

HP StorageWorks EVA4100 SAN Starter Kit white paper

The Simple SAN solution



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Abstract

Combining best-in-class solutions from HP, Emulex, and Brocade, the HP StorageWorks EVA4100 SAN Starter Kit is a distinctive entry SAN solution for Microsoft® Windows® and Linux environments that is simple to deploy and administer, saves time and money, and reduces the risk of configuration error. This complete Simple SAN solution includes the HP StorageWorks 4100 Enterprise Virtual Array (EVA4100), Emulex EZPilot software, four HP StorageWorks 4-Gb/s host bus adapters (HBAs) from Emulex, and one HP StorageWorks 4/8 Base SAN switch from Brocade. In addition, the EVA4100 SAN Starter Kit has been designated by Microsoft as compatible with Simple SAN for Windows Server 2003 and is showcased on the Microsoft Storage Partners Extranet at:

<http://www.microsoftstoragepartners.com/SolutionShowcase/Detail.aspx?SolutionID=513>

The business value of the EVA4100 SAN Starter Kit comes from its low cost and powerfully simple management for the SMB customer who needs the flexibility and benefits of a SAN but is put off by the complexities. Those complexities vanish with the EVA4100 SAN Starter Kit—a simple solution for today while designed to meet storage needs for the future.

This paper highlights an economical, simplified, and automated SAN solution offered with a single SKU.

“Compatible with Simple SAN for Windows Server 2003”

Executive summary

IT administrators in SMB environments are at a crossroads today with respect to SANs. They are facing huge growth in storage demand that is managed with costly, disruptive, and time-consuming DAS upgrades. While the benefits of a SAN are appealing, the complexities involved in managing a SAN, especially with existing staff, have been daunting. Enter the HP StorageWorks EVA4100 SAN Starter Kit. This solution—based on a partnership between HP, Emulex, and Brocade—combines best-in-class storage hardware and software components to provide customers with an easy-to-implement, easy-to-manage, affordable SAN solution.

Compatible with Simple SAN for Windows Server 2003, the EVA4100 SAN Starter Kit is specifically designed and priced for new entry-level SAN customers who want to deploy a Simple SAN solution using an enterprise-class array and enterprise-class components. Microsoft’s Simple SAN compatibility means that this solution demonstrates the following “just works” Simple SAN qualities:

- Each SAN component is robust yet easy to manage.
- All hardware and software are tested and proved to be interoperable in a Windows 2003 environment.
- The user experience includes streamlined installation and configuration steps.

The EVA4100 SAN Starter Kit is based on the HP Enterprise Virtual Array, already known for its simplicity and agility. With this heritage, growth, and expansion, numerous options are available to meet future needs, assuring customers that their investment is safeguarded.

HP StorageWorks EVA4100 SAN Starter Kit

The HP StorageWorks EVA4100 SAN Starter Kit is the latest offering from HP for customers who desire an enterprise-class SAN at an attractive price that can be easily deployed and managed. This solution, which Microsoft says is compatible with Simple SAN for Windows Server 2003, is the preferred choice of SMB customers who are novice SAN users but require a solution that can be managed with existing IT staff and also grow with them into the future. Combining best-in-class components from HP, Emulex, and Brocade provides a proven, easy-to-install, and easy-to-manage solution that improves the user experience and minimizes the complexity of managing a SAN.

HP StorageWorks EVA4100 SAN Starter Kit solution summary

The EVA4100 SAN Starter Kit is a total SAN solution orderable with a single SKU. The following items are included in the EVA4100 SAN Starter Kit:

- Hardware components:
 - One HP StorageWorks EVA4100 2C1D (two controllers, one disk drive enclosure)
 - Either eight HP StorageWorks 146-GB 10K RPM FC disk drives or eight HP StorageWorks 300-GB 10K RPM FC disk drives. It is your choice.
 - Part number AH052B for 146-GB 10K HDDs
 - Part number AG719B for 300-GB 10K HDDs
 - Four HP StorageWorks FC2142SR PCI Express HBAs
 - One HP StorageWorks 4/8 Base SAN Switch
- Software components
 - EZPilot software from Emulex is used for initial installation and ongoing storage provisioning.
 - HP StorageWorks Command View EVA, for the more advanced user, is a comprehensive software suite that supports advanced EVA function.
 - Brocade WEB TOOLS interface, integrated into EZPilot suite, for the more advanced user, delivers advanced switch management functions.

EZPilot is also included in the HP StorageWorks EVA4100 Starter Kit, which is a good option when additional or other SAN infrastructure components are required. The EVA4100 Starter Kit also includes the EVA, disk drives (either 300-GB 10K or 146-GB 15K), and Command View. The HBAs and switches are purchased separately.

Best-in-class components

The EVA4100 SAN Starter Kit is designed with a combination of enterprise-class components from HP, Emulex, and Brocade.

HP StorageWorks 4100 Enterprise Virtual Array

The HP StorageWorks EVA4100 is a technology-leading high-performance, high-capacity, and high-availability “virtual” RAID storage solution that eliminates the time, space, and cost boundaries typically found in traditional storage.

