StorageWorks by Compaq

Command Console for Hubs, Switches, and Tape Controllers Version 2.7

Getting Started Guide

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About This Guide

Use this guide to install and configure Compaq StorageWorks Command Console (SWCC). This guide is designed to be used as step-by-step instructions for installation and as a reference for operation, troubleshooting, and future upgrades.

> **IMPORTANT:** Some of the software described in this guide may not be in your release. To determine which software is included, see Chapter 1, About StorageWorks Command Console and readme.txt.

Intended Audience

This guide is intended for storage administrators. Before you install SWCC, you should have a basic understanding of the following:

- Your hub, switch, and/or tape controller
- The TCP/IP network
- The Storage Area Network (SAN)

In This Guide

This guide contains the following chapters and appendixes:

Chapter 1 — About StorageWorks Command Console provides a brief overview on the software, its components, and its features. It also provides an installation and configuration table, in addition to information about integrating SWCC with a third-party storage management program.

Chapter 2 — Using the Command Console Client provides information about using the Command Console Client and its components.

Chapter 3 — Installing and Removing the Client provides instructions on how to install the Client software on Microsoft Windows NT (Intel) version 4.0 and Windows 2000. It also provides information on how to remove the Command Console Client.

Chapter 4 — Troubleshooting Connection Problems and the Command Console Client describes troubleshooting information for connection problems and the Command Console Client.

Appendix A — Network Connections for Hubs, Switches, and Tape Controllers describes the network connections for hubs, switches, and tape controllers.

Appendix B — Installing the Hub Management Utilities Software describes the software required for you to manage your Compaq Storage Hub 12.

Appendix C — Installing, Configuring, and Removing the Fibre Channel Interconnect Agent describes how to install, configure, and remove the Fibre Channel Interconnect Agent. This section describes how to add and remove client system entries, in addition to changing the polling interval of the Agent.

Appendix D — Managing Hubs, Switches, and Tape Controllers provides information on managing hubs, switches, and tape controllers by using the Web-based software.

Appendix E — Configuring the Web Browser for the Compaq StorageWorks FC-AL Switch describes how to configure your Web browser so you can view the configuration pages for the Compaq StorageWorks FC-AL Switch.

Text Conventions

This document uses the following conventions to distinguish elements of text:

Keys	Keys appear in boldface. A plus sign (+) between two keys indicates that they should be pressed simultaneously.
USER INPUT	User input appears in a different typeface and in uppercase
FILENAMES	File names appear in uppercase italics.
Menu Options, Command Names, Dialog Box Names	These elements appear in initial capital letters.

COMMANDS, DIRECTORY NAMES, and DRIVE NAMES	These elements appear in upper case. **NOTE:** UNIX commands are case sensitive and will not appear in uppercase.
Type	When you are instructed to *type* information, type the information **without** pressing the **Enter** key.
Enter	When you are instructed to enter information, type the information and then press the **Enter** key.

Online Help

Most of the information about using the Client is provided in the online Help. Online Help is provided in two places:

■ Navigation Window - Provides information on pager notification and a tour of the Command Console Client, in addition to information on how to add a system to the Navigation Tree.

■ Fabric Window - Provides information about adding and removing the fabrics and elements.

Release Notes

The release notes are in several files:

■ Readme.txt - Provides information on software components, installation, and Adobe Acrobat Reader.

■ ccclient.txt - Provides information relating to the Command Console Client, such as the Navigation Tree.

■ fcinter.txt - Provides information relating to the Fibre Channel Interconnect Agent and Fibre Channel Interconnect Client.

Symbols in Text

These symbols may be found in the text of this guide. They have the following meanings.

> **WARNING:** Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.

CAUTION: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

IMPORTANT: Text set off in this manner presents clarifying information or specific instructions.

NOTE: Text set off in this manner presents commentary, sidelights, or interesting points of information.

Symbols on Equipment

These icons may be located on equipment in areas where hazardous conditions may exist.

Any surface or area of the equipment marked with these symbols indicates the presence of electrical shock hazards. Enclosed area contains no operator serviceable parts.

WARNING: To reduce the risk of injury from electrical shock hazards, do not open this enclosure.

Any RJ-45 receptacle marked with these symbols indicates a Network Interface Connection.

WARNING: To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.

Any surface or area of the equipment marked with these symbols indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists.

WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching.
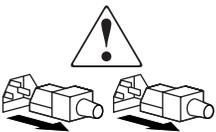
Power Supplies or Systems marked with these symbols indicate the equipment is supplied by multiple sources of power.

WARNING: To reduce the risk of injury from electrical shock, remove all power cords to completely disconnect power from the system.

Any product or assembly marked with these symbols indicates that the component exceeds the recommended weight for one individual to handle safely.

WARNING: To reduce the risk of personal INJURY or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.

Rack Stability

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 installations.

- 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.

Getting Help

If you have a problem and have exhausted the information in this guide, you can get further information and other help in the following locations.

Compaq Technical Support

In North America, call the Compaq Technical Phone Support Center at 1-800-OK-COMPAQ. This service is available 24 hours a day, 7 days a week.

> **NOTE:** For continuous quality improvement, calls may be recorded or monitored.

Outside North America, call the nearest Compaq Technical Support Phone Center. Telephone numbers for world wide Technical Support Centers are listed on the Compaq website. Access the Compaq website by logging on to the Internet at http://www.compaq.com.

Be sure to have the following information available before you call Compaq:

■ Technical support registration number (if applicable)

■ Product serial numbers

■ Product model names and numbers

■ Applicable error messages

■ Add-on boards or hardware

■ Third-party hardware or software

■ Operating system type and revision level

■ Detailed, specific questions

Compaq Website

The Compaq website has latest information on this product as well as the latest drivers. You can access the Compaq website by logging on to the Internet at http://www.compaq.com/storage.

Compaq Authorized Reseller

For the name of your nearest Compaq Authorized Reseller:

■ In the United States, call 1-800-345-1518.

■ In Canada, call 1-800-263-5868.

■ Elsewhere, see the Compaq website for locations and telephone numbers.

Chapter **1**

About StorageWorks Command Console

This chapter includes:

■ Installation and Configuration Overview Table

■ SWCC Overview

■ Components of SWCC

■ Using SWCC with a Third-Party Storage Management Program

Table 1–1: Installation and Configuration Overview

Step	Procedure
1	Verify that the hardware is configured properly. Refer to your hardware documentation.
2	Verify that the hardware is connected to a TCP/IP network. See Appendix A, Network Connections for Hubs, Switches, and Tape Controllers.
3	To understand SWCC, read Chapter 1, About StorageWorks Command Console and Chapter 2, Using the Command Console Client.

Table 1–1: Installation and Configuration Overview (Continued)

Step	Procedure
4	If you have a Compaq Storage Hub 12, install the HMU software on the same client system you plan to install the Command Console Client and Fibre Channel Interconnect Client. See Appendix B, Installing the Hub Management Utilities Software. The HMU software can be ordered from Compaq.
5	Install the Command Console Client and the Fibre Channel Interconnect Client. See Chapter 3, Installing and Removing the Client.
6	Install the Fibre Channel Interconnect Agent. See Appendix C, Installing, Configuring, and Removing the Fibre Channel Interconnect Agent.
7	Add the name of the client system to the Agent's list of client system entries. See Appendix C, Installing, Configuring, and Removing the Fibre Channel Interconnect Agent.
8	Add the name of the agent system to the Navigation Tree of each client system. For more information, refer to the Command Console Client Help.
9	Add fabrics and elements to the Fabric Page and/or to the Fabric Window. For information about the Fabric Window, see Appendix D, Managing Hubs, Switches, and Tape Controllers and the online Help in the Fabric Window. For more information about the Fabric Page, see Appendix D, Managing Hubs, Switches, and Tape Controllers and the Fabric Page's online Help.
10	For troubleshooting information, see Chapter 4, Troubleshooting Connection Problems and the Command Console Client and Appendix E, Configuring the Web Browser for the Compaq StorageWorks FC-AL Switch.
11	To receive pager notification, add the agent system to the Navigation Tree and set up pager notification. For information on pager notification, see Setting Up Pager Notification in Chapter 2.

SWCC Overview

To monitor and configure your hubs, switches, and/or tape controllers, you can:

- Use the Web-based software that is installed with the Fibre Channel Interconnect Agent for managing switches and tape controllers (http://youragentsystem:2301)

- Use the Windows-based Client software (*Start > Programs > Command Console > StorageWorks Command Console*) for hubs, switches, and tape controllers

You can set up pager notification in the Navigation Window to page you when a problem occurs. When you are away from your office, you can learn about the details of a problem with the hub, switch, or tape controller from any computer that has the following:

■ A supported Web browser

■ Network access to the computer running the Agent software

■ For more information on pager notification, see Chapter 2, Using the Command Console Client.

■ Figure 1–1, A brief overview of the software provides a graphical view of the connections for the software.
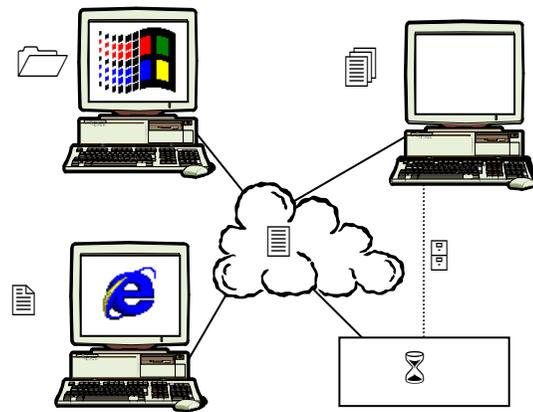
SHR-1540

Figure 1–1: A brief overview of the software

❶ Computer running the Windows-based software (client system)

❷ Computer using a browser to access multiple tape controllers

❸ TCP/IP network connection

❹ Computer running the Agent software

❺ Fibre cable (Optional)

❻ Tape controller

Components of SWCC

In this release, SWCC includes: the Command Console Client, the Fibre Channel Interconnect Client, and the Fibre Channel Interconnect Agent. If you are planning to use SWCC to manage your hub, you must install the Compaq Storage Hub 12 Management Utilities.

> **NOTE:** SWCC does not support the dynamic host configuration protocol (DHCP) or the Windows Internet Name Service (WINS); however, you can still use these protocols on systems that do not run Command Console.

	Table 1–2: Components of StorageWorks Command Console	
Software	**Operating System**	**Components**
Command Console Client	Windows-based	AES, Pager Notification, Navigation Tree, and Navigation Window
Fibre Channel Interconnect Client	Windows-based	Fabric Window, configuration windows for hubs, switches, and tape controllers.
Hub Management Utilities (HMU) (Purchased separately)	Windows-based (Intel), add-in to Fibre Channel Interconnect Client	Configuration software for the Compaq Storage Hub 12.
Fibre Channel Interconnect Agent (SAN Interconnect Management)	Windows 2000 and Windows NT (Intel) 4.0 with Service Pack 4 or later	Agent service, Agent configuration utility, and pages that allow you to view the status of your fabrics.

About the Command Console Client

The Command Console Client provides the Navigation Window you see when you click *Start* > *Programs* > *Command Console* > *StorageWorks Command Console*. The Command Console Client contains the following:

- Navigation Tree
- Navigation Window
- Asynchronous Event Service
- Pager Notification

About the Fibre Channel Interconnect Client

The Fibre Channel Interconnect Client works with the Command Console Client to provide information about your subsystems. The Fibre Channel Interconnect Client provides a Fabric Window, which displays detailed information on a particular fabric.

About the Fibre Channel Interconnect Agent

The Fibre Channel Interconnect Agent:

■ Obtains the status of the hubs, switches, and tape controllers

■ Passes the status of the hubs, switches, and tape controllers to the Fabric Page

■ Passes the status of the hubs, switches, and tape controllers to the Navigation Tree

For more information on the Fabric Page, see Appendix D, Managing Hubs, Switches, and Tape Controllers.

About the Compaq Storage Hub 12 Management Utilities (Intel Only)

If you want to use SWCC to manage your Compaq Storage Hub 12, you must install the Storage Hub 12 Management Utilities (HMU) on the same client system you plan to install the Command Console Client and the Fibre Channel Interconnect Client. This software allows you to manage your hubs from your client system.

For the HMU software to work, you must insert the Compaq Storage Hub 12 Management Module (HMM) into a slave Storage Hub 12 and configure the HMM. When the HMM is inserted into a slave hub, the hub becomes the master hub. HMM provides TCP/IP network connectivity to SWCC.

NOTE: For more information on the HMU software, see Appendix B, Installing the Hub Management Utilities Software.

