

### Overview

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

At the heart of the HP 4400 Scalable NAS File Services is a truly symmetrical cluster file system, with high availability services and cluster storage management services, which allow file server nodes and storage to be added to linearly scale file serving throughput performance or storage capacity. The HP 4400 Scalable NAS File Services integrates various file serving protocols including Network File System (NFS) functionality, Common Internet File System (CIFS) or SAN-Direct I/O protocol. The product can aggregate up to 16 Windows or Linux file server nodes for high-performance, fault-tolerant file serving with a EVA4400 storage.

The EVA4400, used by the HP 4400 Scalable NAS File Services, delivers all the business benefits of virtualization such as ease of management, superior capacity utilization, and self-tuning performance that have made the EVA product family one of best selling arrays in its class. The EVA4400 provides broad operating system support and is built on the EVA4400/6400/8400 architecture with dual-redundant design and offering 99.999% availability. Plus, it supports the robust local and remote replication capabilities of Business Copy and Continuous Access EVA allowing 4400 Scalable NAS File Services customers to configure for disaster tolerance and the ability to easily keep applications on-line during backup and restore.

HP offers a full spectrum of complimentary HP StorageWorks hardware, software product, solutions and HP services. In addition, the HP 4400 Scalable NAS File Services warranty offering -provides the base level of service to which you can add appropriate service option. HP Services provide additional offerings up to Critical Service, the support for mission critical environments.

### Product Highlights

	HP 4400 Scalable NAS File Services
Maximum number of File Server nodes	16
High Availability Type	Fully Symmetrical Active/Active
File System Size (max)	128 TB (Linux); 32 TB (Windows)
Maximum number of File Systems	512 (Linux); 256 (Windows)
File Protocol Support	NFS, CIFS, HTTP, FTP, HTTPS
Number of File Server nodes standard	2, X5500 Network Storage Gateway servers
File Server Operating Systems	Windows Storage Server x64 2003 R2 or SUSE Linux v10 Enterprise Edition
Application Environment	Oracle, SAP, Microsoft Exchange, SQL
Local Data Replication - HP StorageWorks Business Copy EVA	Yes
File Based Replication	Yes, Linux version
Remote Data Replication - HP StorageWorks Continuous Access EVA	Yes
Easy array management and configuration - HP StorageWorks Command View EVA	up to 16 EVAs, per instance of Command View
Application block and file storage	Yes
RAID supported	Vraid1, Vraid 0+1, Vraid5, Vraid6
Number of array controllers	2
Cache (per controller pair)	4GB
Block Host Connectivity	Fibre Channel, Direct Connect, iSCSI
Switched drive shelves	1 to 8
Drives per enclosure	12
Drive types (mixed in enclosure)	High Performance Fibre Channel and Fibre Attached Technology Adapted (FATA)
Host Ports	4 or 2 embedded FC switches with ten 8Gb/s FC SAN ports per controller
Supported disks, min-max	12 to 96
Capacity	1 to 96TB
Drive capacities and speeds	72GB SSD 400 GB 10K rpm 450 GB 10K rpm 600 GB 10K rpm 146 GB 15K rpm 300 GB 15K rpm 450 GB 15K rpm 1TB FATA
Array controller Battery Backup for Cache	Up to 96 hours
Drive Interface	Two 4 Gb/s FC-AL ports per controller in redundant pairs, two paths to each dual ported HDD
Redundant Blowers	Yes
Environmental Monitoring Unit	Yes. Monitors Power and Temperature
Regulatory approvals	UL, CSA, TUV, FCC, CE MARK, CTICK, BSMI, VCCI

### Product Highlights

#### Management Software

Scalable NAS File Serving Software and Command View EVA

#### Scalability

- Scale from 2 to 16 nodes with a linear increase in file serving performance and throughput. Depending on number of HDDs and application workload
- Support for 128 TB per file system for Linux and 32 TB per file system for Windows.
- The Linux version provides scalable NFS file serving and transparent failover for NFS clients with no need to remount in the event of one or more node failures. This feature is unique in the industry. The Linux version also supports CIFS file serving in a non scalable mode via Samba.
- The Windows version provides scalable CIFS file serving and transparent failover for CIFS clients with no need to reconnect in the event of one or more node failures. The Windows version also supports NFS file serving in a non scalable mode via Hummingbird NFS Maestro™

#### High Availability

- Fully symmetrical file system architecture means that all nodes see the same file system and that means no hot spots or bottlenecks.
- Hardware node failures are detected and failed over to all remaining nodes in as little as 5 seconds.
- 99.999 continuous availability

#### Data Integrity

- Complete session state, data and cache coherency is maintained among all nodes in the cluster.
- Both the Windows and Linux versions support scalable SAN-Direct I/O.

