DIGITAL StorageWorks Command Console

Getting Started

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May 1998

This guide contains installation and configuration procedures for setting up Command Console.

Revision/Update Information:	Version 2.0
Operating System and Version:	Microsoft Windows NT 3.51, 4.0 Windows 95 DIGITAL OpenVMS DIGITAL UNIX
Software Version:	DIGITAL StorageWorks Version 2.0

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Introduction

Thank you for purchasing the DIGITAL™ StorageWorks™ products! Command Console is a feature-rich, graphical user interface (GUI) and remote management program for DIGITAL StorageWorks array controllers. It provides an extremely user-friendly method of monitoring, configuring, and troubleshooting a large number of storage subsystems.

Command Console can be connected to your DIGITAL StorageWorks controller in several ways. Once connected, the program issues commands and interprets the responses sent by the controller. The user interface displays in a graphical form, the logical and physical layout and status of a selected storage subsystem.

Documentation

In this manual, you will learn how to install and configure the two Command Console components: Client and Agent. Further instructions on how to use all of the Command Console features can be found online, with the Client's online help system.

First read the hardware documentation for your controller to better understand the material in this book. You should know how a RAID controller works and be familiar with managing virtual devices on your hardware.

For More Information

This document is provided only to get you started using Command Console. Refer to the online help documentation for complete instructions on using this program. Read Client's online help for detailed instructions on configuring and connecting Client to your subsystems. Read the user guide for each Agent type for more Agent information.

In This Manual…

This manual contains the following chapters and appendix:

Chapter 1 - Introduction. Contains information about Command Console's documentation, including online Help, documentation style conventions, intended audience, and related documentation.

Chapter 2 - About Command Console. Provides a description of Command Console, including its two components: Client and Agent, as well as a list of features.

Chapter 3 - Connecting the Client to Your Storage Subsystems. Provides three different methods that you can use to connect Command Console to your storage subsystems.

Chapter 4 - Installing the Client. Provides instructions on how to install Command Console on a Windows NT™ (Intel®) system. It also provides useful information that can assist you in preparing for the installation.

Chapter 5 - Installing the RA200 Agents. Provides instructions on how to install the Command Console Agent on the following platforms: DIGITAL UNIX™, DIGITAL OpenVMS™ and Windows NT (Alpha™ or Intel).

Chapter 6 - Configuring the RA200 Agents. Contains information to assist you in determining RA200 Agents configuration for: DIGITAL UNIX, DIGITAL OpenVMS, and Windows NT (Alpha or Intel).

Chapter 7 - Installing the HS series Agents. Provides installation instructions for DIGITAL's HS series Agents, including the HSZ20, HSZ40, HSZ50, HSZ70, HSD30, HSD50, HSJ30, and HSJ50.

Chapter 8 - Configuring the HS series Agents. Provides information on how to configure the HS series Agents on the following platforms: DIGITAL OpenVMS, DIGITAL UNIX, and Windows NT (Alpha and Intel).

Chapter 9 - Setting-Up ServerWORKS Support. Describes how DIGITAL ServerWORKS Version 3.0 interfaces with Command Console when an Agent detects an event with a controller, virtual disk, or physical device.

Appendix A - Usage Notes and Troubleshooting. Describes usage and troubleshooting information for Command Console and its agents. It also provides information on the following: .ini files, cluster integration, the communication logical unit number (LUN), and system requirements.

Style Conventions

The following style conventions are found in this manual:

Convention	Type of Information
Bold type	Words or characters you type.
Italic type	User interface text.
`Courier type`	System messages that will occur during installation. Many of these messages will require a user response. Also used for file and directory specifications that you use during installation.

Special Captions

The following captions identify important information within this Getting Started manual:

_____**CAUTION**_____

The **CAUTION** caption indicates the presence of a hazard that might damage hardware or corrupt software.

_____

_____**Note**_____

The **Note** caption provides additional information for the current topic.

_____

Online Help

The online documentation includes help for the Navigation Tree and help for each Storage Window. It also includes:

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

- Reference information about RAID

- Glossary of terms

Unzipping Files

If you download a zip file from the Web, you must unzip it on the target operating system and retain the directory structure. For example, do not unzip your OpenVMS agent kit on a Windows NT system. It will not install properly. Refer to the documentation for your unzip utility for further information. To obtain an unzip utility for any platform, go to the following Web site:

http://www.cdrom.com/pub/infozip

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About Command Console

The DIGITAL StorageWorks Command Console Product is made up of two components: Client and Agent. In this chapter, you will learn about these two Command Console components and how they provide a graphical window into the operation of your storage subsystems.

