

*Compaq StorageWorks*TM

Fibre Channel SAN Switch 16-EL Release Notes

These release notes contain late-breaking and supplemental information for the Compaq *StorageWorks*TM *Fibre Channel SAN Switch 16-EL*. Also included in these release notes is a procedure to install the SAN 16-EL switch in a Compaq rack.

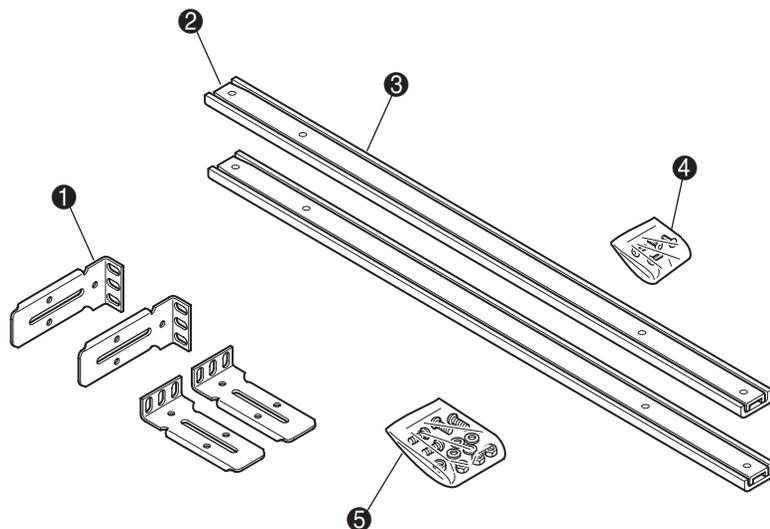
Be sure to read these notes before installing a Fibre Channel SAN Switch. This information is periodically updated and available on the World Wide Web at:

<http://www.compaq.com/storage/index.html>.

Rack Mounting SAN 16-EL Switches

A rack mounting kit is included with your SAN 16-EL switch. The SAN 16-EL switch is 1.5U (1.75 inches) high and requires a special mounting kit to maximize rack space. The mounting brackets and slide assemblies are packaged separately. Locate the two packages. The mounting bracket package contains four brackets, screws, lock washers, and nuts to attach the brackets to the slides.

The other package contains a pair of slides and four screws. The slides are shipped assembled, in one piece, with the switch rails installed in the slides. The four screws in the slide package are used to fasten the rails to the switch. The rack mounting kit is shown in Figure 1.



SHR-2007

Figure 1. SAN 16-EL rack mounting kit

- | | |
|----------------------------------|-----------------------------|
| ① Mounting brackets | ④ Rail mounting screws |
| ② Switch rail installed in slide | ⑤ Mounting bracket hardware |
| ③ Slide assembly | |

In this procedure the switch is mounted with the ports facing the front of a Compaq series 9000 19-inch rack. The procedure describes how to install the switch for either removal from the front or from the back of the rack. How you install the switch in the rack depends on your configuration and site requirements.

Plan before you begin to rack mount the switch, and observe the following guidelines:

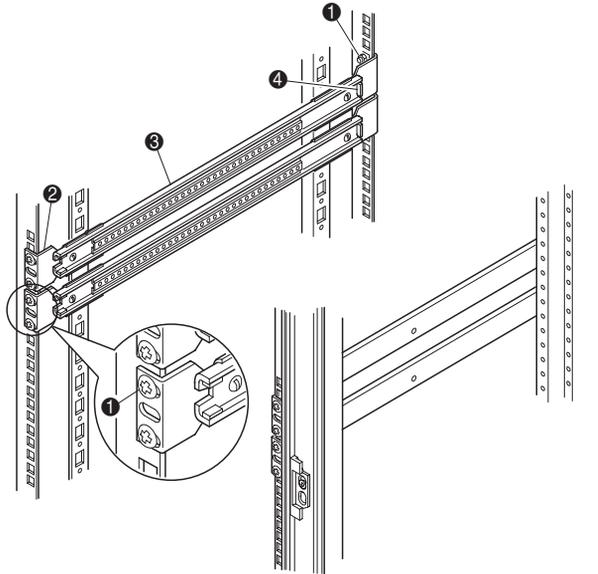
- When you install the switch in a closed or multi-rack assembly, be sure the air temperature measured at the Switch front panel does not exceed 40° C (104° F).
- Make sure the airflow to the switch is at least 300 cfm.
- Verify that after the switch is installed in the rack that the rack remains stable with the slides fully extended.
- Verify that the supply circuit, the line fuse, and the wire size are appropriate for the service.
- Verify that all the other equipment installed in the rack has a reliable ground connection; do not rely on connection to a branch circuit, such as a power strip.
- Route and support the power cord to ensure that the switch moves freely on the slide brackets without crimping or chafing the power cord, or interfering with other equipment and cables installed in the rack.



