

# *Compaq StorageWorks*

## **Command Console for the SAN Switch**

Installation Guide

Second Edition (October 1999)  
Part Number AA-RHDAB-TE / 136265-002  
Compaq Computer Corporation

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# About This Guide

In this guide, you will learn how to install and configure StorageWorks Command Console (SWCC), which is a software tool used to manage your Compaq StorageWorks SAN Switch. SWCC is based on the Client-server architecture consisting of a Client and a server Agent. We will tell you how to install Command Console's Client and Agent software. The Client software runs on Microsoft Windows NT® version 4.0 (Alpha™ and Intel®), Windows 98®, and Windows 95®. The Agent software runs on Windows NT 4.0 (Alpha and Intel). This document tells you how to use the basic features of Command Console. For more information on Command Console's features, refer to the online Help.

This section contains a list of basic terms, in addition to information on how this guide is arranged. You can find details on how to contact Compaq's technical support at the end of this section. We suggest that you look at the list of basic terms in this section and the online glossary, which is installed with the online Help.

## Intended Audience

This guide is intended for storage administrators. You should know how switches work, in addition to having a basic understanding of networking, especially of Storage Area Networks (SANs). First read the hardware documentation for your switch to better understand the material in this book.

## List of Basic Terms

It is important that you understand some of the basic terms that are used throughout this book. For a more complete list, refer to the glossary in the online Help:

**Table 1**  
**List of Basic Terms**

| Term                                | Definition   |
|-------------------------------------|--|
| Agent System                        | Windows NT computer that has the Fibre Channel Switch 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. It is a component of the Command Console Client. AES needs to be running for your client system to receive updates. |
| Client System                       | A computer that has the Windows-based Client software installed and Windows NT 4.0, Windows 98, or Windows 95.   |
| StorageWorks Command Console (SWCC) | Refers to the overall program  |
| Command Console Client              | Is the main program that provides event notification and the Navigation Tree   |
| Device                              | Refers to a switch   |
| Element                             | An element is hardware that makes up a fabric. It can be a bridge, hub, or switch. In this software release, it will only refer to a switch.   |
| Fabric                              | A collection of bridges, hubs, and switches that are in the same SAN. In this software release, it will only refer to a collection of switches.  |

*continued*



**Table 1**  
**List of Basic Terms** *continued*

| Term   | Definition  |
|--|---|
| Fabric window                                | Displays the status of your fabrics in the Client software. Can be used to manage your switches.  |
| Fibre Channel Switch Agent                   | <ul style="list-style-type: none"> <li>■ The Fibre Channel Switch Agent collects data from the switches. It then passes the information along to the Client software.</li> <li>■ It enables the Client to communicate with your switches.</li> </ul>  |
| Fibre Channel Switch Client                  | <ul style="list-style-type: none"> <li>■ Works with the Command Console Client</li> <li>■ Provides the Fabric window</li> </ul>   |
| Navigation Tree                              | <p>The Navigation Tree does the following:</p> <ul style="list-style-type: none"> <li>■ Provides access to the Fabric window</li> <li>■ Shows the status of your storage systems. It displays your systems in a hierarchical order. A subsystem is shown to be connected to a system, and the Fabric window is shown to be connected to a subsystem.</li> </ul> |
| Navigation window                            | <ul style="list-style-type: none"> <li>■ Use to add a system</li> <li>■ Contains the Navigation Tree</li> <li>■ It is the window that you see when you click <i>StorageWorks Command Console</i> in <i>Start Programs\Command Console</i>.</li> </ul>   |
| Subsystem for Compaq StorageWorks SAN Switch | A list of fabrics in a SAN. In this software release, it is comprised of switches.  |

## In This Guide

This guide contains the following chapters and appendix:

**“About This Guide”** This section provides a list of basic terms. It also tells you about online Help, release notes, and style conventions.

**Chapter 1 — “About Command Console”** This chapter provides a description of the components of Command Console: Command Console Client, the Fibre Channel Switch Client, and the Fibre Channel Switch Agent. It also provides a brief overview on how to install and configure the software.

**Chapter 2 — “Connecting the Client to Your Agent”** This chapter provides information on how to connect the hardware by using a TCP/IP network connection.

**Chapter 3 — “Installing and Removing the Clients”** This chapter provides instructions on how to install the Command Console Client and Fibre Channel Switch Client on Windows 98, Windows 95, and Windows NT (Alpha and Intel). It also provides useful information that can assist you in preparing for the installation.

**Chapter 4 — “Installing and Removing the Fibre Channel Switch Client”** This chapter provides an alternative method of installing the Fibre Channel Switch Client. You do not need to read this chapter if you have already installed the Clients as described in Chapter 3. This chapter provides instructions on how to install only the Fibre Channel Switch Client on Windows 98, Windows 95, and Windows NT (Alpha and Intel). For this installation to work, you need to have already installed the Command Console Client version 2.1 or version 2.0.

**Chapter 5 — “Installing and Removing the Fibre Channel Switch Agent”** This chapter provides instructions on how to install the Fibre Channel Switch Agent on Windows NT (Alpha and Intel).

**Chapter 6 — “Configuring the Fibre Channel Switch Agent”** This chapter contains information to assist you in configuring the Fibre Channel Switch Agent on Windows NT (Alpha and Intel).

**Appendix A — “Usage Notes and Troubleshooting”** Appendix A describes usage and troubleshooting information.

## Style Conventions

The following style conventions are found in this guide:

**Table 1-2 Style Conventions**

| Convention         | Type of Information  |
|--------------------|--|
| <b>Bold type</b>   | Words or characters you type   |
| <i>Italic type</i> | User interface text  |
| Courier type       | <ul style="list-style-type: none"> <li>■ System messages that will occur during installation and configuration. Many of these messages will require a user response.</li> <li>■ File and directory specifications that you use during installation.</li> </ul> |
| 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.   |

## Special Captions

The following captions identify important information within this guide:



**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.

## Documentation

You can find further information on this software by referring to the online Help and the release notes. The release notes may provide some last-minute troubleshooting information that may not be discussed in this guide. The online Help provides an overview of the program and additional information on various features.

