

MODELS

StorageWorks Fibre Channel Arbitrated Loop Switch 8 (SW FC-AL Switch 8)

SW FC-AL Switch 8

177862-B21

SW FC-AL Switch 3-Port Expansion Module

177863-B21

Feature List

- 12 Gb/s switching engine
- 8-port FC-AL switch ports at 1 Gb/s per port (11-port optional)
- EBS Certified with TL891 and TL895
- FC-TC I, FC-TC II, Compaq StorageWorks Modular Data Router
- Qualified with broad industry standard x86 server platforms from Compaq, and other vendors. Tight integration in a Compaq ProLiant Server environment.

OVERVIEW

High-Performance Fibre Channel Arbitrated Loop Switch for Compaq RAID Array 4000/4100 storage systems

A core addition to the award-winning RA4100 and RA4000 Raid Array family is the qualification of the StorageWorks Fibre Channel Arbitrated Loop Switch 8 (FC-AL). The New StorageWorks FC-AL Switch 8 is the core component of an affordable SAN solution that will consolidate storage, simplify storage management, manage explosive data growth, and reduce business down time. The FC-AL Switch 8 is a high-performance, switch engine, interconnect component that will help you take that important step towards building a low cost SAN. Built on the stable, easy to use, and mature FC-AL protocol, the FC-AL Switch 8 offers eight ports with dedicated non-blocking 100 MB/second point-point parallel connections. Using the StorageWorks FC-AL Switch 8 as the cornerstone of your SAN deployment, you can start by combining your primary storage components, such as the RA4000/RA4100 storage systems and secondary storage Enterprise Backup Solution components, such as Tape Libraries (TL890/TL891/TL895) on the same Departmental SAN. With a 12 GB/second switch engine, the StorageWorks FC-AL Switch 12 GB/second delivers the necessary resiliency and speed to isolate your client-server network from heavier storage network traffic. Furthermore, as your connection needs grow, the 8-port StorageWorks FC-AL Switch 8 can be expanded to 11 ports using the StorageWorks FC-AL Switch 3-Port Expansion Module. The StorageWorks FC-AL Switch 8 can be easily managed using management tools such as StorageWorks Command Console (SWCC), Compaq Insight Manager -XE (CIM-XE), Compaq Insight Manager (CIM), Array Configuration Utility (ACU), and the StorageWorks Switch Management Utility.

Using the SW FC-AL Switch 8, the RA4000/RA4100 Based SAN solution will deliver following business benefits:

Operational Efficiency

Centralized management, Hot-growth of storage, Storage consolidation (Using Selective Storage Presentation Firmware in the RA4000 controller)

Business Flexibility

Integrate Primary & Secondary storage on same SAN

High Service Levels

FC-AL Non-blocking Switch engine, LIP isolation, Hot-Add, Hot-growth, Cluster Support (MSCS, NHAS, NWCS, OPS)

NOTE: Please refer to OS matrix for features supported by OS.

Product Family Models

StorageWorks FC-AL Switch 8

StorageWorks FC-AL Switch 3-Port Expansion Module (PEM)



KEY FEATURES

High-performance non-blocking 12 Gb/s FC-AL Switch engine for building a Workgroup and Departmental SAN today.

Major features of the new SW FC-AL Switch are:

- 12 Gb/s switching engine
- 8 FC-AL switch ports at 1 Gb/s per port (11-port with additional 3-Port Expansion Module)
- Switching performance plus management at the equivalent price of a 12-port hub
- 8-GBIC ports on baseline chassis; expandable to 11 ports using 3-Port Expansion Module
- Configurable LIP isolation policies
- Full-duplex, communication mode
- General 10 km distance support for switch to device connection with long-wave GBICs
- Integrated StorageWorks FC-AL Switch Management Utility for SW FC-AL Switch management; compatible with Compaq management utilities CIM, CIM XE and StorageWorks Command Console (SWCC); node management and device management allow custom configuration and SAN management via the management console (SWCC, CIM, CIM XE) or via a telnet interface
- Hot pluggable GBIC ports
- Backward compatible with existing RA4000 controller FW and OS drivers
- Qualified with Tape Controller Models FCTC I, FCTC II and Compaq StorageWorks Modular Data Router and Tape Library Models TL891 and TL895. Enable primary & secondary storage on same SAN
- Qualified with broad industry-standard x86 server's platforms from Compaq, and other vendors; tight integration in a ProLiant Server environment

PRODUCT HIGHLIGHTS

Total Number of Ports

8 Ports: StorageWorks FC-AL Switch 8

3-Port Expansion Module for 8-Port to 11-Port Upgrade: StorageWorks FC-AL Switch 3-Port Expansion Module

Enterprise Backup Solutions

EBS support for the TL891/TL895 using Veritas Backup Exec and Computer Associates ArcServe IT tape backup solutions have been qualified.

