 12 TB of storage standard, two high performance file serving nodes, redundant Fibre Channel switches, management and replication software, and support for Windows or Linux. The HP 4400 Scalable NAS File Services does not have a single point of failure. It allows customers to transparently increase application throughput far in excess of traditional NAS products and easily grow storage capacity online without service disruption. The HP 4400 Scalable NAS File Services offers great total cost of ownership with a low initial purchase price and a shared data architecture that yields lower management expenses from a single shared pool of file serving nodes and storage.

HP StorageWorks 4400 Scalable NAS File Services for Windows HP 4400 Scalable NAS for Windows includes AN595B

- EVA4400 Dual Controller with Embedded SW
- M6412A FC HDD Enclosure

Two HP DL360G6-Windows X5500 Network Storage GatewayNodes w/24 GB RAM each

- HP ProCurve Switch 2910
- Command View for EVA Unlimited License



Configuration

- Business Copy for EVA and 1 TB License
- 42U 10000 Series Rack
- TFT7600 Rackmount Keyboard and Monitor
- SmartStart for HP EVA Storage

Short Wave Transceivers, Ethernet interconnect cables and FC interconnect cables.
Factory Integration and pre-configuration.

NOTE: [Installation and Startup is included.](#)

or

HP StorageWorks 4400 Scalable NAS File Services for Linux

HP 4400 Scalable NAS for Linux includes

AN596B

- EVA4400 Dual Controller w/Embedded SW
- M6412A FC HDD Enclosure

Two HP DL360G6 Linux X5500 Network Storage Gateway Nodes w/24 GB RAM each

- HP ProCurve Switch 2910
- Command View for EVA Unlimited License
- Business Copy for EVA and 1 TB License
- 42U 10000 Series Rack
- TFT7600 Rackmount Keyboard and Monitor
- SmartStart for HP EVA Storage

Short Wave Transceivers, Ethernet interconnect cables and FC interconnect cables.
Factory Integration and pre-configuration.

NOTE: [Installation and Startup is included.](#)

For more information:

http://h18006.www1.hp.com/products/storageworks/scnas_4400/index.html

The EVA iSCSI Connectivity Options supports Windows and Linux environments.

HP StorageWorks iSCSI Connectivity Option

HP StorageWorks EVA4400 iSCSI Connectivity Option

AJ713A

Order this part for all new installations. Includes One unit, shelf, brackets, copper FC cables and documentation. Includes one unit to mount in existing shelf and documentation. Includes support for 16 initiators.

HP StorageWorks EVA4400 iSCSI Connectivity Upgrade Option

AJ714A

For multi-path (dual unit high availability) order both part numbers. (The second hardware unit installs into the shelf that ships with AJ713A.)

HP StorageWorks iSCSI Initiator Upgrade license

T5471A

Initiator license for additional 32 ports for a total of 48

NOTE: [For more information on the iSCSI Connectivity Options:](#)

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

HP StorageWorks MPX200 Multifunction Router

HP StorageWorks MPX200 Multifunction Router 1 GbE Base Chassis
Includes:

AP771A

- (1) chassis,
- (1) 1 GbE blade,
- rail kit,



Configuration

- accessory kit and
- documentation.

Includes redundant power supplies.

HP Storage Works MPX200 Multifunction Router 1 GbE Upgrade Blade.

AP772A

Includes:

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

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

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

HP StorageWorks MPX200 Multifunction Router 10 - 1 GbE Base Chassis

AP773A

Includes:

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

Includes redundant power supplies.