WARNING: To reduce the risk of personal injury or damage to the equipment, be sure that:

- The leveling jacks are extended to the floor.
 - The full weight of the rack rests on the leveling jacks.
 - The stabilizing feet are attached to the rack if it is a single rack installation.
 - The racks are coupled together in multiple rack installations.
 - A rack may become unstable if more than one component is extended for any reason. Extend only one component at a time.
 - Follow all the safety guidelines in your Compaq rack documentation kit.
 - The equipment is installed from the bottom up; heavier devices are installed first.
-

4. Install the cage nuts (included with your Compaq rack) in the rack frame.



SHR-2009

Figure 3. Attaching the slides to the rack

- | | |
|-------------------------|---------------|
| ❶ M6 screw and cage nut | ❸ Slide |
| ❷ Mounting bracket | ❹ Slide stops |

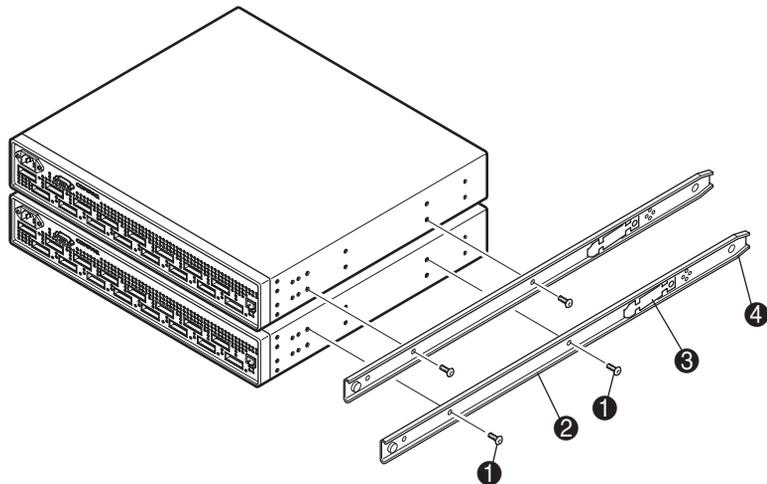
5. Use Compaq M6 screws and attach the slides to the rack (Figure 3). Attach the slides with the stops to the rear of the rack for front removal of the switch or to the front for removal of the switch from the back of the rack. Make sure the slides on both sides of the rack are installed at the same height and are parallel to each other.

Fastening the Rails to the Switch

Refer to Figure 4 for switch rail positions for front removal of the switch; Figure 5 for rear removal. To maximize rack space SAN 16-EL switches are mounted in pairs.



CAUTION: Maximum length of screws to attach rails to switch is 13/64 of an inch. Using screws longer than 13/64 of an inch to attach the rails to the SAN 16-EL switch will damage the motherboard.



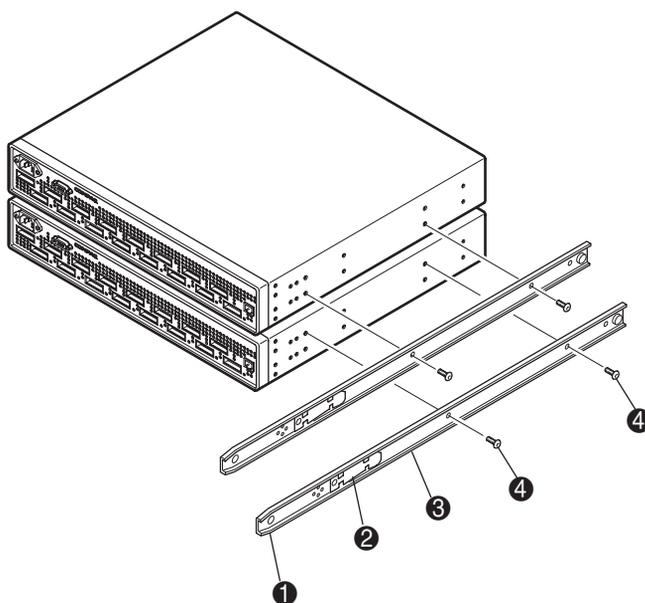
SHR-2010

Figure 4. Rail positions for front removal of the switch

- | | |
|----------------------------------|----------------------|
| ① 13/64-inch rail mounting screw | ③ Latch |
| ② Switch rail (drawer member) | ④ Narrow end of rail |

1. Position the switch rails as shown in Figure 4 (front removal) or Figure 5 (rear removal).

- Using two 13/64-inch screws for each rail, attach the rails to the switch.



