

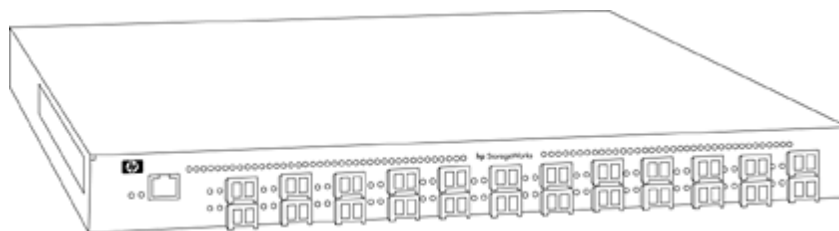
Overview

The HP StorageWorks Edge Switch 2/24 offers customers unprecedented flexibility in supporting enterprise-wide SAN deployments, and core-to-edge architectures. The base model switch includes 8 active switch ports, 8 transceivers, and is upgradeable in 8 port upgrades to 24 active ports. The HP StorageWorks Edge Switch 2/24 provides 2 Gb throughput, FlexPort technology and seamless interoperability with the complete family of switches, including: Director 2/64, Director 2/140, and Edge Switch 2/32.

FlexPort technology enables customers to implement connectivity on demand, capability not available until now in other switch products. End-users can start with a partially populated switch (8-ports) and purchase additional connectivity when needed in 8-port increments up to a total of 24-ports.

The Edge Switch 2/24 provides 2 Gb any-to-any connectivity, high performance bandwidth, and exceptional availability features that enable customers to easily scale enterprise fabrics. The common architecture shared between HP StorageWorks directors and edge switches means seamless interoperability and management across the entire fabric, giving customers unprecedented ability to scale while maintaining performance and availability.

A new 1U server has been added to replace the existing Omnibook Laptop Server and the HAFM software has been bundled with the 1U server under a single part number. In addition, there is support for the latest versions of IBM AIX, Tru64 UNIX, OpenVMS, Windows® 2003 and Novell NetWare operating systems supported by HP, complementing recently announced versions of HPUX, Linux, Solaris and NT®/Windows 2000.



Key Features and Benefits

- Outstanding support for mission critical applications by providing a rich set of high availability features
- Extraordinary performance with twice the potential throughput of traditional 1 Gb switches
- Centralized fabric management through the HP StorageWorks HA Fabric Manager
- Affordable high-port count connectivity
- Connectivity on demand by means of the FlexPort technology
- Effective bandwidth aggregation at the edge of core-to-edge SAN deployments
- Seamless interoperability with other HA Fabric edge switches and directors
- High Availability Fabric Manager (optional)- Infrastructure management software for discovery, planning, and monitoring
- Fabric Security-SANtegrity (optional) and Full Volatility (optional)
- Open Trunking software (optional) - highest throughput between switches
- Performance Monitoring software (optional) - eliminates performance bottlenecks
- SAN Planning software (optional) - time saving SAN design tool

Models

HP StorageWorks Edge
Switch 2/24

Edge Switch 2/24

NOTE: Ships with 8 active ports, shortwave 8 transceivers, and Rack-mount Kit included (supports 5000*, 9000, 10000, 11000, and System/e cabinets).

*5000 cabinet is supported as a field-installable option only.

Add-on
316095-B21
Factory Installed
316095-B21
#OD1

Product Highlights

Configuration support	Supported on all major operating systems and array controllers. For SAN level configuration support of HA Fabric products, please check the "Heterogeneous Open SAN Design Reference Guide" at: http://h18000.www1.hp.com/products/storageworks/san/documentation.html
Security	SANtegrity Binding Security software locks down the fabric -- from the core of the SAN all the way out to the edge -- preventing intentional security threats and limiting exposure to accidental changes to the SAN, such as the accidental merging of two incompatible fabrics.
High availability features	<ul style="list-style-type: none">• Hot plug redundant power supply and cooling modules• Hot plug optics• Online diagnostics• Online, non-disruptive firmware load and activation• Fault isolation tools for network-wide activity• Call home and e-mail notification support (through the HA Fabric Manager)
Deployment flexibility	<ul style="list-style-type: none">• Full interoperability with all HP StorageWorks Directors and Edge Switches• Connectivity on demand through FlexPort technology in 8-port increments• Same firmware for all edge switches and directors, including legacy 1 Gb products• Support for multiple management options, web tools and centralized fabric management
Management	<ul style="list-style-type: none">• Optional HA Fabric Manager for centralized fabric-wide management• Embedded web server management tools for stand-alone switches and small fabrics• Command-line interface option to reduce time of common administration functions• Online help• Call-home and e-mail notification
Performance features	<ul style="list-style-type: none">• 2 Gb any to any connectivity• Auto sensing• Long distance support up to 100 Km (with repeaters)• Low latency of less than 2 microseconds per port maximum