High Availability

Cluster support for up to six nodes

Inter-operability Hot Pluggable Support

By supporting native FC-AL switching, the SW FC-AL Switch is an easy, drop-in replacement into your existing FC-AL environment. It is an affordable and high performance replacement for your 7-Port or 12-Port Hub.

Integration

Qualified with ProLiant Server Models 1850R (New DL 380), 6400R (DL 580), 1600 (ML 370), DL360 and 6500/7500/8500 servers

Tape Library Models TL891 and TL 895; Tape Controller Models FC-TC I, FC-TC II

Manageability

The SW FC-AL Switch 8 can be managed using tools such as StorageWorks Command Console (SWCC), Compaq Insight Manager, Compaq Insight Manager XE (CIM XE) and Array Configuration Utility (ACU), so that all access the StorageWorks FC-AL Switch Management Utility via the SAN Interconnect Agent.

PRODUCT HIGHLIGHTS *(continued)*

Options Supported

- 8-port: SW FC-AL Switch 8
- 3-port: SW FC-AL 3 Port Switch Port Expander (upgrade 8-port switch to a 11-port switch)

Performance

- 12 Gb/s switch engine
- 1.0625 Gb/s per port

Resiliency/Scalability

- Dependent upon the configuration; will support up to 10 km connections, but may be restricted to less than 10 km by total solution
- Multiple simultaneous connections
- Automatic detection of connection points between servers/storage end points

Intelligent LIP Control (ILC) is an advanced method of managing loop initialization events. Loop initialization is prompted by a Loop Initialization Primitive (LIP) being issued by a device on the arbitrated loop. The LIP can be issued at any time and is potentially disruptive if issued during frame transfer. If such a disruption occurs, error-handling code at the driver or application layer is triggered by a timeout to prevent IO errors or data corruption. ILC avoids the disruption in the first place by holding the LIP, up to a certain maximum period, until a minimum gap in frame transfer occurs.

LIP Propagation Policy allows administrators to prevent LIPs generated by initiators to propagate to other ports, thus eliminating the impact of unnecessary LIPs on data flow. When LIP Propagation is prevented the FC-AL Switch will itself provide discovery information needed by the initiator, targets are not disrupted. This policy is implemented on a per port basis.

Servers Supported (if applicable)

- Qualified with broad industry-standard x86 server platforms from Compaq, and other vendors; tight integration in a *ProLiant* Server environment
- ProLiant* Server Models — 1850R (New DL 380), 6400R (DL 580), 1600 (ML 370), DL360 and 6500/7500/8500 servers
- X86 Servers from Dell, HP, IBM Models

Inter-operability

- Supports existing loop based Host Bus Adapters (HBAs)
(Driver updates may be required, depending on HBA.)
- Supports existing redundant RA4000 controller
- Compatible with StorageWorks Fibre Channel SAN Switch for connection to a full fabric environment (pending qualification) via an FL-port

OS Support – FC-AL Switch Support for the following OS

- NT® 4 (SP6)
- Windows® 2000
- NetWare V5.1, V4.2
- SCO Unixware® 7.1.1
- Linux Red Hat V6.2

Rack Density

- 1U Rack Mountable

Total Cost of Ownership

Consolidate your storage on a SAN and reduce overall storage management costs as a result of shared storage, using common management tools (ACU, SWCC, CIM, CIM-XE, Switch Management Utility).

PRODUCT HIGHLIGHTS *(continued)*

Safety Compliance

UL Standard 1950, *Third Edition*

CSA (Canada)

IEC950/EN 60 950, (CE-Europe)

TUV (Germany)

Regulatory/ EMC/EMI Compliance

U.S.