SHR-2011

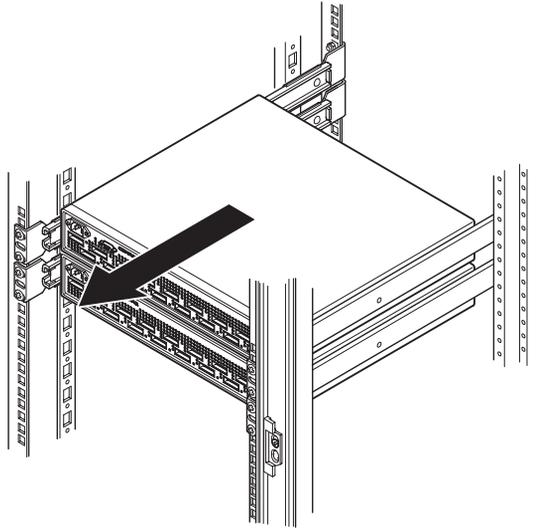
Figure 5. Rail positions for rear removal of the switch

- | | |
|----------------------|-----------------------------|
| ❶ Narrow end of rail | ❸ Rail |
| ❷ Latch | ❹ 13/64-inch mounting screw |

Sliding the Switch into the Rack

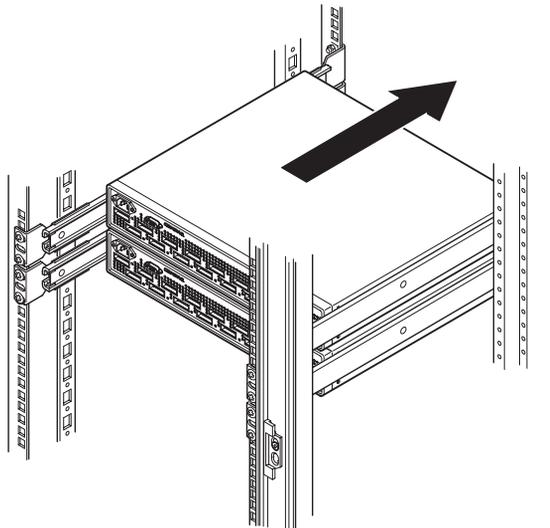
- Line up the switch rails with the rack slides, insert the rails in the slides, and evenly push the switch into the rack until the switch engages the latches.
- Press in both latches, and push the switch all the way into the rack.
- Install the second switch in the rack. Refer to steps 1 and 2 in this procedure. Figure 6 and Figure 7 show the completed installation of a SAN 16-EL switch pair of in a Compaq rack.

Figure 6 shows a pair of SAN 16-EL switches installed in a Compaq rack which are removed from the front.



SHR-2012

Figure 6. Pair of SAN 16-EL switches installed for front removal



SHR-2013

Figure 7. Pair of SAN 16-EL switches installed for rear removal

Figure 7 shows a pair of SAN 16-EL switches installed in a Compaq rack which are removed from the back of the rack.

Firmware Version 2.1.9a Features

The following are features of firmware version 2.1.9a:

- Provides the ability to build large SANs networks.
- Provides the new user interface for managing switches. Features include user interface pages for fabric discovery, zoning, name server, port enables, firmware downloads, switch administration, user administration, software readable serial number, SNMP administration, license administration, and other features for managing up to 239 switches in a fabric. Management of optionally licensed features is also included for managing remote switches.
- Supports both Netscape Navigator and Microsoft Internet Explorer browsers.
- All commands are now case insensitive. For example, instead of entering “fabricShow,” you can enter “fabricshow”.