Optional Software Products

High Availability Fabric Manager (HAFM)

HAFM is a comprehensive storage network management application that enables users to configure and manage M-Series switches (i.e., Director and Edge Switch products). With its powerful configuration tools, numerous M-Series directors and switches can be controlled from a single console, simplifying the administration of a storage network infrastructure. HAFM maximizes the ability of the storage network and minimizes potential SAN downtime. With its real-time monitoring and notification capabilities, critical events can be managed that could impact the performance of the M-Series infrastructure. Proactive alerts like call home and e-mail notification provide notification of the operational status of your SAN anytime and anywhere.

SAN Planning*

Software for evaluating the effects of deploying new devices into an infrastructure or designing a completely new storage network using a set of best practices configuration rules.

Performance Monitoring*

An application for measuring and graphically displaying performance statistics, historic metrics and future trends of every switch port in a SAN. This allows users to pinpoint areas of over-utilized and under-utilized ports and identify trends and problem areas

Event Management*

The event management features enables users to define and monitor specific conditions and events within the fabric, and then trigger actions, such as reports, e-mail, data export, logs, messages, and sound.

***NOTE:** HAFM v8.02 or later is required when purchasing SAN Planning, Performance Monitoring or Event Management

Open Trunking

Open Trunking is performance enhancement software which automatically balances performance throughout a network and optimizes bandwidth use. The software monitors the average data rates for all traffic flows on Interswitch links from a receive port to a target domain and periodically adjusts routing tables to reroute data flows from congested links to lightly loaded links. The objective of Open Trunking is to make the most efficient possible use of redundant Interswitch links between neighboring switches.

Full Volatility

Software designed to meet the specific requirements of secure military facilities. This application prevents classified frame traffic, part of the memory dump, from being written to flash memory on a control processor card during data collection. This allows failed controller processors to be returned for service without compromising data security.

Security

SANtegrity Binding Security software locks down the fabric -- from the core of the SAN all the way out to the edge -- preventing intentional security threats and limiting exposure to accidental changes to the SAN, such as the accidental merging of two incompatible fabrics.

Centralized management features

- User friendly graphical interface
- Centralized configuration management
- Real time interactive display of operational status and performance statistics
- Automatic audit logging of all systems events
- Access security with passwords, valid users, and local and remote access rights
- Call-home
- Event management and notification

Service and Support, HP Care Pack and Warranty Information

Warranty	<p>(1-1-1) Hardware Warranty – One-year on-site, limited warranty, 8x5, next business day response, installation not included.</p> <p>NOTE: The hardware warranty covers firmware and embedded non-saleable software. Saleable software carries its own warranty, see below.</p> <p>Software Warranty – HP warrants only that the software media will be free of physical defects for a period of ninety (90) days from delivery.</p> <p>EXCLUSIVE REMEDY – The entire liability of HP and its suppliers and your exclusive remedy for software that does not conform to this Limited Warranty shall be the repair or replacement of the defective media. This warranty and remedy are subject to your returning the defective media during the warranty period to HP in the country in which you obtained the software. Additional Warranty protection can be purchased.</p> <p>NOTE: Certain restrictions and exclusions apply. Consult the Customer Support Center for details.</p>
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HP Service & Warranty Support	<p>HP Service and Warranty Support Additional Warranty protection and/or HP Installation packages can be purchased. For more information on warranty and support options, please visit our Web site at: http://h18004.www1.hp.com/products/storageworks/warranty.html</p> <p>In addition, available service offerings include a full range of HP Care Pack packaged hardware and software services:</p> <ul style="list-style-type: none">• Installation• Extended coverage hours and enhanced response times• System management and performance services
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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	<p>Software Warranty – HP warrants only that the software media will be free of physical defects for a period of ninety (90) days from delivery.</p> <p>EXCLUSIVE REMEDY – The entire liability of HP and its suppliers and your exclusive remedy for software that does not conform to this Limited Warranty shall be the repair or replacement of the defective media. This warranty and remedy are subject to your returning the defective media during the warranty period to HP in the country in which you obtained the software.</p> <p>NOTE: Certain restrictions and exclusions apply. Consult the Customer Support Center for details.</p>
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Hardware Product Services	<p>(1-1-1) Hardware Warranty – One-year on-site, limited warranty, 8x5, next business day response, installation not included.</p> <p>NOTE: The hardware warranty covers firmware and embedded non-saleable software. For extended hardware installation and maintenance information, click the link below:</p> <p>http://h18005.www1.hp.com/services/carepaq/us/install/</p> <p>http://h18005.www1.hp.com/services/carepaq/us/hardware/</p>
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Service and Support, HP Care Pack and Warranty Information