Using SWCC with a Third-Party Storage Management Program

You can use SWCC with a third-party storage management program by adding the name of the computer that has the third-party storage management program to the Agent's list of client system entries. The Agent sends SNMP traps to client systems that are on its list of client system entries. For more information on how to add client systems, see Appendix B, Installing the Hub Management Utilities Software.

> **NOTE:** Depending on your third-party software, you may need to complete additional steps. Refer to the documentation that came with your third-party storage management program.

Chapter **2**

Using the Command Console Client

This chapter includes the following:

■ Using the Navigation Tree

■ About the Asynchronous Event Service

■ Setting Up Pager Notification

For a complete list of hardware that SWCC supports, refer to the software product description (SPD) on the StorageWorks Command Console website:

> http://www.compaq.com/products/storageworks/Storage-Management-Software/
> command_console.html

The features of Command Console differ according to your software release. For example, SWCC for an HS-Series controller provides a Storage Window, while SWCC for a Fibre Channel switch provides a Fabric Page.

To determine which software is offered in your release, refer to the readme.txt file that is on the SWCC CD-ROM or if you downloaded the software from the website, refer to the readme.txt file on the website.

Using the Navigation Tree

The Navigation Window provides the Navigation Tree. The Navigation Tree provides a way for you to view the status of all your storage at once, as shown in Figure 2–1. It also lets you manage your subsystem over a network. Some of the items shown in the Navigation Tree may not represent the software in your release.
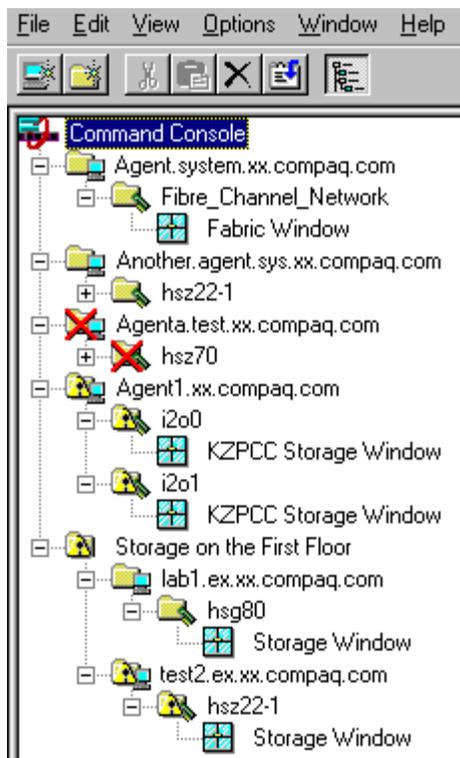
Figure 2–1: An example of the Navigation Tree

Managing Storage Subsystems from the Navigation Tree

You can manage a storage subsystem from the Navigation Tree by double-checking the subsystem's management window, ⊞ icon. The name of this management window will change according to your software release. It may be called a Storage Window, a Fabric Window, or a Web page. The following steps tell you how to access a subsystem's management window:

1. Double-click the folder for the storage subsystem. An icon appears underneath the folder.

    NOTE: If you have two KZPCC controllers connected to the agent system and you have installed the KZPCC Client and KZPCC Agent, you may see two icons.

2. Double-click the subsystem's management window, ⊞ icon,. Depending on your software release, one of the following will appear:

    ❏ A Storage Window or Fabric Window – The window's name varies according to your release.

    ❏ A Web page – The page's name varies according to your release.

    ❏ A CLI Window – It applies to only HS-Series controllers. It provides a command line interface that allows you to change the configuration of your subsystem.

Organizing Your Storage in the Navigation Tree

After you have added systems to the Navigation Tree, you can use folders to organize your storage, as follows:

■ You can place folders under the Command Console root or under another general folder in the Navigation Window.

■ You can use folders to group systems and other general folders, but they cannot be used to group controllers.

For example, in Figure 2–1, the general folder *Storage on the First floor* was created and two agent systems were placed in the folder. If one of the systems in the folder is at a critical state, the status of the folder displays the same critical state.

    NOTE: For a description of the Navigation Window, refer to the "Quick Tour" in the introduction of the Command Console Client Help.

About the Asynchronous Event Service

The Asynchronous Event Service (AES) is a component of the Command Console Client. AES does the following:

■ Runs in the background as a service that provides status updates of the subsystems to its client system. For a client system to receive updates, it needs to be running AES.

■ Passes the trap (message) to the Navigation Tree. The Navigation Tree, in turn, passes the trap to the appropriate Storage Window or Fabric Window. When a trap provides information about a status change in a subsystem, one or more of the icons in the Navigation Tree change color.

■ Sends traps to pagers. To activate this feature, you must predefine each pager number in the *User Profile* section of the Event Notification menu in the Navigation Window.

> **NOTE:** Refer to Command Console's Help for the latest information on how to diagnose problems that could occur when sending pages. Help provides instructions on how to put AES into a debug mode.

You can change whether AES starts at boot time. You can also stop or start AES manually. However, you need AES running to receive pages notifying you of faults and to provide updates to the Navigation Tree, Storage Windows, Fabric Windows, and Event Viewer. When you stop AES, you are telling the Client software to stop the following:

■ Providing updates to the Navigation Tree, Storage Windows, and Fabric Windows.

■ Displaying updates obtained from the Asynchronous Event Service in the Application Log of the Event Viewer.

■ Paging when a fault occurs.

Stopping or Starting AES:

From Windows NT

To stop or start AES manually:

1. Double-click *Services* in *Start > Settings > Control Panel*.

2. Click the *AsyncEventSvc* entry.

3. Click *Stop* or *Start*, then click *Close*.

To disable the automatic start of AES when your system boots, change the startup option to manual in the Services window, as described below:

1. Double-click *Services* in *Start > Settings > Control Panel*.

2. Double-click the *AsyncEventSvc* entry. The Service window appears.

3. Select *Manual* under Startup Type, and click *OK*.

From Windows 2000

To stop or start AES manually:

1. Click *Start > Settings > Control Panel > Administrative Tools > Component Services*.

2. Under Console Root, select *Services (Local)*.

3. Under Services (Local), right-click *AsyncEventSvc*.

4. Click *Stop* or *Start*.

To disable the automatic start of AES when your system boots, change the startup option to manual, as described below:

1. Click *Start > Settings > Control Panel > Administrative Tools > Component Services*.

2. Under Console Root, select *Services (Local)*.

3. Under Services (Local), right-click *AsyncEventSvc*.

4. From the drop-down menu, select *Properties*. The AsyncEventSvc Properties (Local Computer) window appears.

5. Under the General tab, select *Manual* from the Startup Type drop-down menu.

6. Click *OK*.

Setting Up Pager Notification

You can set up Command Console to notify you by pager when a critical event occurs. This feature works with alphanumeric and numeric pagers. You can configure this feature so it sends pages to numerous people at different times.

For example, if several people monitor the network in shifts, you can configure this feature so the software only pages the person currently working.

To receive pages, the following must occur:

- The Asynchronous Event Service (AES) must be running on the client system on which you set up the pager notification.

- The Agent must be running.

- The client system must be added to the Agent's list of client system entries.

- In the Agent's list of client system entries, you must select the TCP/IP notification scheme for your client system.

- The agent system must be added to the Navigation Tree of the client system on which you set up pager notification.

    NOTE: Pager notification uses the Telocator Alphanumeric Protocol (TAP) adopted in 1988 by the Personal Communications Industry Association (PCIA). Verify your paging company uses this protocol.

Table 2–1: Setting Up Pager Notification

Step	Description
1	Numeric Pagers only - Assign pager codes to host systems and controllers. See Setting Up Pager Codes.
2	Set up user profiles. See Setting Up User Profiles.
3	Set up notification lists. See Setting Up Notification Lists.
4	Set up modem and polling intervals. See Setting Up Modem and Polling Preferences.
5	Associate systems and controllers with notification list. See Associating Systems and Subsystems with Notification Lists.
6	For information on troubleshooting pager notification, refer to the Command Console Client online Help.

Setting Up Pager Codes

Numeric pager support lets you receive notification about critical events. A numeric pager usually has three fields separated by hyphens. The first field signifies the area code, the second field signifies the exchange, and the third field signifies the four-digit extension. When you receive a page from Command Console, the first field signifies a three-digit number for the host system, the second field is a three-digit number for the subsystem, and the last field is a four-digit code for the critical event.

Set up pager codes by assigning a three-digit code for each host system. Then assign another three-digit code for each subsystem controller connected to that host. The last four digits are pre-assigned (but you can change them).

Assigning a Pager Code to a Host System

1. Click a host system in the Navigation Window.

2. Click *File* > *Properties*.

3. Click the Event Notification tab.

4. Enter a three-digit number in the Pager identification number field. Avoid entering a number that could be mistaken for an area code.

Assigning a Pager Code to a Subsystem

1. Click a subsystem controller in the Navigation Window.

2. Click *File* > *Properties*.

3. Click the Event Notification tab.

4. Enter a three-digit number in the Pager identification number field.

Viewing or Changing a Pager Code for a Critical Event

1. Click *Options* > *Event Notification* > *Pager Codes*.

2. Click the code you want to edit, then click *Edit*.

3. Type the new pager code in the edit field.

Table 2–2: Pager Codes

*Critical Event	Code	Notes
Disk Fault	1000	Physical device failure
Power Supply Fault	1002	
Fan Fault	1003	
Battery Fault	1004	
Temperature Fault	1005	
Controller Fault	1006	The controller has detected an internal fault

Table 2–2: Pager Codes (Continued)

*Critical Event	Code	Notes
Communication Fault	1007	Agent cannot talk to the subsystem.
Other Controller Fault	1008	One controller is reporting a fault on the other.
External Fault	1009	
LUN Fault	1010	Virtual disk failure

NOTE: *Some of the critical events listed may not apply to your hardware. System codes, subsystem controller codes, and event codes are numeric-only codes. Alphanumeric pager codes are not supported.

Setting Up User Profiles

1. Click *Options* > *Event Notification* > *User Profiles*.

2. Click New.

3. Enter a name. If you want, you can also enter a description.

4. Click the Pager tab.

5. Select Enabled.

6. Enter the phone number for your pager in the pager number field.

7. Select Alphanumeric for alphanumeric paging.

8. Enter the pager identification number (required for alphanumeric pagers). If your numeric pager does not require a pager identification number (PIN), leave this field blank. For example: This field must be left blank for numeric pagers that are assigned their own unique telephone number.

9. Enter the start and end times in HH:MM, 24-hour format. For example: 08:00 as start, and 17:00 as end. Leave both fields set to 00:00 if you want to be notified 24 hours a day.

Keep the following in mind:

■ If you need to dial a code to access an outside number, the code must precede the phone number in the pager number field.

■ Do not use commas with alphanumeric pagers, except if required to access an outside line.

■ If you are configuring an alphanumeric pager, you must supply the paging service provider's TAP service modem number in the pager number field.

■ When you enter a numeric pager number, you can optionally use one or more commas to specify a two-second wait interval. Each comma causes the pager dialer to wait two seconds before sending the pager identification number to the paging company. You may need to add additional commas by using the trial and error method so that Command Console will pause long enough for the pager company greetings to complete.

■ Not every paging company requires a pager identification number. If your pager is assigned a unique phone number to call the paging company, do not enter a pager identification number.

■ Alphanumeric pagers require a pager identification number.

