open storage management

executive summary

This paper presents an HP storage area network (SAN) technical blueprint for building a SAN Management Station. Using this blueprint, customers can create a management station that ensures the availability, efficiency, and flexibility of their SAN storage pool. Furthermore, HP's SAN Management Station offers truly open storage management, in terms of OS and third party storage device interoperability.

Storage Solution Blueprinting is HP's way of defining a configuration for a specific storage problem and providing all the information necessary to implement it. A blueprint represents a fully tested and supportable configuration, orderable as a set of individual components from HP's standard price list. Recognizing that one size does not fit all, guidance on flexibility and scalability is given – ranging from minor changes listed in the blueprint itself, to referenced design and consultancy services for total flexibility. Standard product support is provided for each component in a blueprint configuration, although custom implementation and support services are also available. Overall, the blueprint customer's experience is a quicker time to solution, without the limits of a fixed product bundle.

Figure 1 presents a logical view of the SAN Management Station on a typical SAN configuration.
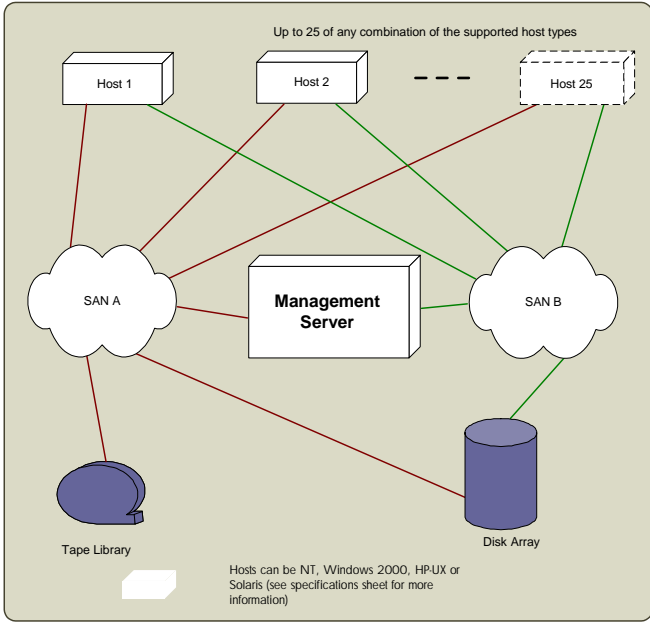

figure 1. SAN management station: logical view

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The blueprint includes details on which components are needed to build the SAN Management Station, and discusses three usage scenarios for the solution:

1. As a complete SAN purchase, along with necessary SAN fabric and storage infrastructure.
2. As an add-on to a low/mid-range SAN that is growing – capacity and nodes – and now needs full SAN management software.
3. As an add-on to existing SAN island(s) to unite multiple pools of storage.

For Scenario 1, users are recommended to consider hp's other SAN solution blueprints, referenced later in this document, which provide fully tested SAN configurations based on varying capacity and data availability needs.

For Scenarios 2 & 3 users need to add the SAN Management Station to their own SAN configuration. Users will need technical assistance from hp to achieve this and ensure interoperability and supportability of their final configuration. Details of the technical assistance needed are given later in this document.

Additional technical blueprints are available to build HP tested and supported SAN Solutions. See the section titled "additional information" at the end of this document for a list of these blueprints.

today's challenges in storage

Businesses today must capture and manage a rapidly expanding amount of digital information. In some cases information *is* the business, and its access and availability are critical to the success of the business. In the 'always-on' world of the Internet, lack of access to data can spell disaster.

Servers with directly attached storage have proven to be difficult to manage in a cost-effective way. Businesses often face the need to provide reserve storage capacity to be able to respond to unpredictable storage demands, in order to avoid business disruption. IT resources are challenged to manage the storage requirements of each individual server and application. Adding storage capacity often requires taking hosts off line, decreasing the availability of applications, and data, to the end users.

An HP SAN Management Station provides a solution to these storage challenges. It enables customers to manage their storage resources in an efficient and cost-effective way, while providing the following benefits:

- Manage more storage per administrator

- Increase return on existing assets by identifying under-utilized or wasted storage resources

- The ability to set and comply to Service Level Agreements (SLAs)

why an hp solution?

HP provides a tested and supported end-to-end solution built with world-class components, supported by a single point of contact – HP. With a service and support organization of over 30,000 professionals in 120 countries, HP offers customers the peace of mind that comes from knowing that their solution works right now and can expand into their future with them.

