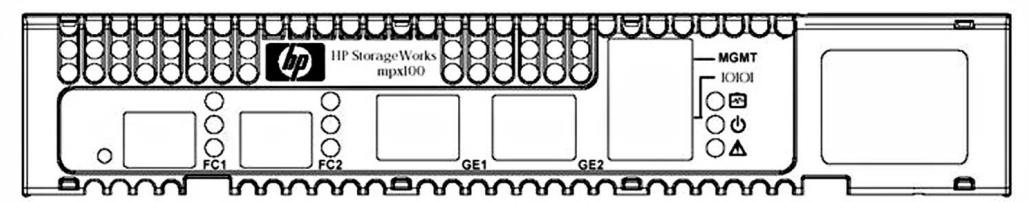
Overview



The HP StorageWorks EVA iSCSI Connectivity Option provides modular multi-protocol SAN designs with increased scalability, stability and ROI on storage infrastructure.

Over 70% of servers within a data center are not connected to Fibre Channel SANs for any of the following reasons:

- Do not require FC Performance
- Cost of the Connectivity to SAN is too high
- Distances are too great

In the typical organization, each distributed server has its own directly attached storage and backup devices. Because these devices are isolated from other servers, excess capacity cannot be redeployed.

This EVA option extends the FC SAN investment with integrated multi-protocol support, allowing customers to incorporate iSCSI servers without requiring additional storage arrays or management costs. Fibre Channel SANs based on EVA technology are now able to leverage IP networks to create larger SAN sizes across longer distances. This enables increased consolidation. Instead of potentially underutilized, direct-attached, server-dedicated storage, a multi-protocol SAN provides access to storage that is allocated as and when it is needed.

The EVA iSCSI Connectivity Option enables organizations to integrate low-cost Ethernet-connected servers into an EVA 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 EVA iSCSI Connectivity Option is an integrated hardware unit that enables access to block storage on a EVA FC SAN across an Ethernet network
- Provides customers a flexible and cost effective way to connect stranded servers to existing Fibre Channel storage increasing return on investment.
- DAS to SAN via IP
- Extend access to and the virtues of FC SANs across Ethernet networks including:
  - Consolidated storage
  - Improved disk utilization
  - Improved IT efficiency

Overview

Key Features

- Supports two Ethernet and two Fibre Channel ports
- Increase the flexibility of EVAs by adding integrated iSCSI support
- Delivers the benefits of SAN storage at a significant discount to FC SAN storage
- Concurrent FC and IP traffic is managed with high throughput enabling access 150 iSCSI servers and LUNS
- Integrated management with Command View EVA
- iSCSI ready for the following operating systems:
  - Apple Mac OS X (via iSCSI Initiator from ATTO Technology)
  - HP OpenVMS
  - Microsoft Windows
  - Linux Red Hat
  - Linux SUSE
  - Sun Solaris
  - VMware
- Supports High Availability Multi-path Options for HP OpenVMS, Linux, Microsoft Windows, Sun Solaris, and VMware
- Fabric and Direct Attach support

Models

HP StorageWorks iSCSI Connectivity Option (mpx100)	HP StorageWorks EVA iSCSI Connectivity Option Order this part for all new installations for EVA4000/4100/4400/6000/6100/6400/8000/8100/8400, EVA3000/5000. Includes One unit, shelf, brackets, copper FC cables and documentation.	AE324A
	HP StorageWorks EVA iSCSI Connectivity Upgrade Option Includes one unit to mount in existing shelf and documentation For multi-path (dual unit high availability) order both part numbers. (The second hardware unit installs into the shelf that ships with AE324A.)	AE325A
HP StorageWorks EVA 4400 iSCSI Connectivity Option (mpx100b)	HP StorageWorks EVA 4400 iSCSI Connectivity Option Order this part for all new installations for EVA 4400 only. Includes one unit, shelf, brackets, copper FC cables and documentation. Supports 16 iSCSI initiators.	AJ713A
	HP StorageWorks EVA 4400 iSCSI Connectivity Upgrade Option Includes one unit to mount in existing shelf and documentation. For use with EVA 4400 only.	AJ714A
	HP StorageWorks EVA4400 iSCSI Connectivity 32 Initiator Upgrade License (LTU) For use with EVA 4400 only.	T5471A

Product Highlights

Configuration Support

The iSCSI Connectivity Option is fully compatible with the HP B-Series, C-Series, and M-Series of FC switches. For complete interoperability information please check:

- http://www.hp.com/go/SANdesign
- http://www.hp.com/go/SANdesignguide

Two hardware units may be implemented for high availability and redundant data paths.

