Hewlett-Packard

IND Product Marketing Infrastructure Products

hp StorageWorks edge switch 2/24
and edge switch 2/32
Order and configuration guide

February 10, 2003
Version 1.02

Introduction

The HP StorageWorks Edge Switch 2/24 and Edge Switch 2/32 provide the availability, manageability, scalability and performance not found in other Fibre Channel switch products. These are is the switch platform(s) that companies choose first for powerful, flexible storage area networks (SANs). Whether they're incorporated into an expansive core fabric or tactically placed at the edge, these switches deliver the performance of 2 Gb technologies and the ability to support larger fabric implementations.

HP StorageWorks Edge 2/24 and Edge 2/32 views
(standard configurations)

Edge switch 2/24 Front view (24 SFP's installed)

Edge switch 2/32 Front view
(32 ports, 16 enabled, SFP's installed)

Features

The Edge Switch 2/24 and Edge Switch 2/32 offer availability features not found in any other switch, including redundant power supplies; hot-plug optics; and online, non-disruptive firmware load and activation (post-2.0 firmware release), making them ideal for supporting medium to large infrastructure implementations. New FlexPort technology in the Edge Switch 2/24 and Edge Switch 2/32 enables customers to implement connectivity on demand capability not available in other switch products until now. End-users can start with a partially populated switch and pay for the additional connectivity when needed, in 8-port increments. Both switches are designed to the Fibre Channel standard and are capable of operating independently as well as in director/edge fabrics.

- **available:** incorporates hot-plug, redundant power supplies and fans and hot-plug optics

- **dependable:** offers call-home functionality (when used with HP StorageWorks HA-Fabric Manager)

- **manageable:** maximizes system administrator resources with centralized management tools

  Fabric Management summary: *Customers can use the free management applications or choose to purchase HAFM (A6575B & A6582A) and one Product Manager LTU for each switch. Typically, Director 2/64 customers will already have HAFM. Once they add an Edge switch, they can purchase the appropriate Product Manager LTU.*

  o Command Line Interface (CLI) *small to medium fabric*
     Scripting, Accessible via Telnet, Free

  o Embedded Web Server (EWS) *small to medium fabric*
     Accessible via any web browser, Does not show Fabric View, No Call home, Free

  o High Availability Fabric Manager (HAFM) *larger fabrics or with Director 2/64*
     Multi-platform Client software, Shows all switches in Fabric, Call Home*, Fee based
     *Requires customer install and verify analog phone line for Call Home access

- **efficient:** utilizes the same firmware as the Director 2/64

- **scalable:** offers the industry's highest port density and scalability with FlexPort technology

- **high-performance:** supports 2 Gbps transfer with no head-of-line blocking for highest performance

- **cost-effective:** integrates into 1 Gb and 2 Gb director/edge fabrics

Configuration Overview

The HP StorageWorks Edge switches provide two products with specific port counts. The 2/24 is a 24-port, 1.0U high switch that comes with 8 ports enabled in the base product. The 2/32 is a 32-port, 1.5U high switch that comes with 16 ports enabled in the base product. The remaining 16 ports for each switch can be configured 8 ports at a time via the 8 port upgrade license to use (LTU). Each port can run at 1 or 2 Gbps, with each delivering full-duplex data transfer up to 2.125 Gbps. Transmission bandwidth supports full non-blocking 24 or 32 port switch performance at 96 Gbps end-to-end (2/24), 128 Gbps end-to-end (2/32). Configurations include short wave SFP hot-plug optics.

HP StorageWorks Edge Switch 2/24 and Edge Switch 2/32 Product Structure

Product Number - Name
316095-B21 - hp StorageWorks edge switch 2/24
A7283A or 286810-B21 - hp StorageWorks edge switch 2/32 field rack
316096-B21 - hp StorageWorks edge switch 8-port upgrade LTU 2/24
A6574B or 302660-B21 - hp StorageWorks edge switch 8-port upgrade LTU 2/32
317067-B21 - hp StorageWorks edge switch 2/24 Product Manager LTU Required for HA-Fabric Manager
A7291A or 300658-B21 - hp StorageWorks edge switch 2/32 Product Manager LTU Required for HA-Fabric Manager
A6575B or 287406-B22 - hp StorageWorks ha-fabric manager 6.03 software
A6582A - hp StorageWorks ha-fabric manager server (OmniBook) add-on kit
317070-B21 - hp StorageWorks SANtegrity Binding, 2/24 LTU
317071-B21 - hp StorageWorks SANtegrity Binding, 2/32 LTU
A6515A or 300834-B21 - 300M Short wave SFP
A6516A or 300835-B21 - 10K Long wave SFP
300836-B21 - 35K Long wave SFP

