Overview

The EVA4400 is no longer being sold. However, add-on FC disk enclosures and add-on FC disk drives are still available. And, EVA software is still available.

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 EVA4100/6100/8100 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 and 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 complementary HP EVA hardware, software products, solutions and HP services for the EVA4400 including the MPX200 Multifunction Router which provides 1 GbE and 10 GbE, iSCSI, FCIP, and 10Gb FCoE (Fibre Channel over Ethernet) connectivity; Business Copy EVA; Continuous Access EVA; Dynamic Capacity Management; HP Storage Essentials Performance Edition Software for path aware performance management; file services and solution 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
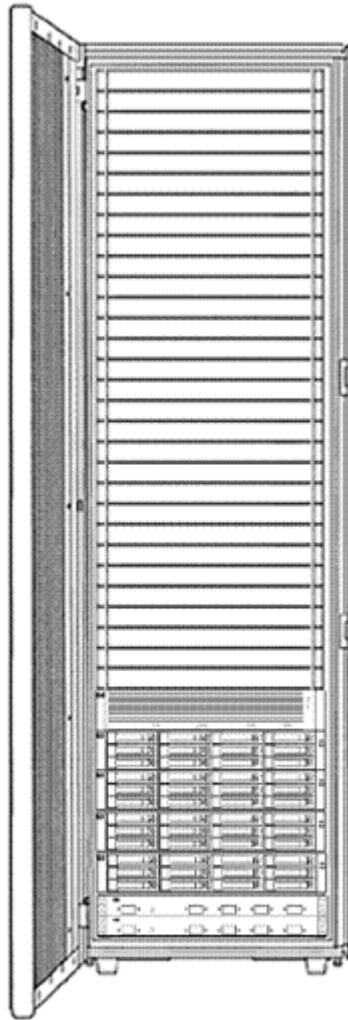
EVA4400 2C4D

What's New

- The EVA4400 is no longer being sold. However, add-on FC disk enclosures and add-on FC disk drives are still available. And EVA software is still available.

QuickSpecs

Product Highlights

	EVA4400	EVA6400	EVA8400
Controller Model	HSV300	HSV400	HSV450
Virtual Controller Software (XCS)	XCS v10.0xx	XCS v10.0xx	XCS v10.0xx
Management Software	Command View EVA v9.4 or v10.0	Command View EVA v9.4 or v10.0	Command View EVA v9.4 or v10.0
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 Business Copy EVA	Yes	Yes	Yes
Remote Data Replication - HP 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 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 (SSDs do not support Vraid 0 or Vraid 6)	Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5, Vraid 6 & Cross Vraid Snaps (SSDs do not support Vraid 0 or Vraid 6)	Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5, Vraid 6 & Cross Vraid Snaps (SSDs do not support Vraid 0 or Vraid 6)
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 132TB	.4 to 330TB**	.4 to 550TB**
Drive capacities and speeds	200GB SSD 400GB SSD 450GB 10K rpm 600GB 10K rpm 300GB 15K rpm 450GB 15K rpm 600GB 15K rpm 1TB FATA 2TB FATA	200GB SSD 400GB SSD 450GB 10K rpm 600GB 10K rpm 300GB 15K rpm 450GB 15K rpm 600GB 15K rpm 1TB FATA 2TB FATA	200GB SSD 400GB SSD 450GB 10K rpm 600GB 10K rpm 300GB 15K rpm 450GB 15K rpm 600GB 15K rpm 1TB FATA 2TB 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		

** The maximum single disk group size is 400TB. So two disk groups are required beyond 400TB.

EVA 4400 Capabilities

- Support for Command View v10.0 with integrated Single Pane of Glass management, with Performance Advisor software for performance monitoring any EVA except the EVA3000/5000
- New Thin Provisioning software and Dynamic Capacity Management software
- Enhanced Large LUN support including the ability to shrink and grow a LUN greater than 2TB, integrated with Business Copy and thin provisioning
- Easy to install and configure in just a few hours (factory configured unit) with the SmartStart configuration utility*

Product Highlights

- 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 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
- Management of up to 1024 LUNs or 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. Vraid0 is not supported on SSDs.
- 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 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:

Product Highlights

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

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 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. |