## Online Help

After you configure this software, you should refer to the online Help to learn more about this product. Help provides further information on how to use this software to manage your systems. You can access Help for the Navigation Tree or for each Fabric window by clicking *Help* in its window.

The Navigation Tree is shown in the Navigation window, which you see when you click *StorageWorks Command Console* in *Start|Programs|Command Console*. The Navigation Tree provides a graphical interface for you to manage your systems, and it is the starting place to connect to a system. The Fabric window provides detailed information on a particular subsystem.

Help provides:

- Step-by-step instructions on how to use Command Console features
- Reference information
- Glossary

## Release Notes

You will be able to find late-breaking and supplemental information for the Fibre Channel Switch Client and Agent by referring to the `fcswitch.txt` file. Release notes on the Command Console Client are in the `ccclient.txt` file.

## Getting Help

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

## Compaq Technical Support

A technical support specialist will help you diagnose the problem or guide you to the next step in the warranty process. In North America, call the Compaq Technical Phone Support Center at 1-800-OK-COMPAQ<sup>1</sup>. This service is available 24 hours a day, 7 days a week.

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 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 number (s)
- Product model name(s) and numbers(s)
- 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 information on this product as well as the latest drivers and Flash ROM images. You can access the Compaq website at <http://www.compaq.com>.

## 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.

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<sup>1</sup> For continuous quality improvement, calls may be recorded or monitored.



# *Chapter 1*

## **About Command Console**

Thank you for choosing Compaq StorageWorks. Command Console is a graphical user interface (GUI) and remote management program for Compaq StorageWorks SAN Switches. It provides a method of monitoring and configuring the switch over a network.

Once StorageWorks Command Console (SWCC) is configured to work with the Compaq StorageWorks SAN Switch, the program sends commands and interprets the responses sent by the switch. The user interface displays the physical layout and status of a selected switch.

In this release, Command Console is comprised of three components: the Command Console Client, the Fibre Channel Switch Client, and the Fibre Channel Switch Agent. In this chapter, you will learn more about these Command Console components and how they provide a graphical window into the operation of your switch. This chapter provides a brief overview on how to install and configure the Client and Agent software.

## Setting Up the Software

Before you can manage your subsystem, install and configure several components of the software. The following table provides a brief overview:

**Table 1-1**  
**Setting Up the Hardware and Software**

| Step | Procedure  |
|------|--|
| 1    | Set up a network connection for the Clients, Agents, and subsystems. See Chapter 2.  |
| 2    | Install the Clients by using one of the following methods: <ul style="list-style-type: none"> <li>■ Install the Command Console Client and the Fibre Channel Switch Client. See Chapter 3.</li> <li>■ Install the Fibre Channel Switch Client on the same computer that has the Command Console Client. This method assumes that you have already installed the Command Console Client version 2.0 or version 2.1. See Chapter 4.</li> </ul> |
| 3    | Install the Fibre Channel Switch Agent. See Chapter 5.   |
| 4    | Add the name of the client system to the Agent's list of client system entries. See Chapter 6.   |
| 5    | Add the name of the agent system to the Navigation Tree of each client system that is on the Agent's list of client system entries. Refer to the Command Console Client Help.  |
| 6    | Add fabrics and elements to the Fabric window. For information about the Fabric window, refer to the online Help in the Fabric window.   |

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

If you are installing SWCC for the first time, install the Command Console Client version 2.1, which will automatically install the Fibre Channel Switch Client (step 2, first bullet in Table 1-1). After you install the Clients, install the Fibre Channel Switch Agent (step 3 in Table 1-1).

If you already have Command Console Client version 2.1 or version 2.0 on your computer, install the Fibre Channel Switch Client (step 2, second bullet), and the Fibre Channel Switch Agent (step 3).

**NOTE:** You can install the Client and Agent software in any order; however, you must install the Client and Agent software either on the same computer or on different computers on the same network.



**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 Switch Client | Windows-based                | Fabric window and configuration windows that allow you to view the status of your switch |
| Fibre Channel Switch Agent  | Windows NT (Alpha and Intel) | Agent service and Agent configuration utility  |

## About the Client

The Client is divided into two components:

- The Command Console Client - The Command Console Client provides the Navigation window that you see when you click *StorageWorks Command Console* in *Start|Programs|Command Console*. This Navigation window provides you with the Navigation Tree in addition to other functions. The Navigation Tree provides a way for you to manage your systems.
- The Fibre Channel Switch Client - The Fibre Channel Switch Client works with the Command Console Client to provide information about your subsystems. The Fibre Channel Switch Client provides a Fabric window. The Fabric window displays detailed information on a particular fabric. A fabric is a collection of bridges, hubs, and switches within the same SAN. In this software release, a fabric will consist of only switches. Before you can access the Fabric window, you must add an agent system to the Navigation Tree. This step is done after you have installed the Client and Agent software. Once you have added an agent system to the Navigation Tree, you must add fabrics and elements to the Fabric window. For more information, refer to the online Help in the Fabric window.

In this software kit, when you install the Command Console Client (Chapter 3), you will automatically install the Fibre Channel Switch Client. You can install the Fibre Channel Switch Client separately (Chapter 4); however, you need to already have Command Console Client version 2.1 or version 2.0 on the same computer for the software to work properly.

## About the Agent

You must install the Fibre Channel Switch Agent on a host that is TCP/IP network-accessible to the client systems and to the switch. The Fibre Channel Switch Agent collects data from the device and passes the information along to the Fibre Channel Switch Client. The Agent software also enables Client software to communicate with your device over a network. The Fibre Channel Switch Agent is available on Windows NT (Alpha and Intel).