■ Refer to your pager documentation to determine which special characters are supported.
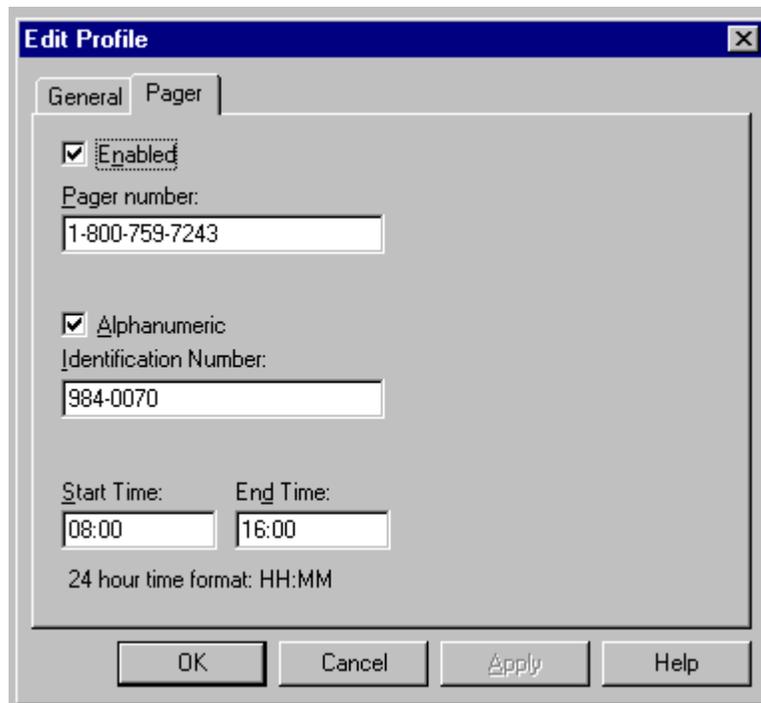
Figure 2–2: Sample user profile – alphanumeric paging
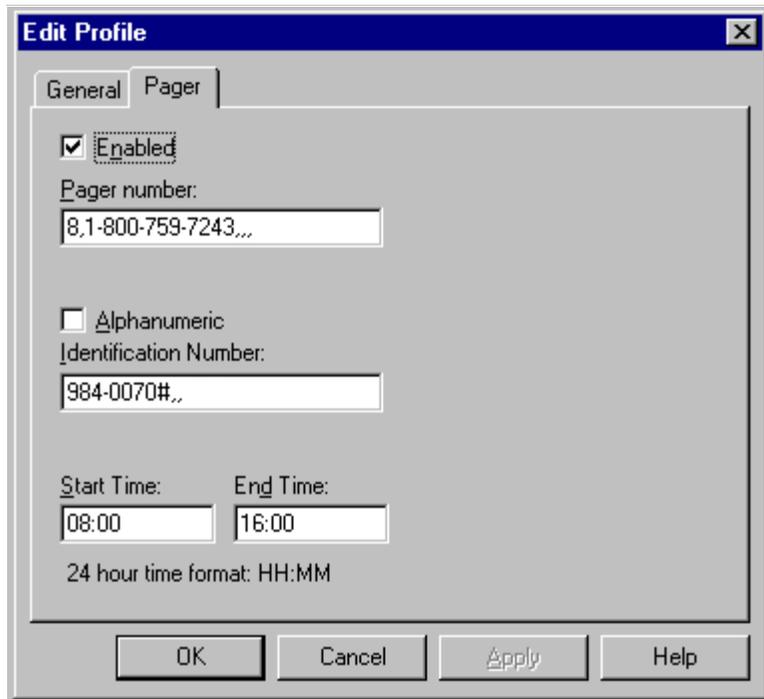
Figure 2–3: Sample user profile – numeric paging

NOTE: The commas in represent two-second wait intervals.

Setting Up Notification Lists

1. Click *Options > Event Notification > Notification List*.

2. Click *New* and enter a name for the new notification list.

3. Write a brief description of the list (optional).

4. Add members to the list by clicking the check box next to each name.

   NOTE: Use notification lists to notify groups of people of critical events. You cannot add a user to a list until a user profile has been created for the user. Be sure you have created the user profiles first before creating a notification list. Use the property pages to associate notification lists with systems and subsystem critical events.

Setting Up Modem and Polling Preferences

1. Click *Options* > *Preferences*.

2. Enter the number of hours or minutes in the subsystem polling interval field.

3. Select the COM port that your modem uses in your computer.

4. For alphanumeric pagers select the baud rate of your paging service provider's TAP modem. This is typically 1200 baud.

   NOTE: The subsystem-polling interval is the frequency at which the Client pings an Agent to determine if the Agent is running.

   NOTE: The default-polling interval is 30 minutes.

   NOTE: If Command Console loses a connection to an Agent, an X will appear on the system folder in the Navigation Window and Command Console will immediately send a communication loss message.

Associating Systems and Subsystems with Notification Lists

To associate a host system or a subsystem with a notification list for the purpose of paging a group of people when a critical event occurs:

1. Click a host system or a subsystem in the Navigation Window.

2. Click *File* > *Properties*.

3. Click the Event Notification tab.

4. Select a notification list from the drop-down menu.

   NOTE: You must first create a notification list before you can associate a system or controller with a notification list.

Chapter **3**

Installing and Removing the Client

This chapter contains information about installing the Client, troubleshooting the Client installation, and removing the Command Console Client.

Installing the Client

Depending on your software release, you can install the Client from a CD-ROM or from a file downloaded from the Compaq StorageWorks website. The readme.txt file provides guidance on which way is suitable.

Before You Install the Client

1. Verify that you are logged into an account that is a member of the administrator group.

2. Check the SPD on the Compaq StorageWorks website for a list of supported hardware. For the URL, see Chapter 2, Using the Command Console Client.

3. Verify that you have the SNMP service installed on your computer. You must have SNMP installed on your computer for this software to work properly. The Client software uses SNMP to receive traps from the Agent. The SNMP service is available on your Windows NT or Windows 2000 installation CD-ROM. To verify that you have the SNMP service:

   ❑ For Windows NT, double-click *Services* in *Start > Settings > Control Panel*. The entry for SNMP is shown in this window. If you install the SNMP service and you already have a Windows NT service pack on your computer, reinstall the service pack after installing the SNMP service.

   ❑ For Windows 2000, click *Start > Settings > Control Panel > Administrative Tools > Component Services*. The entry for SNMP is shown in the Component Services window.

4. Read the release notes in the ccclient.txt file for the Command Console Client.

5. Read the release notes for your device-specific Client. The readme.txt file will have information on where you can find the release notes for the device-specific Client.

6. Read section Troubleshooting the Client Installation, in this chapter.

7. If you have the Command Console Client open, exit the Command Console Client.

8. If you have Command Console Client version 1.1b or earlier, remove the program by going into *Add/Remove Programs*.

9. If you have a previous version of Command Console, you can save your Navigation Tree configuration by copying the swcc2.mdb file to another directory. After you have installed the product, move swcc2.mdb to the directory to which you installed SWCC.

10. During the installation you will be given the option to install certain components. To determine which software is required, refer to the readme.txt file.

Installing from the SWCC CD-ROM

1. Insert the CD-ROM into a computer running Windows 2000 or Windows NT 4.0 (Intel) with Service Pack 4 or later.

2. Using Microsoft Windows Explorer, go to the top-level directory on the CD-ROM, and double-click setup.exe.

3. Select the required Client components and click *Next*. To determine which software is required, refer to readme.txt.

4. Follow the instructions on the screen. After you install the software, the Asynchronous Event Service (AES) starts.

For more information on AES, see section About the Asynchronous Event Service, in Chapter 2.

5. For information on how to install the Agent, see Appendix B, Installing the Hub Management Utilities Software.

Installing from the StorageWorks Website

This procedure assumes you have downloaded the file that contains the Client from the StorageWorks website to a computer running Windows 2000 or Windows NT 4.0 (Intel) with Service Pack 4 or later:

1. Open Windows Explorer and double-click the file you downloaded.

The file self-extracts.

2. Go to the top-level directory created from the self-extracted zip file and double-click setup.exe.

3. Select the required Client components and click *Next*. To determine which software is required, refer to readme.txt.

4. Follow the instructions on the screen. After you install the software, the Asynchronous Event Service (AES) starts.

For more information on AES, see section About the Asynchronous Event Service, in Chapter 2.

5. For information on how to install the Agent, see Appendix B, Installing the Hub Management Utilities Software.

Troubleshooting the Client Installation

This section provides the following information on how to resolve some of the problems that may appear when you install the Client software:

■ Invalid Network Port Assignments During Installation

■ "There is no disk in the drive" Message

Invalid Network Port Assignments During Installation

SWCC Clients and Agents communicate by using sockets. The SWCC installation attempts to add entries into each system list of services (services file or for UCX, the local services database). If the SWCC installation finds an entry in the local services file with the same name as the one it wants to add, it assumes the one in the file is correct.

The SWCC installation may display a message, stating that it cannot upgrade the services file. This happens if it finds an entry in the local services file with the same number as the one it wants to add, but with a different name. In that case, appropriate port numbers must be obtained for the network and added manually to the services file.

There are two default port numbers, one for Command Console (4998) and the other for the device-specific Agent and Client software, such as the Fibre Channel Interconnect Client and Agent (4989). There are two exceptions. The following software has two default port numbers:

■ The KZPCC Agent and Client, (4991 and 4985)

■ The RA200 Agent and Client, (4997 and 4995)

If the Network Information Services (NIS) are being used to provide named port lookup services, contact the network administrator to add the correct ports.

The following shows how the network port assignments appear in the services file:

spgui	4998/tcp	#Command Console
ccdevmgt	4993/tcp	#Device Management Client and Agent
kzpccconnectport	4991/tcp	#KZPCC Client and Agent
kzpccdiscoveryport	4985/tcp	#KZPCC Client and Agent
ccfabric	4989/tcp	#Fibre Channel Interconnect Agent
spagent	4999/tcp	#HS-Series Client and Agent
spagent3	4994/tcp	#HSZ22 Client and Agent
ccagent	4997/tcp	#RA200 Client and Agent
spagent2	4995/tcp	#RA200 Client and Agent

"There is no disk in the drive" Message

When you install the Command Console Client, the software checks the shortcuts on the desktop and in the Start menu. The installation will check the shortcuts of all users for that computer, even if they are not currently logged on. You may receive an error message if any of these shortcuts point to empty floppy drives, empty CD-ROM drives, or missing removable disks. Do one of the following:

■ Ignore the error message by clicking *Ignore*.

■ Replace the removable disks, and place a disk in the floppy drive and a CD-ROM in the CD-ROM drive. Then click *Retry*.

Removing the Command Console Client

Before you remove the Command Console Client from your computer, remove AES. This will prevent the system from reporting that a service failed to start every time the system is booted. Steps 2 through 5 tell you how to remove the Command Console Client.

> **NOTE:** When you remove the Command Console Client, the swcc2.mdb file is deleted. This file contains the Navigation Tree configuration. If you want to save this information, move the file to another directory.

1. Click *Start* > *Programs* > *Command Prompt* and change to the directory to which you installed the Command Console Client.

2. Enter the following command:

   C:\Program Files\Compaq\SWCC> **AsyncEventService -remove**

3. Do one of the following:

   ❑ On Windows NT 4.0, click *Start* > *Settings* > *Control Panel*, and then double-click the *Add/Remove Programs* icon in the Control Panel. The Add/Remove Program Properties window appears.

   ❑ On Windows 2000, click *Start* > *Settings* > *Control Panel* > *Add/Remove Programs*. The Add/Remove Program window appears.

4. Select *Command Console* located in the window.

5. Do one of the following:

   ❑ On Windows NT 4.0, click *Add/Remove*.

   ❑ On Windows 2000, click *Change/Remove*.

6. Follow the instructions on the screen.

> **NOTE:** This procedure removes only the Command Console Client. You can remove a device-specific Client (such as the KZPCC Client) by using the Add/Remove program.

Chapter **4**

Troubleshooting Connection Problems and the Command Console Client

This chapter provides general usage notes for troubleshooting connection problems and the Command Console Client.

Troubleshooting the Command Console Client

■ Authorization Error When Adding an Agent System

■ Increasing Screen Space for the Fabric Windows and Storage Windows

■ Invalid or Missing Fault Displays and Event Logs

■ Pager Notification and Event Logging Continues After Exiting the Command Console Client

■ Some Graphics Do Not Scale Well with Large Fonts

■ Starting Client from the Command Prompt

Authorization Error When Adding an Agent System

If you receive an authorization error when you add an agent system to the Navigation Tree, your client system may be missing from the Agent's list of client system entries. If you have more than one type of Agent installed on that agent system, the name of your client system must be on each Agent's list of client system entries.

Increasing Screen Space for the Fabric Windows and Storage Windows

Run the Client on a monitor that has a minimum super VGA (SVGA) (800X600) display resolution. The Fabric Windows and Storage Windows require a certain amount of screen space to properly display their contents. When you use a VGA display resolution, screen space becomes more limited. If you must use a VGA resolution, select the *Auto Hide* check box in the Taskbar Properties window to increase screen space for the Fabric Windows and Storage Windows.

Invalid or Missing Fault Displays and Event Logs

Invalid or lost notifications may occur when the client system's connection with a subsystem is broken. The client system receives notification for most changing subsystem faults at monitored intervals. This means that if the client system is no longer notified of subsystem faults, then changes to that subsystem will not be displayed in the client system's Navigation Tree, Storage Window (if applicable), Fabric Window (if applicable), and Event Viewer.

For example, while client system's connection with a subsystem is broken, you will not receive event logs pertaining to that subsystem, except to notify you that the connection is severed.