The new Fibre Channel SAN Switches include the latest version of the firmware. However, if needed, a copy of the latest version of the firmware, v2.1.9a, as of this date, is also contained on the Fibre Channel SAN Switch Software v2.1.9a CD. The required loaders and instructions for downloading the firmware are also contained on the CD. The v2.1.9a firmware is also available on the Compaq website at:

<http://www.compaq.com/products/storageworks/hubs-and-bridges/firmwareupdate.html>

This firmware is for the Fibre Channel SAN Switch models 16, 8, 8-EL and 16-EL and will not work if loaded into older Fibre Channel Storage Switches.

Compatibility

The Fibre Channel SAN Switch software (version 2.1.9a and above) is compatible with the Fibre Channel Switch software (versions 1.6d), allowing both types of switches to operate in the same fabric. To accomplish this compatibility, the Fibre Channel SAN Switch must be configured to use a specific addressing mode. This mode is designated “VC Encoded Address Mode.”

Invoke this mode using the `configure` command, as described in Appendix A of the *Compaq StorageWorks™ Fibre Channel SAN Switch Management Guide*. When using compatibility mode, the maximum switch count in a fabric is reduced from 239 to 32, and the maximum number of multicast groups is reduced from 256 to 31.

If the compatibility mode is not set, the following error message displays during a telnet session when interconnecting a Fibre Channel SAN Switch and a Fibre Channel Storage Switch:

```
Error Fabric SEGMENTED, port #  
incompatible flow control parameters
```

Management

Version 2.1.9a requires that the management station have at least 32 MB of RAM to operate, and at least 128 MB of memory to manage a large SAN.

Cascading

Cascading of switches is supported for up to 239 switches with firmware v2.1.9a. Up to 7 hops are supported where a hop is defined as a connection from one switch to another. Connections should be made such that traffic from an NL_Port will not transverse more than 7 hops when traveling through the cascaded switches.

When cascading switches, sequentially assign domain addresses to the switches prior to connecting them to other switches in a Storage Area Network (SAN). When connecting a powered down switch to a SAN that is running, the SAN will automatically assign a domain number to the switch when it is powered up. When connecting a SAN to a switch that is already powered up, the switch will not join the SAN if there are duplicate domain numbers. Refer to the *Compaq StorageWorks Fibre Channel SAN Switch Management Guide* for more information on compatibility mode and zoning that can also prevent switches from connecting to a SAN.

SAN Management Station Memory Requirements

Table 1 lists the memory requirements for a SAN management station with a Windows NT or 2000 operating system.

| Number of Switches | Minimum Memory Requirement |
|---------------------------|-----------------------------------|
| 1 – 4 | 64 MB |
| 5 – 9 | 96 MB |
| 10 – 20 | 128 MB |
| 21 or more | 256 MB |

CD Directory Structure

The Fibre Channel SAN Switch Software CD v2.1.9a contains the following items, including the names and descriptions of the files that contain release notes for the Compaq StorageWorks™ Command Console (SWCC) client and agent for managing the Fibre Channel SAN Switches.

- Dsggb
 - Docs
 - readme.txt (CPQ SWK RELEASE NOTES; late-breaking doc changes)
 - aa-rnapa-te.pdf (CPQ SWK SAN Switch 16-EL Installation and Hardware Guide)
 - aa-rmmha-te.pdf (CPQ SWK SAN Switch 8-EL Installation and Hardware Guide)
 - ek-bcp24-ia.pdf (CPQ SWK SAN Switch 8 Installation and Hardware Guide)
 - ek-bcp28-ia.pdf (CPQ SWK SAN Switch 16 Installation and Hardware Guide)
 - aa-rmmja-te.pdf (CPQ SWK SAN Switch Management Guide)
 - aa-sanrs-aa.pdf (CPQ SWK SAN Switch Remote Switch Services Installation Guide)
 - ek-ssrsr-aa.pdf (CPQ SWK SAN Switch Remote Release Notes)
 - ek-p24fr-aa.pdf (CPQ SWK SAN Switch 8 Remote Release Notes)
 - ek-p28fr-aa.pdf (CPQ SWK SAN Switch 16 Remote Release Notes)
 - aa-rmmgb-te.pdf (CPQ SWK SAN Switch 8-EL Release Notes)
 - aa-rnaqa-te.pdf (CPQ SWK SAN Switch 16-EL Release Notes)
 - Firmware (Compaq StorageWorks Fibre Channel Firmware and updates)
 - firmwareupdate.txt (instructions for updating firmware)
 - v2.1.9a (switch firmware)
 - v2_1FE.mib (Management Information Base for fabric)
 - v2_1SW.mib (Management Information Base for switch)
 - v2_1TRP.mib (Management Information Base for traps)