## Command Console Features

Command Console features include:

- Fault notification by pager (For more information on this function, go to the section “Monitoring Using Pagers” in the online Help. You can access this section quickly by going to the index entry, *monitoring, faults using pagers*, in Command Console Client’s online Help.)
- Easy graphical configuration of the systems
- Network connection by means of TCP/IP
- Monitoring of switches by using colored icons
- The Fibre Channel Switch Agent places the SNMP traps in the Application Log of the Windows NT Event Viewer program (*Start|Programs|Administrative Tools|Event Viewer*). For more information, see “Viewing the SNMP Traps” in Chapter 6.

## Client System Notification Options

The notification scheme defines the network protocol that the Agent will use when notifying the selected client system of a change of status in a subsystem, which is comprised of switches. The following table describes how the Transmission Control Protocol/Internet Protocol (TCP/IP) and the Simple Network Management Protocol (SNMP) work with SWCC.

**Table 1-3**  
**Client System Notification Options for Fibre Channel Switch Client**

| Options   | SWCC Function   |
|---|---|
| Transmission Control Protocol/ Internet Protocol (TCP/IP) | <ul style="list-style-type: none"> <li>■ Automatically updates the Fabric window of subsystem changes</li> <li>■ Required for Windows NT event logging and pager notification</li> <li>■ If you do not select TCP/IP, you will need to refresh the Fabric window to obtain the latest status of a subsystem.</li> </ul> |
| Simple Network Management Protocol (SNMP)                 | <ul style="list-style-type: none"> <li>■ Requires you to use an SNMP-monitoring program to view SNMP traps</li> </ul>   |

## SNMP Management Information Base

This software kit provides a Management Information Base (MIB) file, `cpqswcc.mib`, which you can use with your MIB compiler that came with your SNMP management application. The Agent will send SNMP traps to client systems that:

- are on its list of client system entries (For additional information on how to add client systems, see Chapter 6.)

and,

- have SNMP selected as a client system notification option

## Fault Notification by Pager for Windows-Based Client

You can set up Command Console to notify you by your pager when a critical event occurs. This function works with alphanumeric and numeric pagers. You can configure this function so that it sends pages to numerous people at different times. For example, if several people monitor the network in shifts, you can configure this function so that the software only pages the person currently working.

For more information on how to set up the pager notification, go to “Monitoring Using Pagers” in the online Help in the Command Console Client. You can access this section quickly by going to the index entry, *monitoring, faults using pagers*, in the online Help.



**CAUTION:** 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. AES is a component of the Command Console Client that runs in the background as a service. It also provides updates to the Navigation Tree.
  - The Agent service must be running.
  - 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.
-

# Connecting the Client to Your Agent

This chapter provides an overview on connecting your hardware so that you can use Command Console to manage your switch over the network. You need a TCP/IP network connection to link the Fibre Channel Interconnect Client to your Agent through the network. By using a network connection, you can configure and monitor your subsystem from:

- Your local area network (LAN)
- Your wide area network (WAN)

---

**IMPORTANT:** Command Console 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.

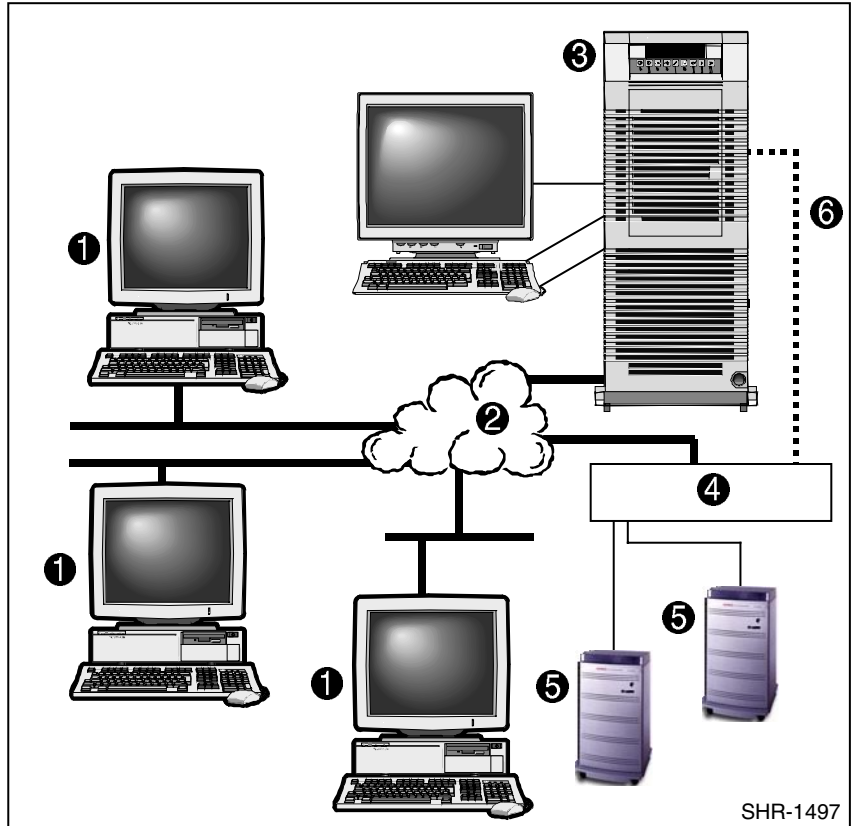
---

The Agent is Client's assistant in managing your switches. The Agent software receives the commands sent from the Client software, and it routes them to a switch. Switch status is transmitted back to Client from Agent through the network connection.