#### Performance

- The performance of each node can provides up to 170 MB/second of sequential write throughput; approximately 190 MB/second sequential read throughput regardless of the base OS selected.  
**NOTE:** Overall file serving throughput is dependent on the number of HDDs configured in the system.

#### Industry standards

- SUSE Linux v10 Enterprise edition is the supported Linux File Server node OS versions.
- Windows Storage Server x64 2003 R2 is the supported Windows File Server node OS version.

#### Flexibility

- Though the HP 4400 Scalable NAS File Services comes standard with an EVA4400 array storage system, it can also use any HP StorageWorks of SAN storage product including MSA, EVA and XP storage arrays.
- Utilize existing data center tools and solutions for backup, management and anti-virus protection that support the OS you have selected.

#### Manageability

- The HP 4400 Scalable NAS File Services includes pre-loaded and pre-configured file serving and array management software.
- Perform rolling upgrades of individual file server nodes by removing nodes from the cluster and then re-inserting them into the cluster. This can be done without any disruption to clients or concern about data integrity with the failover over capabilities that are part of the architecture.

#### Lower Cost

- Purchase the file serving needs for today confident that you can add additional file serving throughput put and performance as your needs grow. There is no need for a "forklift upgrade" in the future.
- By building the solution with industry standard components flexibility can be maintained in the infrastructure - no need to buy proprietary hardware and software.
- Integration in the data center is straight forward as there no need to specialized training to learn about custom hardware and proprietary software.

### Product Highlights

**Integrated File and Block storage services** The HP 4400 Scalable NAS File Services supports both file and block storage access. For host block storage access the HP 4400 Scalable NAS File Services provides support for industry-leading Operating System platforms including: HP-UX, HP OpenVMS, Windows 2008, Windows 2003 Professional, Windows 2003 Standard/Enterprise (32/64-bit) and Extended (32/64-bit), /DataCenter (64-bit), Sun Solaris, Linux, IBM AIX, Novell NetWare, VMware and Apple Mac OS X.  
**NOTE:** See the [EVA Family Operating System, Cluster and High Availability Compatibility matrix for Operating System version details](#).

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**Designed for No-Single-Point-of-Failure** The HP 4400 Scalable NAS File Services redundant architecture is designed to eliminate single-points-of-failure.

Each EVA4400 Dual array controller has ten FC host ports per controller; twenty per controller pair and two device ports per controller, four per controller pair.

Each EVA4400 controller pair interfaces with the M6412 drive enclosures. With two 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.

Each X5500 Network Storage Gateway node has a dual port HBA. Each HP 4400 Scalable NAS File Services system includes dual 10 port enabled FC switches. With two FC ports per HBA and two FC host ports per array controller, each node and array controller connects to each FC switch. So each node has a redundant path to each array controller and each drive within the array.

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 EVA4400 controller also has dual redundant hot plug power supplies and dual redundant hot plug blowers. Each controller has hot plug cache batteries to maintain cache contents for up to 96 hours in case of a total power failure.

The 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. 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.

### Product Highlights

#### Installation and Startup

The HP 4400 Scalable NAS File Services includes Installation and Startup (I&S). Though the HP 4400 Scalable NAS File Services is completely pre-configured at the factory, I&S service is used to adapt the HP 4400 Scalable NAS File Services the customer specific IP infrastructure and to provide general product training.

However for more complex environments additional Installation & Start-up services are recommended or may be required. HP recommends the purchase of the following Installation & Startup services when configuring or using:

- Continuous Access configurations\*. Purchase the HP Data Replication Solution Service - Continuous Access EVA.
- HP's Remote Support Pack (RSP) for remote connectivity to HP. Purchase the HP Remote Connectivity Installation & Start-up service.