The following list provides the reasons for broken connections. After you have fixed the physical and/or software problem that is listed below, you will need to close and reopen the Storage Window pertaining to that subsystem to obtain its latest status.

■ RAS connections - Remote Access Service (RAS) connections are not full time. When there is no RAS connection, events are not logged to the Application Log of Event Viewer.

■ Serial controller connections - There may be a bad or missing serial cable. To repair this situation, replace or plug in the cable.

■ Network connections - Agent may be missing or not running.

■ Network connections - There may be network discontinuity.

■ The Agent may not be properly configured for a client system.

■ If your setup includes a controller, the controller may have halted, reset or hung. To repair the situation, restart or replace the controller.

■ If your setup includes virtual disks, the virtual disk being used for communicating with the subsystem is no longer available.

Pager Notification Continues After Exiting the Command Console Client

You may have noticed continuous pager notification in response to subsystem faults, even though you have exited Command Console Client. This behavior is normal.

AES runs under Windows NT and Windows 2000 as a service. It continues to run even after you have exited the Command Console Client. AES communicates with Agents, and activates paging when a subsystem event occurs.

To stop pager notification, stop AES. For information on how to stop AES, see section About the Asynchronous Event Service, in Chapter 2.

Some Graphics Do Not Scale Well with Large Fonts

Display small fonts when using Client. Some of the graphics do not scale as well when large fonts are used.

Starting Client from the Command Prompt

To start the Client with network connections from the command prompt, enter the following at the command prompt on the client system:

\path_to_client_directory\swcc.exe -d your_host_system your_host_subsystem

where -d *your_host_system your_host_subsystem* is an optional set of parameters that enables you to specify a system and a subsystem to start Client.

For example:

C:\>\Program Files\Compaq\SWCC\swcc.exe –d hostsystem subsystem

If you specify these parameters, Client opens with the system selected and the subsystem displayed in the Storage Window, in the Fabric Window, or in a Web browser. If Client is not already aware of the system and the subsystem, it adds them to the Navigation Tree.

Troubleshooting Connection Problems

SWCC is a TCP/IP socket-based application. As a result, SWCC requires that each node running a SWCC Client or Agent must have access to a valid hosts file or Domain Name Service (DNS) server. The valid hosts file must include at least the system itself and any other systems running a SWCC Client or Agent that it will connect to.

> **IMPORTANT:** SWCC does not support the dynamic host configuration protocol (DHCP) or the Windows Internet Name Service (WINS); however, you can still use these protocols on systems that do not run Command Console. To determine whether you system is using DHCP or WINS on Windows 2000 or Windows NT 4.0:
> Right-click Network Neighborhood on the desktop.
> Select *Properties*.
> Click the Protocols tab.
> Select TCP/IP, then click *Properties*. You see the Microsoft TCP/IP Properties window.

This section includes the following topics:

■ "Access Denied" Message

■ Adding New System by Using Internet Protocol Address May Cause Client to Stop Responding

■ "No Agent Running" Message When Adding System to the Navigation Tree

>   **NOTE:** First verify that your network is running.

>   **NOTE:** For Windows NT or Windows 2000, run netstat at the command prompt on the Agent and check the TCP/IP active connections.

>   **NOTE:** For UNIX, run netstat with the correct options (Reference *netstat man* pages in UNIX help information).

>   **NOTE:** For other operating systems, refer to the operating system documentation.

"Access Denied" Message

This section covers some of the most common reasons for a Client to receive an "Access Denied" message when it attempts to add an agent system to the Navigation Tree.

Aliases Not Checked

When SWCC Agents scan the Client authorization list, they do not check aliases. The entry in the Client authorization list must match that returned by a gethostbyaddr call in the hostent h_name field. SWCC will not scan the hostent alias list to verify if an alias may match the Client authorization list.

Client System Not on Agent's List

The client system may not be on the authorized client system list for the Agent. To verify that the client system is included, view the list of client system entries in the Agent Configuration utility.

Entry in the Client Authorization List Does Not Match

You may see an "access denied" message if the name of the client system that you entered in the Agent configuration utility does not match that for DNS or in the agent system's hosts file. The hosts file on Windows NT and Windows 2000 is at \winnt\system32\drivers\etc.

Your system may be configured to do one the following:

■ Check its local hosts file first, then go to DNS. (most common setup for Windows NT and Windows 2000)

■ Go to DNS first, then check its local hosts file.

■ Ignore DNS even if configured.

■ Ignore the local hosts file.

To determine how your system is configured (Windows NT and Windows 2000):

1. Right-click Network Neighborhood on the desktop.

2. Select *Properties*.

3. Click the Protocols tab.

4. Select TCP/IP, then click *Properties*. You see the Microsoft TCP/IP Properties window.

5. Click the WINS Address tab. If your computer uses DNS, the option, *Enable DNS for Windows resolution*, is selected. You do not need the option, *Enable LMHOSTS Lookup*, selected. If WINS servers are available on the network, LMHOST file can be used. SWCC does not support WINS.

6. To determine the IP address of the system, click the IP Address tab in the Microsoft TCP/IP Properties window.

7. To determine the full name of the system, click the DNS tab.

Multiple Agents

If the agent system is running multiple SWCC Agents (for example, to support different controller types) then the client system must be authorized for all Agents. If the client system is missing from any authorized Client list of an Agent, then that Agent cannot be added to the Navigation Tree.

Adding New System by Using Internet Protocol Address
May Cause Client to Stop Responding

The SWCC Client may stop responding when you attempt to add a system by using the agent system's IP address rather than the agent system's node name. This occurs when the client system does not have a DNS server configured that knows the agent system, and the agent system is not in the client system's hosts file. To correct this situation, add the agent system to the hosts file on the client system.

If you receive an "Invalid host" or "Host not known" message when you attempt to connect to an agent system, do not enter the IP address. Correct your DNS server configuration. If it is correct, confirm the DNS server knows the agent system. If you are not using DNS, verify the agent system is in the client system's hosts file.

"No Agent Running" Message When Adding System to the Navigation Tree

When trying to add a new system to the Navigation Tree, you may see a message, stating "No Agent running on specified system." This message can appear for several reasons. The error most likely occurred as a result of one of the following:

■ The wrong system name was entered.

■ The Agent was not installed on the entered system.

■ The Agent was installed on a system that stopped functioning.

■ Port names and numbers in the services file may be missing or may not match between Client and Agent. This may occur if the default value for an SWCC port was already in use.

■   The specific Client required to support an Agent was not installed. For example, if the agent system only has a KZPCC Agent and the client system has only an HSZ22 Client, the "No Agent Running" message will appear.

To verify that Client support for an Agent had been installed, look at the following registry key:

HKEY_LOCAL_MACHINE\Software\DigitalEquipmentCorporation\
Command Console\AppletManager

You should see a series of keys for supported products.

Appendix **A**

Network Connections for Hubs, Switches, and Tape Controllers

This appendix provides an overview on connecting your hardware to use Command Console to manage your hubs, switches, and/or tape controllers over the network. You need a TCP/IP network connection to link the Fibre Channel Interconnect Client to your Agent through the network.

IMPORTANT: SWCC does not support the dynamic host configuration protocol (DHCP) or the Windows Internet Name Service (WINS); however, you can still use these protocols on systems that do not run Command Console. To determine whether you system is using DHCP or WINS on Windows 2000 or Windows NT 4.0:

Right-click Network Neighborhood on the desktop.

Select *Properties*.

Click the Protocols tab.

Select TCP/IP, then click *Properties*. You see the Microsoft TCP/IP Properties window.

Network Connection with a Switch

A switch with an Ethernet connection to a TCP/IP network can be used to manage other switches that are connected to it by Fibre Channel cable.
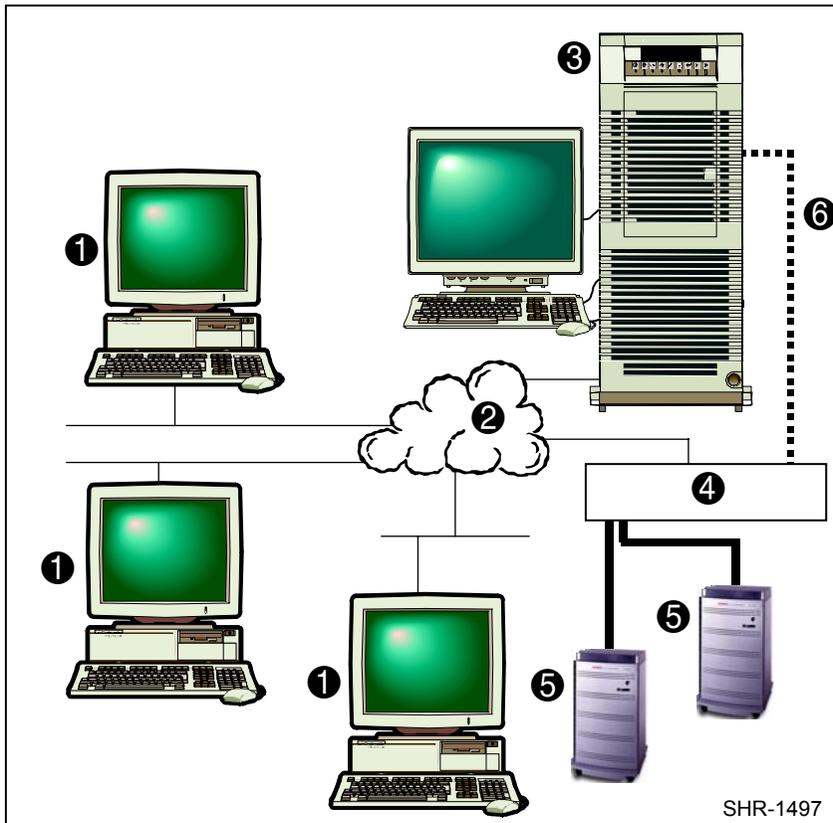

SHR-1497

Figure A–1: An example of a network connection with a switch

❶   Client system, which must be TCP/IP network-accessible to the agent system.

❷   TCP/IP Network.

❸ Agent system with a terminal. It must be TCP/IP network-accessible to the client systems. It must have access to the hubs, switches, and/or tape controllers through a TCP/IP network. It can be a part of the SAN (Storage Area Network).

❹ It is a switch.

❺ Hardware connected by Fibre Channel cables to the switch.

For a network connection, the SAN switch needs to be on the same TCP/IP network as the agent system.

❻ Fibre Channel cable (optional).
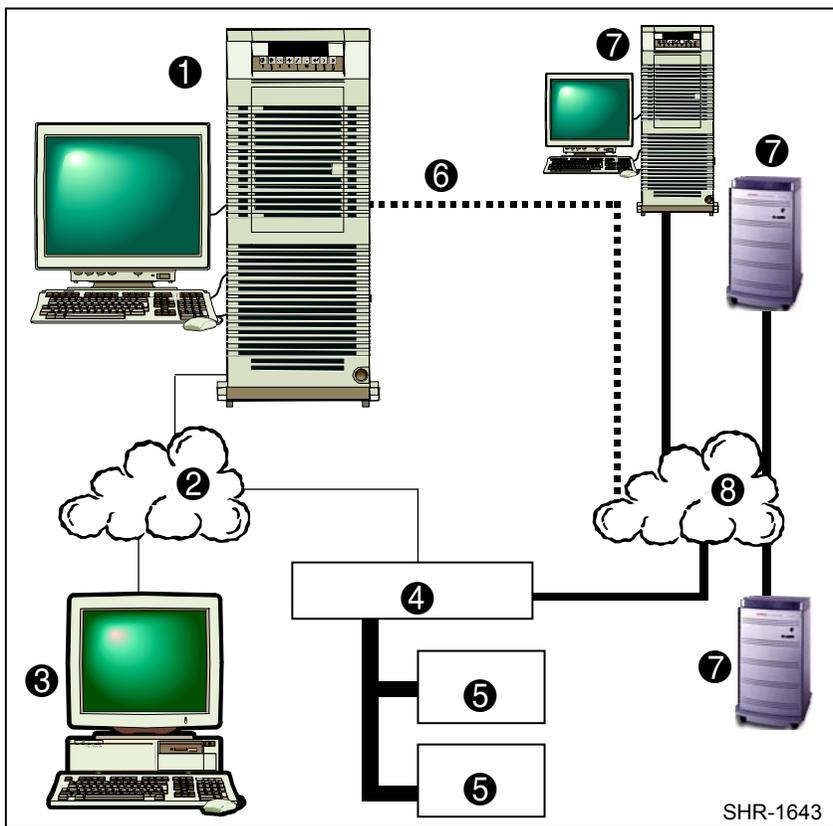
Network Connection with a Tape Controller

Figure A–2: An example of a network connection with a tape controller

❶ Agent system (server) with a monitor
and keyboard. It must be TCP/IP
network-accessible to the client
systems and the tape controller. It can
be a part of the SAN.