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

Includes:

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

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

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

HP StorageWorks 12000 Virtual Library System EVA Gateway

Expanding the power of the HP StorageWorks Enterprise Virtual Array (EVA), the HP StorageWorks 12000 Virtual Library System EVA Gateway accelerates backup performance in complex SAN environments while improving overall reliability. For more information on the VLS EVA Gateway, please visit the link below.

http://h18006.www1.hp.com/storage/disk_storage/disk_to_disk/vls/12000vls/index.html

AH814A

HP ProLiant Storage Servers and supported Fibre Channel HBAs

Select HP ProLiant Storage Servers (plus a Fibre Channel HBA) add file and print services to an EVA or Fibre Channel SAN. ProLiant DL380 G5 x64 SAN Storage Server and DL585 G2 Storage Server gateways each feature Microsoft's Windows Unified Data Storage Server 2003 operating system that also includes Microsoft iSCSI Software Target and a cluster license standard (Microsoft iSCSI Software Target is optional for other DL380 G5 Storage Server models). In addition, any ProLiant DL380 G5 Storage Server or DL585 G2 Storage Server is a perfect platform from which to



Configuration

run Command View EVA. You stretch your investment even further when you host EVA management, file and print services, and iSCSI connectivity all from the same ProLiant Storage Server gateway solution.

HP ProLiant DL380 G5 Base Storage Server NOTE: Microsoft Windows Storage Server 2003 R2 Standard x64 Edition O/S.	AG815A
HP ProLiant DL380 G5 1.16TB SAS Storage Server NOTE: Microsoft Windows Storage Server 2003 R2 Standard x64 Edition O/S.	AG816A
HP ProLiant DL380 G5 x64 SAN Storage Server NOTE: Microsoft Windows Unified Data Storage Server 2003 Enterprise x64 Edition O/S.	AG771A
HP ProLiant DL585 G2 Storage Server NOTE: Microsoft Windows Unified Data Storage Server 2003 Enterprise x64 Edition O/S.	AG630A
HP StorageWorks FC2142SR 4Gb PCIe HBA	A8002A
HP StorageWorks FC2242SR Dual Channel 4 Gb PCIe HBA	A8003A
HP StorageWorks FC1142SR 4Gb PCIe HBA	AE311A
HP StorageWorks FC1242SR Dual Channel 4 Gb PCIe HBA	AE312A
HP StorageWorks FC2143 4Gb PCI-X 2.0 HBA	AD167A
HP StorageWorks FC2243 Dual Channel 4Gb PCI-X 2.0 HBA	AD168A
HP StorageWorks FC1143 4Gb PCI-X 2.0 HBA	AB429A
HP StorageWorks FC1243 Dual Channel 4Gb PCI-X 2.0 HBA	AE369A
HP StorageWorks 81E 8Gb PCI-e FC HBA	AJ762A
HP StorageWorks 82E 8Gb Dual-port PCI-e FC HBA	AJ763A
HP StorageWorks 82Q 8Gb Dual-Port PCI-e FC HBA	AJ764A
HP StorageWorks 81Q PCI-e FC HBA	AK344A

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: HBAs, 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>

Legacy EVA Hardware

Hard Disk Drives

HP StorageWorks FC Drives **NOTE:** Four (4) disk drives, either size/type, are required per disk enclosure per system. These drives support EVA3000/5000, EVA4000/6000/8000 and EVA4100/6100/8100.

300 GB 10K rpm dual-port 2 Gb/s FC-AL 1-inch (2.54 cm) Drive	364622-B23
HP StorageWorks EVA 450 GB 10K Fibre Channel Hard Disk Drive	AP729B
HP StorageWorks EVA 600 GB 10K Fibre Channel Hard Disk Drive	AP730B
146 GB 15K rpm dual-port 2/4 Gb/s FC-AL 1-inch (2.54 cm) Drive	364621-B23



Configuration

300 GB 15K rpm dual-port 2/4 Gb/s FC-AL 1-inch (2.54 cm) Drive	AG425B
450 GB 15K rpm dual-port 2/4 Gb/s FC-AL 1-inch (2.54 cm) Drive	AG804B
600 GB 15K rpm dual-port 2/4 Gb/s FC-AL 1-inch (2.54 cm) Drive	AP751B
1TB FATA disk dual-port 2 Gb FC Hybrid disk drive factory integrated	AG883A

NOTE: There is a minimum order requirement, with the first installation of FATA add-on drives on an EVA, a minimum of 8 FATA drives are required to create the new NearOnline disk group.

