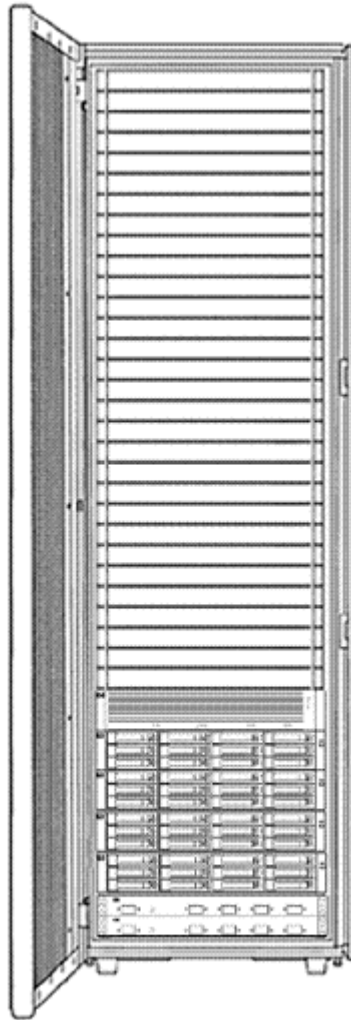


Overview

The EVA4400 offers an easily deployed enterprise class virtual storage array for midsized customers at an affordable price. With built in virtualization, it is designed to improve capacity utilization and be easy to manage, which lowers the cost of ownership compared to traditional arrays. It has high performance, scales easily, and is highly reliable and available. The availability is built on the 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. With HP Command View EVA and HP Dynamic Capacity Management software, management and storage provisioning of the EVA is easy and saves time for customers.



EVA4400 2C4D

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

Overview

What's New

The following are the new items for the EVA4400:

- Uplift of the EVA4400 warranty to 3 years, the same as the EVA6400/8400.
- New 300GB, 450GB and 600GB 10K rpm Low Power disk drives
- Support for the HP StorageWorks MPX200 Multifunction Router
 - provides 1 GbE and 10 GbE iSCSI connectivity to the EVA
 - enables modular multi-protocol SAN designs with increased scalability, stability, and ROI on storage infrastructure

Product Highlights

	EVA4400	EVA6400	EVA8400
Controller Model	HSV300	HSV400	HSV450
Virtual Controller Software (XCS)	XCS v9.5	XCS v9.5	XCS v9.5
Management Software	Command View EVA v9.0	Command View EVA v9.0	Command View EVA v9.0
Application Environment	Oracle, SAP, Microsoft Exchange, SQL	Oracle, SAP, Microsoft Exchange, SQL	Oracle, SAP, Microsoft Exchange, SQL
Local Data Replication - HP StorageWorks Business Copy EVA	Yes	Yes	Yes
Remote Data Replication - HP StorageWorks Continuous Access EVA	Yes	Yes	Yes
Command View EVA Aarray management and configuration support	Up to 16 EVAs	Up to 16 EVAs	Up to 16 EVAs
Application block and file storage	Yes	Yes	Yes
O/S Support	HP-UX HP OpenVMS Windows 2003 Windows 2008 Windows Server 2008 HyperV Sun Solaris Linux IBM AIX Novell NetWare VMware Apple Mac OSX Citrix Xen	HP-UX HP OpenVMS Windows 2003 Windows 2008 Windows Server 2008 HyperV Sun Solaris Linux IBM AIX VMware Apple Mac OSX Citrix Xen	HP-UX HP OpenVMS Windows 2003 Windows 2008 Windows Server 2008 HyperV Sun Solaris Linux IBM AIX VMware Apple Mac OSX Citrix Xen
RAID supported	Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5, Vraid 6 & Cross Vraid Snaps	Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5, Vraid 6 & Cross Vraid Snaps	Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5, Vraid 6 & Cross Vraid Snaps
LUN size	Up to 32TB	Up to 32TB	Up to 32TB
Number of controllers	2	2	2
Cache (per controller pair)	4GB	8GB	14 or 22GB
Battery Back-up Cache	Yes, up to 96 hours	Yes, up to 96 hours	Yes, up to 96 hours
Host Connectivity	Fibre Channel, iSCSI and Direct Connect	Fibre Channel, iSCSI and Direct Connect	Fibre Channel, iSCSI and Direct Connect
Number of Host Supported (Single Path/Dual Path)	512/256	512/256	512/256
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
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

Product Highlights

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 Disks (SSD), High Performance Fibre Channel and Fibre Attached Technology Adapted (FATA)	Solid State Disks (SSD), High Performance Fibre Channel and Fibre Attached Technology Adapted (FATA)	Solid State Disks (SSD), High Performance Fibre Channel and Fibre Attached Technology Adapted (FATA)
Supported disks, minimum	6 SSD, 8 FC and FATA	6 SSD, 8 FC and FATA	6 SSD, 8 FC and FATA
Supported disks, maximum	8 SSD, 96 FC and FATA	8 SSD, 216 FC and FATA	8 SSD, 324 FC and FATA
Capacity	.4 to 96TB	.4 to 216TB	.4 to 324TB
Drive capacities and speeds	72GB SSD 300GB 10K rpm 400GB 10K rpm 450GB 10K rpm 600GB 10K rpm 146GB 15K rpm 300GB 15K rpm 450GB 15K rpm 1TB FATA	72GB SSD 300GB 10K rpm 400GB 10K rpm 450GB 10K rpm 600GB 10K rpm 146GB 15K rpm 300GB 15K rpm 450GB 15K rpm 1TB FATA	72GB SSD 300GB 10K rpm 400GB 10K rpm 450GB 10K rpm 600GB 10K rpm 146GB 15K rpm 300GB 15K rpm 450GB 15K rpm 1TB FATA
JBOD Support (behind XP)	Yes	Yes	Yes
Drive Interface (per controller)	Two 4Gb/s FC-AL ports per controller in redundant pairs, two paths to each dual ported drive	Four 4Gb/s FC-AL ports per controller in redundant pairs, two paths to each dual ported drive	Six 4Gb/s FC-AL ports per controller in redundant pairs, two paths to each dual ported drive
Variable Speed Redundant Blowers	Yes	Yes	Yes
Environmental Monitoring Unit	Monitors Power and Temperature	Monitors Power and Temperature	Monitors Power and Temperature
Regulatory approvals	UL, CSA, TUV, FCC, CE MARK, CTICK, BSMI, VCCI	UL, CSA, TUV, FCC, CE MARK, CTICK, BSMI, VCCI	UL, CSA, TUV, FCC, CE MARK, CTICK, BSMI, VCCI
Fibre Channel Switches & Directors	Optical Switches and Directors: http://h18006.www1.hp.com/storage/saninfrastructure/switches.html		
Warranty	3-3-3 9x5 NBD for the array; 3-0-0 parts only for the disk drives		