Warranty	A7283A	316095-B21 / 286810-B21
	Service and support:	Service and support:
	(1-1-1) One-year warranty, on-site next day response.	(1-1-1) One-year warranty, on-site next day response.
	Additional Warranty protection can be purchased	Additional Warranty protection can be purchased

Ordering and Configuration steps:

Step 1: Choose Field rack part number
Step 2: Select Add on ports
Step 3: Select HA-Fabric manager and server
Step 4: Select Product Manager LTU (for use with HAFM and server)
Step 5: Select SANtegrity binding options
Step 6: Select Long Wave optics (if applicable)
Step 7: Select Service and Support
HP Referenced Product Accessories

Step 1: Choose Field rackable Edge switches

Part Number

316095-B21 - hp StorageWorks edge switch 2/24
A7283A or 286810-B21 - hp StorageWorks edge switch 2/32 field rack

Standard with each edge switch 2/24 (316095-B21) and 2/32 (A7283A or 286810-B21)

Rack-mount kit (instructions, hardware, and brackets) ¹	Null modem cable (RS-232, 3m)
Short wave SFP Hot plug optics (8) - 24-port	Loopback plug, Rubber Bumper
Short wave SFP Hot plug optics (16) - 32-port	Two Power cords *(C13/5-15P 125V/10A 3m)*
Accessory kit (Manuals & Documentation CD)	Enterprise safety and regulatory information
Ethernet Cable (10/100 CAT5, 10')	

¹ Rack mount kit will fit HP E25/33/41 racks, all Compaq racks, and Standard 19" racks

Racking the Edge switches: The following HP racks are available for integration of products and peripherals that are ordered with the Edge switches:

- A4900A HP System/E25: Std 19" Rack (25U), 1.25 meters
- A4901A HP System/E33 Std 19" Rack (33U), 1.6 meters
- A4902A HP System/E41 Std 19" Rack (41U), 2.0 meters
- HP 9000 Series Rack: 9142 (42U) Rack Cabinet - Pallet (120663-B21)
- HP 9000 Series Rack: 9142 (42U) Rack Cabinet - Shock Pallet (120663-B22)
- HP 9000 Series Rack: 9142 (42U) Rack Cabinet - Crated (120663-B23)
- HP 9000 Series Rack: 9136 (36U) Rack Cabinet - Pallet (120664-B21)
- HP 9000 Series Rack: 9136 (36U) Rack Cabinet - Shock Pallet (120664-B22)
- HP 9000 Series Rack: 9136 (36U) Rack Cabinet - Crated (120664-B23)
- HP 9000 Series Rack: 9122 (22U) Rack Cabinet - Pallet (120665-B21)
- HP 9000 Series Rack: 9122 (22U) Rack Cabinet - Shock Pallet (120665-B22)
- HP 9000 Series Rack: 9122 (22U) Rack Cabinet - Crated (120665-B23)
- HP 9000 Series Rack: 9842 (42U) Rack Cabinet – Pallet (222192-B21)
- HP 10000 Series Rack: 10647 (47U) Rack Cabinet - Pallet (245160-B21)
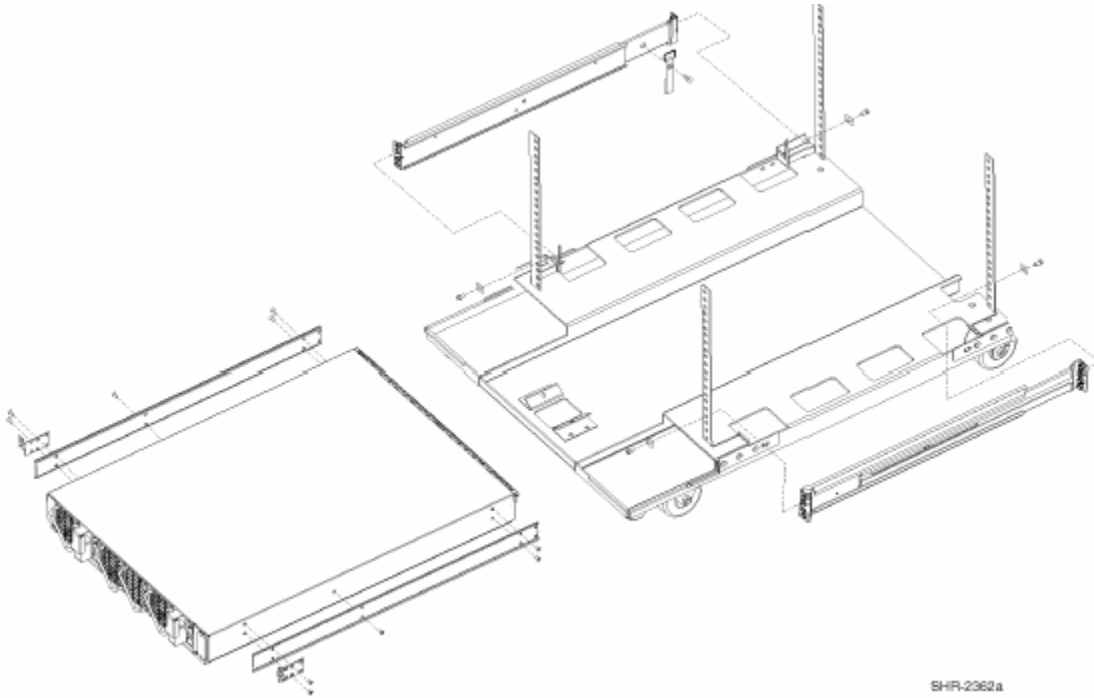- HP 10000 Series Rack: 10647 (47U) Rack Cabinet - Crate (245160-B23)

- HP 10000 Series Rack: 10642 (42U) Rack Cabinet - Pallet (245161-B21)
- HP 10000 Series Rack: 10642 (42U) Rack Cabinet - Shock Pallet (245161-B22)
- HP 10000 Series Rack: 10642 (42U) Rack Cabinet - Crated (245161-B23)
- HP 10000 Series Rack: 10636 (36U) Rack Cabinet - Pallet (245162-B21)
- HP 10000 Series Rack: 10636 (36U) Rack Cabinet - Shock Pallet (245162-B22)
- HP 10000 Series Rack: 10636 (36U) Rack Cabinet - Crated (245162-B23)
- HP 10000 Series Rack: 10622 (22U) Rack Cabinet - Pallet (245163-B21)
- HP 10000 Series Rack: 10622 (22U) Rack Cabinet - Shock Pallet (245163-B22)
- HP 10000 Series Rack: 10622 (22U) Rack Cabinet - Crated (245163-B23)
- HP 10000 Series Rack: 10842 (80 mm wide, 42U) Rack Cabinet - Pallet (257415-B21)
- HP 10000 Series Rack: 10842 (800 mm wide, 42U) Rack Cabinet - Shock (257415-B22)
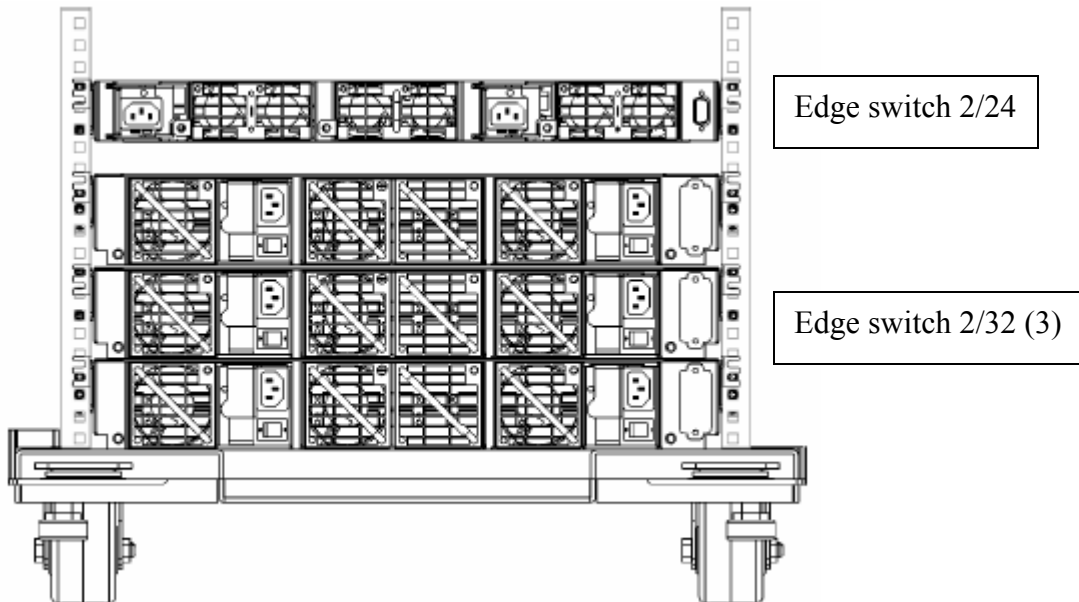
Notes:
- Edge Switch is also compatible with Standard Rittal 19" rack. The 2.0-meter rack supports 41U and a maximum weight of 2000 lbs.
- HP 9000 and 10000 series racks come equipped with 220 to 240 V Redundant PDU.
- For HP 9000 and 10000 series racks, it is mandatory to use a shock pallet in order to ship racks with equipment installed