About the Client

The Client is the graphical user interface portion of Command Console. Client runs on a local system with either Microsoft Windows 95 ™or Windows NT. You can connect Client to your storage subsystems using either local or network connections, depending on the controller.

About the Agent

Command Console Agent is a companion program to the Client that runs on your host system. Agent enables Client to communicate with your storage subsystem over a network. Agent is available for a variety of popular host operating systems, including Windows NT (Intel and Alpha), DIGITAL OpenVMS, and DIGITAL UNIX.

Command Console Features

The following is a list of Command Console features:

- Automatic event logging on Windows NT

- Direct, serial port connection for HSZ controllers

- Easy, graphical configuration of the storage system

- Fault notification by pager

- Graphical view of the controller and its physical and logical storage elements

- Host port SCSI bus virtual terminal connection for HSZ controllers

- Network connection via TCP/IP protocol.

- Security to protect access to Storage Subsystems

- Status monitoring of the storage subsystem using colored icons

Client Notification Options

The notification scheme defines the network method to be used by the Agent when notifying the selected Client of a subsystem fault. The TCP/IP option is the Client notification scheme. If you do not select it, your Client will not display spontaneous faults until it polls the Agent to update its status. To use the SNMP option, you must have an SNMP-compatible monitoring program (ServerWORKS, for example) running on your Client system. You can select one or both options.

Client Access Options

The Access Privilege Level defines the level of storage subsystem access you wish to grant to the selected Client through this Agent. You can select Overall Status (No Access), Detailed Status (Show Level Access Only), or Configuration (Storage Subsystem Configuration Capability). Overall Status does not allow the Client to open a storage page. Detailed Status allows the Client to open a storage page, but it cannot make modifications. Configuration allows the client to make changes to the subsystem configuration. Please see the readme.txt file for information on network configuration and access.

Agent Password

The Agent password allows you to change the configuration of a subsystem, provided that you have Access Privilege Level 2.

3

Connecting the Client to Your Storage Subsystems

This chapter describes the four ways you can connect the DIGITAL StorageWorks Command Console product to your storage subsystems:

- Dial up network connections such as PPP, SLIP, or RAS

- Direct serial connection

- Host bus SCSI connection

- Network connection via the TCP/IP protocol

Direct Serial Connection

The simplest connection to the storage subsystem is a direct cable connection from the local system running Command Console Client to one of the subsystem controller's serial maintenance ports. However, because direct serial connections are only available with stand-alone Storage Windows, you will be unable to connect locally to a subsystem by means of the Navigation Tree. Direct serial connections are not supported for all controllers.

Figure 3-1. Direct Serial Connection

LKG-10476-WI
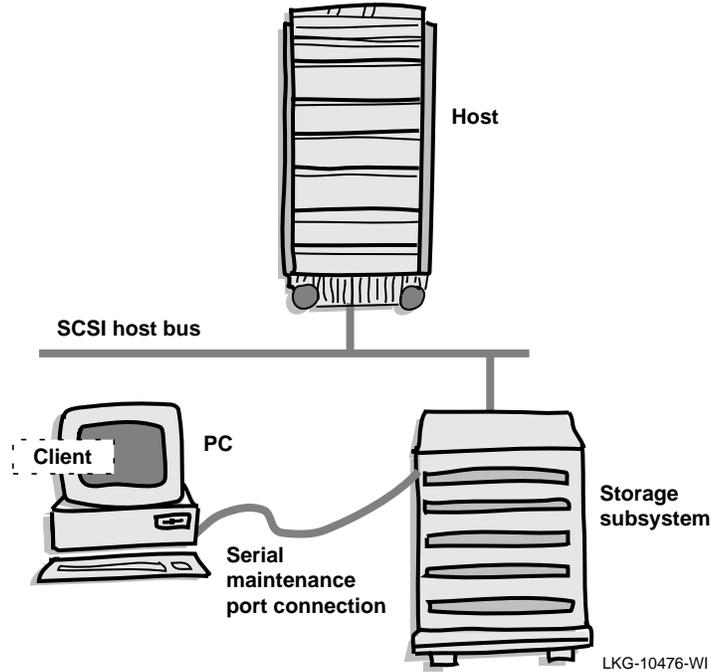
Host Bus SCSI Connection

A host bus SCSI connection is another way that you can connect Client to your storage subsystem. To do this, you must connect the DIGITAL StorageWorks controller subsystem to the host. In addition, the subsystem must contain at least one configured virtual disk.