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

EVA 4400 Capabilities

- Easy to install and configure in just a few hours (for a factory configured unit) with the SmartStart configuration utility*
- Virtualization abilities allow for easy management and excellent capacity utilization
- Start small and increase capacity as the business grows
- Business application and HP BladeSystem 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 2 Gb/s dual-ported Fibre Attached Technology Adapted (FATA) drives and dual ported Solid State Disks (SSD)



Product Highlights

- Array management flexibility with optional deployments of:
 - Array Based Management with Command View / ABM
 - Server Based Management with Command View / SBM**
- Support for Direct Attach connection to Windows, HP-UX, and Linux servers, without the need for SAN switches, with Command View / ABM
- SAN support for integrated EVA iSCSI connectivity options with Windows and Linux, Apple Mac OS X, Microsoft Windows, Sun Solaris, VMware.
- Management of up to 1024 virtual disks (256 per HBA), for the EVA4400, ranging in size from 1GB to 32TB per Virtual disk, in 1GB increments.
- Dynamic Capacity Management support to expand (in 1GB increments) and shrink LUNs up to 2TB.
NOTE: Requires Host Operating System Support.
- Virtual disk data load leveling (non-disruptive background activity)
- Distributed sparing of disk capacity
- Redundant FC-AL loops from each controller to dual disk ports
- Support for remote replications between current EVA generations
- Migration support via remote replications between current and earlier EVA generations
- Dual redundant controller operation for increased fault tolerance
- Robust local and remote replication capabilities with Business Copy and Continuous Access EVA
- High availability with hot plug drives, power supplies, fans, and industry failover software
- Multiple Bus Failover Support using industry popular multiple path software.
NOTE: Requires native OS multi-pathing support.
- Battery-Back-Up for controller cache memory
- Asynchronous Disk Swap (hot swap)
- Clustered Server Support
- Mirrored Write-Back Cache Support
- Read-Ahead and Adaptive Read Caching Support
- Virtual RAID Arrays (Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5, Vraid 6 & Cross Vraid Snaps)
- Support for local replication between Vraid types using Vsnap or Snapclone within a disk group or using Snapclone across disk groups (and Cross Vraid Snapshot and Snapclone)
- Online XCS software upgrade capability
- Online drive firmware upgrade capability
- Supports connection of up to 256 hosts
- Multi-Vendor Platform Support
- Controller Password Protection for Configuration Control
- Selective Storage Presentation and SAN-based Data Zoning (through switches).
- HP StorageWorks Command View EVA GUI Interface for management and monitoring (manages up to 16 EVAs).
- Monitor and control health, HP EVA end-to-end SAN performance and monitoring, storage utilization and reporting for all key HP EVA and SAN infrastructure including servers, storage, HP MSA, HP EML E-series tape, HP ProLiant Storage Servers (NAS), HBAs, switches, applications and monitor the entire backup from a single interface with HP Storage Essentials

*For more information on SmartStart, for EVA see:

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

** For more information on Command View, see:

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

Product Highlights

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 switches per enclosure. This SAN switch is an 8Gb/s, 10 port B-series FC switch for a total of 20 SAN ports per EVA4400 enclosure.

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

EVA4400 is available in pre-configured Starter Kit configurations. For more information on these kits see: http://h18000.www1.hp.com/products/quickspecs/12894_div/12894_div.html

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

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

For more information on these software component options, see: http://h18006.www1.hp.com/storage/networking/b_switches/index.html and look for HP StorageWorks B-Series 8/8 SAN Switch information.

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

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

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

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

Product Highlights

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

Installation and Startup For more complex environments, an Installation & Start-up service is recommended or may be required. HP recommends the purchase of the following Installation & Startup services:

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

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

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

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

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

Product Highlights

Remote Replication Solutions (Software options)

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

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

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

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

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

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

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

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

Local Replication Solutions (Software options)

The HP StorageWorks Business Copy is a local replication application for the EVA family. It incorporates Virtually Capacity-free Snapshot (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.

Product Highlights

Replication Management

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

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

Application Integration with Oracle

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

Capacity Management

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

http://h18000.www1.hp.com/products/storage/software/eva_dcm/index.html

Application Solutions

The EVA4400 is the ideal solution for customers running Oracle, Exchange, SAP environments and those customers who are deploying virtual server technologies like VMware. Here are descriptions of two such solutions:

- JD Edwards

The HP and JD Edwards EnterpriseOne solution leveraging the HP BladeSystem and HP StorageWorks EVA4400, offers a single database and pre-integrated applications that help companies manage the core processes involving finances, people and equipment enabling them to make the best use of information and resources throughout the business. The HP and JD Edwards EnterpriseOne solution provides capabilities across a breadth of business processes, including customer relationship management, enterprise resource planning, supply chain management and supplier relationship management.

- Oracle E-Business Suite (EBS)

Designed to support the global economy (as well as mid-market companies with complex requirements), Oracle® E-Business Suite (EBS) on the HP BladeSystem server and the HP StorageWorks EVA4400 helps users think globally to make better decisions; work globally to be more competitive; and manage globally to lower costs, enhance security and increase

Product Highlights

performance. This right-sized, affordable business technology is built on a unified architecture with a single Oracle Database-providing a comprehensive, integrated set of business management and planning applications that allow organizations to manage their end-to end operations.

For additional tested, industry leading configurations built on the EVA4400 and HP's Blade and Rack Servers, visit: <http://h18006.www1.hp.com/products/storageworks/eva4400sb/index.html>

EVA with HP Storage Essentials Storage Resource Management Software Suite

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

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

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

HP Standard Edition SRM Software and EVA

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

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

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

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

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

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

Product Highlights

HP StorageWorks 12000 Virtual Library System EVA Gateway

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

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

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

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

EVA iSCSI Connectivity EVA iSCSI Connectivity Option

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

The HP StorageWorks EVA4400 iSCSI Connectivity Option extends the advantages of Fibre Channel SANs into smaller departments and remote locations. This EVA4400 option allows customers to incorporate iSCSI servers within SANs without requiring additional storage arrays or management costs. Use the EVA's Command View (/SBM or /ABM) software to manage the iSCSI connectivity to the array and mount the iSCSI device in the same rack as the array. For small-SAN deployment, the EVA4400 Starter Kit with the iSCSI Connectivity Option provides an affordable, robust and highly available simple iSCSI solution for smaller budgets.