Manageability

- Command View EVA
- mpx Manager

Scalability

Initial support: Refer to the guidelines described in the HP StorageWorks SAN Design Reference Guide available at: http://www.hp.com/go/SANdesignguide

Software Components, Standard

Command View

HP StorageWorks Command View EVA provides the capability to manage the EVA and is installed on an existing Storage Management Appliance, a management server or a NAS server. This powerful tool provides an easy mechanism to manage EVA storage systems in a SAN configuration. Command View EVA is purchased separately from XCS media kit.

Service and Support, HP Care Pack and Warranty Information

Warranty

(1-1-1) Hardware Warranty - One-year on-site warranty, 8x5, next business day response, installation not included.
NOTE: The hardware warranty covers firmware and embedded non-saleable software.

HP Service & Warranty Support

HP Service & Warranty Support Additional Warranty protection and/or HP Installation packages can be purchased.
NOTE: Certain restrictions and exclusions apply. Consult the Customer Support Center for details. HP provides a one-year, hardware limited warranty, fully supported by a worldwide network of resellers and service providers.

In addition, available service offerings include a full range of HP Care Pack packaged hardware and software services:

- Installation
- Extended coverage hours and enhanced response times
- System management and performance services

For more information on warranty and support options, please visit our Web site at: http://www.hp.com/hps/tech/storage/supp/.

Software Product Services

- Stand-alone telephone support
- Rights to a new license
- Media and documentation updates

Hardware Product Services

- Installation services
- On-site Maintenance (includes warranty support)
- Response time upgrades during the warranty period
- Post-warranty coverage

HP Care Pack Services Warranty Upgrade Options

Service offerings include a full range of Customer HP Care Pack services for both hardware and software services:

- Response - Upgrade on-site response from next business day to same day 4-hours
- Coverage - Extend hours of coverage from 5 days x 9 hours to 7 days x 24 hours
- Duration - Select duration of coverage for a period of 1, 3, or 5 years

Additional Warranty protection and/or HP Installation packages can be purchased.

NOTE: Certain restrictions and exclusions apply. Consult the HP Customer Support Center for details.

Service and Support, HP Care Pack and Warranty Information

HP Care Pack Information

HP Care Pack is defined as an upgrade to the product warranty attribute, available for a specific duration and hours of coverage.

HP Care Pack is not available for less than the product's warranty duration.

HP Care Pack is available for sale anytime during the warranty period for most products, but the commencement date will be the same as the Warranty Start Date (delivery date to end user customer). Proof of purchase may be required.

HP Care Pack services are prepaid.

For additional HP Care Pack (hardware & software) information, as well as orderable part numbers, please refer to the URL:
http://h18005.www1.hp.com/services/carepaq/index.html

Additional Services

Implementation service, SAN Architecture service. For more information on service options, please visit our Web site at: http://www.hp.com/go/san.

Step 1 - Base Configuration and Power Pack

Select one:

Model	Model Description	Part Number
StorageWorks EVA iSCSI Connectivity Option (mpx100)	Includes 1 unit, shelf, brackets, 2 copper FC cables (for direct connect to EVA) and documentation NOTE: Fabric iSCSI-Fibre Channel attachment mode requires optical transceivers and cables listed below.	AE324A
StorageWorks EVA iSCSI Connectivity Upgrade (mpx100)	Includes 1 unit to mount in existing shelf and documentation NOTE: For multi-path (dual unit) support order both part numbers. NOTE: For a highly redundant direct connect environment, recommend customer purchase 2 additional FC copper cables listed below (see the HP StorageWorks EVA iSCSI connectivity user guide).	AE325A
StorageWorks EVA 4400 iSCSI Connectivity Option (mpx100b)	Includes 1 unit, shelf, brackets, copper FC cables (for direct connect to EVA) and documentation. For use with EVA 4400 only. NOTE: Fabric iSCSI-Fibre Channel attachment mode requires optical transceivers and cables listed below.	AJ713A
StorageWorks EVA 4400 iSCSI Connectivity Upgrade (mpx100b)	Includes 1 unit to mount in existing shelf and documentation. For use with EVA 4400 only. NOTE: For multi-path (dual unit) support order both part numbers. NOTE: For a highly redundant direct connect environment, recommend customer purchase 2 additional FC copper cables listed below (see the HP StorageWorks EVA iSCSI connectivity user guide).	AJ714A
StorageWorks EVA 4400 iSCSI Connectivity Option 32 Initiator Upgrade LTU (for mpx100b only)	Includes 1 license upgrade to enable connectivity for an additional 32 iSCSI initiators. If a second license is installed, it provides an upgrade to the maximum supported number of iSCSI initiators. Refer to the guidelines described in the EVA iSCSI Connectivity User Guide available on the Storage Networking product page and the HP StorageWorks SAN Design Reference Guide available at: http://www.hp.com/go/sandesignguide.	T5471A

Step 2 - Additional Options

Optical Transceivers	Short Wave - 300m	A7446B
EVA Loopback Connector	The loopback connector is used when an EVA host port is not cabled to a switch, mpx100/100b (for iSCSI direct connect), or HBA (for FC direct connect). NOTE: All EVA host ports must be filled with either a cable or loopback connector.	AJ706A

Configuration Information

2 Gb optical cables (Required for Fabric attach)	LC-LC for between two 2 Gb devices	
	2 m LC-LC Multi-Mode Fibre Channel Cable	221692-B21
	5 m LC-LC Multi-Mode Fibre Channel Cable	221692-B22
	15 m LC-LC Multi-Mode Fibre Channel Cable	221692-B23
	30 m LC-LC Multi-Mode Fibre Channel Cable	221692-B26
	50 m LC-LC Multi-Mode Fibre Channel Cable	221692-B27
	LC-SC for between a 1 Gb and a 2 Gb device	
	2 m LC-SC Multi-Mode Fibre Channel Cable	221691-B21
	5 m LC-SC Multi-Mode Fibre Channel Cable	221691-B22
	15 m LC-SC Multi-Mode Fibre Channel Cable	221691-B23
	30 m LC-SC Multi-Mode Fibre Channel Cable	221691-B26
	50 m LC-SC Multi-Mode Fibre Channel Cable	221691-B27
FC Copper cables (Recommended for a highly redundant direct connect environment (see the HP StorageWorks EVA iSCSI connectivity user guide)	2m Copper FC Cable	324394-B21

Arrays supported	EVA 4000, 4100, 4400, 6000, 6100, 6400, 8000, 8100, 8400 EVA 3000, 5000	
Array Connectivity Mode	EVA 4x00, 6x00, 8x00	Direct connect and fabric attach
	EVA 3000 and 5000	Fabric attach
Maximum Number of EVA iSCSI Connectivity Options	2 EVA iSCSI Connectivity Options supported per EVA	
Maximum Number of EVA storage systems per mpx	1 EVA per mpx100 or mpx100b	
Management Software Support	Configure FC LUNs and iSCSI initiators through EVA Command View v9.1, v9.0, v8.1, v8.0.2, v8.0.1, v8.0, v7.0, v6.02	
OS Support	Apple Mac OS X (via iSCSI Initiator from ATTO Technology) HP OpenVMS (EVA iSCSI Connectivity Option (mpx100) only) Microsoft Windows Linux Red Hat Linux SUSE Sun Solaris VMware For operating system version support, see the HP StorageWorks SAN Design Reference Guide available at: http://www.hp.com/go/sandesignguide.	
Host Platform Support	Any server running supported OS	
Cluster Support	None	
Fibre Channel Interface	Dual Port, 2Gb	
FC Transceiver	4Gb SFP, supported @ 2Gb speed	
FC Connectivity Mode	Fabric attach	Optical connected as an N-Port
	Direct connect	connected as an NL-Port
IP Interface	Dual port, 1GbE (IPv6, IPv4)	
iSCSI Initiator Support	• Microsoft iSCSI Initiator (32-bit and 64-bit versions) • Linux iSCSI Initiator (32-bit and 64 it versions) • ATTO Macintosh iSCSI Initiator • HP OpenVMS iSCSI Initiator • Sun Solaris iSCSI Initiator • VMware iSCSI Initiator • Product supporting EVA 4400 is limited to 16 initiators with base unit. License upgrades are available in two steps, a 32 initiator license, followed by an unlimited license up to the HP supported maximum.	
iSCSI Network Card Support	• Any HP 1GbE NIC • Apple, Sun supported 1GbE NICs • NIC Teaming is supported for extra redundancy NOTE: Standard 10/100 NIC cards are not supported	
TCP/IP Offload Engine Support (TOE)	• HP NC510x, NC3xx TOE supported • Alacritech TOE Card supported • Qlogic QLA4052c, 4062c iSCSI HBA	
IP Security	NOTE: Support is operating system dependent • CHAP User name and password authentication. Password encryption of saved configuration file	
iSCSI Boot	Linux, Windows, VMware	