IMPORTANT: It is possible to mount the switches with no space between (unless you mix switch models in the same rack). However, HP recommends that you leave space between every second switch for cable management in racks that do not have side channels for cable routing, (such as the HP Rack System/E and Rittal racks).

HP StorageWorks Edge switch rack assembly

SHR-2362a

HP StorageWorks Edge switches rack mounted

Edge switch 2/24

Edge switch 2/32 (3)

Plan for AC power:
Plan for facility power sources for each equipment rack. Edge Switches in a rack operate at 47 to 63 Hertz (Hz) and 100 to 230 volts alternating current (VAC), and require a minimum dedicated 5-ampere service. If two power sources are supplied (optional but recommended for high availability), the equipment rack contains two customer-specified external power cords. Each cord should be connected

to a separate power circuit, or both should be connected to an uninterruptible power supply (UPS). Several types of power cables and plugs are available to meet local electrical requirements.

Edge switches Airflow:
Front to Rear with a minimum of 3.0in (7.6 cm) clearance at Front/Rear of switch.

Step 2: Select Add on ports (Optional)

To expand the Edge switch, HP offers 8-port upgrade kits based on the FlexPort technology. The software-enabled FlexPort technology provides customers a unique opportunity to deliver upgradeable port configurations and position attractive price/performance entry points for environments with growth potential.

The ability to dynamically and non-disruptively[1] activate ports within a base unit provides an attractive entry price for a 24 or 32- port-capable switch with inherent expansion capabilities available when needed. The Edge switch 2/24 comes standard with 24 ports (8 ports enabled). The Edge switch 2/32 comes standard with 32 ports (16 ports enabled). Customers can upgrade up to 16 ports, in 8-port increments. Each kit includes eight (8) short-wave SFP optics.

[1] Non-disruptive activation of feature keys requires firmware v2.x and companion HAFM v6.0, or later.

It's as easy as 1, 2, and 3.

1. Simply order the HP StorageWorks Edge Switch Upgrade kit (sold in 8-port increments)
2. Install the pluggable optics and cables.
3. Activate the ports by entering the license key (obtained via instructions on the included Feature Entitlement Request Certificate) in the switch management application. The newly added ports will configure automatically.

A6574B or 302660-B21 - hp StorageWorks edge switch 8-port upgrade LTU for 2/32

8-Port Upgrade License to Use
Optic, SW SFP's
Upgrade label

316096-B21 - hp StorageWorks edge switch 8-port upgrade LTU for 2/24

8-Port Upgrade License to Use
Optic, SW SFPs
Upgrade label

Note: In the event of an Edge switch reset to factory configuration, the Edge switch will revert back to base enabled port counts. Any port upgrades will have to be reloaded using existing license keys.