\* In Americas the Replication Workload Profiler (RWP) process is also required.

**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 service.

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

- Storage Essentials. Purchase the Storage Essentials Solution Service.

A comprehensive list of Installation & Start-up services can be found at: [www.hp.com/hps/storage](http://www.hp.com/hps/storage)

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#### 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 the HP 4400 Scalable NAS File Services systems. Continuous Access EVA provides the highest level of FC SAN data protection to customers in order to meet disaster tolerant business continuity implementation goals. For additional information about Continuous Access EVA visit: <http://h18006.www1.hp.com/storage/software.html>

The Linux version of the HP 4400 Scalable NAS includes a file-based replication feature that enables asynchronous replication between HP 4400 Scalable NAS system.

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/enterprise/cache/231355-0-0-121.html>

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### Product Highlights

#### Local Replication Solutions

The HP 4400 Scalable NAS File Services includes HP StorageWorks Business Copy, which is a local replication application for the EVA4400. 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.

#### Hard Drive Support

The HP 4400 Scalable NAS File Services 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 with in the group.

#### FATA Drive Support

The HP 4400 Scalable NAS File Services supports 1TB dual ported 4 Gb/s Fibre Attached Technology Adapted (FATA) disk. It can be configured with any combination of FATA and Fibre Channel disk drives; total raw capacity will vary based upon the redundancy (Vraid) selected. A minimum of eight FATA drives are required in a configuration, if this drive type is chosen.

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 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** When providing host block storage services, the HP 4400 Scalable NAS File Services 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>

#### Factory pre-installation and pre-configuration

The HP 4400 Scalable NAS File Services ships from the factory fully configured. This includes the pre-configuration of storage, file serving and storage management software. After unpacking, it can be plugged into power sources, connected to the IP network, and it is ready for use. The included Installation and start-up service is provided to help change the factory preset IP addresses.

### Service and Support, HP Care Pack, and Warranty Information

**Warranty and Services Included with the Product** 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

#### **For increased uptime, productivity and ROI -HP Care Pack packaged services for Storage**

These days, you need to get the most out of your storage investment-you can't afford not to. When you buy HP storage products and solutions, it's also a good time to think about what levels of service and support you may need. To help take the worry out of deploying, designing, maintaining, and managing your environment, we've designed a portfolio of service options that are as flexible, reliable and scalable as your storage. Unlike storage-only vendors, we take a holistic approach to your entire environment, bridging storage, servers, blades, software and network infrastructures with our HP Care Pack packaged services for Storage.

#### **Protect your business beyond the warranty**

When it comes to robustness and reliability, standard warranties on today's computing equipment have matured just as the technologies have matured. Good news on some fronts-but also a source of potential problems and subsequent consequences that come from depending on standard warranties alone. Standard warranty protects against product defects and some causes of downtime- but not the business. By using a standard approach to warranty uplifts, such as HP Care Pack Services, you can reduce downtime risks and be more certain of operational consistency for both mission-critical and standard business computing. Simply put, HP Care Pack Services normalize the warranty of combined products - helping you proactively guard against unplanned downtime.

#### **Extending warranties with HP Care Pack Services**

For cost-effective upgrading or extending your standard warranty, HP Care Pack Services offer a suite of standard reactive hardware and software support services that are sold separately, or combined as with our Support Plus and Support Plus 24 services. The portfolio also provides a combination of proactive and reactive services, such as Proactive 24 Service and Critical Service. In addition, with HP Proactive Select we offer an innovative approach to service delivery that gives you the flexibility to acquire the specific proactive services you need today, then add services as your needs evolve. HP Proactive Select offers a broad set of technical or per-event type service options - including server, storage, and network, SAN device, and software, environment, installation and education services. Services that you can mix and match depending on your specific requirements, from preliminary planning and equipment delivery to installation, configuration, integration, and testing, through every level of ongoing support. Our HP Care Pack packaged services for Storage assures help when you need it most. And for many products, post-warranty HP Care Pack Services are available when your original warranty has expired.