The HP StorageWorks MPX200 Multifunction Router extends the FC SAN investment with integrated multi-protocol support, allowing customers to incorporate iSCSI servers without requiring additional storage arrays or management costs. The MPX200 offers simultaneous 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. MPX 200'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

The HP StorageWorks MPX200 Multifunction Router provides 1 GbE and 10 GbE iSCSI connectivity to the EVA and enables modular multi-protocol SAN designs with increased scalability, stability, and ROI on storage infrastructure.

Product Highlights

The MPX200 Multifunction Router enables organizations to integrate low-cost Ethernet connected servers with an EVA storage system by bridging the iSCSI protocol to the Fibre Channel protocol. This capability allows iSCSI servers to leverage shared SAN resources, improving asset utilization and enabling new applications. This integration greatly reduces the cost of connecting servers to centrally managed storage and helps provide a cost-effective solution to introduce utility computing into the enterprise.

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.

Key Benefits:

- Delivering SAN-like benefits over the Ethernet IP network, the HP StorageWorks MPX200 Multifunction Router enables access to block storage across up to 4 EVA storage systems from an Ethernet IP network.
- Provides customers a flexible and cost effective way to connect stranded servers to existing Fibre Channel storage, increasing return on investment.
- Enterprise-class high availability design provides dual hot-plug power supplies and router blades for no single point of failure.
- Modular software and hardware design enables easy upgrades to enable additional protocols or to add more ports.
- Unmatched performance: 8 Gbps Fibre Channel, 1 GbE and 10 GbE iSCSI ports deliver best in class performance.
- Advanced installation and configuration wizards allow set up in less than 25 minutes.
- Power efficient: typically dissipates 200W for a dual blade configuration.
- Extend access to FC SANs across Ethernet networks with the virtues of an FC SAN including:
 - Consolidated storage
 - Improved disk utilization
 - Improved IT efficiency

For more information and operating system support:

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

ProLiant Storage Server Gateways

The EVA also supports select ProLiant Storage Servers (i.e. NAS) connected as iSCSI/file/print gateways. ProLiant DL380 G5 SAN Gateway Storage Servers and SB460c SAN Gateway Storage Servers both feature Microsoft's Windows Unified Data Storage Server 2003 operating system that includes a cluster license and Microsoft iSCSI Software Target standard, while other models offer optional support for Microsoft iSCSI Software Target. ProLiant Storage Servers with iSCSI target functionality not only enable tiered (Fibre Channel and iSCSI) block access for application servers, but they also add file and print services to your EVA solution. In addition, any ProLiant DL380 G5 Storage Server or SB460c SAN Gateway Storage Server is a perfect platform from which to run Command View EVA / SBM. You can greatly enhance the value of your EVA when you host EVA management, file and print services, and iSCSI connectivity all from the same ProLiant Storage Server gateway solution.

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

Product Highlights

EVA File Services

File services for the EVA are supported through the use of the EFS Clustered Gateway. Using File services with the EVA eliminates having to manage silos of storage, File Services for the EVA creates a single, integrated storage solution that provides both easy to manage application (block) services and scalable files services.

This solution can serve both block and file data concurrently with high availability and scalable performance. The solution is supported by a powerfully simple suite of management software making it easy for users to achieve high levels of productivity.

File services through the EFS Clustered Gateway supports mid-range and enterprise customers wanting a single storage solution for their block and file data, improved storage utilization, scalable throughput performance to meet application specific demands for consistent high transaction I/O, easy capacity expansion, instantaneous replication, simplified storage administration and high availability. Customers can consolidate their individual silos of storage to gain flexibility, reduce IT costs and complexity as compared to traditionally architected storage solutions.

The use of EVA and file services supports both CIFS (windows) and NFS file serving. The components can be factory integrated into HP EVA4400 arrays. The components required to implement file services on the EVA are:

- Two EFS Clustered Gateway serving nodes
- One Ethernet Switch
- Two 8Gb FC Switches
- Installation and Startup

A file service solution provides the following benefits:

- Integrates and simplifies providing a single storage solution for application (block) and file data delivering high utilization and lower TCO
- Uses a single set of management tools that can be invoked from anywhere, anytime, resulting in a very operationally efficient environment to manage.
- Combines state-of-the-art application (block) data performance and file serving performance, that can scale as needs dictate, offers customers aggregate performance levels far in excess of traditional file servers and NAS appliances.
- Additional capacity can be added quickly and easily with any combination of high performance Fibre Channel and/or low cost FATA drives.
- Uses state-of-the-art virtualization which improves performance, disk usage and TCO while the single, shared pool of storage allows for easy dynamic expansion, which automatically distributes data to avoid potential hot spots.
- With fully redundant components such as SAN switches, array controllers, and file serving nodes built into every unit, this solution is perfect for demanding mid-range and enterprise storage applications.

For more information:

http://h18006.www1.hp.com/products/storageworks/efs/index.html?jumpid=reg_R1002_USEN

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

ProLiant Storage Server Gateways

Select ProLiant Storage Servers can be connected to an EVA to add file, print, management, and/or iSCSI services and boost the value of your array investment. ProLiant DL380 G5 SAN Gateway and SB460c SAN Gateway Storage Servers are designed to provide highly-available additional data services to an EVA array or SAN, and both feature Microsoft's Windows Unified

Product Highlights

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

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

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 Disk Support

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

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

10K rpm Drive Support The EVA supports the 400GB 10K rpm dual-ported 4 Gb/s FC disk. The EVA4400 will support up to 96 disk drives. The EVA4400 array will support single or mixed drive capacities and types (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

15K rpm Drive Support The EVA also supports 146GB, 300GB, and 450GB 15K rpm dual-ported 4 Gb/s FC disk drives. The EVA arrays will support single or mixed drive capacities and types (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.

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

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

Please see the following URL for more information on FATA drives, their uses and their benefits:
<http://h71028.www7.hp.com/ERC/downloads/5982-7353EN.pdf>

Fibre Channel Technology

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

The EVA4400 takes advantage of the benefits of Fibre Channel (FC) in distance, performance and connectivity. The use of optical Fibre cabling allows distances between connected segments of a SAN to be up to 500 meters @ 1 Gb/s; 300 meters @ 2 Gb/s using short wave multi-mode, 150 meters @ 4 Gb/s and up to 10 kilometers (6.21 miles) @ 1 Gb/s when using long wave cable. Storage Area Networks (SANs) can be constructed using FC switches/directors for fabric connectivity. HP StorageWorks SAN B-series and C-series switches and directors provide exceptional connectivity while increasing the effective bandwidth of the network. Supported SAN features include Zoning for communication isolation and Inter-Switch Links (hops) up to 10 km.

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

Transfer Speeds

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

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

Product Highlights

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.