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. Please see the following web sites:

<http://h18005.www1.hp.com/services/carepaq/us/install/>

<http://h18005.www1.hp.com/services/carepaq/us/hardware/>

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

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 products 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 and software) information, as well as orderable part numbers, please refer to the URL listed below:

<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>.

Family Information

Features	Edge Switch 2/12	Edge Switch 2/24	Edge Switch 2/32	Director 2/64	SAN Director 2/140
Targeted Environment	Departments	Departments, Data Centers	Departments, Data Centers	Data Centers	Data Centers
Port Bandwidth	200 MB	200 MB	200 MB	200 MB	200 MB
Aggregate device bandwidth	Up to 2400 MB	Up to 4800 MB	6400 MB	12800 MB	28000 MB
OS Support	NOTE 1	NOTE 1	NOTE 1	NOTE 1	NOTE 1
Storage system support	MA8000 EMA12000/16000 EVA, XP, VA, MSA1000,MSA1500	MA8000 EMA12000/16000 EVA, XP, VA, MSA1000,MSA1500	MA8000 EMA12000/16000 EVA, XP, VA, MSA1000,MSA1500	MA8000 EMA12000/16000 EVA, XP, VA, MSA1000,MSA1500	MA8000 EMA12000/16000 EVA, XP, VA, MSA1000,MSA1500
Ports	Up to 12	Up to 24	32 (NOTE 2)	64 (NOTE 3)	Up to 140
Topology	Shared Memory	Shared Memory	Crossbar	Crossbar	Crossbar
Form factor	1U	1U	1.5 U	9U	12U
Call home	No	Yes (NOTE 5)	Yes (NOTE 5)	Yes (NOTE 5)	Yes (NOTE 5)
Fabric-wide management	No	Yes	Yes	Yes	Yes
Hot plug	Yes	Yes	Yes	Yes	Yes
Redundant power	No	Yes	Yes	Yes	Yes
SAN configurations	NOTE 1	NOTE 1	NOTE 1	NOTE 1	NOTE 1

NOTES:

1. Refer to the Heterogeneous Open SAN Design Guide at:

<http://h18000.www1.hp.com/products/storageworks/san/documentation.html>

2. The Edge Switch 2/32 supports capacity on demand with the FlexPort technology in increments of 8-ports, base model comes with 16-ports.

3. The Director 2/64 base unit comes with 32-ports, and can be upgraded in increments of 4-ports.

4. The Director 2/140 base unit comes with 64-ports, and can be upgraded in increments of 4-ports.

5. Call-home support provided through the HP StorageWorks HA Fabric Manager.

Configuration Information

Step 1 – Base Configuration

Select one:

Model	Model Description	Part Number
HP StorageWorks Edge Switch 2/24	Edge Switch 2/24 NOTE: Ships with 8 active ports, 8 transceivers, and Rack-mount Kit included (supports 5000*, 9000, 10000, 11000, and System/e cabinets). *5000 cabinet is supported as a field-installable option only.	Add on 316095-B21 Factory Installed 316095-B21 #0D1
	Standard with each Edge Switch 2/24	
	<ul style="list-style-type: none"> • Universal Rack-mount kit supports 5000, 9000, 10000, 11000, and System/e Cabinets, (instructions, hardware, and brackets) • Short wave SFP Hot plug optics (8) - 24-port • Accessory kit (Manuals & Documentation CD) • RJ-45 cable Rubber Bumper • Null modem cable • Loopback plug • Power cords • Enterprise safety and regulatory information 	

Step 2 – Additional Options

Select each required option with quantities specified.