FC Loop Switch Kits

This option is mandatory when upgrading the EVA4x00 2C1D to and EVA6x00 with 5 shelves or higher. Addition of loop switches to an EVA4000 or EVA4100 creates an EVA6x00 and must be licensed as an EVA6x00.

HP EVA- Dual Loop Switch Option

AD557B

Contains two FC loop switches, mounting hardware and cables.

NOTE: This kit is mandatory when upgrading the 4Gb EVA4000-A or EVA4100. Addition of 5 shelves or more requires a Dual Loop Switch kit. Addition of the loop switch to an EVA4000 or EVA4100 (1 or more shelves) creates an EVA6x00. Four FC loop switches (2 AD557B) are required when upgrading the 4Gb EVA8000-A or EVA 8100 2C2D to 5 shelves or higher. 3U spare space is required to install the FC Loop Switch Kit.

3U spare space is required to install the FC Loop Switch Kit.

The EVA8000-A or EVA8100 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.

Select M5314B drive enclosures to expand EVA configurations Drive enclosures may be ordered for on-site capacity additions to existing EVA3000/5000/4000/6000/8000 configurations.

AD542B*

NOTE: Addition of the loop switch pair to an HSV200B controller pair (with 1 to 8 drive enclosures) creates an EVA6000.

Up to 18 drive enclosures are supported with each pair of HSV210B (EVA8100) with 4 loop switches.

M5314B FC Drive Enclosure

The M5314B is a 3U dual-redundant FC Loop 14-bay disk enclosure with mounting hardware, and the necessary copper FC cables for connecting to an HSV200 or HSV200-A Controller pair.

NOTE: Minimum of 8 disk drives, of any size, are required per Fibre Channel or FATA drive types

Select M5314C drive enclosures to expand EVA4100/6100/8100 configurations: Drive enclosures may be:

AD542C*

1. Ordered for on-site capacity additions to existing EVA4100/6100/8100 configurations.

Compatible with EVAs (EVA4100/6100/8100 arrays only). Without a loop switch pair, up to four drive enclosures are supported with each pair of HSV200B controllers (EVA4100, EVA4100 Starter Kits, EVA4100/6100 Controller Assembly).



Configuration

An HSV200B controller with a loop switch pair supports 1 to 8 M5314C Drive Enclosures.

NOTE: Addition of the loop switch pair to an HSV200B controller pair (with 1 to 8 drive enclosures) creates an EVA6100.

Up to 18 drive enclosures are supported with each pair of HSV210B (EVA8000) with 4 loop switches.

M5314C FC Drive Enclosure

The M5314C is a 3U dual-redundant FC Loop 14-bay disk enclosure with mounting hardware, and the necessary copper FC cables for connecting to an HSV200B and HSV210B Controller pair.

NOTE: Minimum of 8 disk drives, of any size, are required per Fibre Channel or FATA drive types

Enterprise Virtual Array Expansion Cabinet Example Configurations for EVA8000			
Expansion Cabinet Components	0C6D	0C12D	Description
AF002A	1	1	EVA 42U HP 10000 G2 Series Rack
252663-xxx	2 (minimum)	2 (minimum)	Country/component requirement specific
336881-B21	1	2	Can bus to Can bus cable
AD542B	6	12	M5314B (for EVA8000) FC Drive Enclosure
345580-B21	6	12	Cable Kit, Expansion Cab Drive Shelf
<p>NOTE: The EVA Expansion cabinets examples defined above may be used with any existing or 2 or 4Gb EVA8000. NOTE: Installation of an expansion cabinet must be done offline.</p>			