❷ TCP/IP network.

❸ Client system, which must be TCP/IP network-accessible to the agent system.

❹ Tape controller that is connected to the agent system (host) by a TCP/IP network.

❺ Tape libraries and/or tape drives.

❻ Fibre Channel cable (optional for the agent system).

❼ Hardware connected to the SAN, such as RAID arrays and servers.
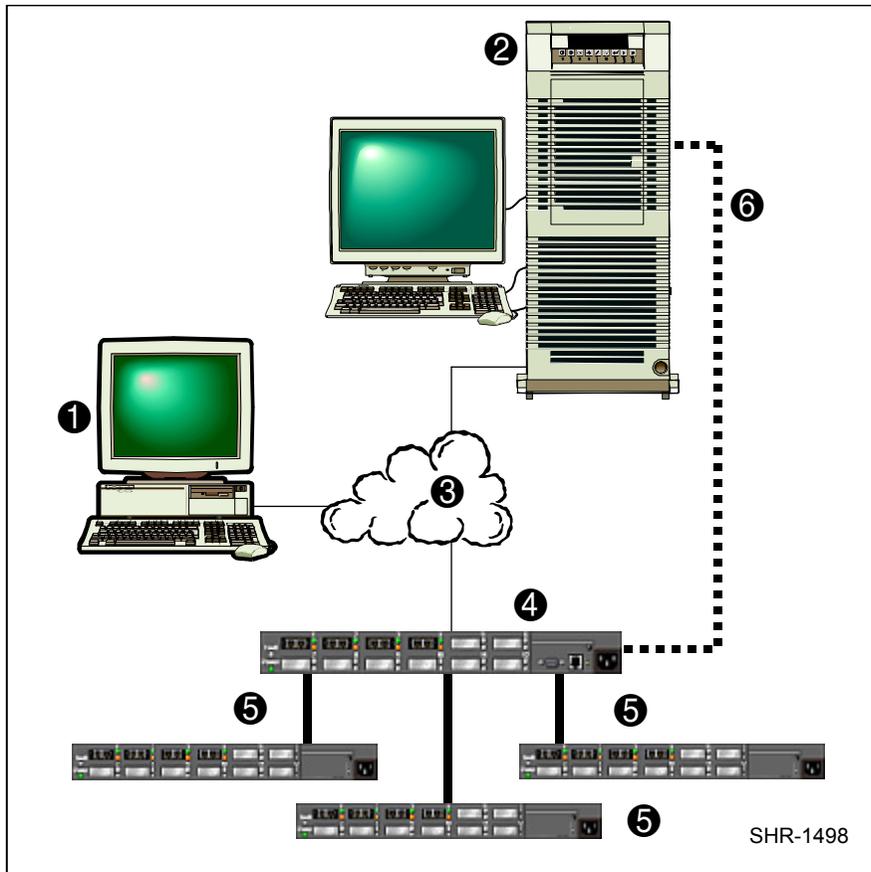
❽ SAN

Network Connection with Master and Slave Hubs

Figure A–3: An example of a network connection with master and slave hubs

❶ Client system, which must be TCP/IP network-accessible to the agent system.

❷ Agent system with a terminal. It must have access to the hubs, switches, and/or tape controllers through a TCP/IP network. It can be a part of the SAN.

❸ TCP/IP Network

❹ Master hub. This hub must have the Compaq Storage Hub 12 Management Module (HMM) installed and configured. The hub must also have a network address.

❺ Slave hubs that are connected to the master hub by Fibre Channel cables. The master hub has the HMM.

❻ Fibre channel cable (optional for a TCP/IP network connection). If the tape controller is not connected to the TCP/IP network, the fibre channel cable is required.

Appendix **B**

Installing the Hub Management Utilities Software

Installing the Software

If you plan to use Command Console to manage a Compaq Storage Hub 12, you must install Compaq Storage Hub 12 Management Utilities (HMU) software. This software acts as a plug-in that allows you to manage your hub from your client system by using the Windows-based software. You can order the HMU software from Compaq.

For the HMU software to work, you must insert the Compaq Storage Hub 12 Management Module (HMM) into a slave Storage Hub 12 and configure the HMM. When the HMM is inserted and configured, the hub becomes a master hub. HMM provides TCP/IP network connectivity to SWCC. For more information on how to install the HMU, refer to the User Manual for the Compaq Storage Hub 12 Management Utilities. This manual is shipped with the HMU software.

> **CAUTION:** You can only install the HMU software on Intel computers running Windows NT 4.0 (Intel).

You will be able to access this software by double clicking on the element ID entry for a hub in the Fabric Window. However, you will not be able to access this software right away. After you install HMU software, you must do the following to access the HMU software:

1. Install the Client software. If this is a new installation, you must install the Command Console Client and the Fibre Channel Interconnect Client. See Chapter 3, Installing and Removing the Client.

2. Install the Fibre Channel Interconnect Agent. See Appendix C, Installing, Configuring, and Removing the Fibre Channel Interconnect Agent.

3. Add the name of your client system to the Agent's list of client system entries. See Appendix C, Installing, Configuring, and Removing the Fibre Channel Interconnect Agent.

4. Add the name of your agent system to the Navigation Tree on your client system (*Start > Programs > Command Console > StorageWorks Command Console*). For more information, refer to the Command Console Client online Help.

5. Add a fabric and then add an element to the Fabric Window. For more information, refer to the Fabric Window online Help.

Appendix **C**

Installing, Configuring, and Removing the Fibre Channel Interconnect Agent

This appendix contains instructions for installing and removing the Fibre Channel Interconnect Agent (SAN Agent) for Windows NT 4.0 (Intel) and for Windows 2000. When you install the Fibre Channel Interconnect Client to operate over a network, you must also install the Fibre Channel Interconnect Agent.

The Agent is responsible for establishing communication with the Client and its subsystems on the network. The Agent runs in the background as a service on the host system. The Fibre Channel Interconnect Agent also provides Web pages, which show the status of your hub, switch, and/or tape controller.

Before You Install the Fibre Channel Interconnect Agent

1. Install the Command Console Client and Fibre Channel Interconnect Client. See Chapter 3, Installing and Removing the Client.

2. Verify that you have the SNMP service installed on your computer. You need SNMP installed on your computer for this software to work properly. If this service is not installed, the Fibre Channel Interconnect Agent is unable to monitor your hubs, switches, and/or tape controllers. The SNMP service is available on your Windows NT or Windows 2000 installation CD-ROM. To verify that you have the SNMP service:

   ❏ For Windows NT, double-click *Services* in *Start* > *Settings* > *Control Panel*. The entry for SNMP is shown in this window. If you install the SNMP service and you already have a Windows NT service pack on your computer, reinstall the service pack after installing the SNMP service.

   ❏ For Windows 2000, go to *Start* > *Settings* > *Control Panel* > *Administrative Tools* > *Component Services*. The entry for SNMP is shown in the Component Services window.

3. For Intel computers running Windows NT, verify that you have Windows NT Service Pack 4 or 5 (*My Computer* > *Help* > *About*).

4. Verify that you are logged into an account that is a member of the administrator group. Perform all installations on Windows NT locally. Do not attempt to install the Agent over the network.

5. Read the release notes in the fcinter.txt file for more information on the installation.

Installing the Fibre Channel Interconnect Agent

This section describes how to install your Fibre Channel Interconnect Agent from the SWCC CD-ROM and from the Web. Install the Fibre Channel Interconnect Agent on only one system. You can install the Fibre Channel Interconnect Agent on multiple systems if you intend to manage separate collections of Fibre Channel hubs, switches, and tape controllers.

Install the Fibre Channel Interconnect Agent on a host that has the following:

■ TCP/IP network connection to the client systems

■ TCP/IP network connection to the bridges, hubs, and/or tape controllers

1. Do one of the following:

   ❏ Insert the SWCC CD-ROM into a computer running Windows 2000 or Windows NT 4.0 (Intel) with Service Pack 4 or later.

❏ Download the file that contains the SAN Interconnect Agent from the StorageWorks website to a computer running Windows 2000 or Windows NT 4.0 (Intel) with Service Pack 4 or later.

2. If you downloaded the file that contains the SAN Interconnect Agent, open Windows Explorer and double-click the file you downloaded.

The file self-extracts.

3. Using Microsoft Windows Explorer, double-click *Setup.exe* in one of the following directories:

❏ Top-level directory of the SWCC CD-ROM.

❏ Top-level directory created from the self-extracted zip file.

4. Select SAN Interconnect Management under Agent Applications and click *Next*. When you install the Fibre Channel Interconnect Agent (SAN Interconnect Management), WebAgent installs automatically, unless you have a previous version of WebAgent. The Welcome window appears.

5. Click *Next*. The software license appears.

6. Click *Yes*. The default directory is shown:

C:\program files\Compaq\Swcc\Fibre Agent

7. Click *Next*. You see a window displaying the polling interval.

8. Type an interval for the Agent to poll each element in the fabric. An element is a hub, switch, or tape controller. The default is five minutes; however, you can enter an interval from 1 to 60 minutes.

> **IMPORTANT:** If you want to use the Windows-based software to manage your hubs, switches, and tape controllers, you must complete the following steps. If you want to use the Web-based software, you must complete another set of steps. Those steps are described in Appendix D, Managing Hubs, Switches, and Tape Controllers.

> **NOTE:** If the installation detects previous configuration files, it displays the StorageWorks Command Console Fibre Agent configuration Utility. If necessary, make changes to the configuration. To save your changes, click *OK.* Click *Finish to exit the installation.*

9. Click *Next*. The Client List window appears.

10. Type the client system name and select the monitor mode: TCP/IP and/or SNMP or none. The notification scheme defines the network protocol that the Agent will use when notifying the selected client system of a change in the state in a subsystem. The following table lists the client system notification options.

Table C–1: Client System Notification Options for Fibre Channel Interconnect Client (Windows-Based Software)

Options	SWCC Function
Transmission Control Protocol/ Internet Protocol (TCP/IP)	■ Automatically updates the Fabric Window of subsystem changes ■ Required for event logging and pager notification ■ If you do not select TCP/IP, you must refresh the Fabric Window to obtain the latest status of a subsystem.
Simple Network Management Protocol (SNMP)	■ Requires you to use an SNMP-monitoring program to view SNMP traps

11. Click *Add* to add the Client.

12. Click *Finish* if satisfied or *Back* for changes. The program prompts you with the message:

    Changes have been made to the Fibre Agent Configuration. The Agent is not currently running. Start the Agent now?

13. Click *Yes* to run Agent. The Agent is started and the program finishes loading.

> **IMPORTANT:** You need the Agent service running to receive status updates on your hubs, switches, and/or tape controllers.

14. Click *Finish.*

15. If you plan to use the Window-based Client, add this system to the Navigation Tree of each client system you added to the Agent's list (*File* > *Add System* in the Command Console Client). Refer to the Command Console Client online Help.

Using the Agent Configuration Utility

You must use the Fibre Channel Interconnect Agent's configuration utility to not only change the polling interval and enable/disable the Agent startup at system boot, but also to stop, start, and restart the Agent. If you want to use the Windows-based Client, you also must use the configuration utility to add, modify, and remove client system entries. For more information on how to use the Web-based software, see Appendix D, Managing Hubs, Switches, and Tape Controllers. Topics in this section include:

■ Client System Notification Options (Windows-based Client Only)

■ Adding a Client System Entry (Windows-based Client Only)

■ Modifying a Client System Entry (Windows-based Client Only)

■ Removing a Client System Entry (Windows-based Client Only)

■ Restarting the Agent (Windows-based Client and Web-based software)

■ Changing the Polling Interval (Windows-based Client and Web-based software)

■ Starting and Stopping Agent (Windows-based Client and Web-based software)

■ Disabling and Enabling the Agent Startup at System Boot
   (Windows-based Client and Web-based software)

■ Viewing the SNMP Traps (Windows-based Client and Web-based software)

Adding a Client System Entry (Windows-Based Client Only)

For a client system to receive updates from the Agent, you must add it to the Agent's list of client system entries. The Agent will only send information to client system entries that are on this list.

> **NOTE:** Put your most important client systems at the top of this list and the client systems that are connected infrequently to the network at the bottom. The Agent first contacts the client systems that are located at the top of the list.

1. Click *Start* > *Programs* > *StorageWorks* > *Fibre Agent Configure*. The StorageWorks Command Console Fibre Agent Configuration window appears.