If your subsystem does not contain a configured virtual disk, and you still want to use the host bus SCSI connection, you must establish a temporary connection through the controller's serial maintenance port, so that you can create a virtual disk for the subsystem.

_____ **Note** _____

Host bus SCSI connections are not supported on all controllers.
_____

Figure 3-2. Host Bus SCSI Connection

LKG-10477-WI
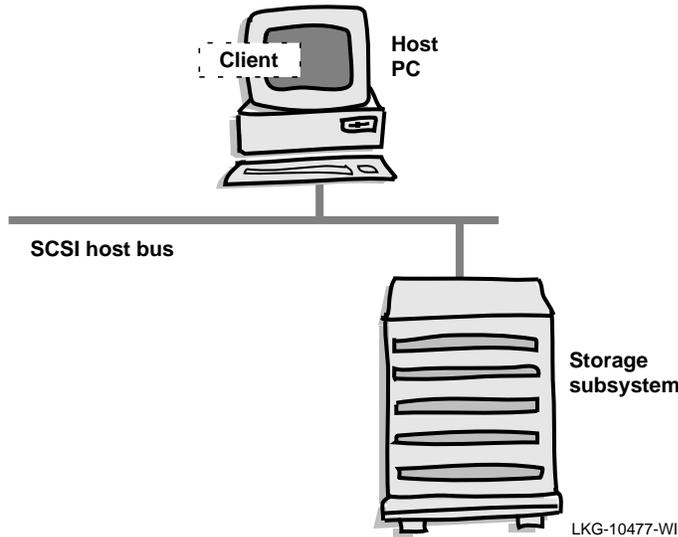
Network Connection

Command Console has sophisticated networking capabilities. If the local system that you are running Client on has a TCP/IP network connection, you can connect the program to an Agent through the network on a system connected to your storage subsystem. To connect this way, you must run the Command Console Agent program on your host.

In the Command Console Agent Program, you need to only enter the Client name, for example, fifo. However, if you are connecting through a router, bridge, or gateway, you may have to enter a complete path; for example, fifo.cxo.dec.com.

Agent acts as Client's assistant in controlling your storage subsystem. Commands sent from Client are received by Agent and are routed to the storage subsystem through the subsystem's SCSI host bus. Subsystem status is transmitted back to Client from Agent via the network connection. You can also use Agent for access protection.

Using a network connection, you can configure and monitor your storage subsystem from anywhere on your local area network (LAN). If your LAN has wide area network (WAN) or Internet connectivity, you can monitor your subsystem with TCP/IP network reliability.

SWCC does not support DHCP and WINS. Please see the readme.txt file for a more detailed description of the network requirements and troubleshooting.

Figure 3-3. Network Connection

LKG-10478-WI
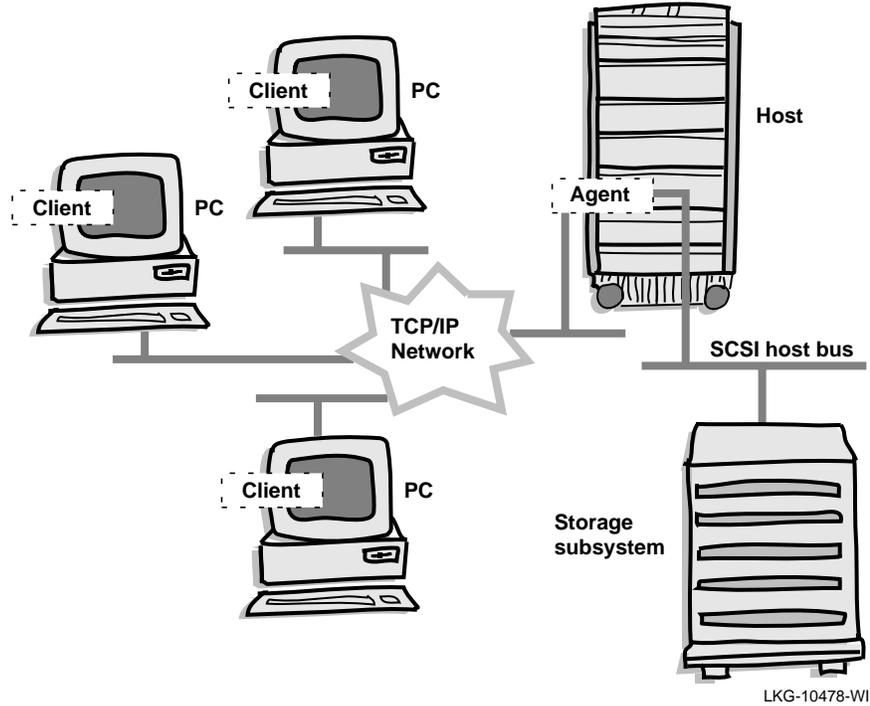
Choosing the Right Connection Type

There are many issues to consider when choosing a connection type to use between Client and your subsystems. Each connection type differs in the type of features or limits it provides. The following table shows these differences, as well as the benefits and drawbacks of each connection type.