Enterprise Virtual Array Expansion Cabinet Example Configurations for EVA8100			
Expansion Cabinet Components	0C6D	0C12D	Description
AF002A	1	1	EVA 42U HP 10000 G2 Series Rack
252663-xxx	2 (minimum)	2 (minimum)	Country/component requirement specific
336881-B21	1	2	Can bus to Can bus cable
AD542C	6	12	M5314C FC Drive Enclosure
345580-B21	6	12	Cable Kit, Expansion Cab Drive Shelf
<p>NOTE: The EVA Expansion cabinets examples defined above may be used with any EVA8100. NOTE: Installation of an expansion cabinet must be done offline.</p>			



Configuration

EVA4000/4100 Upgrade	EVA6000/6100	SKUs Required
EVA4000 to 6000-A FC loop Switches (kit contains 2 switches, mounting hardware and cables)	Yes	AD557B
HP StorageWorks EVA XCS v6.2 or higher	Yes	Download ⁵
Command View EVA	Yes	See URL ³
Command View Licenses ²	Yes	See URL ³
Business Copy EVA	Yes	See URL ³
Business Copy Upgrade license	Yes	See URL ³
Continuous Access EVA	Yes	See URL ³
Continuous Access EVA Upgrade license	Yes	See URL ³
HP Services assessment and upgrade installation	Yes	See URL ³

NOTES:

¹ 2 FC loop switches must be added creating an EVA6000/6100; which must then be licensed as an EVA6000/6100. Command View EVA and array integrated software license (if previously installed) for Business Copy EVA, Dynamic Capacity Manager and Continuous Access EVA upgrade licenses must be purchased.

² Proper Command View licensing requires a License To Use (LTUs) equal to or greater than the total raw capacity of each array and may be purchased in additive increments of 1TB or Unlimited LTUs).

³ <http://h18006.www1.hp.com/storage/software.html>

⁴ <http://www.hp.com/hps/storage/>

⁵ <http://h18006.www1.hp.com/products/storageworks/eva/>



Technical Specifications

EVA4400

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
Operating Vibration	Sine 5-10 Hz 0.020" (0.5mm) double amplitude displacement, 10-500 Hz 0.1g, Random 10-500Hz at 0.15 Grms
Non-operating Vibration	Sine 10-150 Hz 0.3g, Random 10-500 Hz at 0.5 Grms
Shipping Vibration (packaged, on shock pallet)	Sine 5-150 Hz 0.5g, Random 0.86 Grms from 5-300 Hz, consisting of 5-100 Hz at 0.0059 g2/Hz and 100-300 Hz at 0.000049 g2/Hz
Operating Shock	5g half-sine 10mSec
Non-operating Shock	8g half-sine 10mSec
Shipping Shock (packaged, on shock pallet)	Horizontal: 10-deg incline at 1m/Sec, Vertical rotational edge 0.15m
Altitude	Up to 8,000 ft (2,400 m)
Air Quality	Not to exceed 500,000 particles per cubic foot of air at a size of 0.5 micron or larger

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

NOTE: This power information is for a maximum configuration using the default 208 - 240 Volt single-phase PDUs. Other PDUs may use different plugs, voltages, etc. For more information on PDU support, please see the following URL:

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

EVA4400

AC plug type (quantity 2)	North America – 3 wire NEMA No. L6-30P, 30 Amp (208 to 240V, 50-60Hz 30A) Europe - 3 wire, 2 pole IEC 309, 30 amp, (220 to 240V 50Hz 32A) NOTE: For other voltages, including 3-phase or 100-127V, see the PDU information for plug types at: http://h18004.www1.hp.com/products/servers/proliantstorage/power-protection/pdu.html .
Number of phases	Single (3-phase PDUs are also available)
Rated current	11A @ 200V-240V AC, 50/60Hz, 5.5A per power cord (2 PDUs) 22A @ 100-127V AC, 60/50Hz, 11A per cord (2 PDUs)
Nominal Line Voltage	North America - 208 or 230V or 120V Europe - 230V Japan - 206V or 108V Latin America - 208 or 240V
Range Line Voltage	187 to 256V or 100 to 127V
Line Frequency	North America 60 Hz, Europe 50 Hz, Japan 50 or 60 Hz, Latin America 60K or 50Hz



Technical Specifications

Enterprise Virtual Array 4400

NOTE: This data represents fully populated drive shelves with 450GB 15K rpm disk drives under typical heavy load performance. Other drive types may vary slightly.