Step 3: Select HA-Fabric Manager and HAFM Server (Optional)

The Edge switches ship with two SAN fabric managers (Command Line Interface and Embedded Web Server, see Features on page 4 for details). Customers who require Full Fabric view and/or Call Home capabilities

need to purchase the HA-Fabric Manager and HA-Fabric Manager server. HA-Fabric Manager and HA-Fabric Manager server is the fabric management solution sold primarily for Director 2/64 and Director 2/140 based SAN's. ***See step 4 for appropriate Edge switch LTUs***.

HA-Fabric Manager Server Software supports up to 48 switches (multiple SANS) and 36 switches (single SAN). HAFM Server (Laptop) supports up to 48 switches (multiple SANS) and 36 switches (single SAN)

A6575B/287406-B22 - hp StorageWorks ha-fabric manager 6.03 software

HAFM Software and documentation CD

A6582A - hp StorageWorks ha-fabric manager Server (OmniBook) add-on kit

Hp OmniBook VT6200 *(Pentium 4 1.6GHz processor, 14.1" XGA display, 256MB RAM, 32MB VRAM, 30GB HDD, 8x DVD, 56k modem, 10/100 LAN, 8-cell Lithium battery, Win XP Pro pre-loaded/Windows 2000 CD [2])*	
Sliding Shelf kit[3]	Zip Media, 100MB
PDU Adapter Cord (PC power supply to PDU)	Ethernet Cable 14 ft CAT5 M/M
HP Zip Drive Module, 250MB	Documentation, OmniBook Add-on kit

[2] HAFM is only tested and support with the OmniBook server running Windows 2000.
[3] Sliding shelf kit will fit HP E25/33/41 racks, All Compaq and Standard 19" racks
Note: Installation services are a separately provided option.
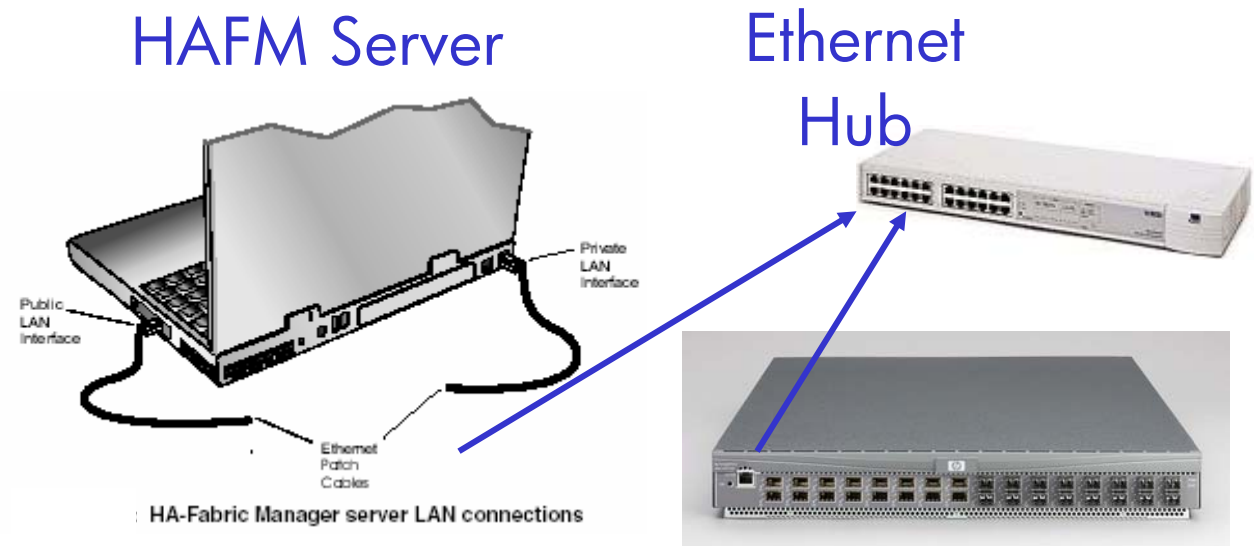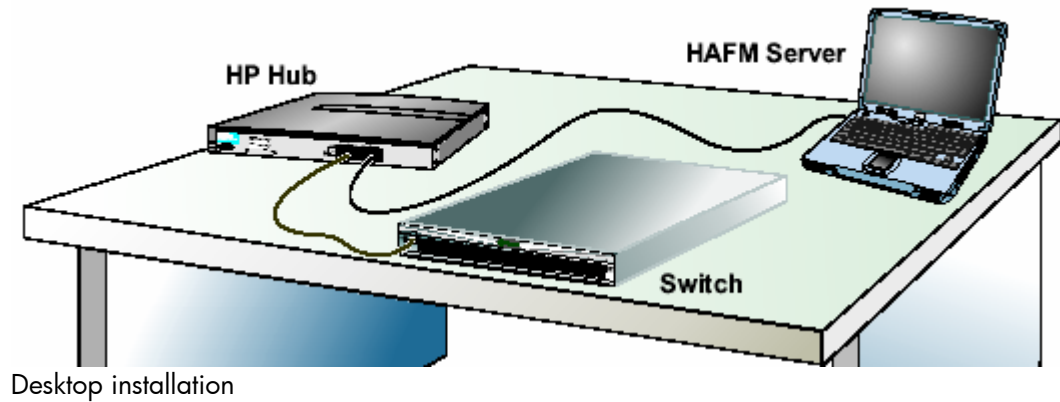
Ethernet Access to Edge switches