Connection Type	Create Virtual Disk	Delete Virtual Disk	Fault Events: Client Visual Notification	Fault Events: Paging Notification	Fault Events: NT Event Logging
Local Serial Connection (Navigation Tree and Agent not used)	Supported	Supported	Supported	Not Supported	Not Supported
Local SCSI Bus	Supported	Supported	Supported	Not Supported	Not Supported

Connection Type	Create Virtual Disk	Delete Virtual Disk	Fault Events: Client Visual Notification	Fault Events: Paging Notification	Fault Events: NT Event Logging
Connection (Navigation Tree and Agent not used)					
Local Network Connection (Client and Agent running on the same host)	Supported	Supported	Supported	Supported	Supported
Remote Network Connection (Client running on a remote system from Agent on a host)	Supported. Follow-up operating system configuration cannot be performed remotely.	Supported. Follow-up operating system configuration cannot be performed remotely.	Supported	Supported	Supported
Remote RAS Connection (Client running on a remote system with a dial-up network connection)	Supported. Follow-up operating system configuration cannot be performed remotely.	Supported. Follow-up operating system configuration cannot be performed remotely.	Supported reliably only while RAS intact. Some events may be missed while dial up connection is broken.	Supported reliably only while RAS intact. Some events may be missed while dial up connection is broken.	Supported reliably at agent end only. Some events may be missed at Client end while dial up connection is broken.

Operating System Considerations

SWCC 2.0 allows you to reconfigure the storage subsystems. For the operating system to properly reflect these changes, you may need to take action outside the scope of SWCC, such as initialize the drive or reboot the system. Please reference the readme.txt file and your operating system's documentation for further information.

4
Installing the Client

This chapter contains instructions on how to install the Client component of the DIGITAL StorageWorks Command Console product on a Windows NT and Windows 95 (Intel) platform. It provides the minimum requirements necessary to properly install Command Console, as well as other helpful information that can assist you during installation.

If you are installing Command Console using a network connection, you must also install the individual Agents for each host system.

Before You Begin

There is a `README.TXT` file available for your review. It contains any last-minute changes made to Command Console, as well as any known problems with this release. To avoid conflicts, read this file before proceeding with the installation.

Also, an online copy of this manual is available in .PDF format, on the CD-ROM that accompanied this Getting Started manual. You can read this file using an Adobe ® Acrobat® Reader. If you do not have a copy of the Adobe Acrobat Reader, you can obtain one from the SWCC CD-ROM or from the Web as follows:

From the SWCC CD-ROM:

1. Open the subdirectory for your operating system found on the CD-ROM for a copy of Adobe Acrobat Reader.

2. Install the Adobe Acrobat Reader on your machine.

3. Open the `GettingStarted.PDF` file found in the top level of the CD-ROM.

From the Web:

1. In your browser, enter the following address:

   `http://www.adobe.com`

2. Download the Adobe Acrobat Reader that corresponds to your platform.

Client Installation Requirements for Windows NT and Windows 95

Windows NT and Windows 95 operating systems must meet the following minimum requirements for the Client to install and operate successfully:

Architecture	Intel 486/66 MHz, 16 MB memory, 10 MB free disk space, CD-ROM drive
Operating system	Windows NT Version 3.51 (Service Pack 5)
	Windows NT Version 4.0 (Service Pack 3)
	Windows 95 (build 950 or later, kernel32.dll version 4.00.951 (7/29/97, 337016 bytes) or later) Refer to the readme.txt file for details.
Monitor	VGA (best viewed with 800x600 SVGA)
Input devices	Keyboard, mouse
Modem *(optional - for pager use only)*	Hayes-compatible
SCSI adapter *(optional - for local connection through a host bus only)*	fast/wide/differential for DIGITAL StorageWorks 6-port controllers (e.g., HSZ40 controllers) OR fast/wide/single-ended for DIGITAL StorageWorks 2-port controllers (e.g., HSZ20 controllers)
Serial port *(optional - for connection through a serial port only)*	Standard serial port capable of at least 9600 baud.
Network adapter *(optional - for network connection only)*	TCP/IP-compatible network card

Improving VGA Resolution for Command Console

It is highly recommended that you run Client on a monitor that has a minimum of SVGA (800x600) display resolution, as the Storage Window requires a certain amount of screen space to properly display its contents. A VGA display will limit the screen space available for the Storage Window, which in turn could cause visual problems.