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.

Product Highlights

EVA Manageability

HP StorageWorks Command View EVA provides the capability to manage the EVA Array family in a SAN or direct connect Fibre Channel host attach configuration. HP Command View EVA / SBM software runs on a variety of server configurations using Windows Server 2003. ProLiant DL380 G5 and SB460c SAN Gateway Storage Servers are the perfect companion platforms from which to run Command View EVA / SBM, since they can also add file and iSCSI services to your array, and help you optimize your investment by combining multiple services on a single device or cluster.

The powerful Command View EVA / SBM 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 see who did what and when. 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.

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 43.2TB using 450 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.

Product Highlights

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

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

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

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

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

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

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)

Product Highlights

EVA Required Software HP StorageWorks EVA4400 ships with XCS v9.5 factory installed on new EVAs. XCS v9.5 also supports the EVA6400/8400. The base XCS License to use for the EVA is contained in the hardware shipment..

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

NOTE: Review the Release Notes and Upgrading Product Software documentation and compatibility requirements of all installed Array Integrated Software completely before upgrading. Downgrading the EVA4400 from XCS v9.5 is not supported.

XCS v9.5 controller media and the EVA4400 Release Notes are also available to download from: <http://h18006.www1.hp.com/products/storageworks/eva/index.html>

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

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

EVA StorageWorks EVA Software Selector The following matrix will assist in identifying some of the complimentary 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,		X monitor applications and associated storage/infrastructure (Oracle, Microsoft Exchange Server, Sybase, Microsoft SQL, InterSystems

Product Highlights

					reporting, Performance, monitor host clusters		Cache' database and SAP ACC)
HP Storage Essentials Standard Edition SRM Software (Small to medium HP Storage-based SANs)	Discovery, topology	X Backup monitoring/ reporting			X monitoring, events, applications, NAS/SAN, File monitoring, reporting, EVA Performance, monitor host clusters	X	X (Oracle, Exchange, Sybase, MS SQL)
HP Data Protector		X	X				X
HP Systems Insight Manager	In-context launch of CV EVA, SAN discovery, monitoring, asset, config., security					X (Included with EVA)	
HP Storage Mirroring				X			

EVA and Value-added Software Compatibility

Model	XCS Software	HP Command View EVA*	HP Continuous Access EVA**	HP Business Copy EVA**	HP Replication Solution Manager (RSM)***
EVA4400	EVA4400 v9.0 (XCS 9.0)	Command View EVA / SBM v8.0 or Command View EVA / ABM v8.1	Continuous Access EVA	Business Copy EVA	Replication Solution Manager v4.0

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

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

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

Operating Systems, Cluster and High Availability Compatibility



Product Highlights

Operating System	Versions Supported		Cluster Server or High Availability Software	HA Versions Supported	Failover Software
Microsoft Windows 2003/32-bit	Standard Enterprise	SP1, R2; SP2 SP1, R2; SP2	Microsoft Cluster Server (MSCS)	Windows Server 2003 Enterprise Edition Windows 2003 DataCenter Edition (64-bit)*	Full featured MPIO, v3.00.00 available from HP and Microsoft DSM from Microsoft
Microsoft Windows 2003/x64	Standard Enterprise	SP1, R2; SP2 SP1, R2; SP2			
Microsoft Windows 2003/IA64	Enterprise DataCenter	SP1; SP2 SP1; SP2			
Microsoft Windows 2008 32-bit, x64*	Standard Enterprise		Veritas Foundation Suite/HA ***	5.0 (Windows 2003)	
Microsoft Windows 2008 IA64*	Enterprise				
HP-UX	11i v1 (PA-RISC) 11i v2 (PA-RISC & Integrity) 11i v3 (PA-RISC & Integrity)		HP ServiceGuard **** Veritas Foundation Suite/HA***	11.14 (11i v1) 11.15 11.16 11.17 5.0 (11iv2)	HP Secure Path 3.0F SP3 for HP-UX 11.23 and prior versions, HP-UX 11.31 has OS native multi-path, pvlincs native in HP-UX and Veritas DMP
Linux	Red Hat EL Advanced Server 4.5, 4.6 (IA32, IA64 & x86_64) RedHat EL Advanced Server 5.0, 5.1 (IA32, IA64 & x86_64) SUSE/SLES9 (IA32, IA64 & x86_64)-SP3, SP4 SUSE/SLES10 (IA32, IA64 & x86_64)-SP1		HP ServiceGuard for Linux**** VERITAS Foundation Suite/HA for Linux***	11.16 5.0 (SLES9& REL4 x86 only)*	QLogic Failover driver, available from QLogic /HP, Emulex MultiPulse available from Emulex/HP and Device Mapper v4.0 Enablement Kit from HP
Apple Mac OS X	Tiger - 10.4.10 minimum Leopard - 10.5		N/A	N/A	ATTO FC HBA driver
HP OpenVMS	Alpha: 7.3-2, 8.2, 8.3 Integrity: 8.2-1, 8.3, 8.3-1H1		HP OpenVMS Clusters	7.3-2 8.2 8.2-1 8.3 8.3-1	Native in OS
Sun Solaris	8 9 10 (SPARC & x86_64)		SunCluster VERITAS Foundation Suite/HA***	3.1 5.0 (9 & 10)	MPxIO for Solaris, Native in OS Veritas DMP 5.0
IBM AIX	5.2 5.3 6.1		HACMP VERITAS Foundation Suite/HA***	Native in OS 5.0 (AIX 5.3)	MPIO for IBM AIX, Native in OS Veritas DMP 5.0
Novell NetWare***	6.5 SP6, SP7		NetWare cluster server	1.8	MPIO for NetWare, Native in OS



Product Highlights

VMware	ESX Server 2.5.4, 2.5.5, 3.0.1, 3.0.2, and 3.5	MSCS Clustering**	Windows Server 2003 Enterprise Edition	Windows Server 2003 Enterprise Edition
Citrix	<p>Integrated Citrix XenServer HP Enterprise Citrix Xen Enterprise 4.1.0-7846</p> <p>Guest Operating Systems Supported</p> <ul style="list-style-type: none"> ● Red Hat 5.2 ● SuSE 10 SP1 ● Windows 2003 x64 			Native Device Mapper MPIO

*For more specific information on supported versions of Windows 2008, see the OS support matrix at: hp.com

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

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

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

Racking Guidelines and Power Distribution

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

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

For more information on the HP rack offerings, please see the following URL:

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

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

For more information on the 5642 rack, please see the following URL:

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

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

For more information on PDU support, please see the following URL:

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

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

Product Highlights

Total Cost of Ownership

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

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

Family Information

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

HP's warranty and support features:

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

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

Online Support

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

Remote Support

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

Technical Phone Support

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

Customer Self Repair (customer installed replacement parts)

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

Required Customer Self-Repair (Replacement) Parts List:

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

Optional Customer Self-Repair Parts List:

- Controller cache battery.
- Controller module.