The HP J3294A 10/100 Ethernet Hub 12 is recommended to connect the HAFM Server to multiple Edge switches. The J3294A is an industry standard 10/100 Ethernet hub. Hub dependencies (number of ports, number of hubs) vary on site/rack configurations.

Ethernet cables available:

C7533A	5183-2683	Ethernet Cable 4 ft CAT 5 M/M
C7535A	5183-2685	Ethernet Cable 7 ft CAT 5 M/M
C7536A	5183-2686	Ethernet Cable 14 ft CAT 5 M/M
C7537A	5183-2687	Ethernet Cable 25 ft CAT 5 M/M

Ethernet access to Edge switches and HA-Fabric Manager Server

Desktop installation

HAFM Server

Ethernet Hub

HA-Fabric Manager server LAN connections

Example: HAFM Server and Edge switch 2/32 connected to an Ethernet Hub.

Step 4: Select Product Manager LTU (for use with HAFM and server)

In order to manage the Edge switches with HAFM, each switch requires a Product Manager license.

317067-B21- hp StorageWorks edge switch 2/24 Product Manager LTU

License to Use, Product Manager, 2/24

A7291A or 300658-B21 - hp StorageWorks edge switch 2/32 Product Manager LTU

License to Use, Product Manager, 2/32

Step 5: Select SANtegrity binding option

In order to take advantage of fabric security features, which manage connection permissions, each switch requires a SANtegrity bindings license.

317070-B21 - hp StorageWorks SANtegrity Binding, 2/24 LTU

License to Use, SANtegrity binding, 2/24

317071-B21 - hp StorageWorks SANtegrity Binding, 2/32 LTU

License to Use, SANtegrity binding, 2/32

Step 6: Select Long Wave optics (if applicable)

Short wave SFP optics are included with each Edge switch and each upgrade kit. Customer can order Long wave SFP's as replacement parts.

A6516A/300835-B21 - LW SFP (10Km)   **300836-B21 - LW SFP (35Km)**

Long-wave SFP optical transceiver
Installation sheet
ESD WRISTSTRAP

Long-wave SFP optical transceiver
Installation sheet
ESD WRISTSTRAP

Note: Support limited to Compaq classic configurations.