#### **HP Storage Services: Offering reliability, flexibility and value-just like your storage**

HP Storage Services offers a full spectrum of customer care, from technology support to complex migrations to complete completely managed services. HP Factory Express provides customization, integration and deployment services for turnkey solutions. HP Education offers flexible, comprehensive training on storage networking, disk storage systems, and storage software to help your IT staff get the most out of your investments. And HP Financial solutions extend innovative financing and asset management programs to cost-effective buy, manage and eventually retire your older equipment.

HP Storage 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.



### Service and Support, HP Care Pack, and Warranty Information

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

- Services for customers purchasing from HP or an enterprise reseller are quoted using HP order configuration tools.
- Customers purchasing from a commercial reseller can find HP Care Pack Services at:  
[http://h30125.www3.hp.com/csn/salesmktg/elfpack/elf\\_nonlkup\\_ctrylang.asp?code=ELNL](http://h30125.www3.hp.com/csn/salesmktg/elfpack/elf_nonlkup_ctrylang.asp?code=ELNL)

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

#### Recommended Support **3-Year HP Support Plus 24**

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

- Improve uptime with responsive hardware and software services
- Cost-effectively obtain expert multivendor support
- Enjoy consistent service coverage across geographically dispersed sites
- Update HP and selected third-party software at a predictable cost
- Take advantage of subscription savings on software updates
- Increase revenue-with access to world-class expertise without headcount implications
- Increase customer satisfaction-with no interoperability gaps

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6638EN.pdf>

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### Related HP Care Pack Services that will enhance your HP product experience.

#### Related Services

##### HP Data Migration Service

For customers who need to safely transport mission critical data with minimal impact to their operations:

You need to move your critical enterprise data to your new HP StorageWorks SAN platform. And you need to accomplish that without losing data. And without interrupting your ongoing business operations.

HP Data Migration Service helps you lessen the risk of data loss, minimize threats to data integrity, and avoid productivity-sapping performance slowdowns during data transport. A highly experienced HP Services storage specialist works with you to rapidly and securely migrate mission-critical business information across your data center or around the globe - regardless of the complexity of your environment.

<http://h20195.www2.hp.com/v2/GetPDF.aspx/5982-4107EN.pdf>

##### HP Proactive Select Service

For customers who need to improve IT performance and manageability through the use of cost effective flexible proactive services:

Proactive Select - increased flexibility, minimal complexity -- Select what works for you - your package  
Delivery planning + Proactive Service Credits

- Credits are used to redeem proactive services

### Service and Support, HP Care Pack, and Warranty Information

- Three 'predefined' service credit levels - 30, 60,180 credits
- Additional credits available
- Available in 1,3, 4 & 5 year packages
- Reactive
- Utilize existing reactive services products - ranging from Next Day, through 24x7, to 6 Hour Call to Repair

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

### eSupport

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

#### Support Portal

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

Features include:

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

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

#### 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.

### 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](http://www.hp.com/learn/storage)

### *Service and Support, HP Care Pack, and Warranty Information*

#### **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://h20219.www2.hp.com/services/cache/433028-0-0-225-121.htm>

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#### **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 Information and Configuration Rules

#### Step 1 - Choose a HP 4400 Scalable NAS File Services Base Model

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

AN595B

- EVA4400 Dual Controller with Embedded SW
- M6412A FC HDD Enclosure
- Two HP DL360G6-Windows X5500 Network Storage Gateway Nodes w/24 GB RAM each
- HP Procurve Switch 2910
- Command View for EVA Unlimited License
- Business Copy for EVA and 1 TB License
- 42U 10000 Series Rack
- TFT7600 Rackmount Keyboard and Monitor
- SmartStart for HP EVA Storage

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

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

or

HP StorageWorks 4400 Scalable NAS File Services for Linux HP 4400 Scalable NAS for Linux includes

AN596B

- EVA4400 Dual Controller w/Embedded SW
- M6412A FC HDD Enclosure
- Two HP DL360G6 Linux X5500 Network Storage Gateway Nodes w/24 GB RAM each
- HP Procurve Switch 2910
- Command View for EVA Unlimited License
- Business Copy for EVA and 1 TB License
- 42U 10000 Series Rack
- TFT7600 Rackmount Keyboard and Monitor
- SmartStart for HP EVA Storage