HP SAN Solutions are managed using the industry-leading HP OpenView Storage Area Manager software, allowing a SAN to be managed and monitored from a single management station. An easy to learn, easy to use, interface allows IT staff to be more efficient in managing the storage. The HP OpenView Storage Area Management Implementation Service brings

experienced professionals sharing best "SAN management" practices to design and implement storage management that works right the first time. Centralized device management reduces storage management overhead and allows non-disruptive storage growth in the future.

HP Surestore Tape Libraries and HP OpenView Omniback II software provide a secure and manageable solution enabling optimal customer data protection. Omniback provides backup protection for data in heterogeneous environments with minimal impact on system performance and application availability. Omniback is based on a modular design, so it is scalable with a customer's infrastructure, to provide highly reliable and cost-effective backup in systems of any size.

HP has developed a strategy based on the concept of Federated Storage Area Management (FSAM). FSAM delivers a naturally scalable environment of pooled storage resources working together as a seamless system. In federated computing, networked resources can be brought together to perform tasks and solve problems, and then easily be reassigned to other tasks as business requirements change. With this HP SAN Solution, HP has made key alignments with the FSAM strategy.

key components

The Storage Management Station is made up of a hardware platform and multiple software elements. The hardware platform provides the server for running the software and an Ethernet switch for connection to components. The main software element is HP's OpenView Storage Area Management suite (OV SAM), with HP's OpenView Omniback II backup software and additional device management software as needed. These additional software components are not all needed for every configuration. They are applicable in situations where specific management functions are needed, such as the use of HP's high-end XP disk arrays.

open SAN management solution

Figure 2 illustrates how the Storage Management Station might fit into a full SAN solution. The upper left corner shows the Storage Management Station. With this station there is a single pane view into the management of the storage in this example.
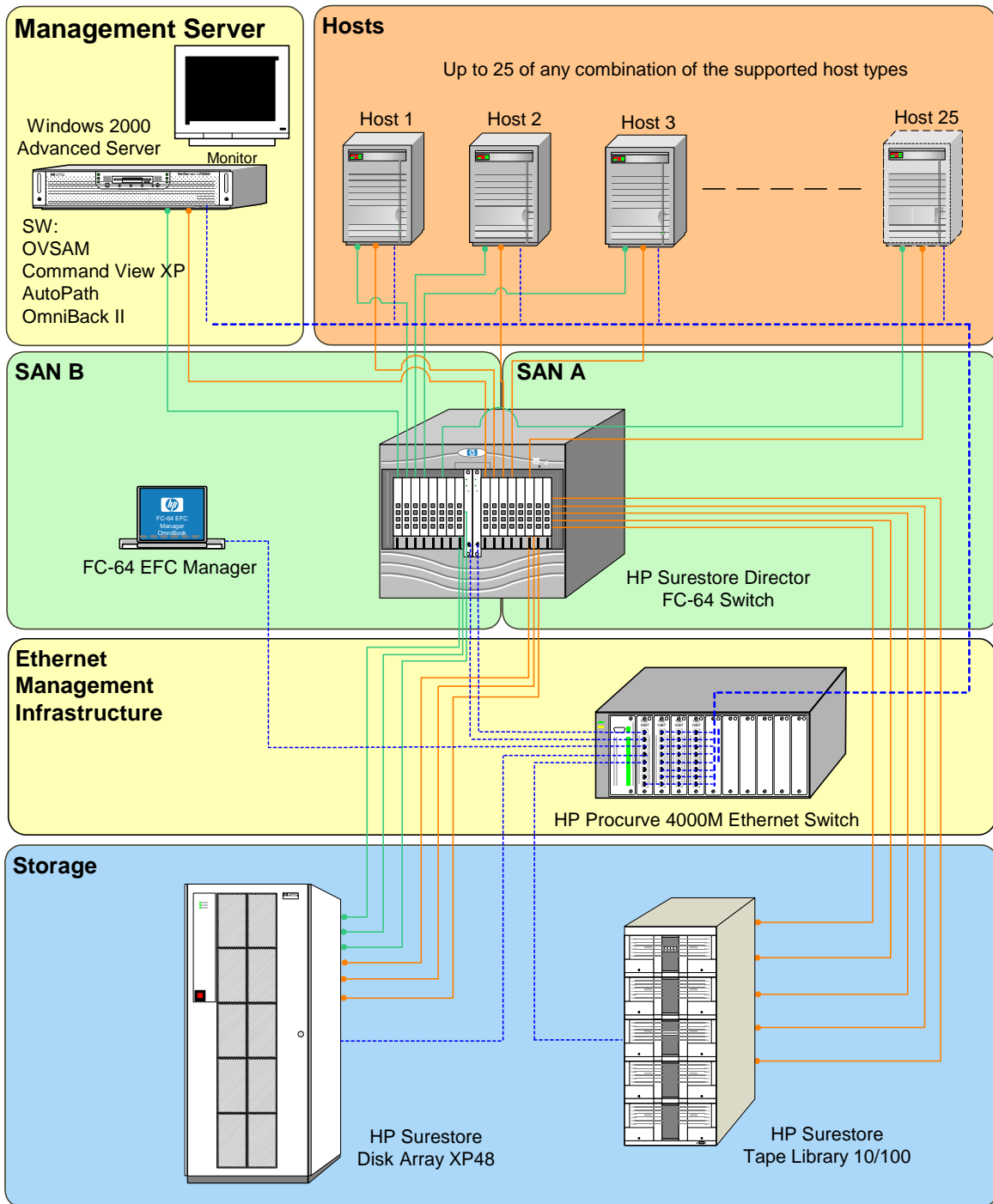