Product Highlights

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

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/services/storage

Product Highlights

Remote Replication Solutions (Software options)	HP Continuous Access provides disaster tolerant replication across a Fibre Channel SAN. Continuous Access EVA performs real-time replication between HP 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 Disaster Tolerant Solution for mySAP Business Suite on EVA offers a business continuance solution for SAP environments, where data integrity and value added functionality are high priorities. Best practices for implementing remote mirroring of an SAP database as part of an overall data protection strategy with SAP applications can be found at: http://h71028.www7.hp.com/erc/downloads/4aa1-5683Enw.pdf
Local Replication Solutions (Software options)	The HP Business Copy is a local replication application for the EVA family. It incorporates Virtually Capacity-free Snapshot (Vsnaps), 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.
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.
Thin Provisioning	Thin Provisioning provides the ability to create a vdisk such that the operating system sees more capacity available than is physically allocated by the array. As the OS writes data to the vdisk, the firmware will automatically allocate more space up to the size of the vdisk. The following are some of the benefits of thin provisioning. It allows customers to: ● Purchase only the storage capacity and performance actually needed today ● Take advantage of ongoing storage price reductions by delaying purchases until capacity is needed ● Save power and cooling costs immediately ● Reduce stress by reducing the need to anticipate and justify expenses for resources that might never be needed ● Increase array capacity online, without any impact to the server/application

Product Highlights

- Increase storage utilization and return on investment immediately (Stop paying for storage that is never used)
- Use virtual storage with your virtual machines
- Never extend a File System (FS) again - make the Vdisk larger than needed the first time
- Easily shrinking the thin provisioned Vdisk

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 Storage 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

Capacity Management

HP EVA Dynamic Capacity Management Software is a comprehensive software solution that automates storage provisioning and improves capacity utilization on the HP 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

Product Highlights

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 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

EVA with HP Storage Essentials Storage Resource Management Software Suite

HP Storage Essentials Storage Resource Management Software Suite and HP Storage Essentials Performance Edition 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 a portfolio of 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

Product Highlights

HP Storage Essentials SRM Performance Pack Software and EVA (end-to end EVA SAN Performance Management)	HP Storage Essentials Performance 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 performance of their EVA storage, hosts and SAN infrastructure with real-time monitoring, historical trend analysis and trend extrapolation.

For more information on HP Storage Essentials Performance Edition Software visit: http://h18006.www1.hp.com/products/storage/software/e-suite/index.html |
| **HP 12000 Virtual Library System EVA Gateway** | Expanding the power of the HP Enterprise Virtual Array (EVA), the HP 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 MPX200 Multifunction Router (FC/FCoE/iSCSI). This 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 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: |

Product Highlights

- Delivering SAN-like benefits over the Ethernet IP network, the HP 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 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 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 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 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

Product Highlights

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.

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

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

HP 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 |

Product Highlights

- 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:
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, 200 GB, and 400 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. **NOTE:** SSD are supported with Vraid 1 and 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 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 and 2TB 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 v10.0. 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 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 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 X1800, X3400, X3800 Network Storage Systems are the perfect platforms from which to run Command View EVA. HP 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 P9500 and XP	HP EVA4400 disk arrays can be connected as external storage devices behind the HP P9500 and XP family of disk arrays. The P9500/XP24000/XP20000 simplifies the management of heterogeneous SAN environments through its ability to support up to 255PB/ 247 PB/ 96 PB respectively of external storage-all configured 'behind' a single P9500/XP. P9000/XP External Storage software uses advanced virtualization technology to allow storage administrators to host P9500/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 P9500/XP disk array. In effect, the P9500/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 P9500/XP24000/XP20000, data can be moved back and forth dynamically across tiers, all of which is invisible to the applications. The P9500/XP 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 or the HP P9000 External Storage Software web page at: http://h18006.www1.hp.com/storage/software/p9000/ess/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 EVA4400 ships with XCS v10.0xx factory installed on new EVAs. XCS v10.0xx also supports the EVA6400/8400. The base XCS License to use for the EVA is contained in the hardware shipment. XCS v10.0 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 10.0xx to v9.5xx is not supported. XCS is available for download at the "software & drivers" link: http://h18006.www1.hp.com/products/storageworks/eva/index.html HP 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.
HP Storage Management Pack for Microsoft System Center	The HP Management Pack for Systems Center Operations Manager provides seamless integration with Microsoft Systems Center Operations Manager and now System Center Essentials by integrating predefined discovery and state monitoring policies, event processing rules and tasks, and diagram and topology views for the storage system. For more information: http://h18000.www1.hp.com/products/quickspecs/14249_div/14249_div.html HP Storage Management Pack can be downloaded free from the following website: https://h20392.www2.hp.com/portal/swdepot/displayProductInfo.do?productNumber=SCOM

Product Highlights

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.