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Family Information

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

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

Software Warranty

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

On-site Warranty Service

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

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

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

HP warrants the HP 10000 G2 Series Rack according to the standard rack product warranty. Please refer to product specification for further details:

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

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

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

Protect your business beyond the warranty

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

Extending warranties with HP Care Pack Services

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

Provide consistent, predictable levels of support across your entire department or business
Give you direct access to proven technical and problem-solving expertise



Family Information

Offer a choice of response-time and repair-time commitments
Are available whenever and wherever you do business

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

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

Recommended Services

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

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

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

Product Number	Product Name	Service Name	Care Pack Services Product # and Band	Alternate Care Pack Services Product #
		HP StorageWorks EVA 4400 Disk Array Installation and Startup Service	HA114A1-58D	UD493E
AG637B	HP EVA4400 Dual Controller Array	3-Year HP Support Plus 24	HA110A3-13F	
		HP 3Y 4h 24x7 EVA4400 Dual Ctrl HW Supp		UQ309E
AG805C	HP EVA4400 Dual Controller w/Switch & 8Gb/s SFPs	3-Year HP Support Plus 24	HA110A3-13G	

Family Information

		HP 3Y 4h 24x7 EVA4400 with Switch HW Sup		UQ324E
AJ711B	HP 400GB 10K FC EVA M6412A Enclosure HDD	3-Year HP Support Plus 24	HA110A3-13H	
		HP 3Y 4h 24x7 EVA 146/300/400G HWSup		UQ354E
AG690B	HP 300GB 15K FC EVA M6412A Enclosure HDD	3-Year HP Support Plus 24	HA110A3-13H	
		HP 3Y 4h 24x7 EVA 146/300/400G HWSup		UQ354E
AG691B	HP 1TB FATA EVA M6412A Enclosure HDD	3-Year HP Support Plus 24	HA110A3-13J	
		HP 3Y 4h 24x7 EVA 450-1TB HW Sup		UQ375E
AJ713A	HP StorageWorks EVA4400 iSCSI Connectivity Option	3-Year HP Support Plus 24	HA110A3-83F	
		HP 3y 24x7 EVA iSCSI cnct opt HW Sup		UF064E
AJ714A	HP StorageWorks EVA4400 iSCSI Connectivity Upgrade Option	3-Year HP Support Plus 24	HA110A3-83F	

Family Information

		HP 3y 24x7 EVA iSCSI cnct opt HW Supp		UF064E
AP766B	HP EVA M6412A 300GB 10K 4Gb Fibre Channel Dual Port Hard Disk drive	3-Year HP Support Plus 24	HA110A3-13H	
		HP 3Y 4h 24x7 EVA 146/300/400G HWSupp		UQ354E
AJ711B	HP EVA M6412A 400GB 10K 4Gb Fibre Channel Dual Port Hard Disk Drive	3-Year HP Support Plus 24	HA110A3-13H	
		HP 3Y 4h 24x7 EVA 146/300/400G HWSupp		UQ354E
AP731B	HP EVA M6412A 450GB 10K 4Gb Fibre Channel Dual Port Hard Disk drive	3-Year HP Support Plus 24	HA110A3-13J	
		HP 3Y 4h 24x7 EVA 450-1TB HW Supp		UQ393E
AP732B	HP EVA M6412A 600GB 10K 4Gb Fibre Channel Dual Port Hard Disk Drive	3-Year HP Support Plus 24	HA110A3-13J	
		HP 3Y 4h 24x7 EVA 450-1TB HW Supp		UQ393E
AG556B	HP EVA M6412A 146GB 15K	3-Year HP Support Plus 24	HA110A3-13H	

Family Information

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

Service information for additional products referenced in this QuickSpecs can be found in their individual QuickSpecs.

Family Information

Related Services

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

- HP Proactive Select Service** HP Proactive Select Service improves IT performance and manageability through the use of cost effective flexible proactive services. This proactive service allows you to accelerate the ROI of your technology environment, by tailoring specific services to more quickly take advantage of your investment.
- HP Entry Storage Data Migration Service for Windows** HP Entry Storage Data Migration Service for Windows offers you a cost competitive and convenient way to accommodate data migration triggered by a need to refresh or consolidate storage, or to create different storage tiers. This service offers a migration cost in line with the costs of storage products in small and medium-sized storage environments. The service is delivered via a skilled HP service specialist with special consideration for data availability, integrity, and ongoing operational performance during the transfer process

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

eSupport

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

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

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

Remote Support Technology (RST)-HP Remote Support Pack

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

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

Family Information

Customer Technical Training

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

HP Services Awards

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

Additional Services Information

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

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

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

Configuration

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

Enterprise Virtual Array 4400 Independent Components	The following components are available worldwide. The EVA4400 models are modular and scalable storage solutions designed to have no-single-point-of-failure, which provide disaster tolerance and business continuance support for storage consolidation on heterogeneous SANs.	
EVA4400 Dual Controller Array	HP StorageWorks 4400 Dual Controller Enterprise Virtual Array One 2U controller enclosure with two HSV300 controller module, mounting hardware, cables, controller mounting. Order one unit for each EVA4400 array configuration.	AG637B
EVA4400 Controller Pair Enclosure with embedded switch	HP StorageWorks EVA4400 Dual Controller Enterprise Virtual Array w/Embedded Sw One 2U Controller Enclosure with two HSV300-S controller modules, mounting hardware, cables, and controller mounting. Each controller module also includes an 8Gb/s 10 port B-series SAN switch, for a total of two switches and 20 ports per controller enclosure. Also included are four 8Gb/s SFPs. Per controller enclosure; 8 total. Additional 4Gb/s or 8Gb/s SFPs can be purchased separately. Order one unit for each EVA4400 array configuration. The embedded switches come with full fabric scalability enabled, licenses and docs. The included software has Advanced Fabric OS, Advanced Web Tools and Advanced Zoning 0514. See below for optional switch software.	AG805C
M6412A FC Drive Enclosures & Accessories	HP StorageWorks M6412A Fibre Channel Drive Enclosure Select up to eight M6412A drive enclosures to expand EVA4400 configurations. Drive enclosures may be: <ul style="list-style-type: none"> 1. Ordered for on-site capacity additions to existing EVA4400 configurations. 2. Ordered for field installation of complete EVA4400 configurations in conjunction with the EVA4400 Starter Kits. 3. Installed by HP manufacturing into EVA configurations by ordering the enclosure with the factory integration part number (#0D1). This drive enclosure is compatible with EVA4400 arrays only. Up to eight drive enclosures are supported with each pair of HSV300 or HSV300-S controllers. The M6412A is a 2U dual-redundant FC Loop 12-bay disk enclosure with mounting hardware, and the necessary copper FC cables for connecting to an HSV300 or HSV300-S Controller pair. <p>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.</p> <p>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 Disks are required per EVA4400 when using those drive types.</p>	AG638B