figure 2. storage management server configuration example

The software does full discovery, configuration, and management of the SAN storage solution. In this example, the Storage Management Station is connected into the SAN through two Fibre Channel connections, one to each side of the HP Surestore Director FC-64 Switch. This dual connection permits a level of availability and protects against path failure for the management files that need to be backed up. The Ethernet network connection permits the Storage Management Station to be linked out of band with the other components in the SAN. It is recommended that this LAN be a separate management LAN segment from the customer's normal production LAN.

Hardware Components	Software components

HP Netserver LP2000r
 	
HP Netserver LPT 6000r
 	
     Qlogic 2200F or Emulex LP8000 Host Bus Adapter
 	
     Minimum of 1GB RAM
 	
     Minimum of 4GB hard drive
 	
     Windows 2000 Advanced Server, sp2
 	
HP Flat Panel Display/Keyboard/pointing device
 	
HP Procurve 4000 Network Switch
 	
HP Rack System /E25
	OpenView-Storage Area Manager 2.2 (Note: If Allocater is used, Secure Manager XP or VA is not be used)
	
	Omniback II 4.0
	
	Command View (XP or VA)
	
	Auto Path (XP or VA) for High Availability configurations
	
	OpenView Performance Agent (MeasureWare)
	
	HP Performance Advisor XP (for the XP arrays if used in the configuration)
	
	Secure Manager (XP or VA) (Note: if Secure Manager is used, OpenView-Storage Area Manager Allocater is not used)

The SAN Management Station can be racked to minimize space at a customer's site. Figure 3 shows one possible rack configuration in an HP Rack System/E25. Figure 3 shows . Additional SAN components can be racked with the SAN Management Station.
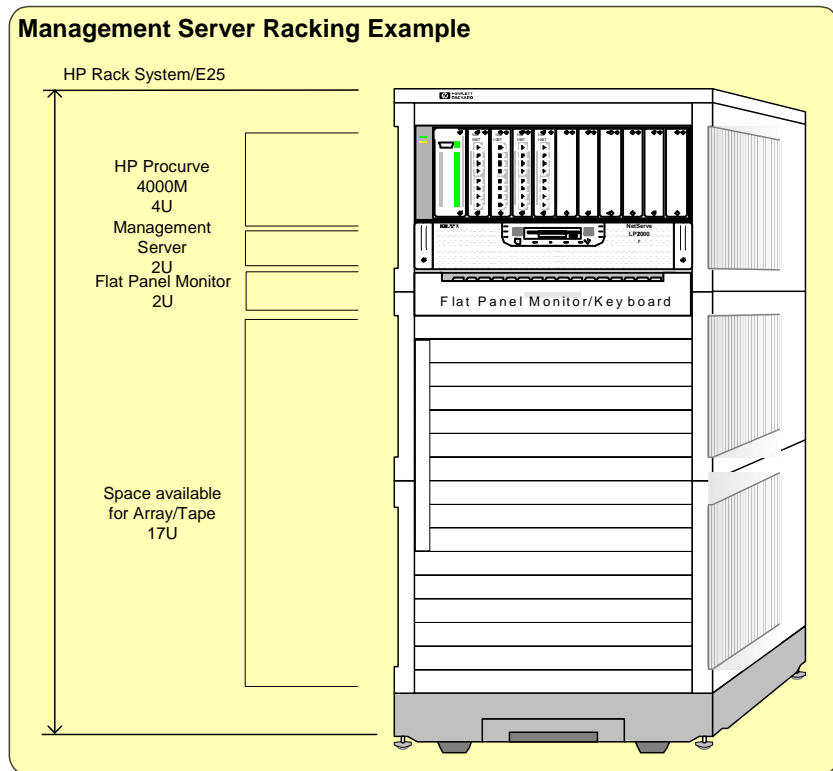

figure 3. storage management station example physical cabinet

solution deployment & flexibility

The example SAN Management Station listed in this blueprint can be deployed in one of three scenarios.