	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 Performance Edition Software	Discovery, topology				X Discovery, topology, EVA performance	X	X (Oracle, Exchange, DB2, Informix, 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

HP Storage Management Pack for Microsoft System Center						X	

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	XCS v10.0xx	Command View EVA v9.4****	Continuous Access EVA	Business Copy EVA	Replication Solution Manager v 5.0

*HP 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 Continuous Access EVA and HP 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 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 v9.4 or later 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 (MFCS) (2008)	Windows Server 2008	
Microsoft Windows 2003 IA64	All Editions - See SPOCK for details	SP1; SP2 ; R2		See SPOCK for details	Microsoft DSM from Microsoft (2008)
Microsoft Windows 2008 32-bit, x64* Including Hyper-V	All Editions - See SPOCK for details	SP1, SP2, R2	Veritas Storage Foundation & HA Solutions for Windows		See SPOCK for details
Microsoft Windows 2008 IA64*	All Editions - See SPOCK for details	SP1, SP2, R2			
HP-UX	11i v1 (PA-RISC) 11i v2 (PA-RISC & Integrity)		HP ServiceGuard	11.16 11.17	HP-UX 11.iv3 has OS native multi-path,

Product Highlights

	11i v3 (PA-RISC & Integrity)	**Veritas Storage Foundation & HA Solutions**	**11.18** **11.19**	**pvlinks 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 (SPARC)** **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**
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)**

*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

Product Highlights

Racking Guidelines and Power Distribution	Power Distribution Units (PDUs) are configured according to the voltage used in the country when the solution is ordered. These PDUs provide redundant power. They are located in the bottom 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

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

When installing the EVA Enclosures in extended depth racks (AF091A, AF092A, AF094A, or AF097A), 1 each of the longer Power Jumper Cord listed is required for each EVA Controller or Drive Enclosure on the order.
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.

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.
- Controller cache memory (DIMM).

Family Information

- 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 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:
www.hp.com/storage/warranty

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. Packaged server and storage services for increased uptime, productivity and ROI.
When you buy HP server and storage products and solutions, it's also a good time to think about what levels of support you may need. Our portfolio of service options reduce deployment and management worries while helping you get the most out of your server and storage investments. We take a holistic approach to your environment, bridging servers, blades, storage, software and network infrastructures with our packaged HP Care Pack Services for servers and storage.

Protect your business beyond the warranty
When it comes to robustness and reliability, standard computing equipment warranties have matured along with technology. Good news that can also create problems stemming from depending on standard warranties designed to only protect against product defects and some downtime causes. Using a standard approach to warranty uplifts, such as HP Care Pack Services, helps reduce downtime risks and provides operational consistency for mission-critical and standard business computing.

HP Care Pack Services: Upgrading or extending standard server and storage warranties cost effectively
HP Care Pack Services offer a standard reactive hardware and software support services suite sold separately, or combined with our Support Plus and Support Plus 24 services. The portfolio also provides a combination of integrated proactive and reactive services, such as Proactive 24 Service and Critical Service. In addition with HP Proactive Select, you can acquire the specific proactive constancy and technical services. HP Proactive Select menu offers a broad set of service options that you can mix and match depending on your specific requirements. Proactive service options include offers for server, storage, network, SAN device, software, environment and education services.

HP server and storage lifecycle support services offers a full spectrum of customer care-from technology support to complex migrations to complete managed services. HP Factory Express provides customization, integration and deployment services for turnkey solutions. HP Education Services offer flexible, comprehensive training on to help your IT staff get the most out of your server and storage investments. HP Financial solutions extend innovative financing and cost-effective asset management programs-from

Family Information

purchase to equipment retirement.

Learn more: www.hp.com/services/servers and www.hp.com/services/storage

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

HP Care Pack Services are sold by HP and HP Authorized Service Partners:

- Services for customers purchasing from HP or an enterprise reseller are quoted using HP order configuration tools.
- Customers purchasing from a commercial reseller can find HP Care Pack Services at
  http://www.hp.com/go/lookuptool

Recommended HP Care Pack Services for optimal satisfaction with your HP product.

3-Year HP Support Plus 24 For a higher return on your server and storage investment, HP Support Plus 24 provides integrated hardware and software support services designed specifically for your technology. Available 24x7, this 3-year combined reactive support option delivers onsite hardware support and over-the-phone software support around-the-clock. Leverage the full strength of HP Technology Services - customers can trust the services professionals at HP to work collaboratively with them, putting our strategic and technical know-how to work across their entire infrastructure.