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

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

### Configuration Information and Configuration Rules

#### Step 2 - Pick Initial Hard Disk Drives

The 4400 Scalable NAS File Services requires that 12 hard disk drives be ordered, with the Base Model (AN595B or AN596A), from the list below:

<b>HP StorageWorks FC and FATA Drives</b>	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 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. The 72 GB SSD and 146 GB Fibre Channel Disk Drive are not supported as an initial drive choice.

#### Step 3 - Software

##### Snapshot Software

The HP 4400 Scalable NAS comes standard with a 1 TB license of HP Business Copy EVA for taking Snapshots. It is strongly recommended that if more storage is ordered, that the HP Business Copy Unlimited Capacity LTU be ordered as well.

HP Business Copy Unlimited Software License.	T5477A
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**OPTIONAL SOFTWARE:** EVA4400 optional software can be found at the following URL:  
<http://h18006.www1.hp.com/storage/software.html>

#### Step 4 - Hard Disk Drives

Drives and drive enclosures are orderable at the time the 4400 Scalable NAS File Services is purchased, or can be added in the future when additional capacity is required. Use these SKUs whenever ordering hard disk drives for the 4400 Scalable NAS File Services or EVA4400. Note that these SKU's apply ONLY to the HP 4400 Scalable NAS File Services or EVA4400 and can't be used with other EVA models.

##### Drive Enclosure

M6412A drive enclosures can be ordered to expand a HP 4400 Scalable NAS File Services configuration. 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 EVA4400 Controller pair.  
 \*0D1 will appear after this part number to indicate factory integration where appropriate.

##### 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 HP 4400 Scalable NAS or 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



### Configuration Information and Configuration Rules

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.

### Step 5 - Cables and SFPs

#### FC cable - Copper SFP

The following cables are used with the M6412 drive enclosure but are not necessary for new installations. These cables are for use inside the cab between the controllers and drive enclosures if replacement cables are required.

Cable FC Copper SFP .6m

321624-B21

Cable FC Copper SFP 2m

324394-B21

#### 8 Gb/s SFP (Small Form-Factor Profile) Transceiver

HP 8Gb Short Wave B-series FC SFP 1 Pack.

AJ716A

#### FC cable - 1 Gb to 2 Gb/s (optional) (LC to SC)

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

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

FC Short Wave 2-Meter Cable, LC/SC (1Gb to 2Gb)

221691-B21

FC Short Wave 5-Meter Cable, LC/SC (1Gb to 2Gb)

221691-B22

FC Short Wave 15-Meter Cable, LC/SC (1Gb to 2Gb)

221691-B23

FC Short Wave 30-Meter Cable, LC/SC (1Gb to 2Gb)

221691-B26

FC Short Wave 50-Meter Cable, LC/SC (1Gb to 2Gb)

221691-B27

#### FC cable - 2Gb/s to 2Gb/s (optional)(LC to LC)

**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 of each HSV controller.

2-meter LC-LC Multi-Mode Fibre Cable

221692-B21

5-meter LC-LC Multi-Mode Fibre Cable

221692-B22

15-meter LC-LC Multi-Mode Fibre Cable

221692-B23

30-meter LC-LC Multi-Mode Fibre Cable

221692-B26

50-meter LC-LC Multi-Mode Fibre Cable

221692-B27

### 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
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 maximum configuration

#### 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)
Number of phases	Single
Rated current	17A @ 200V-240V AC, 60Hz total, 4.25 A per power cord
Nominal Line Voltage	208 or 230V
Range Line Voltage	187 to 256V
Line Frequency	North America 60Hz, Europe 50Hz, Japan 50 or 60 Hz, Latin American 60K or 50Hz