If you must use a VGA resolution, consider the following helpful suggestions to provide more "screen space" for the Storage Window:

- If the Client is running on a Windows 95 or Windows NT Version 4.0 platform, select the Task Bar's *Auto Hide* feature to make more screen space available for the Storage Window.

- Use the Storage Window's menu settings to remove the toolbar, if it is preventing you from viewing the scroll bars at the bottom of the display.

- If you use the Client with a 24-device, high availability enclosure, you may find it easier to configure the subsystem by setting the system type to `Generic`. Remember to return the setting to `High-Availability 24-Device Pedestal` for monitoring and viewing purposes.

About Windows 95 Monitor Energy Saver

Command Console is incompatible with Windows 95 Monitor Energy Saver mode. If you use Command Console with a Windows 95 monitor and/or graphic adapter in the "low power" mode, there is a strong possibility that your system could lock up with a blank screen.

Installing the Client

This section contains instructions on how to install the Command Console Client on the Windows NT and the Windows 95 operating systems.

_____ **Note** _____

If you are using Windows NT, you must be logged into an account that is a member of the administrator group.

_____

From the CD-ROM:

1. On the CD-ROM, run \NTINTEL\CLIENT\ `setup.exe.`

2. Go to step 3 of the following section, "From the Web".

From the Web:

1. Unzip the installation kit on the same operating system that it will be installed under. For instance, unzip SWCC20DUNIX.ZIP on a DIGITAL UNIX system. Be sure to retain the directory structure when you unzip the file.

   For more information on unzipping a file, please see the section, "Unzipping Files", in the introduction of this manual.

   The unzip utility creates the subdirectory, NTINTEL\CLIENT\, under the directory into which you unzipped SWCC 2.0. If you do not see the subdirectory, NTINTEL\CLIENT\, it was not unzipped properly. Unzip the installation kit again.

2. Run NTINTEL\CLIENT\ `setup.exe` in the directory that you unzipped `SWCC20client.zip.` If you do not see the subdirectory, NTINTEL\CLIENT\, it was not unzipped properly. Unzip the installation kit again.

3. Enter the appropriate information in response to the prompts. The installation program installs a Start menu item (on Windows NT 4.0 or Windows 95) or a program group on Windows NT 3.51.

_____ **Note** _____

After the Client is installed, you can access an online help file that provides detailed information regarding the configuration and use of Command Console.
_____

Asynchronous Event Service

Asynchronous Event Service (AES) is a Windows NT and Windows 95 feature within DIGITAL StorageWorks for Command Console that collects and forwards all traps to the appropriate applets and/or individual pagers.

When AES receives a new trap, it automatically forwards the trap to the Applet Manager. The Applet Manager, in turn, passes the trap onto the appropriate applets. You can visually identify a new trap that has been passed on to the Applet Manager, because the status of one of more of its icons will change on the GUI.

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* window.

_____ **Note** _____

For the latest information on how to diagnose problems that could arise when sending pages, consult the Command Console Help file. The Help file provides instructions on how to put AES into a debug mode.
_____

Running AES on Windows NT

AES automatically starts when your system is booted. To stop or restart AES, click on the *Services* icon located under the Control Panel. "*AsyncEventSvc*" is the entry for AES in the *Services* window. AES is one of several services that you can start, stop, pause, and continue under the *Services* icon.

Running AES on Windows 95

AES automatically starts when your system is booted. To stop or restart AES, click *Async Event Service* icon located under the *Control Panel*. To disable the automatic start of AES when your system boots, deselect the *Automatic Start Upon Boot* option, then click *Apply*.

5

Installing the RA200 Agents

The DIGITAL StorageWorks Command Console product uses its RA200 Agents to establish the communication pathway between the Client and its subsystems over the network. When you install the Command Console Client to operate over a network, you must install an Agent. The Agent is responsible for establishing communication between the Client and its subsystems on the network.