- Improve uptime with responsive hardware and software services
- Enjoy consistent service coverage across geographically dispersed sites
- Update HP software at a predictable cost
- Increase customer satisfaction-with no interoperability gaps

http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6638EEE

HP EVA 4400 Disk Array Installation and Startup Service For an efficient start, HP 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. In today's new era of business technology, technology must produce thousands of business outcomes. Today's HP Technology Services portfolio helps customers manage their technology in action-because when technology works, business works.

- Installation and startup by an HP technical specialist
- Availability of an HP service specialist to answer basic questions during delivery
- Delivery of the service at a mutually convenient scheduled time
- Verification prior to installation that all service prerequisites are met
- Customer orientation session

http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA1-8183ENW.pdf

HP Proactive Select Service HP Proactive Select Service improves your IT performance and manageability through the use of cost effective flexible services. HP provides technical expertise and best practices to accelerate ROI of your technology investment. Selectable proactive services span a wide range of technology and process services - a flexible way to purchase proactive services that fit your particular environment and situation.

HP Proactive Select Service is technology agnostic and purchased in addition to your choice of underlying reactive support.

- Access to a list of flexible and customizable proactive service activities
- Enhance customers' in-house IT team with complementary assistance from HP
- Improved time to solution
- Reduce business risk and project costs by accessing HP specialists
- Simplify IT operational procedures by leveraging HP best practices

http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-3842ENN.pdf

Family Information

Optional HP Care Pack Services that will enhance your HP product experience.

HP Entry Storage Data Migration Service for Windows

For customers who need to safely migrate Windows data within their TCP/IP networks with minimal impact to their operations:

You have a need to migrate data between Windows servers within your TCP/IP network. Or you have a need to migrate storage for your Windows servers. Or both. And you need to accomplish these migrations efficiently while minimizing risk at the same time.

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.

http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-4734ENW.pdf

HP Performance Analysis for the XP/P9000/EVA Disk Arrays

For customers who need to increase performance, stability and availability of their XP/P9000/EVA arrays:

Enhancing the return on your HP Disk Array investment requires informed configuration and management decision-making. That, in turn, calls for an in-depth understanding of the performance level your array is delivering. HP's experienced storage specialists can help.

Capitalize on HP Services XP/P9000/EVA knowledge and know-how.

HP Performance Analysis for the XP/EVA Disk Arrays provides automated data collection, detailed I/O analysis, and expert recommendations for throughput enhancement. It offers a quick, convenient way to:

- Increase XP/P9000/EVA performance, stability, and availability by identifying potential bottlenecks and effective solutions for avoiding them
- Establish a baseline for future performance analysis and change management
- Make sound proactive decisions on XP/P9000/EVA system capacity planning
- Minimize the need for costly reactive upgrades

http://h20195.www2.hp.com/v2/GetPDF.aspx/5982-6668EN.pdf

Family Information

eSupport

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

Support Portal

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

Features include:

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

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

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Customer Technical Training

HP Education Services

In today's cost-conscious business environment, IT professionals, developers, consultants and users face an interesting challenge: how to keep up with the latest technologies and expand important skills while delivering profitable results on current projects. To help address this challenge, HP offers innovative training solutions that help keep you up-to-date on virtualization, server, storage, Insight Control, Citrix, Microsoft® and open source/Linux-related topics-while spending less time away from business-critical activities.

HP Services Awards

HP Technology 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.

Additional Services Information

To learn more on HP ProLiant servers, HP BladeSystem servers and HP storage products, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: www.hp.com/services/proliant or www.hp.com/services/bladesystem or http://www.hp.com/services/storage

Configuration

M6412A FC Drive Enclosures & Accessories	HP M6412A Fibre Channel Drive Enclosure	AG638B

Select up to eight M6412A drive enclosures to expand EVA4400 configurations. Drive enclosures may be:

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. This drive enclosure is compatible with EVA4400/EVA6400/EVA8400 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.

Expansion Options

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.

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 EVA4400.

Configuration

Firmware and Management Software

Controller Firmware and Installation and Management Software

HP EVA4400 is factory installed with XCS v10.0xx. 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 EVA4400 XCS v10.0xx 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 v10.0 or / ABM v9.4 or v10.0 supports the EVA4400 and XCS v10.0xx. 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 v9.4 or v10.0 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

Hard Disk Drives

Drives can be added when additional capacity is required. Use these SKUs whenever ordering hard disk drives for the EVA 4400, when adding additional capacity. Note that these SKUs apply ONLY to the EVA4400/EVA6400/EVA8400 and can't be used with other EVA models.