2. Click the *Clients* tab. The Clients window appears.

3. Type the client system's name. For example, **tree.wat.ran.com**.

4. Select the notification scheme: TCP/IP and/or SNMP or none.

For definitions of the notification options, see Table C–1, Client System Notification Options for Fibre Channel Interconnect Client (Windows-Based Software).

5. Click *Add Client* to add the client system entry to the Client list.

6. To save your changes:

   ❏ If you click *Apply*, you stay in the configuration program.

   ❏ If you click *OK*, you leave the configuration program.

> **IMPORTANT:** You must restart the Agent for your changes to take effect.

Modifying a Client System Entry (Windows-Based Client Only)

1. Click *Start* > *Programs* > *StorageWorks* > *Fibre Agent Configure*. The StorageWorks Command Console Fibre Agent Configuration window appears.

2. Click the *Clients* tab. The Clients window appears.

3. Select the client system entry you want to modify in the Client list.

4. Change the notification scheme to one of the following: TCP/IP and/or SNMP or none.

   For a definition of the notification options, see Table C–1, Client System Notification Options for Fibre Channel Interconnect Client (Windows-Based Software).

5. Click *Modify* Client.

6. To save your changes:

   ❏ If you click *Apply*, you stay in the configuration program.

   ❏ If you click *OK*, you leave the configuration program.

   > **IMPORTANT:** You must restart the Agent for your changes to take effect.

Deleting a Client System Entry (Windows-Based Client Only)

When you delete a client system entry from the Agent's list, you are instructing the Agent to stop sending updates to that client system.

1. Click *Start* > *Programs* > *StorageWorks* > *Fibre Agent Configure*. The StorageWorks Command Console Fibre Agent Configuration window appears.

2. Click the *Clients* tab. The Clients window appears.

3. Select the client system entry to delete in the list.

4. Click *Delete Client*. The client system entry is deleted.

5. To save your changes:

   ❏ If you click *Apply*, you stay in the configuration program.

   ❏ If you click *OK*, you leave the configuration program.

   > **IMPORTANT:** You must restart the Agent for your changes to take effect.

Changing the Polling Interval

> **IMPORTANT:** When you change the polling interval of the Agent, the Windows-based Client and the Web-based software is affected.

1. Click *Start* > *Programs* > *StorageWorks* > *Fibre Agent Configure*. The StorageWorks Command Console Fibre Agent Configuration window appears.

2. Type an interval for the Agent to poll each element in the fabric. The default is 5 minutes; however, you can enter an interval from 1 to 60 minutes.

3. To save your change:

   ❑ If you click *Apply*, you stay in the configuration program.

   ❑ If you click *OK*, you leave the configuration program.

   > **IMPORTANT:** You must restart the Agent for your changes to take effect.

Stopping and Starting Agent

The Agent runs as a service in the background. When you stop the Agent, you are instructing the software to stop monitoring the hubs, switches, and/or tape controllers that were added as elements to the agent system's Fabric Page and/or Fabric Window.

1. Verify that the Fabric Windows, pertaining to this agent system, are closed on all of your client systems.

2. Click *Start* > *Programs* > *StorageWorks* > *Fibre Agent Configure*. The StorageWorks Command Console Fibre Agent Configuration window appears with the *Agent* tab on top.

3. Click *Stop* to stop the Agent or click *Start* to start the Agent.

Disabling and Enabling the Agent Startup at System Boot

By default, the Agent starts at system boot; however, you may want to change this option. For example, if you want to check your system, you may not want the Agent to start at system boot.

> **NOTE:** If you want to disable the Fibre Channel Interconnect Agent startup at system boot, change the startup type to manual.

From Windows NT 4.0

1. Double-click *Services* in *Start > Settings > Control Panel*.

2. Double-click *SWCC SAN Agent*. The Service window appears.

3. Select *Manual* under Startup Type, and click *OK*.

From Windows 2000

1. Click *Start > Settings > Control Panel > Administrative Tools > Component Services*.

2. Under Console Root, select *Services (Local)*.

3. Under Services (Local), right-click *SWCC SAN Agent*.

4. From the drop-down menu, select *Properties*. The SWCC SAN Agent (Local Computer) window appears.

5. Under the General tab, select *Manual* from the Startup Type drop-down menu.

6. Click *OK*.

Viewing the SNMP Traps

The Fibre Channel Interconnect Agent gathers the SNMP traps and puts them in the Application Log of Event Viewer, which resides on its computer and on the client systems that it notifies. The events that the Fibre Channel Interconnect Agent collected from Data Director and Tape Controller II will be listed under the sources: AsyncEventSvc and SWCC SAN Agent. To access Event Viewer:

■ Windows NT 4.0– (*Start > Programs > Administrative Tools > Event Viewer*) To access the Application Log, select <u>A</u>*pplication* from the Log menu.

■ Windows 2000 – (*Settings > Control Panel > Administrative Tools > Event Viewer*) To access the Application Log, select Application Log in the Tree panel.

For your client system to receive traps, the Asynchronous Event Service (AES) needs to be running on that computer and the agent system must be added to the Navigation Tree. For information on how to start AES, see section Stopping or Starting AES:, in Chapter 2.

Removing the Fibre Channel Interconnect Agent

1. Do one of the following:

❏ On Windows NT 4.0, click *Start* > *Settings* > *Control Panel*, and then double-click the *Add/Remove Programs* icon in the Control Panel. The Add/Remove Program Properties window appears.

❏ On Windows 2000, click *Start* > *Settings* > *Control Panel* > *Add/Remove Programs*. The Add/Remove Program window appears.

2. Select *StorageWorks SAN Management* located in the window.

3. Do one of the following:

❏ On Windows NT 4.0, click *Add/Remove*.

❏ On Windows 2000, click *Change/Remove*.

4. Follow the instructions on the screen. The Agent is removed, but several files are left behind.

5. To remove the files left behind, go to the directory that contained the Fibre Channel Interconnect Agent, and delete the files listed in the following table. The default is C:\Program Files\Compaq\Swcc\Fibre Agent. If you delete these files, you must reconfigure the Agent during reinstallation. For a list of the files, see Table C–2, Program Files.

> △ **CAUTION:** Other Agents use the client.ini and storage.ini file names, but their files are in different directories. If you cannot determine which files are for the Fibre Channel Interconnect Agent, find the FibreAgent.cfg file. The storage.ini file for the Fibre Channel Interconnect Agent is located in the directory referenced by the second line in the FibreAgent.cfg file.

Table C–2: Program Files

File Name	File Type
FibreAgent.cfg	Contains information on the fabrics and elements
client.ini	Contains the list of client system entries
storage.ini	Contains the polling interval
fibreagent.db	Contains the names and the IP addresses of the hubs, switches, and/or tape controllers that have been added to the Fabric Page
sysinfo.agt	Contains information about the agent system

Appendix **D**

Managing Hubs, Switches, and Tape Controllers

This appendix describes how to use SWCC to manage hubs, switches, and tape controllers. It includes the following topics:

■ Using the Web-Based Software

■ Using the Windows-Based Client

■ Configuring the Hubs, Switches, and Tape Controllers

The Fabric Page is the Web-based version of the Fabric Window. You add fabrics and elements to the Fabric Page, just as you would add them to the Fabric Window. Any changes you make in the Fabric Page are reflected in the Fabric Window and vice-versa. Table D–1, Comparison Between the Fabric Page and the Fabric Window provides a comparison.

Table D–1: Comparison Between the Fabric Page and the Fabric Window

Software	Setup	Manage	Configuration Pages
Fabric Page	Web-Based	Switches, and Tape Controllers	Access configuration pages by clicking the element entry
Fabric Window	Windows-Based	Hubs, Switches, and Tape Controllers	Access configuration pages by double clicking the element entry

NOTE: You can use the Fabric Page to monitor your hubs, but you cannot manage them from the Fabric Page. You must use the HMU to manage your hubs.

Using the Web-Based Software

The following sections tells you how to use the Web-based software. You can use the Web-based software to manage your switches and tape controllers. Use one of the supported browsers when accessing the Fabric Page:

❏ Microsoft Internet Explorer version 4.01 or 5 that runs on Intel computers

❏ Netscape Communicator version 4.6 that runs on Tru64 UNIX version 4 or 5

How User Accounts Work

To access the Fabric Page, enter a user name and a password. In this software release you are given three predefined user names and passwords. You cannot add, delete, or modify the user names. However, you can as administrator, change the passwords of the user names. Table D–2, Available User Accounts shows the available accounts.

Table D–2: Available User Accounts

Account	User Name	Password	Privileges
User	user	public	■ Cannot make changes to the Fabric Page ■ Can make changes to the configuration pages of the elements ■ Cannot add, rename, or delete fabrics and elements
Operator	operator	operator	■ Cannot make changes to the Fabric Page ■ Can make changes to the configuration pages of the elements ■ Cannot add, rename, or delete fabrics and elements
Administrator	administrator	administrator	■ Can make changes to the Fabric Page and to the configuration pages of the elements ■ Can change the password of an account ■ Can add, rename, or delete fabrics and elements

Changing the Password of a User Account

If you have administrative privileges, you can change the password of a user account. To change the password, you must access the Account Login page. For more information on how to access the Account Login page, see section Accessing the Fabric Page, in this appendix.

Accessing the Fabric Page

1. Verify you have installed a supported Web browser.

2. Open your Web browser, type "http://", and then the name of the system on which you installed the Agent software followed by ":2301", as shown here:

   http://agentsystem.compaqxx.com:2301

You see the Device Home Page.

3. Click Compaq SAN Interconnect Management, as displayed in Figure D–1, Hot link for SAN Interconnect Management.

Figure D–1: Hot link for SAN Interconnect Management

4. You are asked to enter your user name and password on the Account Login page. For more information on your user name and password, see section, How User Accounts Work, in this appendix.

5. Type your user name and password. Click *OK*.

6. The Fabric Page appears.

Viewing the Latest Version of the Fabric Page

Some Web browsers are configured to view an earlier version of a Web page, stored in its cache, rather than view the latest version, posted to the Web. To verify your Web browser is configured to view the latest version of the Fabric Page:

In Internet Explorer 5.0:

1. Click *Tools* > *Internet Options*. The Internet Options window appears.

2. Click *Settings* on the General tab in the Internet Options window.

3. Select *Every visit to the pa*ge, and click *OK*. When the Web browser goes to a Web page, the Web browser compares the version of the Web page in its cache with the version on the Web and displays the latest version.

In Netscape Communicator 4.6:

1. Click *Edit* > *Preferences*. The Preferences window appears.

2. In the Category field, double-click *Advanced*. The options expand under Advanced.

3. In the Category field, click *cache*. The preferences for the cache display.

4. Select *Every time*, and click *OK*. When the Web browser goes to a Web page, the Web browser compares the version of the Web page in its cache with the version on the Web and displays the latest version.

Java Disabled in Some Versions of Netscape Communicator

Java must be enabled to view the configuration pages. In some versions of Netscape Communicator, Java is disabled. To enable it, select the Enable Java and Enable Java Script options in the Advanced Preferences menu of Netscape Communicator (*Edit* > *Preference* > *Advanced*).

Adding Fabrics and Elements

This section describes how to add hubs, switches, and tape controllers to fabrics by using the Web-based software. In the software, hubs, switches, and tape controllers are referred to as elements. The method of adding fabrics and elements to your Fabric Page is similar to adding fabrics and elements to the Fabric Window by using the Windows-based Client software. Before you can add an element, you must create a fabric. A fabric is a collection of interconnected hubs, switches, and/or tape controllers in the same SAN.

IMPORTANT: You must have administrative privileges to add hubs, switches, and tape controllers. For more information, see section How User Accounts Work, in this appendix. Before you add your hubs, switches, and/or tape controllers by using the Web-based software, you must create an IP address for them. You can add a hub to the fabric for monitoring purposes; however, you will not be able to manage it by using the Web-based software.

---

1. Access the Fabric Page. For more information, see section Accessing the Fabric Page, in this appendix.

2. Select *Add Fabric* from the drop-down menu on the left, and click *OK*.

3. Type a name for your fabric. It can have 1 to 32 characters, but it cannot have spaces nor can it have the vertical line. Click *Add*.

IMPORTANT: When you add fabrics and elements to a Fabric Page or to a Fabric Window, others who are accessing the same agent system see the fabrics and elements you added in their Fabric Page and in their Fabric Window. When you delete or rename a fabric or an element, that change also appears in their Fabric Page and in their Fabric Window that corresponds to the same agent system.