#### Enterprise Virtual Array 4400

NOTE: This data represents fully populated drive shelves with 15K rpm disk drives under typical performance. Other drive types may vary slightly. Note, at idle, the system operates at approx. 15% less power than at typical.		208 Volts				230 Volts			
		2C1D	2C2D	2C3D	2C4D	2C5D	2C6D	2C7D	2C8D
Typical	Total System Wattage	424	728	1032	1336	1640	1944	2248	2552
	Total System BTU/hour	1447	2485	3522	4560	5597	6635	7872	8710
	Input Current (A) - Typical per system	1.6/1.5	2.6/2.4	3.5/3.3	4.4/4.3	5.5/5.2	6.5/6.1	7.4/7.0	8.4/8.0
	In Rush Current (A)	98/10498	132/147	170/190	220/244	250/272	280/311	321/357	363/403
Failover Mode	Input Current (A) - Maximum per system	2.7/2.6	4.3/4.1	5.9/5.5	7.5/7.8/7.3	9.4/8.8	11.0/10.0	12.6/11.9	14.2/13.7
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)									

### Technical Specifications

#### Enterprise Virtual Array EVA4400 Product Dimensions, Weight and Clearance

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 Config. (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 Enclosure	3.5/8.89	17.6/44.70	24.5/62.3	48/21.8	N/A	N/A
M6412 Drive Enclosure	3.5/8.89	17.6/44.70	23.75/60.33	57/25.86	N/A	N/A

<b>X5500 Storage Gateway</b>	<b>Dimensions (H x W x D)</b> (with bezel)	1.70 x 16.78 x 27.25 in (4.32 x 42.62 x 69.22 cm)	
	<b>Weight</b> (approximate)	Maximum (all hard drives, power supplies, and processors installed)	39.5 lb (17.92 kg)
		Minimum (one hard drive, power supply, and processor installed)	32 lb (14.51 kg)
	<b>Input Requirements</b> (for Standard 460W PSU, see power specifications tables for detail on 460W, 750W and 1200W power supplies)	Rated Line Voltage	100 to 240 VAC
		Rated Input Current	4.5 Amps (at 120VAC) to 2.2 Amps (at 240 VAC)
		Rated Input Frequency	50 to 60 Hz
	<b>BTU Rating</b>	Maximum	1773 BTU / hr (at 120 VAC), 1715 (at 240 VAC)
	<b>Power Specifications</b>	To review typical system power ratings use the HP Power Advisor which is available via the online tool located at URL: <a href="http://www.hp.com/go/proliant-energy-efficient">www.hp.com/go/proliant-energy-efficient</a> or <a href="http://www.hp.com/go/hppoweradvisor">www.hp.com/go/hppoweradvisor</a>	
		<ul style="list-style-type: none"> <li>- Click on the system of interest. Example: DL360 G6</li> <li>- Follow the instructions of the next screens.</li> </ul>	
	<b>Power Supply Output</b> (per power supply)	Rated Steady-State Power	460 W (at 100 VAC), 460 W (at 200 VAC)
		Maximum Peak Power	460 W (at 100 VAC), 460 W (at 200 VAC)
		NOTE: See Power Supply Specifications tables for complete details on 460W PSU and optional 750W and 1200W Power Supply Options.	
	<b>System Inlet Temperature</b>	Operating	10° to 35° C (50° to 95° F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8° F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10° C/hr (18° F/hr). The upper limit may be limited by the type and number of options

### Technical Specifications

		installed.
		System performance may be reduced if operating with a fan fault or above 30° C (86° F).
<b>Relative Humidity</b> (non-condensing)	Non-operating	-40° to 70° C (-40° to 158° F). Maximum rate of change is 20° C/hr (36° F/hr).
	Operating	10 to 90% relative humidity (Rh), 28° C (82.4° F) maximum wet bulb temperature, non-condensing.
<b>Altitude</b>	Non-operating	5 to 95% relative humidity (Rh), 38.7° C (101.7° F) maximum wet bulb temperature, non-condensing.
	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
<b>Acoustic Noise</b>	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
		Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23° C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).
	<b>Idle</b>	
	L WAd	6.4 B
	L pAm	49 dBA
	<b>Operating</b>	
	L WAd	6.4 B
	L pAm	49 dBA
<b>Emissions Classification</b> (EMC)	FCC Rating	Class A
	Normative Standards	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22; K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1

**NOTE:** Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.

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For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.