Step 2 – Choose File Services and EVA4400 Connectivity Options

The EVA File Services and EVA iSCSI Connectivity options provide superior storage consolidation, management and total



Configuration

cost of ownership. The EVA file service offerings support both block and file data concurrently with high availability and scalable performance. The EVA iSCSI Connectivity Option and the HP StorageWorks MPX200 Multifunction router extend the FC SAN investment with integrated multi-protocol support, allowing customers to incorporate iSCSI servers without requiring additional storage arrays or management costs. ProLiant Storage Servers are an affordable way to add Windows-powered file, print, iSCSI, and Command View EVA / SBM hosting services to an EVA array or SAN.

Ordering an iSCSI Connectivity Option is easy. The iSCSI Connectivity Option will be factory integrated into EVA4400 configurations. ProLiant Storage Servers can be ordered to be added into an EVA configuration in the field or they can be integrated in the factory.

The EVA iSCSI Connectivity Options supports Windows and Linux environments.

HP StorageWorks iSCSI Connectivity Option	<p>HP StorageWorks EVA4400 iSCSI Connectivity Option AJ713A</p> <p>Order this part for all new installations. Includes One unit, shelf, brackets, copper FC cables and documentation. Includes one unit to mount in existing shelf and documentation. Includes support for 16 initiators.</p> <p>HP StorageWorks EVA4400 iSCSI Connectivity Upgrade Option AJ714A</p> <p>For multi-path (dual unit high availability) order both part numbers. (The second hardware unit installs into the shelf that ship with AJ713A.)</p> <p>HP StorageWorks iSCSI Initiator Upgrade license T5471A</p> <p>Initiator license for additional 32 ports for a total of 48</p> <p>NOTE: For more information on the iSCSI Connectivity Options: http://h18006.www1.hp.com/products/storageworks/evaiscsiconnect/index.html</p>
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HP StorageWorks MPX200 Multifunction Router	<p>HP StorageWorks MPX200 Multifunction Router 1 GbE Base Chassis AP771A</p> <p>Includes:</p> <ul style="list-style-type: none"> • (1) chassis, • (1) 1 GbE blade, • rail kit, • accessory kit and • documentation. • Includes redundant power supplies. <p>HP Storage Works MPX200 Multifunction Router 1 GbE Upgrade Blade. AP772A</p> <p>Includes:</p> <ul style="list-style-type: none"> • (1) 1 GbE blade • accessory kit • documentation <p>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.</p> <p>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.</p> <p>HP StorageWorks MPX200 Multifunction Router 10 - 1 GbE Base Chassis AP773A</p> <p>Includes:</p> <ul style="list-style-type: none"> • (1) chassis • (1) 10 - 1 GbE blade • rail kit • •
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Configuration

- accessory kit
- documentation.
- Includes redundant power supplies.

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

AP774A

- (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 ProLiant Storage Servers

HP ProLiant Storage Servers, SAN Gateways, and supported Fibre Channel HBAs

HP ProLiant Storage Servers (plus a Fibre Channel HBA) can add file, print, iSCSI, and/or Command View EVA / SBM management services to an EVA or Fibre Channel SAN. SAN Gateway models feature Microsoft's Windows Unified Data Storage Server 2003 operating system that also includes Microsoft iSCSI Software Target and a cluster license for high availability standard (Microsoft iSCSI Software Target is optional for other Storage Server models). In addition, any ProLiant Storage Server connected to an EVA is a recommended platform from which to run Command View EVA / SBM. Increase the value of your SAN/array investment by hosting EVA management, file and print services, and iSCSI connectivity all from the same ProLiant Storage Server gateway solution.

HP ProLiant DL380 G5 Base Storage Server

AG815B

NOTE: Microsoft Windows Storage Server 2003 R2 Standard x64 Edition O/S (compatible with Command View EVA / SBM) with file services on a 2U rack form factor platform. For more information, go to:

http://h18006.www1.hp.com/products/quickspecs/12559_div/12559_div.html

HP ProLiant DL380 G5 SAN Gateway Storage Server

AG771B

NOTE: Microsoft Windows Unified Data Storage Server 2003 Enterprise x64 Edition O/S (compatible with Command View EVA / SBM) with file, iSCSI, and cluster services on a 2U rack form factor platform. For more information, go to:

http://h18006.www1.hp.com/products/quickspecs/12559_div/12559_div.html

HP ProLiant SB460c SAN Gateway Storage Server

AN583A

NOTE: Microsoft Windows Unified Data Storage Server 2003 Enterprise x64 Edition O/S (compatible with Command View EVA / SBM) with file, iSCSI, and cluster services on a blade form factor platform. For more information, go to: http://h18006.www1.hp.com/products/quickspecs/13114_div/13114_div.html

Fibre Channel HBA options for DL380 G5 Storage Servers

HP StorageWorks FC2142SR 4Gb PCIe HBA

A8002A

HP StorageWorks FC2242SR Dual Channel 4 Gb PCIe HBA

A8003A

HP StorageWorks FC1142SR 4Gb PCIe HBA

AE311A

HP StorageWorks FC1242SR Dual Channel 4 Gb PCIe HBA

AE312A

HP StorageWorks 81Q PCI-e FC HBA

AK344A



Configuration

HP 82Q 8Gb Dual Port PCI-e FC HBA	AJ764A
HP StorageWorks 81E 8Gb SP PCI-e FC HBA	AJ762A
HP 82E 8Gb Dual-port PCI-e FC HBA	AJ763A
Fibre Channel HBA options for the SB460c SAN Gateway Storage Server	
Emulex Lpe1105 FC Dual Channel 4Gb, PCI-E-to-Fibre Channel Host Bus Adapter	403621-B21
Qlogic QMH2462 4Gb FC HBA for HP c-Class BladeSystem	403619-B21