The EVA4100 is supported by a powerfully simple suite of management software, including Emulex’s EZPilot software, allowing the user to achieve the highest level of productivity.

The EVA4100 has been designed where there is a need for improved storage utilization and scalability to ensure that the array will meet application-specific demands, capacity expansion on demand, instantaneous volume replication, and simplified storage administration.

Figure 1.



EVA4100—Capability summary

- Online/dynamic Logical Unit Number (LUN) expansion/growth; requires support by operating system
- Online/dynamic array capacity expansion; physical disk drives can be added without downtime
- Virtual disk data automatic load level/balancing; distributes data across the physical disk drives (non-disruptive background activity)
- Virtual RAID Levels: Vraid0, Vraid1, Vraid5, Vraid 0+1
- HP StorageWorks Business Copy—Local/instantaneous data replication: traditional snapshot, space efficient snapshot (Vsnap), and Snapclone
 - Cross Vraid supported—Business Copy from Vraid(x) to Vraid(y)
- HP StorageWorks Continuous Access EVA remote replication (synchronous and asynchronous)
- Asynchronous disk swap (hot swap of disk drives)
- Data cache—4 GB (battery backup included)
 - Mirrored/Write-back and Read-ahead/Adaptive read capability
- Array capacity maximum—28 TB
- Management of 1,024 virtual disk (256 per HBA) ranging in size from 1 GB to 2 TB per virtual disk
- Host ports—4
 - Host port speed—4 Gb/s and 2 Gb/s
- Support for 4 disk drive enclosures/14 disk drives per enclosure
- Support for 8 disk drives (minimum) to 56 disk drives (maximum)
- Support for high-performance and high-capacity/low-cost Fibre Attached Technology Adapted (FATA) disk drives
- Customer-replaceable parts: disk drives, power supplies, blowers/fans, cache batteries, and operator control panel
- Supported drive capacities
 - High performance: 146-GB 10K/15K, 300-GB 10K/15K
 - High-capacity/low-cost FATA: 500 GB
- Upgradeable to HP StorageWorks 6100 Enterprise Virtual Array (EVA6100) with addition of back-end switches and additional disk drive enclosures

Emulex EZPilot Software

Emulex provides the EVA4100 SAN Starter Kit and the EVA4100 Starter Kit with the most efficient installation and management tools, making EZPilot software the ideal solution for less technical users.

EZPilot, a Microsoft Simple SAN designated component, is a unified SAN installation and management software component. EZPilot streamlines the SAN installation and also provides the capability to provision EVA4100 storage. EZPilot automatically discovers the EVA4100, Emulex HBAs, and the Brocade switches for configuring the network parameters. The user-friendly wizard simplifies the installation process and storage provisioning of the Virtual disks (Vdisks).

EZPilot software—Components and capability summary

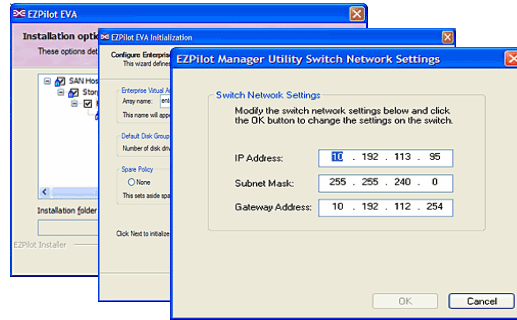
EZPilot components

- EZPilot Wizard
- EZPilot Manager
- Virtual Disk Services (VDS) Hardware Provider for the EVA
- Multi-path input/output (MPIO) Device Specific Module (DSM) for the EVA

EZPilot wizard-driven installation services

- EVA and Emulex driver installation and initialization
- HBA software stack installation and configuration
- Switch configuration and setup
- Command View EVA suite installation and setup
- VDS Hardware Provider installation and setup
- MPIO installation and initialization

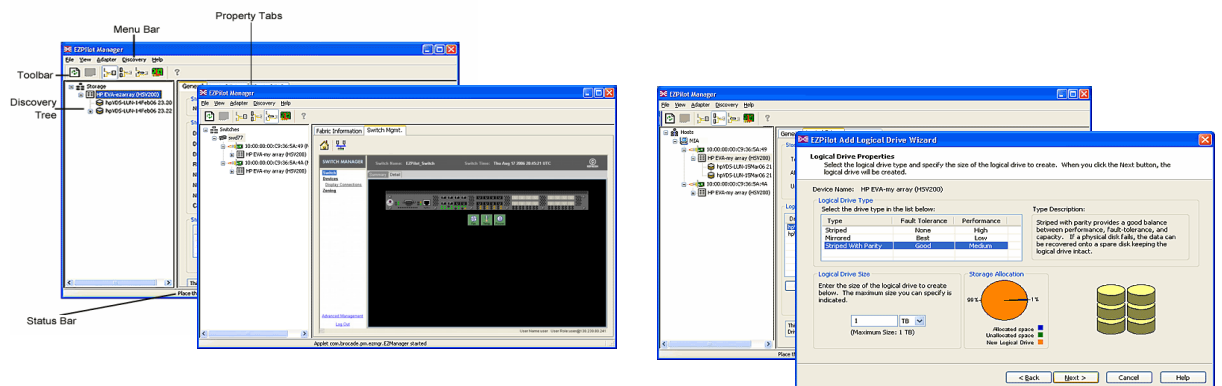
Figure 2.