SFP Optical Modules

SFP replaces GBIC modules
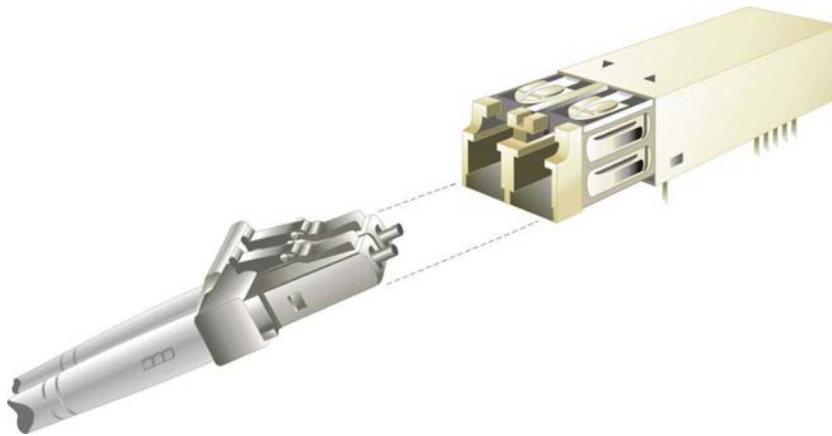SFP = small form factor pluggable
Some companies call the same module SFF for "small form factor," but that doesn't designate if it's pluggable
Shortwave SFP's have black dots visible from the front
Longwave SFP's have blue dots visible from the front

The SFP's qualified by HP are 1Gb/2Gb capable.

LC cable connector and SFP Optic module

Step 7: Select Service and Support

Each Edge switch comes standard with the following warranties:

Warranty	A7283A	316095-B21 / 286810-B21
	Service and support:	Service and support:
	(1-1-1) One-year warranty, on-site next day response.	(1-1-1) One-year warranty, on-site next day response.
	Additional Warranty protection can be purchased	Additional Warranty protection can be purchased

HP offers SupportPack solutions and Support Option Contracts for the Edge switches.

Support Pack solutions

support packs	
support #	support description
Edge Switch 2/16	
U3486A/E	3 Yr Next Day Onsite Response
U3487A/E	3 Yr 4 hr Onsite, Extended Hours Response
U3488A/E	3 yr 4 hr Onsite Response, 24x7
U3489A/E	3 yr Call-to-Repair (Onsite/24 x 7)
Edge Switch 2/32	
U3490A/E	3 Yr Next Day Onsite Response
U3491A/E	3 Yr 4 hr Onsite, Extended Hours Response
U3492A/E	3 yr 4 hr Onsite Response, 24x7
U3493A/E	3 yr Call-to-Repair (Onsite/24 x 7)

For Support Option Contracts, contact your HP Sales representative for availability.

HP Referenced Product Accessories

Short Wave SFP Optics:

A6515A/300834-B21 - SW SFP

Short-wave SFP optical transceiver
Installation sheet
ES ESD WRISTSTRAP

LC connector cables

For connecting inter switch links (ISL's) from one Edge switch to another edge switch, use the LC-to-LC cables.

LC-to-LC cables M/M (50/125 um):

C7524A	2m LC-to-LC Fibre Channel cable	221692-B21	2m LC-to-LC multi-mode FC cable
C7525A	16m LC-to-LC Fibre Channel cable	221692-B22	5m LC-to-LC multi-mode FC cable
C7526A	50m LC-to-LC Fibre Channel cable	221692-B23	15m LC-to-LC multi-mode FC cable
C7527A	200m LC-to-LC Fibre Channel cable	221692-B26	30m LC-to-LC multi-mode FC cable
		221692-B27	50m LC-to-LC multi-mode FC cable

Configuration Requirements

The configuration requirements and manuals for the Edge 2/24 and 2/32 are accessible via the Web. Please use the following URLs to get the most up-to-date configuration.

Product Information	URL
Edge Switch 2/24 and Edge Switch 2/32	http://www.hp.com/go/san http://www.hp.com/products1/storage/products/san/fibreswitches/edgeswitch224/index.html http://www.hp.com/products1/storage/products/san/fibreswitches/edgeswitch232/index.html http://www.compaq.com/products/storageworks/san/documentation.html
Warranty and Support options	http://www.hp.com/hps/tech/storage/supp/ http://www.compaq.com/services/*CarePAQ*/us/install/cp_storage.html http://www.compaq.com/services/*CarePAQ*/us/hardware/cp_storage.html http://www.compaq.com/services/CarePAQ/index.html

Information included in this document can change without notice. Please refer to http://www.hp.com/go/san for the latest information