HP 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 EVA M6412A 200GB 4Gb Fibre Channel 2-port Solid State Drive	AW571A
HP StorageWorks EVA M6412A 400GB 4Gb Fibre Channel 2-port Solid State Drive	AW572A
HP StorageWorks EVA M6412A 450GB 10K Fibre Channel Hard Disk Drive	AP731B
HP StorageWorks EVA M6412A 600GB 10K Fibre Channel Hard Disk Drive	AP732B
HP StorageWorks EVA M6412A 300GB 15K Fibre Channel Hard Disk Drive	AG690B
HP StorageWorks EVA M6412A 450GB 15K Fibre Channel Hard Disk Drive	AG803B
HP StorageWorks EVA M6412A 600GB 15K Fibre Channel Hard Disk Drive	AJ872B
HP StorageWorks EVA M6412A 1TB FATA Hard Disk Drive	AG691B

Configuration

	HP EVA M6412A 2TB FATA Fibre Channel Dual Port Hard Disk Drive* **	BV898A

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

*Controller Firmware XCS 10.0xx or later is required to support the 2TB FATA drive.

** The EVA4400 has a maximum addressability limit of 132TB. 2TB drives, or 2TB drives and other capacity drives, can exceed this addressability limit. With 2TB drives alone, using Vraid 5, with 80% efficiency, 82 drives can be supported. With 2TB drives, using Vraid 6, with 66% efficiency, a maximum array of 96 drives can be supported. With 2TB drives, using Vraid 0, *which is strongly recommended not be used with FATA drives,,* a maximum of 66 drives can be supported.

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.

Cables and SFPs

HP EVA Loopback Connector	HP EVA Loopback Connector Contains one Loopback connector. The loopback connector is used when an EVA host port is not cabled to a switch or HBA (for direct connect). **NOTE:** All EVA host ports must be filled with either a cable or loopback connector.	AJ706A

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

SFPs	The EVA4400 controllers without embedded switches come with 4Gb SFPs in each FC port. The EVA4400 controllers with embedded switches come with 8Gb SFPs in each FC port.	

The following tables show the distances available with various cables and transceivers.

8 Gb/s SFP (Small Form- Factor Profile Transceiver)	HP 8Gb Shortwave B-series FC SFP+ 1 Pack for use with EVA4400 embedded switch model	AJ716A

Distance - Maximum	OM2 Cable	OM3 Cable	PremierFlex Cable
8Gb performance	50 meters	150 meters	150 meters

Configuration

	4Gb performance	150 meters	380 meters	380 meters
	2Gb performance	300 meters	500 meters	500 meters

4 Gb/s SFP (Small Form- Factor Profile Transceiver)	HP 4Gb Shortwave B-series FC SFP 1 Pack for use with EVA4400 without embedded switch model.			AJ715A
	Distance - Maximum	**OM2 Cable**	**OM3 Cable**	**PremierFlex Cable**
	4Gb performance	150 meters	380 meters	380 meters
	2Gb performance	300 meters	500 meters	500 meters

FC Cables

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.

NOTE: One of these cables (either LC to SC or LC to LC) or an EVA Loopback connector is required per FC port of each HSV controller.

PremierFlex OM4 FC cables (LC to LC)	1m PremierFlex OM4 LC/LC Multi-Mode Optical Cable	QK732A
	2m PremierFlex OM4 LC/LC Multi-Mode Optical Cable	QK733A
	5m PremierFlex OM4 LC/LC Multi-Mode Optical Cable	QK734A
	15m PremierFlex OM4 LC/LC Multi-Mode Optical Cable	QK735A
	30m PremierFlex OM4 LC/LC Multi-Mode Optical Cable	QK736A
	50m PremierFlex OM4 LC/LC Multi-Mode Optical Cable	QK737A

PremierFlex OM3+ FC cables (optional) (LC to LC)	0.5m PremierFlex LC/LC Multi-Mode Optical Cable	BK837A
	1m PremierFlex LC/LC Multi-Mode Optical Cable	BK838A
	2m PremierFlex LC/LC Multi-Mode Optical Cable	BK839A
	5m PremierFlex LC/LC Multi-Mode Optical Cable	BK840A
	15m PremierFlex LC/LC Multi-Mode Optical Cable	BK841A
	30m PremierFlex LC/LC Multi-Mode Optical Cable	BK842A
	50m PremierFlex LC/LC Multi-Mode Optical Cable	BK843A

FC cable - OM3 LC-LC type cables

NOTE: Premierflex OM3+ cables are still supported, but are no longer sold.