FCC Rules & Regulations, Part 15B, Class A level

Canada

ICES-003 Class A

EU

CISPR22 Class A , EN55022 Class A

Japan

VCCI Class A ITE

Australia/New Zealand

AS/NZS 3548 Class A

Immunity

IEC 801-2 (IE: IEC 1000-4-2), Severity Level 3 for ESD

IEC 801-3 (IE: IEC 1000-4-3), Severity Level 3 for Radiated Fields

IEC 801-4 (IE: IEC 1000-4-4), Severity Level 3 for Fast Transients

IEC 801-5 (IE: IEC 1000-4-5), Severity Level 3 for Surge Voltage

IEC 801-6 (IE: IEC 1000-4-6), Conducted Emissions

QuickSpecs

Compaq StorageWorks FC-AL Switch 8

SPECIFICATIONS

Switch Engine	12 Gb/s
Communication Modes	Full Duplex
Data Transfer Latency	< 280 to 500 ns range
Number of Expansion Slots	One 3-Port Expansion Module (for 8-port to 11-port expansion)
Protocols Supported	FC-AL, FC-AL-2, FC-PH, FC-PH-2, FC-PH-3, FC-PLDA, FCP

Switch Management Specifications

Switch Management Access	Local Console Via RS232, SNMP via 10BaseT
Switch Management Interface	ASCII via RS232, SNMP via 10baseT, StorageWorks Command Console (SWCC), Compaq Insight Manager (CIM) and CIM XE, StorageWorks Switch Management Utility
Management Standards	IETF Fibre Channel Management MIB, Fabric Element MIB

Physical Characteristics and Ordering Information

Packaging	SW FC-AL Switch 8	(177862-B21)
	SW FC-AL Switch 3-Port Expansion Module	(177863-B21)
Dimensions (HxWxD)	(Applies to 8-port and 11-port chassis)	1.66 x 17.3 x 16.26 in/42 x 439 x 413 mm
Weight	8 Port Chassis	24.9 lbs/11.2 kg
	3 Port Chassis	2.1 lbs/ 0.95 kg
Relative Humidity (non-condensing)	Operating	20% to 80% non-condensing
	Non-Operating	10% to 90%
Power	100 to 240 VAC, 50 to 60 Hz	
Power Supply	1.5A, 100 W, Fixed	
Temperature Range	Operating	50° to 140° F/10°C to 60° C
	Shipping	-22° to 140° F/-30°C to 60° C

Warranty

3 Years Parts Exchange, 0 Year Carry-In Labor, 0 Year On-site Labor

SERVICE & SUPPORT, HP CARE PACK AND WARRANTY INFORMATION

Software Product Services

- Standalone telephone support
- Rights to new license version
- 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
- RAID setup and performance consulting via statement of work

For additional hardware installation and maintenance information, please refer to the URLs listed below:

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

Warranty Upgrade Options

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

HP Care Pack Information

Sample part numbers:

- FM-**XHW-36, 3 year, uplift to 5 x 9, Next Day Response
- FM-**4HR-36, 3 year, uplift to 5 x 9, 4-hour Response
- FM-**724-36, 3 year, uplift to 7 x 24, 4-hour Response

** represents a two digit product specific code

- 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 listed below:

<http://h18005.www1.hp.com/services/carepag/index.html>

Components

The following brick level options/components do not have individual HP Care Pack services. These items will be included in product HP Care Pack services into which they are installed.

Disk Drives	Tape Drives	CD/DVD ROM	SCSI Hubs in SBBs	Adapters
Bus Converters	Backplane RAID Controllers	Power Supplies	Cabling	Fans

CONFIGURATION INFORMATION

This product has been qualified with the RA4000/RA4100 Storage Systems, TL891 (120876-B22), TL895 (349350-B2X), Tape Libraries (including FC-TC II; Part # 152975-001).

The FC-AL Switch 8 is not cascadable.

STEP 1 – FC-AL SWITCH – BASE CONFIGURATION

Select one:

Model #	Part #	Model Description:
FC-AL Switch 8	177862-B21	8-Port FC-AL Switch
FC-AL Switch 3-Port Expansion Module	177863-B21	3-Port Expansion Module that will expand the FC-AL Switch 8 from an 8-port to an 11-port Switch.

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