---

4. Repeat steps 2 and 3 for each fabric you want to add.

5. Select *Add Element* from the drop-down menu on the right, and click *OK*.

6. Type a name for your element. It can have 1 to 32 characters, but it cannot have spaces nor can it have the vertical bar. The name does not have to be its host name; however, it is suggested you choose a name that will help you to distinguish it from the other elements.

7. Enter the TCP/IP address of the element you want to add.

8. Click *OK*.

The element is added to SAN Interconnect Manager.

9. Repeat steps 5 through 8 for each element you want to add.

> **IMPORTANT:** Elements in the same fabric must belong to the same SAN.

> **NOTE:** You can access the configuration menus for the switches and tape controllers by clicking the name of the element, which is hot-spotted.

Renaming Fabrics and Elements

You can rename fabrics and elements within Fabric Page by using the drop-down menus.

> **IMPORTANT:** You must have administrative privileges to rename fabrics and elements. For more information, see section How User Accounts Work, in this appendix. When you rename a fabric or an element, that change will also appear in other Fabric Pages and in other Fabric Windows that correspond to the same agent system.

1. Access the Fabric Page. For more information, see section Accessing the Fabric Page, in this appendix.

2. Select the Rename option on the drop-down menu that corresponds to the fabric or element you want to rename, and click *OK*.

The software displays a window that tells you to enter a new name.

3. Enter the new name of the element or the fabric. It can have 1 to 32 characters, but it cannot have spaces nor can it have the vertical bar. Click *OK*.

The software displays a window that tells you that the fabric or element has been renamed.

4. Click *OK*.

Deleting Fabrics and Elements

You can delete fabrics and elements within the Fabric Page by using
the drop-down menus.

IMPORTANT: When you delete a fabric or an element:
You must have administrative privileges to delete fabrics and elements. For more information,
see section How User Accounts Work, in this appendix.
That change will also appear in other Fabric Pages and in other Fabric Windows, corresponding
to the same agent system.
You are instructing the software to stop monitoring the fabric or the element for the
Windows-based and Web-based version of the software.
When you delete a fabric, you will automatically delete the elements contained in that fabric.

---

1. Access the Fabric Page. For more information, see section Accessing the Fabric Page,
   in this appendix.

2. Select the Delete option on the drop-down menu that corresponds to the fabric or
   element you want to rename, and click *OK*.

You are asked if you want to delete the fabric or the element.

3. If you are certain you want to delete the element or fabric, click *OK*. You are told that
   the element or fabric has been deleted.

4. Click *OK*.

Using the Windows-Based Client

The following sections tell you how to use the Windows-based Client software. You can
use the Windows-based Client software to manage your hubs, switches, and/or tape
controllers. For more information, refer to the online Help in the Fabric Window.

Accessing the Fabric Window

1. Add the agent system to the Navigation Tree. Click *File* > *Add System* in the menu bar
   of the Command Console Client, and follow the instructions on the screen. After you
   add the agent system, an icon for a Fabric Window will be displayed under the folder
   for the agent system.

> **NOTE:** You may receive an error message if you have not added the name of your computer to the Agent's list of client system entries. For more information on how to add a client system entry, see Appendix C, Installing, Configuring, and Removing the Fibre Channel Interconnect Agent. For more information on troubleshooting, see Chapter 4, Troubleshooting Connection Problems and the Command Console Client.

2. Double-click the icon for the Fabric Window.

The Fabric Window appears.

Adding Fabrics and Elements

In this section you will learn how to add hubs, switches, and tape controllers to a fabric by using the Windows-based software. In the software, hubs, switches, and tape controllers are referred to as elements. Before you can add an element, you must create a fabric. A fabric is a collection of interconnected hubs, switches, and/or tape controllers in the same SAN.

> **IMPORTANT:** You must have administrative privileges to add hubs, switches, and tape controllers. For more information, see section How User Accounts Work, in this appendix. Before you add your hubs, switches, and/or tape controllers by using the Windows-based software, you must create an IP address for them.

1. Access the Fabric Window. For more information, see section Accessing the Fabric Page, in this appendix.

2. Click *Fabric > Add* in the menu bar.

3. Type a name for your fabric. It can have 1 to 32 characters, but it cannot have spaces nor can it have the vertical bar. Click *OK*. If you want to add more than one fabric, click *Apply*.

> **IMPORTANT:** When you add fabrics and elements to a Fabric Window, others who are accessing the same agent system see the fabrics and elements you added in their Fabric Window and in their Fabric Page. When you delete or rename a fabric or an element, that change also appears in their Fabric Window and Fabric Page that corresponds to the same agent system.

4. Repeat steps 2 and 3 for each fabric you want to add.

5. Click *Element > Add* from the menu bar.

6. Type a name for your element. It can have 1 to 32 characters, but it cannot have spaces nor can it have the vertical bar. The name does not have to be its host name; however, it is suggested you choose a name that will help you to distinguish it from the other elements.

7. Enter the TCP/IP address of the element you want to add.

8. Click *OK*. If you want to add more than one fabric, click *Apply*.

The element is added to SAN Interconnect Manager.

9. Repeat steps 5 through 8 for each element you want to add.

> **IMPORTANT:** Elements in the same fabric must belong to the same SAN.

> **NOTE:** You can access the configuration menus for the hubs, switches, and tape controllers by double clicking the name of the element.

Renaming Fabrics and Elements

> **IMPORTANT:** When you rename a fabric or an element, that change also appears in other Fabric Pages and in other Fabric Windows that correspond to the same agent system.

1. Access the Fabric Window. For more information, see section Accessing the Fabric Page, in this appendix.

2. Do the following:

   ❏ To rename a fabric, click *Fabric* > *Rename* in the menu toolbar.

   ❏ To rename an element, click *Element* **>** *Rename* in the menu toolbar.

3. Enter the new name of the element or the fabric. It can have 1 to 32 characters, but it cannot have spaces nor can it have the vertical bar. Click *OK*.

Deleting Fabrics and Elements

IMPORTANT: When you delete a fabric or an element:
That change will also appear in other Fabric Pages and in other Fabric Windows, corresponding to the same agent system.
You are instructing the software to stop monitoring the fabric or the element for the Windows-based and Web-based version of the software.
When you delete a fabric, you will automatically delete the elements contained in that fabric.

---

1. Access the Fabric Window. For more information, see section Accessing the Fabric Page, in this appendix.

2. Do the following:

   ❏ To delete a fabric, select *Fabric* **>** *Delete* in the menu toolbar.

   ❏ To delete an element, select *Element* **>** *Delete* in the menu toolbar.

3. If you are certain you want to delete the element or fabric, click *Yes*.

4. Click *OK*.

Configuring the Hubs, Switches, and Tape Controllers

You can configure your hubs, switches, and tape controllers from SWCC by accessing their configuration pages. These pages can be accessed by:

■ Double clicking the element entry in the Fabric Window
(Windows-based Client)

■ Clicking the element entry in the Fabric Page
(This does not apply to the hub.)

Using SWCC to Configure Fibre Channel Tape Controller II

You can access the configuration of Fibre Channel Tape Controller II (FCTC-II) by clicking its element ID entry in the Fabric Page or by double clicking its element ID entry in the Fabric Window. You can obtain information, such as the following, when you access the tape controller's configuration:

■ Baud rate of the serial port

■ Fibre Channel address

■ SCSI initiator and target IDs

■ Ethernet IP and MAC addresses

■ Fibre Channel-to-SCSI mapping

■ SCSI-to-Fibre Channel mapping

■ Trace level settings

> △ **CAUTION:** If you change the tape controller's IP address and you have already added the tape controller to a fabric, you must delete the old entry and then add the tape controller with the new IP address to the fabric. You must do this because SWCC contacts the tape controller by its IP address. If you change the tape controller's IP address, SWCC will be unable to find the tape controller. You should also alert others, who have this tape controller added to a fabric, of its new IP address.

NOTE: For more information on how to configure FCTC-II, refer to its documentation.

Using SWCC to Configure the Hub

You can access the hub's configuration by double clicking its element ID entry in the Fabric Window. You can obtain information, such as the following, when you access the hub's configuration:

■ Device Description

■ Device Model Number

■ Device Serial Number

■ HMM Board Identifier

■ Agent Board Serial number

■ Hub Board Serial Number

■ Device Location

■ Contact Name

For more information, refer to the online Help in the Fabric Window.

Using SWCC to Configure the Switch

You can access the SAN switch's configuration by clicking its element ID entry in the Fabric Page or by double clicking its element ID entry in the Fabric Window. You can obtain information, such as the following, when you access the switch's configuration:

- LED Status Information
- Port Information
- Switch Information
- Administration
- Performance View
- Temperature
- Fans

For more information, refer to the online Help in the Fabric Window.

> **IMPORTANT:** Before you can access the configuration pages for the Compaq StorageWorks FC-AL Switch, you must configure your Web browser. For more information, see Appendix E, Configuring the Web Browser for the Compaq StorageWorks FC-AL Switch.

Appendix **E**

Configuring the Web Browser for the Compaq StorageWorks FC-AL Switch

This appendix describes how to configure your Web browser so you can view the configuration pages for the Compaq StorageWorks FC-AL Switch.

> **IMPORTANT:** Before you configure your browser, the Compaq StorageWorks FC-AL Switch must have the following:
> An IP address
> A subnet mask
> Default gateway address
> Its IP address mapped to a Fully Qualified Domain Name (FQDN) (Recommended)
> For more information, see section Configuring the Compaq StorageWorks FC-AL Switch for the Web Interface, in this chapter.

Configuring the Compaq StorageWorks FC-AL Switch for the Web Interface

This section tells you how to configure setup your Compaq StorageWorks FC-AL Switch for the Web interface. The following topics are covered:

■ Assigning an IP address

■ Assigning a subnet mask

■ Assigning a gateway for access to the Web interface

■ About Mapping the Switch's IP Address to an FQDN

First connect to the serial interface of the switch by using a program, such as HyperTerminal on Windows. The default terminal settings are the following:

■ 38400 baud rate

■ Data bits 8

■ No parity

■ Stop bits 1

■ No flow control

When you connect, the following appears (Press <CR> for the Boot Menu.):

Powering up switch...

Press <CR> for Boot Menu, Agent Code within 5 seconds

Boot Menu Version 01.00-G01

1. Switch IP address [current = 127.0.0.1]

2. Switch subnetworking mask [current = 0.0.0.0]

3. Switch default gateway address [current = 0.0.0.0]

4. TFTP server IP address [current = 0.0.0.0]

5. TFTP filename [current =]

6. TFTP initial number of retries [current = 5]

7. TFTP initial timeout [current = 5000ms]

8. TFTP data transfer number of retries [current = 5]

9. TFTP data transfer timeout [current = 5000ms]

T. TFTP force download [current = no]

B. Boot filename [current =]

D. load Default system parameters

E. Exit menu and continue operation

command>

Assigning an IP Address

1. Connect to the switch by using a program, such as HyperTerminal on Windows. Press <CR> for the Boot Menu.

2. Enter **1**.

3. Enter the switch's new IP address.

Assigning a Subnet Mask

1. Connect to the switch by using a program, such as HyperTerminal on Windows. Press <CR> for the Boot Menu.

2. Enter **2**.

3. Enter the switch's new subnetworking mask.

Assigning a Gateway for Access to the Web Interface from a Different Network

1. Connect to the switch by using a program, such as HyperTerminal on Windows. Press <CR> for the Boot Menu.

2. Enter **3**.

3. Enter the switch's new default gateway address.

About Mapping the Switch's IP Address to an FQDN

Map the switch's IP address to a valid Fully Qualified Domain Name (FQDN) in the DNS server used by the Web browser host. This is needed to work around a bug that appears in some older versions of Microsoft Internet Explorer Java Virtual Machine. Contact your network administrator to set this up.

For example: 192.168.13.13 should resolve to myswitch.mycompanyxxxx.com

Where 191.168.13.13 is the switch's IP address, and myswitch.mycompanyxxxx.com is the FQDN.

Configuring Netscape Communicator

1. Verify that the Java support is enabled by selecting *Edit > Preferences*.

2. Click the Advanced Section and select *Enable Java* and *Enable Java Script*.

3. If you have problems viewing the configuration pages, use the Java Console to troubleshoot your problem. To view the Java Console, click *Communicator > Tools > Java Console*

Configuring Microsoft Internet Explorer

Before you can use Microsoft Internet Explorer to view the configuration pages, you must configure it.