- javaplugin.exe (SUN java plug-in for browser)
- NTAlpha
 - Cat.exe (mover for upgrading firmware from an Alpha)
 - Rshd.exe (small server for upgrading firmware from an Alpha)
- NTIntel
 - Cat.exe (mover for downloading firmware from a PC)
 - Rshd.exe (small server for upgrading firmware from PC)
- SWCC(SWCC software for managing the Compaq StorageWorks SAN Switch and the Compaq StorageWorks Fibre Channel Switch)
 - ccclient.txt (SWCC Command Console release notes)
 - fcinter.txt (Switch Agent & Client release notes)
 - readme.txt (SWCC late breaking changes)
 - Getting Started Guide.pdf (CPQ SWK Command Console for the SAN Switch Installation Guide)
 - setup.exe (SWCC Installation file)
- Agent (contains the installSHIELD kit)
- Client (contains the installSHIELD kit for AppMgr)
- Acrobat
 - ar405eng.exe
 - other acrobat files

Using the Java Plug-In

- The proper execution of the Web Management Tools v2.1 application requires that Java Plug-In is installed on your workstation. Web Management Tools v2.1 requires the Java Plug-In version based on Java 1.2 (also known as Java 2) to operate correctly. The Java Plug-In is similar to other plug-ins used on your browser such as Real Audio, Adobe Acrobat, and Macromedia Director. Once Java Plug-In is installed its use is invisible. Microsoft Windows requires Java Plug-In 1.2.2 and Compaq Tru64 UNIX and Solaris requires 1.2.
- The Java plug-in can be loaded from the Compaq CD-ROM included with the product. The plug-in is located in the FIRMWARE subdirectory. Double-click on the *JAVAPLUGIN.EXE* file to begin the installation procedure.

Release Files V2.1.9a

The release files, MIB Files for Version 2.1.9a, are as follows:

- v2_1FE.mib (Management Information Base for fabric)
- v2_1SW.mib (Management Information Base for switch)
- v2_1TRP.mib (Management Information Base for traps)

Licenses

Table 2 lists the licenses key translations. The display format follows this but is hex, for example, 01B=27 decimal which translates into Web+Zoning+QL+Fabric=1+2+8+16=27.

| License | Decimal | Hex |
|----------------|----------------|------------|
| WEB_LICENSE | 1 | 1 |
| ZONING_LICENSE | 2 | 2 |
| SES_LICENSE | 4 | 4 |
| QL_LICENSE | 8 | 8 |
| FABRIC_LICENSE | 16 | 10 |
| REMOTE_SWITCH | 32 | 20 |
| REMOTE_FABRIC | 64 | 40 |
| EXTEND_FABRIC | 128 | 80 |
| ENTRY_FABRIC | 256 | 100 |

configUpload Telnet Command

An FTP server must be installed and running when performing the Telnet command `configUpload` on a Windows NT or 2000 system. If you do not have a Microsoft Windows NT or 2000 FTP service previously installed on your system, you need to install it.

Perform the following steps to install and configure a Windows NT or Windows 2000 FTP server.

4. Create a folder to put the switch firmware and configuration files in.
5. Install the Windows NT or 2000 FTP server on your system from your Windows installation CD.

If you only use the FTP server for the firmware and configuration loads, you can specify the folder created in Step 1 as the FTP Publish Directory.

6. Open the Internet Service Manager Tool found in the Start menu under
7. Perform a configuration save by using the Telnet command `configUpload`.

FTP Service uses the standard users defined under Windows NT, so a valid local user and password is required. A user can be created using the Windows NT administrative tools.

Appropriate permissions for the created folder (NTFS volumes only) must be setup to allow the user to have read and write privileges.

Another link that may be used to create a specific directory structure for use of firmware downloads explains how to create a directory structure for a specific login, but this is not necessary if FTP is only being used for switch use.

New Telnet Command

ssn

The Fibre Channel SAN Switch has a software readable serial number that can be accessed by using the Telnet command “`ssn`.” Switches that have been upgraded to firmware v2.1.9a will not display the software readable serial number when this command is given; instead the switch World Wide Name (WWN) will display. If you have a switch with firmware v2.1.9a preinstalled and the switch displays the WWN instead of the software readable serial number, contact customer service.

Known Issues

This section describes the known issues and problems related to the Fibre Channel SAN switch.