EZPilot Manager capabilities

- Discovery and reporting of SAN element status: HBAs, hosts, switches, and arrays
 - Name storage array and SAN switch
 - Display non-array targets (for example, tape drives)
 - Direct access to Command View EVA
 - DHCP assignment of SAN switch IP address
- Storage provisioning
 - Create, configure, initialize, and format a virtual disk
 - Present and mount a Vdisk to a (local or remote) host
 - Add, expand, or delete a Vdisk
- HBA management
 - View HBA attributes
 - Reset an HBA
 - Update HBA firmware

Figure 3.



- Switch management
 - Easy-to-use shortcut panel for commonly performed administrative functions
 - Monitor switch status by way of intuitive graphics
 - Link to advanced management tools

HP StorageWorks 4/8 Base SAN Switch

The HP StorageWorks 4/8 Base SAN Switch provides an affordable, high-performance, and flexible connectivity solution for the EVA4100 SAN Starter Kit and EVA4100 Start Kit. The single-switch solution provides a Fibre Channel interconnection component between the EVA4100 and the HBAs. Based on the Brocade SilkWorm family of products, the 4/8 SAN Switch provides an infrastructure that simplifies the deployment and management of the SAN.

The switch delivers eight high-performance Fibre Channel ports with auto-sensing speeds of 1, 2, and 4 Gb/s. The switch is easily expandable to 16 ports by way of ports on demand software license upgrades to meet the needs of an expanding small or medium enterprise. Moreover, the switch is fully non-blocking and provides an aggregate bandwidth of 128-Gb/s end-to-end (4 Gb/s full duplex) capacity for uncongested sustained, 4-Gb/s full duplex throughput.

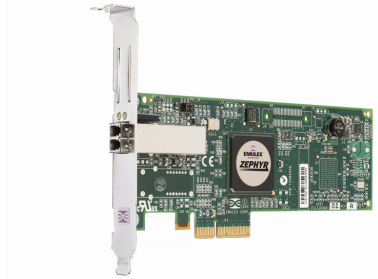
HP StorageWorks 4/8 Base SAN Switch—Capability summary

- Eight active 4-Gb/s ports expandable to 16
- Compatibility with previously installed 1 Gb/s, 2 Gb/s, and 4 Gb/s HP B-Series SAN switches
- Aggregate bandwidth—128 Gb/s end-to-end
- POST and embedded online/offline diagnostics
- Simplified management through EZPilot
- Hot code load activation
- Optional license enables switch to interconnect with other switches
- Additional optional licenses are available to enable advanced Enterprise SAN features and capabilities

HP Model FC2142SR HBA

The FC2142SR is a high-performance HBA that will easily meet the computing demands of the smaller SAN environments requiring only a single Fibre Channel port. However, because the FC2142SR is based on Emulex LightPulse technology, the HBA is ideally suited for either small or large SAN environments. The HBA leverages six generations of advanced and field-proven technologies to deliver a distinctive set of benefits.

Figure 4.



HP Model FC2142SR HBA—Capability summary

- Single Fibre Channel 4-Gb/s speed with auto-speed negotiation with 1-Gb/s and 2-Gb/s SANs
- PCI Express x4 interconnect
- Managed with either EZPilot or HBAnyware software
- Frame-level multiplexing and out-of-order frame reassembly
- On-board hardware context cache for enhanced SAN and high-transaction performance
- End-to-end data protection with hardware parity and CRC support
- Firmware-based architecture enables updates with new features and functionality
- Service Level Interface (SLI) architecture allows complete independence of device drivers from HBA hardware and firmware; no reboots are required during most configuration changes and operating system-specific firmware is not required
- Detailed, real-time event logging assists in quick diagnosis of SAN problems

Conclusion

HP, Emulex, and Brocade provide innovative and industry-leading solutions. The best-in-class companies have partnered together to provide an enterprise-class solution, at an affordable price, available to the smaller SAN user.

The EVA4100 SAN Starter Kit is another example of simplicity, agility, and value that enables users to achieve the highest level of productivity.

The ease of powerfully simple management capabilities and investment protection bundled into EVA4100 SAN Starter Kit saves time, space, and management costs, and provides the ability to grow to meet the needs of expanding companies.

For more information

- For more information on HP StorageWorks Enterprise Virtual Arrays, visit:
www.hp.com/go/eva
- For more information on HP StorageWorks EVA4100 Microsoft Simple SAN Solution, visit:
<http://www.microsoftstoragepartners.com/SolutionShowcase/Detail.aspx?SolutionID=513>

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