NOTE: At idle, the system operates at approx. 15% less power than at typical.

		2C1D	2C2D	2C3D	2C4D	2C5D	2C6D	2C7D	2C8D
Typical	Total System Wattage without embedded switches	359	615	871	1127	1383	1639	1895	2151
	Total System BTU/hour	1225	2098	2971	3844	4716	5589	6462	7335
	Input Current per plug, 230V	0.8	1.4	2.0	2.5	3.1	3.7	4.3	4.9
	Input Current per plug, 208V	0.9	1.5	2.2	2.8	3.5	4.1	4.7	5.4
	Input Current per plug, 115V	1.6	2.8	4.0	5.2	6.4	7.5	8.7	9.9
	Input Current per plug, 100V	1.9	3.3	4.7	6.0	7.4	8.8	10.1	11.5
	In Rush Current (A) per plug, 208V	70	100	130	149	168	178	188	200
Failover Mode	Input Current (A), 230V	1.5	2.5	3.6	4.7	5.7	6.8	7.9	8.9
	Input Current (A), 208V	1.6	2.8	4.0	5.2	6.4	7.5	8.7	9.9
	Input Current (A), 115V	3.0	5.1	7.3	9.5	11.7	13.8	16.0	18.2
	Input Current (A), 100V	3.5	6.0	8.5	11.0	13.6	16.1	18.6	21.2

Typical	Total System Wattage with embedded switches	441	697	953	1209	1465	1721	1977	2233
	Total System BTU/hour	1504	2377	3250	4123	4996	5869	6742	7615
	Input Current per plug, 230V	1.0	1.6	2.2	2.7	3.3	3.9	4.5	5.0
	Input Current per plug, 208V	1.1	1.7	2.4	3.0	3.7	4.3	5.0	5.6
	Input Current per plug, 115V	2.0	3.2	4.4	5.6	6.7	7.9	9.1	10.3
	Input Current per plug, 100V	2.4	3.7	5.1	6.5	7.8	9.2	10.6	12.0
Failover Mode	Input Current (A), 230V	1.8	2.9	4.0	5.0	6.1	7.2	8.2	9.3
	Input Current (A), 208V	2.0	3.2	4.4	5.6	6.8	7.9	9.1	10.3
	Input Current (A), 115V	3.7	5.4	8.0	10.2	12.4	14.6	16.7	18.9
	Input Current (A), 100V	4.3	6.8	9.4	11.9	14.4	17.0	19.5	22.0

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

NOTE: For the lower voltages, PDUs may not be able to support the maximum power/current and the power/current may be divided across two or more PDUs.

NOTE: For more detailed information on a specific configuration and drives please utilize the EVA Power Calculator at: <http://www.hp.com/servers/powercalculator>

* Total system wattage would increase by 85 watts with the embedded switch option. Input current would increase as well.

Enterprise Virtual Array EVA4400 Product Dimensions, Weight and Clearance



Technical Specifications

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
EVA4400 2C8D Configuration (42U Graphite cab)	78.75 (200.03)	23.7 (60.3)	40.2 (102.2)	860 (390.09)	30 (76.2)	30 (76.2)
EVA4400 Dual Controller Array	3.5/8.89	17.6/44.70	24.5/62.3	48/21.8	N/A	N/A
M6412A Drive Enclosure	3.5/8.89	17.6/44.70	23.75/60.33	57/25.86	N/A	N/A

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For hard drives, 1 GB = 1 billion bytes (1000³ or 10⁹). Actual usable capacity can be less, based on Vraid types used.