FC cable - OM2 LC-LC type cables

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.

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

Configuration

FC cable - 1 Gb to 2 Gb/s (optional) (LC to SC)	**NOTE:** Before selecting the FC cables to connect between the controllers and the switches, check to see what kind of connectors are on the switches that will be connected to the controllers. The SFP connector can support 8Gb I/Os, 4Gb I/Os, 2Gb I/Os and/or 1Gb I/Os.

NOTE: One of these cables (either LC to SC or LC to LC) is required per FC port of each HSV controller.

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

Optional Software

Remote Replication Software	HP Continuous Access EVA is a controller-based application that performs real-time replication between HP 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 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 EVA Dynamic Capacity Management Software is a comprehensive software solution that automates storage provisioning and improves capacity utilization on the HP 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
HP Storage Essentials Performance Edition Software	HP Storage Essentials Performance Edition Software provides path aware performance management for your EVA Disk Array. Performance Editions includes 150 MAPs and one MAL for Oracle, DB2, Informix, SQL Server, or Exchange. For more information, see the Storage Essentials product description earlier in this document.

Storage Essentials Performance Edition Media and License to Use (LTU)

HP Storage Essentials SW Media	T4283DA
HP Storage Essentials Performance Edition 150 MAP LTU	T4661AA

Add on Storage Essentials Suite plug-in products for Storage Essentials Performance Edition

HP Storage Essentials SRM Enterprise Edition 50 MAP LTU	T4284AA
HP Report Optimizer	T9422AA
HP Storage Essentials Provisioning Manager 50 MAP LTU	T4285AA
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

Configuration

VMware Site Recovery Manager	VMware Site Recovery Manager (SRM) is designed to automate the recovery process and the remote replication of HP Continuous Access EVA with 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 Storage Essentials Performance Edition Software QuickSpec for product and licensing details: http://h18006.www1.hp.com/products/storage/software/e-suite/index.html

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

Optional Hardware

The EVA File Services and MPX200 Multifunction Router 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 MPX200 Multifunction Router 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.

HP 4400 Scalable NAS File Services Base Model

The HP 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 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 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 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

Configuration

Short Wave Transceivers, Ethernet interconnect cables and FC interconnect cables.
Factory Integration and pre-configuration.
NOTE: Installation and Startup is included.

or

HP 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

HP MPX200 Multifunction Router

HP MPX200 Multifunction Router 1 GbE Base Chassis   AP771A
Includes:

- (1) chassis,
- (1) 1 GbE blade,
- rail kit,
- accessory kit and
- documentation

Includes redundant power supplies.

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

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

For multi-path (redundant blade for high availability) order both part numbers. The
second hardware blade installs into the chassis that is included with AP771A or AP773A.
NOTE: HP recommends use of the same blade option type (1 GbE or 10 - 1GbE) in a
common chassis to ensure balanced performance in a redundant configuration.

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

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

Configuration

- 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 12000 Virtual Library System EVA Gateway	Expanding the power of the HP Enterprise Virtual Array (EVA), the HP 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	AH814B

SAN Components

The HP 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 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.	
	HP StorageWorks EVA 450GB 10K Fibre Channel Factory Installed Hard Disk Drive	AP729B
	HP StorageWorks EVA 600GB 10K Fibre Channel Factory Install Hard Disk Drive	AP730B
	HP StorageWorks EVA 300GB 15K Fibre Channel Hard Disk Drive	AG425B
	HP StorageWorks EVA 450GB 15K rpm Fibre Channel Hard Disk Drive	AG804B
	HP StorageWorks EVA 600GB 15K rpm 2/4Gb FC-AL 1 inch Dual-port Hard Disk Drive	AP751B
	HP StorgeWorks EVA 1TB FATA Add on Hard Disk Drive	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 Near Online disk group.	
FC Loop Switch Kits	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*

Configuration

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). An HSV200B controller with a loop switch pair supports 1to 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

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

		2C1D	2C2D	2C3D	2C4D	2C5D	2C6D	2C7D	2C8D
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

For hard drives, 1 GB = 1 billion bytes (1000^3 or 10^9). Actual usable capacity can be less, based on Vraid types used.