1. As a complete SAN purchase, along with the necessary SAN fabric & storage infrastructure.
2. As an add-on to a low/mid-range SAN that is growing – capacity and nodes – and now needs full SAN management software.
3. As an add-on to existing SAN island(s) to unite multiple pools of storage.

To provide guidance on deploying this solution a series of assumptions and design rules are listed below.

scenario 1: design rules

For scenario 1, customers should refer to the additional SAN solution blueprints listed below. The SAN Management Station is included in each of these configurations, and HP has fully tested each configuration for operability. Select the configuration that most closely matches your needs. Note: each of the configurations is scalable.

Entry-level SAN	up to 11 hosts and 745GB capacity
Entry-level HA SAN	up to 12 hosts and 1.3TB capacity
Enterprise-level SAN	up to 50 hosts and 10.9TB capacity
Enterprise-level HA SAN	up to 25 hosts and 5.2TB capacity

There are technical blueprints on each of these configurations, and full bills of materials listed in Sales Builder for Windows. See the section titled "additional information" at the end of this document for links.

scenario 2 & 3 design rules

For scenarios 2 & 3, a custom-design approach is needed. Storage Area Manager provides a high-level of open-connectivity to multi-vendor operating systems and storage devices, thus offering significant flexibility when combining legacy equipment with a new SAN infrastructure.

Storage Area Manager Device Plug-Ins (DPIs) are available for many leading 3rd party storage products. For up-to-date details go to www.openview.hp.com/products/storagemgmt/specifications/index.asp. Please note the correct device firmware must be installed for Storage Area Manger to support it.

In all cases customers should contact HP for custom SAN design and implementation assistance. Specific SAN design and implementation services available are:-

hp SAN architecture service (H9162A)
- Technical assessment of current environment
- Define the overall approach for storage utilization across the organization
- Define the overall approach for data access across the organization
- Storage Solution design
- Storage Solution implementation plan

OpenView Storage Area Manager implementation service (H9142A)
- Installation, configuration, documentation, and demonstration of this SAN management solution.

hp SAN environment support
- A single source for reactive and proactive support for your hp SAN environment and multi-vendor SAN infrastructure
- A SAN-peaked account support engineer (ASE) who proactively maximizes your SAN availability and stability

additional information

SAN solutions
Additional HP SAN solution technical blueprints

> Entry-level SAN
>
> Entry-level HA-SAN
>
> Enterprise-level SAN
>
> Enterprise-level HA SAN
>
> Open Storage Management

For more business-level information on the benefits a SAN can bring your company, take a look at our SAN solution business blueprints

> Storage Efficiency
>
> High Availability
>
> Open Storage Management
>
> Starter SAN

To get answers on further SAN implementation questions contact your hp sales representative who will be able to consult our regularly updated SAN interoperability matrices and provide guidance on additional OS, fabric topology and 3rd party/legacy device interoperability.

hp SAN components
To get further information on the individual components in an HP SAN, go to www.hp.com/go/storage.

hp services
A full range of services are available including planning your SAN, implementing your SAN, and evolving your SAN as your needs change. For full details see www.hp.com/go/4service. Available services include:

design and implementation services
We provide our expertise and experience to assist you in creating your SAN architecture. We then help you implement your SAN and provide additional services in critical areas such as SAN management, data protection, and quick recovery. Product specific services are also available.

operate and evolve services
Support services range from aggressive, proactive Mission Critical services to a range of reactive services (8x5 3-day response to 24x7, same day response with 6-hour Call-to-Restoration commitments). We will analyze the performance and capacity usage of your storage environment including all major system components. You will receive a detailed performance and capacity report with recommendations on how to tune your performance and optimize your capacity usage.

data migration services
We offer a stress-free data migration from mission critical HP-UX, Windows NT/2000, SUN legacy and EMC storage systems to the HP Surestore SAN platform based on an end-to-end management of the entire data migration process.

storage/SAN integration services
HP also offers Storage/SAN integration services, which provide a trouble-free and quick on-site installation of your SAN solution. For full details see www.hp.com/hps/gds, as an outline, this service provides:

- Physical integration of the selected SAN systems in a factory environment.

- Installation and verification of Storage Software

- Utilizes procedures developed and proven in HP's extensive experiences delivering storage solutions

- Dedicated project manager as your single point of contact

- Complete solution documentation, presentation and repackaging

- Synchronization of shipment with planned date of installation