---

**IMPORTANT:**

- The Agent software must be installed on a host that has Windows NT and is connected to the same TCP/IP network as the switch. The software can be installed on a host that is not connected to the switch by a fibre cable.
  - The Fibre Channel IP addresses must be on a different subnet than the Ethernet IP. This will allow you to make an Ethernet connection to one switch from SWCC and manage other switches connected to the first switch by using inband management over the Fibre Channel. Inband management is when you send management information over the Fibre Channel.
-



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Figure 2-1. An example of a network connection with a switch

- ① Client system (Windows 98, Windows 95, Windows NT (Alpha and Intel))
- ② TCP/IP Network
- ③ Agent system, Windows NT (Alpha and Intel). It must be TCP/IP network-accessible to the client systems and to the SAN Switch. If a system has Windows NT, you can install the Client and Agent software on it.
- ④ A switch. The StorageWorks SAN Switch needs to be on the same TCP/IP network as the agent system.
- ⑤ Hardware connected by fibre cables to the switch.
- ⑥ Fibre cable. You can install the Agent software on a host that is connected to the SAN Switch by a fibre cable; however, the agent system must also be part of the same TCP/IP network as the Client software and the SAN Switch.

## Chapter 3

# Installing and Removing the Clients

This chapter contains instructions on how to install the Command Console Client and Fibre Channel Switch Client on Windows 98, Windows 95, or Windows NT (Alpha and Intel). It also provides information on how to access the online version of this document.

When you install the Command Console Client, you will also install the Fibre Channel Switch Client, which provides the Fabric window. You must also install the Fibre Channel Switch Agent on a host that is network-accessible to the switches and the Clients.

## Before You Begin

See the `ccclient.txt` file before you begin the installation. It contains any last-minute changes made to the Command Console Client, in addition to known problems with this release.

Also, an online copy of this guide (`swccinstallguide.pdf`) is available in .PDF format on the CD-ROM that accompanies this software. You need to view the .PDF file by using Adobe Acrobat Reader version 3.0 or later. You can obtain Adobe Acrobat Reader from <http://www.adobe.com>.

## Installing the Clients

This section contains instructions on how to install the Command Console Client and Fibre Channel Switch Client on Windows NT, Windows 98, and Windows 95.

---

**IMPORTANT:** Before you install the Command Console Client and Fibre Channel Switch Client, do the following:

- If you are using Windows NT, verify that you are logged into an account that is a member of the administrator group.
  - Check the Software Product Description (SPD) for a list of supported hardware.
  - If you have the Command Console Client open, exit the Command Console Client (*FileExit*).
  - If you have Command Console Client version 1.1b or earlier, remove the program by going into *Add/Remove Programs*.
  - Verify that you have installed one of the following browsers: Internet Explorer™ version 4.0 (or later), Netscape Navigator™ version 4.0 (or later), or HotJava™ version 1.1 (or later). The Fibre Channel Switch Client will launch your default browser to display the status of your switch.
  - If any of your shortcuts point to a floppy drive, a CD-ROM drive, or a removable drive, verify that the floppy or CD-ROM drives are not empty and that the removable drive is present. The installation will check the shortcuts on the desktop and in the Start menu. If you have Windows NT, the installation will check the shortcuts of all users for that computer, even if they are not currently logged on.
  - Read the release notes in the `ccclient.txt` file for the Command Console Client and the `fcswitch.txt` file for the Fibre Channel Switch Client and Agent.
- 

1. Insert the CD-ROM into the CD-ROM drive.
2. Using Windows Explorer®, go to the following directory on the CD-ROM, and double-click `setup.exe`:

For the Alpha platform:            `\SWCC\NTAlpha\client`

For the Intel platform:            `\SWCC\NTIntel\client`

The Command Console Client and Fibre Channel Switch Client installs, and the Asynchronous Event Service (AES) starts.

For more information on AES, read the following section, “About the Asynchronous Event Service.”

3. Install the Fibre Channel Switch Agent. For more information on how to install the Fibre Channel Switch Agent, see Chapter 5.



**NOTE:** After the Command Console Client is installed, you can access its Help, which provides detailed information on the configuration and use of Command Console. You can access Help for the Command Console Client by clicking *Help* in its window.

## About the Asynchronous Event Service

The Asynchronous Event Service (AES) is a component of the Command Console Client. It 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. When AES is running, it passes the trap (message) to the Navigation Tree. The Navigation Tree, in turn, passes the trap to the appropriate Fabric windows. You can identify a new trap that has been passed to the Navigation Tree because the status of one or more of its icons will change.

AES can also send traps to pagers. To activate this function, you must predefine each pager number in the *User Profile* section of the Event Notification menu.

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

The default is for AES to start automatically at boot time; however, you can change this. You can also stop or start AES. You need AES running to receive pages notifying you of faults and to provide updates to the Navigation Tree, Fabric windows, and Windows NT Event Viewer. When you stop AES, you are telling the Client software to do the following on its client system:

- No longer provide updates to the Navigation Tree and Fabric window
- Stop displaying updates obtained from the Asynchronous Event Service in the Application Log of the Windows NT Event Viewer
- Not page others when a fault occurs

### Stopping and Starting AES on Windows NT

To stop or start AES:

1. Open the Services window (*Start\Settings\Control Panel\Services*).
2. Click the *AsyncEventSvc* entry. The Service window appears.
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. Open the Services window, (*Start\Settings\Control Panel\Services*).
2. Double-click the *AsyncEventSvc* entry. The Service window appears.
3. Select *Manual* under Startup Type, and click *OK*.

### Stopping and Starting AES on Windows 98 and Windows 95

To stop or start AES:

1. Double-click the *Async Event Service* icon located in the Control Panel. The AES Service Settings window appears.
2. Click *Stop* or *Start*, then click *Apply*.

To disable the automatic start of AES when your system boots:

1. Double-click the *Async Event Service* icon located in the Control Panel. The AES Service Settings window appears.
2. Deselect *Automatic Startup on Boot* and click *Apply*.

## Removing the Command Console Client

Before you remove the Command Console Client from your computer, remove AES from Windows NT or deactivate it from starting automatically at system boot on a computer, running Windows 98 or Windows 95. This will prevent the system from reporting that a service failed to start every time the system is booted. Steps 2 through 4 tell you how to remove the Command Console Client.

**NOTE:** When you remove the Command Console Client, which includes the Navigation Tree, from your computer, you will no longer be able to access the Fabric windows.