Technical Specifications

Multi-Path support	HP OpenVMS	Native
	Windows	Microsoft MPIO
	Linux	Device Mapper
	Sun	MPxIO
	VMware	Native software MPxIO
Max. Pending Commands	Default value of 64.	
Host Interface	Uses standard TCP/IP connection, RJ45 connector	
Distance	GbE Copper, CAT-5e or CAT-6, twisted pair	
Host Platform Support	Any 32-bit or 64-bit servers running the supported OS	
Performance	half duplex	>30,000 > 200 MB / Sec
	full duplex	> 360 MB / Sec
Maximum Host Connection Design Limits for iSCSI*	Architectural Limits 256 connections per iSCSI port mpx100b is limited to 16 iSCSI initiator ports in base unit. License upgrades are available in two steps, a 32 initiator license followed by an unlimited license up to the HP supported maximum.2 FC target ports, with maximum initiators * Please see the product user guide available on the Storage Networking product page and the SAN Design Guide for latest tested and supported configurations located at: http://www.hp.com/go/sandesignguide.	

Installation
User installable, but recommended field service install

Environmental Specifications
Optional side-by-side 1U rack mount kit
Non-cable-side to cable-side airflow; power from cable-side; 1U, 19-in. EIA rack-compliant
Cooling: Two fans with back-to-front airflow

	Condition	
Environment	**Operating**[1]	**Non Operation**[2]
Temperature	5° to 40° C (41° to 104° F)	-25°C to 70° C (-40° to 158° F)
Humidity[3]	5 to 90%, non-condensing	5 to 93%, non-condensing
Altitude	3 km	15 km
Shock	IEC 68-2, 4g, 11ms, 20 repetitions	IEC 68-3, 30g, 292 ips, 3 repetitions, 3 axis
Vibration[4]	IEC 68-2, 5-500Hz, random, 0.21G rms, 10 minutes	IEC 68-2, 5-500Hz, random, 2.09G rms, 10 minutes
Power AC input Nominal	Power AC input Nominal: 0.5A@100-125 VAC 0.25A@200-240 VAC	
Frequency Range	47 to 63 Hz	
Nominal Frequency Range	50 Hz to 60 Hz	
Power Dissipation	48W maximum (optics included)	

[1] Environmental specification for operating condition should be satisfied before the iSCSI Connectivity Option subsystem is powered on. Maximum temperature of 40°C should be strictly satisfied at air inlet portion.
[2] Non-operating condition includes both packing and unpacking conditions unless otherwise specified.
[3] No condensation in and around the iSCSI Connectivity Option should be observed under any conditions.
[4] The above specifications of vibration are applied to all three axes.
On shipping/storage condition, the product should be packed with factory packing.

Technical Specifications

Physical Size	Height	1U (1.7 in/4.32 cm)
	Width	8.5 in (21.59 cm)
	Depth	12 in (30.48 cm)
	Weight	10 lb (4.54 kg)