Web Management Tools

- Netscape 4.6 (IRIX) fails to load SwitchManager.html (core dump of Netscape or SwitchApplet cannot start error).
- When using Internet Explorer version 5.0 or lower, scrolling error may occur. Internet Explorer version 5.01 or higher is recommended.
- When using an Internet Explorer or Netscape browser, for the SUN plug-in to work correctly you must type a backslash after the URL (for example: http://192.168.60.45/).

SWCC

SWCC has the capability to log SNMP trap information (error and status events) occurring on the switch into the Windows NT application Event log. To enable this capability, the following parameters must be set on the switch:

- **swEventTrapLevel: (0..5)**—must be set for a severity level from 0 to 5
 - 0 – none
 - 1 – critical
 - 2 – error
 - 3 – warning
 - 4 – informational
 - 5 – debug

NOTE: Additional information is provided in the Compaq *StorageWorks™ Fibre Channel SAN Switch Management Guide*.

- **authTrapsEnabled: (true, t, false, f)**—must be set to “true” or “t” to enable sending of traps

NOTE: This parameter is set to “true” or “t” by default.

These parameters can be set by using the switch Telnet interface along with the `agtcfgSet` Telnet command.

Switch Operating System

- When connected to some Ethernet switches, the Fibre Channel SAN Switches with 100BaseT sometimes fail to connect through Telnet and the user interface. Firmware v2.1.7 and above improves network reliability on networks that have many collisions, but you have to load the firmware into the switch to take advantage of it. If you have problems downloading firmware into the switch, try using a crossover cable directly from the host, that you are loading the firmware from, to the switch.
- With firmware 2.03a, during a Telnet session with a Fibre Channel SAN Switch from a Compaq Tru64 UNIX or OpenVMS machine, the **Backspace**, **Delete**, and **Left Arrow** keys do not work properly. The keyboards shipped with these machines produce a “question mark” character instead of deleting characters when using the **Backspace** key. It is necessary to type **Control + H** to delete characters. The **Delete** key changes the case of the letter at the cursor and prevents you from adding anything to the line. The **Left Arrow** key deletes the character to its left and prevents you from adding anything to the line.

Firmware v2.1.7 and above provides a Telnet command called `backSpace`. `backSpace` without any parameters, returns the current state of the parameter. `backSpace 1` sets the backspace character in the switch to the Delete character. `backSpace 0` sets the Backspace character to Backspace (Control +H). This makes the delete key work on Tru64 UNIX and OpenVMS machines.

- The Fibre Channel SAN Switches are configured with a default IP address 10.77.77.77. This IP address may not be compatible with your configuration. The IP address can be changed by two different methods. One method is using the serial connection. When connecting to the switch using this method, the switch's IP address is not used. Once the serial line is connected, use the command `ipAddrSet` to change the default IP address to an IP address that is suitable for your configuration. The other method to change the IP address is to use the default IP address and an Ethernet connection to the switch. Once the Ethernet is connected to the switch, use the same `ipAddrSet` command to change the IP address.

NOTE: When using the serial port connection, the flow control must be set to None.

Supported Configurations

This release supports cascading of switches. See **Compaq Solutions Kits for supported configurations involving cascading of switches.**

Cables

Optical cables for the Fibre Channel SAN Switches must be ordered separately. 500 meters or less cables should be multi-mode Fibre Channel cables. Cables that are longer than 500 meters should be single-mode. Multi-mode optical cables are connected to shortwave GBIC modules in Fibre Channel SAN Switches. Single-mode optical cables are connected to longwave GBIC modules in the Fibre Channel SAN Switches. Multi-mode cables should use 50/125 optical fibers, SC Duplex connectors with a PC finish. Use of 62.5/125 should be restricted to situations where 62.5/125 optical fiber was previously installed and the link lengths are to be kept shorter than 200 meters. Single-mode cables typically use 9/125 optical fibers for distances up to 10 km.

GBIC Modules

Giga-Bit Interface Converter (GBIC) modules for the Fibre Channel SAN Switches must be ordered separately. The Compaq part number for the shortwave optical GBIC module for multi-mode cable is 380561-B21. Two longwave GBIC modules and a short single-mode test cable can be ordered in a kit (part number 340412-B21).

In the Switch Management Application page of the Web Management Tools, the GBICs are identified differently depending on the type of GBIC and the supplier. Some examples of the displays include “ID” for VIXEL shortwave GBICs and “SW” for IBM shortwave GBICs.

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