1. In this step:
  - If you have Windows 98 or Windows 95, deactivate AES from starting automatically at system boot.
  - If you have Windows NT, remove AES from the computer.

### On Windows 98 and Windows 95:

Go into *Start\Settings\Control Panel\Async Event Service*, and uncheck "Automatic startup on boot."

### On Windows NT:

Go to the command prompt (*Start\Programs\Command Prompt*) and change to the directory to which you installed the Command Console Client. Type the following command and then press *ENTER*:

```
C:\Program Files\SWCC> AsyncEventService -remove
```

2. 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.
3. Select *Command Console V2.1* located in the window, and then click *Add/Remove*. The computer asks:

```
Are you sure you want to completely remove the  
selected application and all of its components?
```

4. Click *Yes*. The computer removes only the Command Console Client, and you can no longer access the Fabric windows.

**NOTE:** The procedure described above did not remove the Fibre Channel Switch Client. You can remove the Fibre Channel Switch Client by using the Add/Remove program (*Start\Settings\Control Panel\Add/Remove Programs*).



## Chapter 4

# Installing and Removing the Fibre Channel Switch Client

This chapter contains instructions on how to install the Fibre Channel Switch Client on Windows 98, Windows 95, and Windows NT (Alpha and Intel) for network access to the Fibre Channel Switch Agent. The Fibre Channel Switch Client, which provides the Fibre Channel Fabric window, renders a graphical interface for your Fibre Channel Switch Agent.

**NOTE:** If you already installed the Client software as mentioned in Chapter 3, you do not need to read this chapter. This is because the Fibre Channel Switch Client was installed with the Client software. This chapter is only for those, who have already installed Command Console Client version 2.1 or 2.0, but have not installed this version of the Fibre Channel Switch Client.

The Fibre Channel Switch Client provides the Fabric window, which displays the status of your fabrics. A fabric is a collection of switches, bridges, and hubs within the same SAN. For this software release, the Fibre Channel Switch Client will only provide information about your switches.

## Installing the Fibre Channel Switch Client

The following tells you how to install the Fibre Channel Switch Client on Windows 98, Windows 95, and Windows NT (Alpha and Intel):

---

**IMPORTANT:** Before you install the Fibre Channel Switch Client, do the following:

- Verify that you have installed Command Console Client version 2.1 or version 2.0. You can determine a Client's version by selecting *Help>About* in its window. The Command Console Client and the Fibre Channel Switch Client must be installed on the same computer.
  - Check the Software Product Description for a list of supported hardware.
  - Exit the Command Console Client (*File/Exit*). This will allow the Command Console Client to recognize the Fibre Channel Switch Client.
  - Read the release notes in the `fcswitch.txt` file for more information on the installation.
- 

1. Stop the Asynchronous Event Service.

### Windows NT:

Go to *Start\Settings\Control Panel\Services*. Select *AsyncEventSvc* (Asynchronous Event Service), and click *Stop*.

### Windows 98, Windows 95:

Go to *Start\Settings\Control Panel\Async Event Service*, and click *Stop*.

2. Insert the SWCC CD-ROM into the CD-ROM drive of the computer that has the Command Console Client. Using Windows Explorer, go to the following directory on the CD-ROM:

For the Alpha platform:            `\SWCC\NTAlpha\client\fibres`

For the Intel platform:            `\SWCC\NTIntel\client\fibres`

3. Double-click `setup.exe`.
4. Click *Next* to continue. The Command Console License Agreement window appears.
5. Click *Next* to continue. The software may display a message saying that it has found Command Console and that it will now install the Fabric window into the Command Console directory structure.
6. Click *OK*. The Fibre Channel Switch Client is installed into the directory in which the Command Console Client is located (`C:\Program Files\swcc`). In most cases, the Fibre Channel Switch Client will be installed into the following directory:

C:\Program Files\swcc\FibreWindow

The Fibre Channel Switch Client software installs.

7. Start the Asynchronous Event Service (AES). AES must be running for the Fabric window to receive updates. AES allows users to see traps and refreshes to the Fabric window (for example, to show that a switch has been added). To start AES, you can either reboot the computer or start it manually, as described below. The default is for AES to start automatically at boot time. For more information on AES, see Chapter 3.

**Windows NT:**

- a. Open the Services window (*Start\Settings\Control Panel\Services*).
- b. Click on the *AsyncEventSvc* entry. The Service window appears.
- c. Click *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 describe below:

- a. Open the Services window, (*Start\Settings\Control Panel\Services*).
- b. Double-click on the *AsyncEventSvc* entry. The Service window appears.
- c. Select Manual under Startup Type, and click *OK*.

**Windows 98, Windows 95:**

- a. Double-click the *Async Event Service* icon located in the Control Panel. The AES Service Settings window appears.
- b. Click *Stop* or *Start*, then click *Apply*.

To disable the automatic start of AES when your system boots:

- a. Double-click the *Async Event Service* icon located in the Control Panel. The AES Service Settings window appears.
  - b. Deselect *Automatic Startup on Boot* and then click *Apply*.
8. Install the Fibre Channel Switch Agent. For more information, see Chapter 5.

## Removing the Fibre Channel Switch Client

When you remove the Fibre Channel Switch Client from your computer, you will also remove the Fabric window. The Command Console Client will still be on your computer. The following procedure tells you how to remove the Fibre Channel Switch Client from Windows 98, Windows 95, and Windows NT.

1. Click *S*ettings under the *S*tart menu, then click *C*ontrol Panel.
2. Double-click the *A*dd/*R*emove Programs icon in the Control Panel. The Add/Remove Program Properties window appears.
3. Highlight *S*torageWorks*F*ibre*A*pplet located in the window, and then click *A*dd/*R*emove. The computer removes the Fibre Channel Switch Client from your computer.

**NOTE:** The procedure described above did not remove the Command Console Client. For information on how to remove the Command Console Client, see Chapter 3.