HP StorageWorks 12000 Virtual Library System EVA Gateway	Expanding the power of the HP StorageWorks Enterprise Virtual Array (EVA), the HP StorageWorks 12000 Virtual Library System EVA Gateway accelerates backup performance in complex SAN environments while improving overall reliability. For more information on the VLS EVA Gateway, please visit see: http://h18006.www1.hp.com/storage/disk_storage/disk_to_disk/vls/12000vls/index.html	AH814A
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HP StorageWorks IP Distance Gateway SAN over WAN connectivity, enables EVA Continuous Access replication over WAN (Asynchronous and Synchronous)	HP StorageWorks IP Distance Gateway Order this part for all new installations. Includes One unit, shelf, brackets and documentation. HP StorageWorks IP Distance Gateway Includes One unit to mount in existing shelf and documentation. For multi-path (dual unit high availability) order both part numbers. This second hardware unit installs into the shelf that ship with AG680A. NOTE: For more information on the IP Distance Gateway: http://h18006.www1.hp.com/storage/disk_storage/index.html	AG680A AG681A
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StorageWorks B-series FC switch options

Storage Works B-series 8-24 Port SAN Switch Power Pack+ Upgrade LTU	HP B-series 8-24 Port Power Pack + Upgrade LTU (Adaptive Networking, Fabric Watch, ISL Trunking, Advanced Performance Monitoring and Extended Fabric and Extended Fabric)	T5521A
Optional switch software	ISL Trunking	324506-B21
	Extended Fabric	324505-B21
	Fabric Watch	324504-B21
	Advanced Performance Monitoring	324507-B21
	HP B-series 8-24 Pt Adaptive Network LTU	T5524A
	Data Center Fabric Manager Enterprise	T5542A
	NOTE: For more information on these software component options, see: http://h18006.www1.hp.com/storage/networking/b_switches/index.html and look for HP StorageWorks B-Series 8/8 SAN Switch information.	

Step 3 – Choose a Rack – Base and Factory Integration Information

Factory Integration Start your order by choosing a rack to house your EVA4400 based on the HP 10000 G2 Series Rack.

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

Primary Configuration Use of the EVA Factory Integration part number is required for component



Configuration

Rules

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

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

HP 10000 Series G2 Racks

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

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

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

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

HP PDU Pivot Kit

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

AG730A

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

HP Rack 5642 System for Field Installation only

5642 (42U) Rack Cabinet System

358254-B21

For more information on this rack, please see:

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

Non-HP rack and power requirements

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

HP ProLiant Storage Servers and supported Fibre Channel HBAs

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



Configuration

file and print services, and iSCSI connectivity all from the same ProLiant Storage Server gateway solution.

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

Step 4 – Firmware and Software

Controller Firmware and Installation and Management Software HP StorageWorks EVA4400 is factory installed with XCS v9.5. Separate Media kits and licenses are required to support HP Command View EVA, HP Continuous Access EVA and HP Business Copy EVA.

HP StorageWorks EVA4400 XCS v9.5 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 v8.0 or / ABM v8.1 is mandatory to support the EVA4400 and XCS V9.5. 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.

Configuration

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 v8.0 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

Step 5 – Hard Disk Drives

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

HP StorageWorks FC and FATA Drives

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

HP StorageWorks 72GB 4Gb dual port FC EVA M6412A SSD	AR055B
HP EVA M6412A 300GB 10K 4Gb Fibre Channel Dual Port Hard Disk Drive	AP766B
HP EVA M6412A 400GB 10K 4Gb Fibre Channel Dual Port Hard Disk Drive	AJ711B
HP EVA M6412A 450GB 10K 4Gb Fibre Channel Dual Port Hard Disk Drive	AP731B
HP EVA M6412A 600GB 10K 4Gb Fibre Channel Dual Port Hard Disk Drive	AP732B
HP EVA M6412A 146GB 15K 4Gb Fibre Channel Dual Port Hard Disk Drive	AG556B
HP EVA M6412A 300GB 15K 4Gb Fibre Channel Dual Port Hard Disk Drive	AG690B
HP EVA M6412A 450GB 15K 4Gb Fibre Channel Dual Port Hard Disk Drive	AG803B
HP EVA M6412A 1TB FATA Fibre Channel Dual Port Hard Disk Drive	AG691B

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

Disk drive Bulk Pack shipping

Bulk Pack Shipping Option	519137-B21 (Americas only)
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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.

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

NOTE: The bulk pack shipping option is for the Americas region only.

NOTE: 0D1 will appear after the disk drive part number to indicate that the drives are linked to the bulk pack.

Configuration

Step 6 – Cables and SFPs

FC cable – Copper SFP	The following cables are used with the M6412 drive enclosure but are not necessary for new installations. These cables are for use inside the cab between the controllers and drive enclosures if replacement cables are required	
	Cable FC Copper SFP 0 .6m	321624-B21
	Cable FC Copper SFP 2m	324394-B21
8 Gb/s SFP (Small Form- Factor Profile Transceiver)	HP 8Gb Shortwave B-series FC SFP+ 1 Pack for use with EVA4400 embedded switch model	AJ716A
8 Gb/s SFP (Small Form-Factor Profile Transceiver)	HP 8Gb Longwave B-series FC SFP+ 1 Pack for use with EVA4400 embedded switch model.	AJ717A
4 Gb/s SFP (Small Form- Factor Profile Transceiver)	HP 4Gb Shortwave B-series FC SFP 1 Pack for use with EVA4400 embedded switch model.	AJ715A
FC cable – 1 Gb to 2 Gb/s (optional) (LC to SC)	<p>NOTE: Before selecting the FC cables to connect between the controllers and the switches, check to see what kind of connectors are on the switches that will be connected to the controllers. The SFP connector can support 8Gb I/Os, 4Gb I/Os, 2Gb I/Os and/or 1Gb I/Os.</p> <p>NOTE: One of these cables (either LC to SC or LC to LC) is required per FC port of each HSV controller.</p>	
	FC Short Wave 2-Meter Cable, LC/SC (1Gb to 2Gb)	221691-B21
	FC Short Wave 5-Meter Cable, LC/SC (1Gb to 2Gb)	221691-B22
	FC Short Wave 15-Meter Cable, LC/SC (1Gb to 2Gb)	221691-B23
	FC Short Wave 30-Meter Cable, LC/SC (1Gb to 2Gb)	221691-B26
	FC Short Wave 50-Meter Cable, LC/SC (1Gb to 2Gb)	221691-B27
FC cable - OM2 LC-LC type cables	<p>NOTE: SFP - Small Form-Factor Profile on the ports of the EVA4x00/6x00/8x00. One of these cables (LC to LC) is required per FC port used of each HSV controller.</p>	
	2-meter LC-LC Multi-Mode Fibre Cable	221692-B21
	5-meter LC-LC Multi-Mode Fibre Cable	221692-B22
	15-meter LC-LC Multi-Mode Fibre Cable	221692-B23
	30-meter LC-LC Multi-Mode Fibre Cable	221692-B26
	50-meter LC-LC Multi-Mode Fibre Cable	221692-B27
FC cable - OM3 LC-LC type cables	.5 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ833A
	1 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ834A
	2 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ835A
	5 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ836A
	15 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ837A
	30 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ838A
	50 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ839A

Configuration

Step 7 – Management and High Availability Software

EVA Storage Management / User Interface

NOTE: Command View / SBM v8.0 runs on either a management server or application host running Microsoft Windows. One management server or application host is required per SAN fabric containing an Enterprise Virtual Array.