HP StorageWorks Edge Switch 2/24 Element Manager license	A7496A
NOTE: Required when managing a switch using HA Fabric Manager Server.	
SANtegrity Binding 2/24 License	317070-B21
8-FlexPort Upgrade for Edge 2/24	316096-B21
NOTE: Includes 8 shortwave transceivers and a license.	
NOTE: 1 to 2 needed.	
HA Fabric Manager Appliance FIS HAFM	A7489A
HA Fabric Manager SW upgrade kit	A7490A
HA Fabric Manager appliance without HAFM software	A7509A
SAN Planning*	A7491A
Performance Monitoring*-512 port license	A7492A
Performance Monitoring*-64 port license	A7494A
Event Management*- 512 port license	A7493A
Event Management*64 port license	A7495A
Event Management/ Performance Monitoring 512 port bundle license*	A7507A
Event Management/ Performance Monitoring 64 port upgrade bundle*)	A7508A
Open Trunking for 2/24	A7503A
Full Volatility	A7498A
*NOTE: Requires the purchase of HAFM v8.02 or later	

Optical Transceivers	300 m short-wave optical transceiver kit	A6515A
	10 km long-distance optical transceiver	A6516A
	35 km long-distance optical transceiver kit	300836-B21

Configuration Information

2-Gb optical cables

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

Technical Specifications

Availability	<ul style="list-style-type: none">• Hot plug redundant power supply and cooling modules• Hot plug optics• Online diagnostics• Online, non-disruptive firmware load and activation• Fault isolation tools for network-wide activity• Call home and e-mail notification support (through the HA Fabric Manager)
Compatibility	Fibre Channel protocols FC-PH Rev 4.3, FC-PH-2, FC-PH-3, FC-GS-2, FC-FLA, FC-FG, FC-SW2 SNMP Fibre Alliance MIB - Version 3.0 Fibre Channel Fabric Element MIB - Version 1.10 TCP/IP MIB II
Performance	Classes of service Class 2, Class 3, Class F Port Speed 1.0625 - 2.125 Gb, full duplex Throughput 64 million frames/sec Buffer credits 12 per port Fabric latency Less than 2 microseconds average
Scalability	Ports per chassis 24 G Ports Media Type Hot plug, industry-standard LC Small Form Factor Supported optical media Types/Distance Shortwave 1,640 ft (500 m) Longwave 6.2 mi (10 km), 21.9 mi (35 km) With repeaters 60 mi (100 km) Cabling, single mode 9/125 micron, 6.2 mi (10 km) Cabling, multimode 50/125 micron, 1,640 ft (500 m) 62.5/125 micron, 1,148 ft (300 m)
Management options	HP StorageWorks HA Fabric Manager Embedded Web Server SNMP Command Line Interface
Access	In-band Ethernet (10/100 Mbps)
Fabric services	Simple Name Server In-order delivery (Class 2, 3) Management Server (optional) Broadcast Name Server Zoning
Diagnostics	Power-on self test On-line port Internal and external loopback On-line system health

Technical Specifications

Serviceability	Hot load firmware upgrades	
	Call-home, email (with HA Fabric Manager)	
	Maintenance port (DSUB)	
	Thermal protection	
	Unit, port, FRU beaconing	
	System error LED	
	FRU failed LED	
Dimensions	Height	1.75 in (4.45 cm) (1U)
	Width	17.50 in (44.45 cm)
	Depth	17.50 in (44.45 cm)
	Weight	20.00 lb (9 kg)
Shipping Dimensions	Height	7.00 in (18.00 cm)
	Width	25.00 in (64.00 cm)
	Depth	23.00 in (58.00 cm)
	Weight	28.00 lb (13.00 kg)
Environmental	Non-operating temperature	40° to 125° F (4.4° to 51.67° C)
	Humidity	8% - 80%
	Altitude	40,000 ft (12,192 m)
	Operating temperature	40° to 104° F (4.4° to 40° C)
	Humidity	8% - 80%
	Altitude	10,000 ft (3,048 m)
Electrical	Operating voltage	100-230 VAC
	AMPs	2 AMP Max
	Watts	Less than .50W
Regulatory	UL, TUV, CE Mark, VCCI Class A	
	FCC Part 15 Class A	

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