Table E–1: Configuring Microsoft Internet Explorer for the Compaq StorageWorks FC-AL Switch

Step	Description
1	Verify that the switch IP address maps to an FQDN on DNS. See section About Mapping the Switch's IP Address to an FQDN, in this appendix.
2	Verify that Java Virtual Machine (JVM) is installed. See section How to Verify Whether JVM Is Installed, in this appendix.
3	If JVM is not installed, install it. See section Installing JVM, in this appendix.
4	Add the switch IP address/host name to trusted sites on Microsoft Internet Explorer. See section Adding the Switch's IP Address/Host Name to Trusted Sites, in this appendix.
5	Verify that unsigned applets are able to access the network. See section Enabling Unsigned Apples to Access the Network, in this appendix.
6	Enable Java Console and Logging. See section Enabling Java Console and Logging, in this appendix.

How to Verify Whether JVM Is Installed

Microsoft JVM is an optional component of Microsoft Internet Explorer version 5.x, unlike version 4.x, which had it installed by default.

1. Open Microsoft Internet Explorer.

2. Select *Tools > Internet Options*. You see the Internet Options window.

3. Click the Advanced tab.

4. Scroll down to find the "Java VM" section as shown in the following figure.
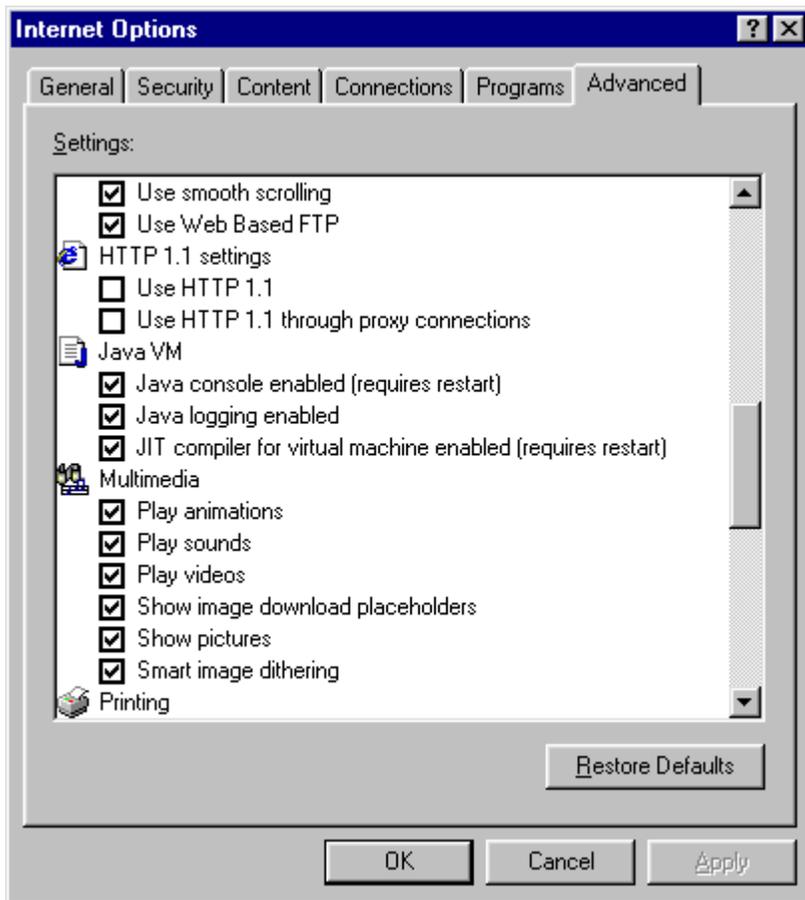
Figure E–1: Verifying whether you have Java VM

NOTE: If Java VM is missing, JVM is not installed. See section Installing JVM, in this appendix.

Installing JVM

1. Go to the Microsoft Windows Update website:

   http://www.microsoft.com/windowsupdate

2. Click the link, *Product Updates*. You are asked if you want to install and run Microsoft Active Setup.

3. Click *Yes*. Microsoft Active Setup scans your hard drive to determine the software updates available.

After Microsoft Active Setup scans your hard drive, you see a list of software updates that are available for your version of windows.

4. Select Microsoft virtual machine.

5. Click *Start Download*. JVM is installed on your computer.

6. Restart the computer.

> **NOTE:** If you have problems with the Windows update, contact your system administrator or go to http://www.microsoft.com.

Adding the Switch's IP Address/Host Name to Trusted Sites

1. Open Microsoft Internet Explorer.

2. Select *Tools > Internet Options*. You see the Internet Options window.

3. Click the Security tab.

4. Click the Trusted Sites icon,

5. Click *Sites*. You see the Trusted Sites window.

6. Add the switch's hostname (FQDN) to the trusted sites list.

Enabling Unsigned Apples to Access the Network

1. Open Microsoft Internet Explorer.

2. Select *Tools > Internet Options*. You see the Internet Options window.

3. Click the Security tab.

4. Click the Trusted Sites icon, .

5. Click *Custom Level*. You see the Security Settings window.

6.   Scroll down to find the "Java VM" section.

7. Set the Java permissions to custom, as shown in the following figure. When you select custom, the software displays the Java Custom Settings button.
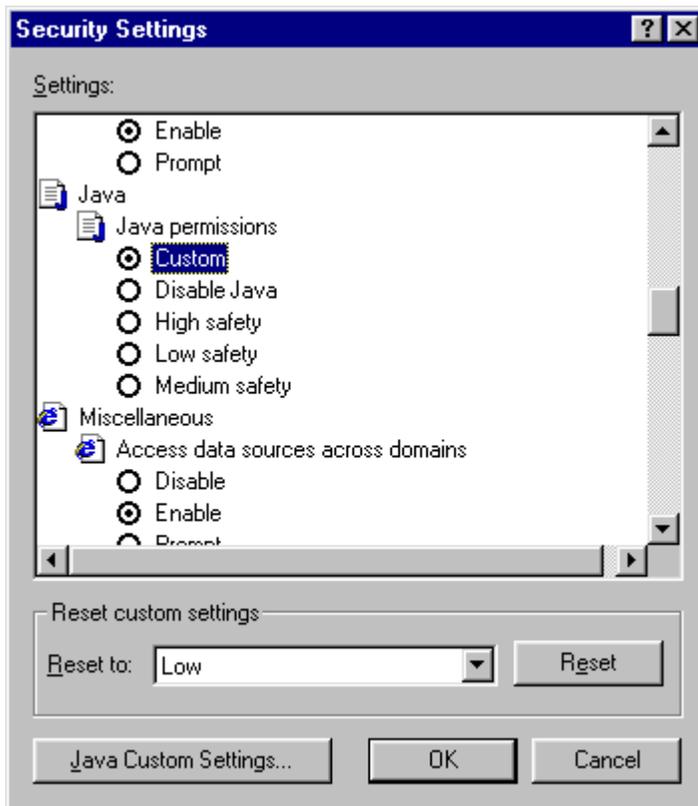
Figure E–2: Setting Java permissions to custom

8. Click *Java Custom Settings*. You see the Trusted Sites window.

9. Click the Edit Permissions tab.

10. Ensure "Run in sandbox" is selected under "Run Unsigned content."

11. Under "Unsigned Content" scroll down to the "Access to all Network Addresses" section and set it to "Enable."
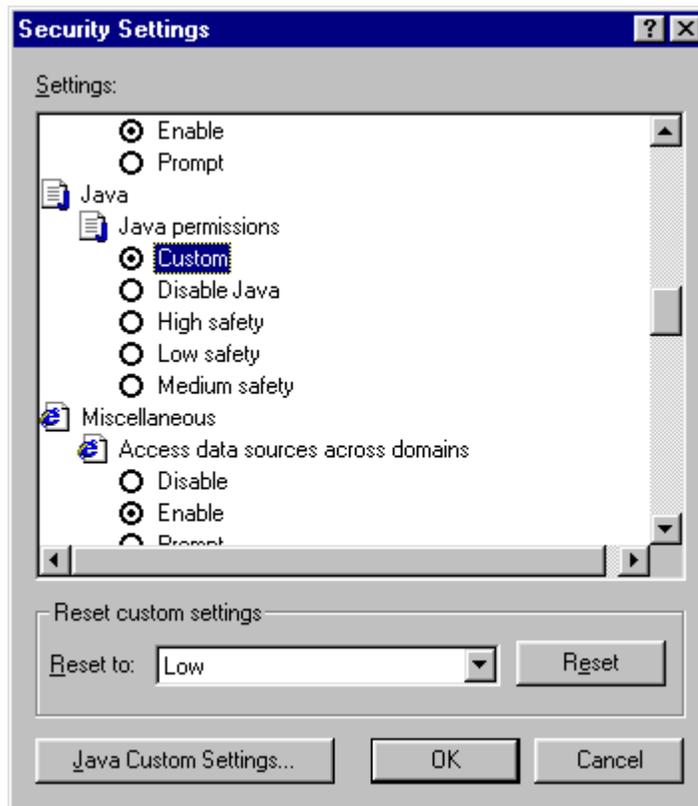
Figure E–3: Setting the permissions

12. Click *OK*.

13. Restart Microsoft Internet Explorer before accessing the SAN Interconnect software.

Enabling Java Console and Logging

1. Open Microsoft Internet Explorer.

2. Select *Tools > Internet Options*. You see the Internet Options window.

3. Click the Advance tab.

4. Select the following:

   ❏ Java console enabled

❏ Java logging enabled

❏ JIT compiler for virtual machine enabled (requires restart)

5. Click *OK*.

6. To view the Java console, click *View > Java Console*.

Logging into the Configuration Pages for the Compaq StorageWorks FC-AL Switch

When you click the element entry for the Compaq StorageWorks FC-AL Switch, you are asked to enter a user name and password. Enter the user name and password that you would use for console/telnet.

After you enter your username and password, the software asks for the SNMP read/write community strings to access the switch. If you only want to view the configuration and passively monitor the switch, the read community string is all you need. If you intend to change the switch configuration, the read and the write community strings are required.

If you had started the configuration pages for the Compaq StorageWorks FC-AL Switch with only the read community string, but want to be able to change the switch's configuration:

1. Click the Chassis tab, then click the Network Settings tab.

2. Enter the write community string and click the Set button. Use the same procedure for correcting an incorrect write community string.

If you entered a wrong read community string, close and then reopen the Web browser.

Accessing the Configuration Pages for the Compaq StorageWorks FC-AL Switch Through Firewalls

The network administrator should configure your firewall to allow access to the following ports of the switch's IP address:

■ 80/TCP (HTTP)

■ 161/UDP (SNMP)

Glossary

This glossary defines terms used in this guide or related to this product and is not a comprehensive glossary of computer terms.

agent system

Computer that has the Fibre Channel Interconnect Agent installed

Asynchronous Event Service (AES)

AES, which runs in the background as a service, collects and passes all traps from the subsystems to the appropriate Navigation Trees and individual pagers. AES needs to be running for your client system to receive updates.

client system

A computer that has one of the following:

■ The Windows-based Client software installed

■ A Web browser that can view the status of the fibre channel devices

StorageWorks Command Console (SWCC) refers to the overall program

Command Console Client

Provides event notification and the Navigation Tree

Compaq Storage Hub 12 Management Utilities (HMU)

Add-in for SWCC. This software allows you to manage your hubs from your client system. It can only be installed on Intel computers. You can obtain this software by ordering it separately.

Compaq Storage Hub 12 Management Module (HMM)

A hub with HMM is called a master hub, and a hub without HMM is called a slave hub. HMM provides TCP/IP network connectivity to SWCC.

device

Refers to a hub, switch, or tape controller.

element

An element is hardware that makes up a fabric. It can be a hub, switch, or tape controller.

fabric

A collection of interconnected hubs, switches, and/or tape controllers that are in the same SAN.

Fabric Page

Displays the status of your fabrics in the Web-based software. Used to monitor your hubs, switches, and tape controllers; however, you can use it to manage your switches and tape controllers.

Fabric Window

Displays the status of your fabrics in the Windows-based Client software. Used to manage your hubs, switches, and tape controllers.

Fibre Channel Interconnect Agent (SAN Interconnect Agent)

■ Collects data from the hubs, switches, and tape controllers. It then passes the information along to the Windows-based Client software and to the pages.

■ Enables the Client to communicate with your hubs, switches, and tape controllers.

Fibre Channel Interconnect Client

■ Works with the Command Console Client

■ Provides the Fabric Window

Navigation Tree

■ Provides access to the Fabric Window

■ Shows the status of your storage systems. It displays your systems in a hierarchical order.

Navigation Window

Contains the Navigation Tree

subsystem for Fibre Channel Interconnect

A list of fabrics in a SAN. It is comprised of hubs, switches, and/or tape controllers.

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