This chapter contains instructions on how to install the RA200 Agent on the DIGITAL UNIX system, DIGITAL OpenVMS, and the Windows NT (Intel and Alpha) system.

_____ **CAUTION**_____

Verify that the RAID Array is running and you have the appropriate firmware updates and drivers properly installed, before you begin the installation procedures for the Agent. Please reference the README.TXT file for details.
_____

Installing the RA200 Agent on a DIGITAL OpenVMS System

If you download a zip file from the Web, you must unzip it on the target operating system and retain the directory structure. Do not unzip your OpenVMS agent kit on a Windows NT system. **This will not install properly**. Refer to the documentation for your unzip utility.

Instructions on how to install the RA200 Agent on a DIGITAL OpenVMS system are as follows:

1. Insert the SWCC CD-ROM into the host system connected to the subsystem controller or unzip the file downloaded from the Web. If you do not see subdirectories in the directory to which you unzipped the file, it did not unzip properly. Unzip the file again, and retain the directory structure.

For more information on unzipping a file, please see the section, "Unzipping Files", in the introduction of this manual.

For the examples in this section, assume the CD-ROM device is DKB600 and the directory to which the files have been unzipped from the Web is DKB0:[ZIPS].

If you are installing from the SWCC CD-ROM, type the following command (substituting the name of your CD-ROM device):

$ **MOUNT/OVER=ID/MEDIA=CD DKB600:**

2. In this step you will copy the files from the installation medium and change the file names to a format acceptable to the POLYCENTER ™ Software Installation (PCSI) Utility. First, create a local directory on your host system to which you will copy the files from the installation medium.

Copy the file from the installation medium to a file with the correct PCSI file name on your computer. To determine the correct file name (which may change with different versions of the SWCC kit), first access the file called AXPVMS.TXT. The correct file name for the kit is listed in AXPVMS.TXT.

Type the text file, AXPVMS.TXT. Then, copy the AXPVMS.PCS file to the file name specified in AXPVMS.TXT, for example `DEC-AXPVMS-CCAGENTRA200-V0200-184-1.PCSI`. The following examples assume you created a directory called DKB100:[TEMP]:

From the SWCC CD-ROM:

```
$ COPY DKB600:[VMS.AGENTS.MLG]AXPVMS.PCS -

_$DKB100:[TEMP]DEC-AXPVMS-CCAGENTRA200-V0200-184-1.PCSI
```

The PCSI installation kit for your system has now been copied into DKB100:[TEMP] with the correct file name for the PCSI installation utility.

From the Web:

```
$ COPY DKB0:[ZIPS.VMS.AGENTS.MLG]AXPVMS.PCS -
_$DKB100:[TEMP]DEC-AXPVMS-CCAGENTRA200-V0200-184-1.PCSI
```

The PCSI installation kit for your system has now been copied into DKB100:[TEMP] with the correct file name for the PCSI installation utility.

3. Invoke the PCSI installation utility to install the kit by typing the following command:

```
$ PRODUCT INSTALL CCAGENTRA200/SOURCE=DKB100:[TEMP]
```

If you mistype the PCSI file name in step 2 or use a file name from a previous kit (which is no longer valid for the current kit), you will see the following error messages when you try to install the kit:

%PCSI-E-READERR, error reading DEC-AXPVMS-SWCC-V200-2Q-7.PCSI;1

-PCSI-E-INVDOCSTR, internal error - product document has invalid domain structure

%PCSI-E-S_OPFAIL, operation failed

%PCSIUI-E-ABORT, fatal error encountered - operation terminated

If this error message appears, verify that you copied the kit to the correct PCSI file name.

If you did not see the previous error message, the following text appears:

```
The following product has been selected:

DEC AXPVMS CCRA200AGENT V2.0          Layered Product

Do you want to continue? [YES] <return>

Configuration phase starting ...
```

You will be asked to choose options, if any, for each selected product and for any products that may be installed to satisfy software dependency requirements.

```
DEC AXPVMS CCRA200AGENT V2.0: StorageWorks Command
Console RA200 Agent for OpenVMS AXP

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reserved.

Digital Equipment Corporation

This product does not use a PAK.

Do you want the defaults for all options? [YES] <return>

Do you want to review the options? [NO] <return>

Execution phase starting ...

The following product will be installed:

DEC AXPVMS CCAGENTRA200 V2.0  Layered Product

Portion done: 0%...70%...80%...90%...100%

The following product has been installed:

DEC AXPVMS CCAGENTRA200 V2.0  Layered Product

DEC AXPVMS CCRA200AGENT V2.0: StorageWorks Command
Console RA200 Agent for OpenVMS AXP
```

```
Run @SYS$MANAGER:RA200CONFIG.COM to configure this
product.

Insert the following lines in
SYS$MANAGER:SYSTARTUP_VMS.COM:

@SYS$MANAGER:CCAGENTRA200$STARTUP.COM
```

Installing the RA200 Agent on DIGITAL UNIX

The method of installing the RA200 Agent on DIGITAL UNIX depends on whether you install the software from the CD-ROM or the Web. The following sections tell you how to install the RA200 Agent.