## *Chapter* **5**

# **Installing and Removing the Fibre Channel Switch Agent**

This chapter contains instructions for installing the Fibre Channel Switch Agent on Windows NT version 4.0 (Alpha and Intel) and for removing the Fibre Channel Switch Agent from Windows NT. When you install the Fibre Channel Switch Client to operate over a network, you must install the Fibre Channel Switch 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.

## **Installing the Fibre Channel Switch Agent**

This section tells you how to install your Fibre Channel Switch Agent from the Compaq website for SWCC. Install the Fibre Channel Switch Agent on only one system. You can install the Fibre Channel Switch Agent on multiple systems if you intend to manage separate collections of Fibre Channel switches.

---

**IMPORTANT:** Before you install the Fibre Channel Switch Agent, do the following:

- Install the Command Console Client and Fibre Channel Switch Client. See Chapter 3.
- Verify that you have the Windows NT SNMP service installed on your computer. If this service is not installed, the Fibre Channel Switch Agent will be unable to monitor your SAN Switch. The Windows NT SNMP service is available on your Windows NT installation CD-ROM. To check if you have the SNMP service, double-click *Services* in *Start|Settings|Control Panel*. The entry for SNMP will be shown in this window. If you install the SNMP service and you already have Windows NT service pack 3, 4, or 5 on your computer, you will need to reinstall the service pack after installing the SNMP service.
- For the Alpha computers running Windows NT, verify that you have only Windows NT service pack 3, 4, or 5 (*My Computer|Help|About*).
- For the Intel computers running Windows NT, verify that you have Windows NT service pack 3, 4, or 5 (*My Computer|Help|About*).
- 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.
- Read the release notes in the `fcswitch.txt` file for more information on the installation.

- 
1. Insert the SWCC CD-ROM into the CD-ROM drive.
  2. Using Windows Explorer, go to the following directory on the CD-ROM:

For the Alpha platform:        \SWCC\NTAlpha\Agent

For the Intel platform:        \SWCC\NTIntel\Agent

3. Double-click `setup.exe`.
4. Click *N*ext to continue. The Command Console License Agreement window appears.
5. Click *N*ext to continue. The Command Console Setup window appears.
6. Select the destination directory for the Agent software, then click *N*ext. The default is the following:  
C:\Program Files\swcc\FibreAgent\

The Folder Selection window appears giving you the name of the folder (StorageWorks) that is to appear in the Programs submenu. This folder will hold the listing for the Fibre Agent Configuration Utility.

7. Click *N*ext.

Or

Enter a new name for the folder and then click *Next*.

The software will check for configuration files in the directory that you specified to install the Agent. You will not have these files if you are installing the Agent for the first time. The software will do one of the following:

- If any of the configuration files are missing, the Fibre Agent Configuration Utility appears. Go to step 8.
  - If all three configuration files are found (`FibreAgent.cfg`, `client.ini`, `storage.ini`), the program will tell you where it found the configuration files. To change the configuration, run the Fibre Agent Configuration Utility after the installation. Click *OK*. The program finishes the installation and starts the Agent. The following steps do not apply because the software has been installed and the Agent has a previous configuration.
8. Click *Next* to configure your Agent. The Agent Setting window appears.
  9. 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. An element is a bridge, hub, or switch. In this software release, the term, element, will refer to only a switch.
  10. Click *Next*. The Client List window appears.
  11. 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 5-1**  
**Client System Notification Options for Fibre Channel Switch Client**

---

| Options   | SWCC Function   |
|---|---|
| Transmission Control Protocol/ Internet Protocol (TCP/IP) | <ul style="list-style-type: none"> <li>■ Automatically updates the Fabric window of subsystem changes</li> <li>■ Required for Windows NT event logging and pager notification</li> <li>■ If you do not select TCP/IP, you will need to refresh the Fabric window to obtain the latest status of a subsystem.</li> </ul> |
| Simple Network Management Protocol (SNMP)                 | <ul style="list-style-type: none"> <li>■ Requires you to use an SNMP-monitoring program to view SNMP traps</li> </ul>   |

---

12. Click *Add* to add the Client.

13. 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?
```

14. 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 switches.

---

15. Add this system to the Navigation Tree of each client system that you added to the Agent's list (*FileAdd System* in the Command Console Client). Refer to the Command Console Client Help.

**NOTE:** This software kit provides a Management Information Base (MIB) file, *cpqswcc.mib*, which you can use with your MIB compiler that came with your third-party SNMP management application.

## Removing the Fibre Channel Switch Agent from Windows NT

The following instructions tell you how to remove the Agent:

1. Click the *Add/Remove Programs* icon in the Control Panel. The *Add/Remove Program Properties* window appears.
2. Select *StorageWorkFibreAgent* located in the window, and click *Add/Remove*. The computer asks:  