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). The 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 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.

See the HP StorageWorks Command View EVA QuickSpecs for detailed licensing, support and configuration information:

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

High Availability Software

Industry popular multiple path software is supported on the EVA4400. This software is used to manage multiple paths between hosts and storage systems. It enables high availability through path management and I/O load balancing. Multiple Path support is available for the following Operating Systems:

- HP-UX - HP Secure Path 3.0F SP3 for HP-UX 11.23 and prior versions, HP-UX 11.31 has OS native multi-path, pvlinks native in HP-UX and Veritas DMP
- Windows – Full featured MPIO, v3.00.00 available from HP and Microsoft DSM from Microsoft
- Linux – QLogic Failover driver, available from QLogic /HP, Emulex MultiPulse available from Emulex/HP and Device Mapper v4.0 Enablement Kit from HP
- OpenVMS – native in OS
- AIX – MPIO native in OS
- Solaris – MPxIO native in OS, Veritas DMP available from Veritas
- NetWare – MPIO native in OS
- VMware – MPIO native in OS
- Apple Mac OS X - Included with ATTO HBA driver

Refer to: <http://h18006.www1.hp.com/products/storage/software/multipathoptions/index.html>

Configuration

Step 8 – Expansion Options

The EVA4400 Dual Controller Enclosure can be added on-site into existing EVA configurations (or qualified rack systems), using the AG637A SKU. Additional M6412 drive enclosures (AG638A) can be ordered to expand an EVA4400 configuration:

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

Up to eight drive enclosures are supported with each pair of HSV300 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 Controller pair.

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

NOTE: Minimum of 8 disk drives per Fibre Channel drive type or FATA drive type per EVA4400.

Step 9 – Optional Components and Software

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

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

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

<http://h18000.www1.hp.com/storage/software.html>

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

http://h18000.www1.hp.com/products/quickspecs/12815_div/12815_div.html

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

Standard Edition SRM Media and License to Use (LTU)

HP Storage Essentials Standard Edition SRM Media Kit T5314AA

HP Storage Essentials Standard Edition SRM LTU T5315AA

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

HP Storage Essentials NAS Manager 1 TB LTU T4294AA

HP Storage Essentials File System Viewer 1 TB LTU T4292AA

HP Storage Essentials Database Viewer 1 MAL LTU T4289AA

HP Storage Essentials Exchange Viewer 1 MAL LTU T4288AA

HP Storage Essentials Backup Manager 1 TB LTU T4295AA

VMware Site Recovery VMware Site Recovery Manager (SRM) is designed to automate the recovery process and the



Configuration

Manager

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

NOTES:

1. Refer to the HP Standard Edition SRM Software QuickSpec for product and licensing details: <http://h18006.www1.hp.com/products/storage/software/e-suite/index.html>
 2. Standard Edition SRM LTU contains bundled licensing comprising of Edition 150 MAPs, 3TBs of File System Viewer, NAS Manager, and I MAL for either the Exchange Viewer or the Database Viewer. This is a customer choice.
-

Optional Hardware Accessories

Non-HP Rack installation

For racks other than those specifically stated within the EVA4400 product set, please visit the EVA web page for details on rack and power specifications: <http://www.hp.com/go/eva>

SAN Components

The HP StorageWorks SAN integrates best-in-class storage networking components to deliver a complete connectivity platform for end-to-end network storage solutions. HP's fabric portfolio includes: HBAs, directors, switches, SAN extenders, NAS heads, iSCSI routers, and fabric software. HP SAN Infrastructure components deliver the network storage infrastructure for the Adaptive Enterprise.

For details on SAN infrastructure components and storage compatibility information, please visit: <http://hp.com/go/san>

Technical Specifications

EVA4400

Operating Temperature	50° to 95° F (10° to 35° C) - Reduce rating by 1° F for each 1000 ft altitude (1.8° C/1,000 m)
Shipping Temperature	-40° to 150° F (-40° to 66° C)
Humidity	10% to 90% non-condensing
Shipping Humidity	5% to 90% non-condensing
Operating Vibration	Sine 5-10 Hz 0.020" (0.5mm) double amplitude displacement, 10-500 Hz 0.1g, Random 10-500Hz at 0.15 Grms
Non-operating Vibration	Sine 10-150 Hz 0.3g, Random 10-500 Hz at 0.5 Grms
Shipping Vibration (packaged, on shock pallet)	Sine 5-150 Hz 0.5g, Random 0.86 Grms from 5-300 Hz, consisting of 5-100 Hz at 0.0059 g2/Hz and 100-300 Hz at 0.000049 g2/Hz
Operating Shock	5g half-sine 10mSec
Non-operating Shock	8g half-sine 10mSec
Shipping Shock (packaged, on shock pallet)	Horizontal: 10-deg incline at 1m/Sec, Vertical rotational edge 0.15m
Altitude	Up to 8,000 ft (2,400 m)
Air Quality	Not to exceed 500,000 particles per cubic foot of air at a size of 0.5 micron or larger

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

NOTE: This power information is for a maximum configuration using the default 208 - 240 Volt single-phase PDUs. Other PDUs may use different plugs, voltages, etc. For more information on PDU support, please see the following URL: <http://h18004.www1.hp.com/products/servers/proliantstorage/power-protection/pdu.html>

EVA4400

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

Technical Specifications

Enterprise Virtual Array 4400

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

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

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

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

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

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

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

Enterprise Virtual Array EVA4400 Product Dimensions, Weight and Clearance

Technical Specifications

Physical Dimensions	Height in/cm	Width in/cm	Depth in/cm	Max Weight lb/kg	Req. Front Clearance in/cm	Req. Rear Clearance in/cm
EVA4400 2C8D Configuration (42U Graphite cab)	78.75 (200.03)	23.7 (60.3)	40.2 (102.2)	860 (390.09)	30 (76.2)	30 (76.2)
EVA4400 Dual Controller Array	3.5/8.89	17.6/44.70	24.5/62.3	48/21.8	N/A	N/A
M6412A Drive Enclosure	3.5/8.89	17.6/44.70	23.75/60.33	57/25.86	N/A	N/A

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