_____**CAUTION** _____

Please read the README.TXT file before installing SWCC V2.0 RA200 Agent on your system. The README.TXT file contains the latest information you should know about removing a V1.1b Agent along with helpful hints to make your installation successful.

_____

_____ **Note** _____

All Agent installations must be done locally. Do not attempt to install an Agent over the network. You must be logged into an account that is a member of the administrator group. In this case, log in as `root.`

_____

Beginning the Installation

How you will install the RA200 Agent depends upon whether you will obtain the installation file from the SWCC CD-ROM or from the SWCC web site.

From the SWCC CD-ROM

The following instructions assume you have a directory /mnt to which you can mount the CD-ROM. If you do not, you will have to create a mount point and replace /mnt in the following sequence with the mount point you create. It also assumes your CD-ROM device is `/dev/rz4c`. If not, replace /dev/rz4c with the actual CD-ROM device. Instructions for installing the RA200 Agent on a DIGITAL UNIX system are as follows:

1. Insert the Agent CD-ROM into the host machine connected to the subsystem controller.

2. At the prompt, enter the following: **mount -t cdfs /dev/rz4c /mnt**

Press *ENTER*.

3.   At the prompt, enter the following: **setld -l /mnt/DUNIX/Agents/mlg**

Press *ENTER*.

A menu giving you the choice of continuing or canceling the installation appears.

4.   Go to the following section, "Completing the Installation".

From the Web

The following instructions assume you had downloaded the file SWCC20DUNIX.zip from the Web. Unzip the file into /tmp. If you unzipped the file to a different directory, replace /tmp with the directory to which you unzipped the file. Instructions for installing the RA200 Agent on a DIGITAL UNIX system are as follows:

1.   Confirm that you unzipped the file on the target operating system and retained the directory structure.

Your unzip utility should have placed subdirectories under the directory to which you unzipped the file. If it did not, the file was unzipped incorrectly. Unzip the file again.

For more information on unzipping a file, please see the section, "Unzipping Files", in the introduction of this manual.

2.   At the prompt, enter the following: **setld -l /tmp/DUNIX/Agents/mlg**

Press *ENTER*.

A menu giving you the choice of continuing or canceling the installation appears.

3.   Choose to continue the installation.

4.   Go to the following section, "Completing the Installation".

Completing the Installation

1.   To continue with the installation, select **1** "*All of the Above*". Press *ENTER*.

A message, asking if the above choice is correct, appears.

2.   Enter **Y** and press *ENTER* to continue with the installation.

If you see a message stating that an existing configuration will be used, go to step 10 to unmount your CD-ROM. You will not see the following steps because the software has installed.

A message to enter a new password appears. Your case-sensitive password must be between 4 and 16 characters.

3.   Enter the new password. Press *ENTER*.

A message, asking you to verify the new password, appears.

4.   Enter the new password again. Press *ENTER*.

A message, telling you that the password has been updated, appears. Press ENTER to continue. A prompt for adding the Client system appears.

5.   Enter the host name of the Client system.

A menu for selecting the subsystem access level appears, giving you three choices:

0   Overall

1   Detailed Status

2   Configuration

Overall Status does not allow the Client to open a storage page. Detailed Status allows the Client to open a storage page, but it cannot make modifications. Configuration allows the client to make changes to the subsystem configuration.

6.   Enter an access level for the subsystem.

A menu for selecting a client notification scheme appears, giving you four choices:

0   No Error Notification

1   Notify via a TCP/IP Socket

2   Notify via a SNMP Protocol

3   Notify via TCP/IP and SNMP

7.   Enter a notification scheme for the Client.

After you have entered the notification scheme, the Client name, access level, and error notification scheme appears, along with a message asking you if this information is correct.

8.   Enter **Y** and press *ENTER* to complete the installation.

A message, asking if you would like to add another Client, appears.