```
Are you sure you want to completely remove the
selected application and all of its components?
```
3. Click *Yes*. The Agent is removed.
4. To remove the configuration, Client list, and the parameter files, change to the `C:\Program Files\SWCC\FibreAgent` directory and delete the files listed in the following table. These files may be in a different directory if you did not install the Agent in `C:\Program Files\SWCC\`. If you delete these files, you will need to reconfigure the Agent during reinstallation.



**CAUTION:** Other Agents use the `client.ini` and `storage.ini` file names, but their files are in different directories. If you cannot locate the files for the Fibre Channel Switch Agent, use the Find command in Windows Explorer to find the `FibreAgent.cfg` file. The `storage.ini` file for the Fibre Channel Switch Agent is located in the directory referenced by the second line in the `FibreAgent.cfg` file.

---

---

**Table 5-2**  
**Program Files**

| <b>File Name</b> | <b>File Type</b>   |
|------------------|--------------------|
| FibreAgent.cfg   | Configuration File |
| client.ini       | Client List File   |
| storage.ini      | Parameter File     |



## Chapter **6**

# Configuring the Fibre Channel Switch Agent

This chapter contains instructions on how to configure the Fibre Channel Switch Agent on Windows NT. You configure the Fibre Channel Switch Agent by using the Fibre Agent Configuration program. Topics in this chapter include:

- Client System Notification Options
- Adding a Client System Entry
- Modifying a Client System Entry
- Removing a Client System Entry
- Restarting the Agent
- Changing the Polling Interval
- Starting and Stopping the Agent

### Client System Notification Options

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. You can select one, both, or none of the notification options. The following table describes how the Transmission Control Protocol/Internet Protocol (TCP/IP) and the Simple Network Management Protocol (SNMP) work with SWCC.

**Table 6-1**  
**Client System Notification Options for Fibre Channel Switch Client**

| Options   | SWCC Function   |
|---|---|
| Transmission Control Protocol/ Internet Protocol (TCP/IP) | <ul style="list-style-type: none"> <li>■ Automatically updates the Fabric window of subsystem changes</li> <li>■ Required for Windows NT event logging and pager notification</li> <li>■ If you do not select TCP/IP, you will need to refresh the Fabric window to obtain the latest status of a subsystem.</li> </ul> |
| Simple Network Management Protocol (SNMP)                 | <ul style="list-style-type: none"> <li>■ Requires you to use an SNMP-monitoring program to view SNMP traps</li> </ul>   |

## Adding a Client System Entry

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. The following steps tell you how to add a client system entry:

**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 the Fibre Agent Configure entry in *Start|Programs|StorageWorks*. 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 a definition of the notification options, read the section, "Client System Notification Options," located at the beginning of this chapter.

5. Click *Add Client* to add the client system entry to the Client list.
6. Click *OK* or *Apply* to confirm your addition. If you click *OK*, you will leave the configuration program after you are asked to restart the Agent. If you click *Apply*, you will stay in the configuration program after you are asked to restart the Agent.

You are asked if you want to restart the Agent.

7. Click *Yes*. The Agent is restarted.



## Modifying a Client System Entry

This section contains instructions on how to modify a client system entry on Windows NT.

1. Click the Fibre Agent Configure entry in *Start|Programs|StorageWorks*. The StorageWorks Command Console Fibre Agent Configuration window appears.
2. Click the *Clients* tab. The Clients window appears.
3. Select the client system entry that 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, read the section, “Client System Notification Options,” located at the beginning of this chapter.

5. Click *Modify Client*.
6. Click *OK* or *Apply* to confirm your changes. If you click *OK*, you will leave the configuration program after you are asked to restart the Agent. If you click *Apply*, you will stay in the configuration program after you are asked to restart the Agent.

You are asked if you want to restart the Agent.

7. Click *Yes*. The Agent is restarted.

## Deleting a Client System Entry

When you delete a client system entry from the Agent’s list, you are telling the Agent to no longer send updates to that client system. Instructions on how to delete a client system entry are as follows:

1. Click the Fibre Agent Configure entry in *Start|Programs|StorageWorks*. 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. Click *OK* or *Apply* to confirm your deletion. If you click *OK*, you will leave the configuration program after you are asked to restart the Agent. If you click *Apply*, you will stay in the configuration program after you are asked to restart the Agent.

- You are asked if you want to restart the Agent.
6. Click *Yes* to restart the Agent.

## Changing the Polling Interval

This section contains instructions on how to change the polling interval of the Agent.

1. Click the Fibre Agent Configure entry in *Start\Programs\StorageWorks*. 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. Click *OK* to confirm your choice. You are asked to restart the Agent
4. Click *Yes* to restart the Agent.

## Stopping and Starting the Fibre Channel Switch Agent

This section contains instructions on how to stop and start the Fibre Channel Switch Agent. The Agent runs as a service in the background. When you stop the Agent, you are telling the software to no longer monitor the switches that were added as elements to the agent system's Fabric window.

1. Verify that the Fabric windows, pertaining to this agent system, are closed on all of your client systems.
2. Click the Fibre Agent Configure entry in *Start\Programs\StorageWorks*. 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

The default is for the Agent to start at system boot; however, you may want to change this option. For example, if you need to check your system, you may not want the Agent to start at system boot. You can change the automatic startup by going into the Services window. The following instructions tell you how to change the default:

1. Open the Services window, *Start\Settings\Control Panel\Services*.

2. Double-click on the entry for the Fibre Channel Switch Agent. The Service window appears.
3. Select *Manual* under Startup Type, and click *OK*.

**NOTE:** If you want to enable the Fibre Channel Switch Agent to start at system boot, change the startup type to automatic.

## Viewing the SNMP Traps

The Fibre Channel Agent gathers the SNMP traps and puts them in the Windows NT Event Viewer program (*Start\Programs\Administrative Tools\Event Viewer*), which resides on its computer and on the client systems that it notifies (Event Viewer is on Windows NT operating systems only.). To view the SNMP traps, go into the Application Log (*Log\Application*) in the Event Viewer. The events for your subsystems and Agent will be listed under the sources: AsyncEventSvc and FibreAgent. You can obtain additional details of an event by double clicking on its entry.

For your client system to receive traps, the Asynchronous Event Service (AES) needs to be running on that computer. To start AES, do the following:

Windows NT - Go to *Start\Settings\Control Panel\Services*. Select *AsyncEventSvc* (Asynchronous Event Service), and click *Start*.



## Usage Notes and Troubleshooting

This appendix describes general usage notes and tips for troubleshooting problems for Command Console Client, Fibre Channel Switch Client, and Fibre Channel Switch Agent. Topics include:

- System Requirements
- General Usage Notes
- Web Management Limitations

### System Requirements

This section describes the special considerations for various operating systems and Agents. The following topics are presented in this section:

- Add System Error - Windows 95, Windows 98 Services File
- Network Port Assignments

#### **Add System Error - Windows 95, Windows 98 Services File**

You will receive an “Add System Error” message when you try to add or delete a system if you changed the items regarding the system network (for example, removing the network adapter, and then adding it back in) after installing SWCC. The error window states: No Agent running on specified host.

This error occurred because the entries for Command Console were removed when Windows 95 or Windows 98 upgraded the `\windows\services` file.

You are able to access the systems that are already listed in the Navigation Tree without problems.

To fix this problem, reinstall Command Console or edit the `\windows\services` file and re-enter the following that correspond to the software on your system:

|                       |                       |  |
|-----------------------|-----------------------|--|
| <code>spgui</code>    | <code>4998/tcp</code> | <code>#Command Console</code>                                      |
| <code>ccdevmgt</code> | <code>4993/tcp</code> | <code>#Device and Enclosure<br/>Management Client and Agent</code> |
| <code>ccfabric</code> | <code>4989/tcp</code> | <code>#Fibre Channel Switch Client<br/>and Agent</code>            |
| <code>spagent</code>  | <code>4999/tcp</code> | <code>#HS-Series Client and Agent</code>                           |
| <code>spagent3</code> | <code>4994/tcp</code> | <code>#HSZ22 Client and Agent</code>                               |
| <code>ccagent</code>  | <code>4997/tcp</code> | <code>#RA200 Client and Agent</code>                               |
| <code>spagent2</code> | <code>4995/tcp</code> | <code>#RA200 Client and Agent</code>                               |

The last line in the file must end with a carriage return. The system does not need to be rebooted after editing the services file.

## Network Port Assignments

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 already 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 Switch Agent and Client software (4989). The exception is the RA200 Agent and Client, which has two default network port numbers (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 are the port names and the default numbers:

|                       |          |  |
|-----------------------|----------|--|
| <code>spgui</code>    | 4998/tcp | #Command Console                                     |
| <code>ccdevmgt</code> | 4993/tcp | #Device and Enclosure<br>Management Client and Agent |
| <code>ccfabric</code> | 4989/tcp | #Fibre Channel Switch Client<br>and Agent            |
| <code>spagent</code>  | 4999/tcp | #HS-Series Client and Agent                          |
| <code>spagent3</code> | 4994/tcp | #HSZ22 Client and Agent                              |
| <code>ccagent</code>  | 4997/tcp | #RA200 Client and Agent                              |
| <code>spagent2</code> | 4995/tcp | #RA200 Client and Agent                              |

## General Usage Notes

This section provides general information, regarding Command Console and its Agents, to help you understand certain error messages. It contains the following topics:

- Authorization Error When Adding an Agent System
- Increasing Screen Space for the Fabric Window
- Invalid or Missing Fault Displays and Event Logs
- Pager Notification and Event Logging Continues After Exiting the Command Console Client
- Starting Client with Network Connections
- Windows 95 and Windows 98 Monitor Energy Saver Mode

### 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 Window

Run the Client on a monitor that has a minimum of super VGA (SVGA) (800X600) display resolution because the Fabric window requires a certain amount of screen space to properly display its 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 window.

## 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, Fabric windows, and Windows NT Event Viewer (Windows NT only).

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

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 Fabric window pertaining to that subsystem to obtain its latest status.

- Agent may be missing or not running.
- There may be network discontinuity.
- The Agent may not be properly configured for a client system.

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

You may have noticed continuous pager notification and Windows NT event logging in response to subsystem faults, even though you have exited Command Console Client. This behavior is normal. It is the result of Command Console Client starting the paging and event logging activity while it was running.

Command Console Client's Asynchronous Event Service (AES) module runs under Windows 98, Windows 95, or Windows NT as a service. It continues to run, even after you have exited the program. The AES module communicates with Agents, and it activates paging and event logging when a subsystem event occurs.

**NOTE:** When you stop AES on a client system, you are telling the Client software to no longer receive updates.

To stop paging and event logging on a client system:



- Windows NT - Go to *Start\Settings\Control Panel\Services*. Select *AsyncEventSvc* (stands for Asynchronous Event Service), and then click *Stop*.
- Windows 98 and Windows 95 - Go to *Start\Settings\Control Panel\Async Event Service*, and then click *Stop*.

## Starting Client with Network Connections

To start Command Console Client with network connections to your subsystems, click *StorageWorks Command Console* in *Start\Programs\Command Console*.

You can also enter the following line at a command prompt on Windows 98, Windows 95, or Windows NT to start the Client with network connections:

```
\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. If you specify these parameters, Client opens with the system selected and the subsystem displayed in the Fabric window. If Client is not already aware of the system and the subsystem, it adds them to the Navigation Tree.

## Windows 95 and Windows 98 Monitor Energy Saver Mode

In certain instances, Command Console may be incompatible with Windows 95 and Windows 98 monitor energy saver mode. If you use Command Console with a Windows 95 (Windows 98) monitor and/or graphic adapter in the "low power" mode, there is a possibility that your system could lock up with a blank screen.

## Web Management Limitations

This section provides solutions to some of the problems that you may have found while using your browser to manage your switches.

**NOTE:** This software requires a Java™ capable browser, which may be slow in some environments. For the best performance, use a highly capable computer that has one of the following browsers: Netscape Navigator version 4.0 (or later), Internet Explorer version 4.0 (or later), or HotJava version 1.1 (or later).

## **Java Disabled in Some Versions of Netscape Navigator**

Java may be disabled in some versions of Netscape Navigator. To enable it, select the Enable Java and Enable JavaScript options in the Advanced Preferences menu of Netscape Navigator (*EditPreferencesAdvanced*).

## **Browser Hangs on Java Applications**

Netscape Navigator or Internet Explorer may hang on Java applications on Windows NT with Service Pack 3 due to True Color. To work around this problem, either change the Windows NT display settings to other than True Color or download the Microsoft hotfix to modify WIN32K.SYS.

You do not need to install this hotfix if you have installed Service Pack 4 for Windows NT version 4.0. You can find the Microsoft hotfix from Microsoft Technical Support at <http://www.microsoft.com>.

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