9.   Enter **Y** and press *ENTER* to add another Client. Repeat steps 5 through 8.

10. If you installed from a CD-ROM, unmount the CD-ROM by typing the following:

umount /mnt

Event Logging with the DIGITAL UNIX Agent

Events are logged by the Command Console Agent to the DIGITAL UNIX logging facility using the syslog standard C Library function (man reference syslog(3)). When the syslog function is executed, the priority specified during the call is "notice". The openlog

standard C library function (man reference syslog(3)) used prior to the syslog function specifies the facility as LOG_USER (messages generated by user processes).

To ensure that logging occurs for the Command Console Agent on DIGITAL UNIX, the /etc/syslog.conf file (man reference syslog (8)) must be configured to include an entry to direct logging for the user facility. This entry must have a priority equal to or greater than the notice priority. In other words, if logging currently does not occur for the user facility, you must create an entry similar to the following in the syslog.conf file:

```
user.notice            /var/adm/syslog.dated/user.log
```

If an entry already exists in the syslog.conf file that logs user messages and has the same priority or higher than notice, you do not need to add an entry of the above format. Doing so will result in duplicate logs.

The DIGITAL UNIX Agent is installed as a background task and will continuously run after it is installed.

Uninstalling the RA200 Agent on DIGITAL UNIX

To uninstall issue the following command: **setld -d SWCCRA200**

Installing the RA200 Agent on Windows NT (Alpha and Intel)

Instructions on how to install the RA200 Agent on Windows NT (Alpha and Intel) are as follows:

1. Insert the RA200 Agent CD-ROM into the host machine containing the subsystem controller. If you downloaded from the Web, unzip the file SWCC20ntx86.zip or SWCC20ntaxp.zip.

    Your unzip utility should have placed subdirectories under the directory to which you unzipped the file. If it did not, the file was unzipped incorrectly. Unzip the file again.

    For more information on unzipping a file, please see the section, "Unzipping Files", in the introduction of this manual.

    _____ **Note** _____

    All Agent installations must be done locally. Do not attempt to install an Agent over the network. You must be logged into an account that is a member of the administrator group.

    _____

2. From the Explorer window or file manager, open the following subdirectory on the CD-ROM or in the directory that you unzipped the files from the Web:

    \NTAlpha\Agents\mlg for Alpha systems

> `\NTIntel\Agents\mlg` for Intel systems

Your unzip utility should have placed subdirectories under the directory to which you unzipped the file. If it did not, the file was unzipped incorrectly. Unzip the file again.

3. Double click `setup.exe` to start the installation.

   Setup prepares the Installshield Wizard. The Command Console Setup window appears.

   The Command Console Setup window is the first of several windows that appear during the installation process. You have the option of selecting the default configuration information that each window provides or you can configure your own site-specific information for the Agent.

4. Click *Next*. A window appears with the name of the directory that is to receive the new Agent.

5. Click *Next*. The Folder Selection window opens, giving you the name of the folder that is to receive the new Agent.

6. Click *Next*. The setup begins. A window, displaying one of the following, appears:

   - Enter you password. Type your password twice, and click *OK*.
   - A previous configuration is being used. Click *OK*.

7. Configure your Agent by using the Agent Configurator entry in the StorageWorks group.

Starting the Windows NT Service

You must manually start the Agent after it has just been installed on a Windows NT system.

Instructions on how to start an Agent for the first time after its installation are as follows:

1. Click the *Control Panel* icon to open it.

2. Click the *Services* icon.

3. Click *SWCC RA200 Agent.*

4. Click *Start.*

Your Windows NT Agent starts and executes as a service.

6

Configuring the RA200 Agents

This chapter contains instructions on how to configure the RA200 Agents on DIGITAL OpenVMS, DIGITAL UNIX, and Windows NT (Alpha and Intel). Topics in this chapter include:

- Adding a Client

- Agent Password

- Changing the access level of a Client

- Changing the access password for the RA200 Agents

- Client Access Options

- Client Notification Options

- Removing a Client

Client Notification Options

The notification scheme defines the network method to be used by the Agent when notifying the selected Client of a subsystem fault. The TCP/IP option is the Client notification scheme. If you do not select it, your Client will not display spontaneous faults until it polls the Agent to update its status. To use the SNMP option, you must have an SNMP-compatible monitoring program (ServerWORKS, for example) running on your Client system. You can select one or both options.

Client Access Options

The Access Privilege Level defines the level of storage subsystem access you wish to grant to the selected Client through this Agent. You can select Overall Status, Detailed Status, or Configuration. Overall Status does not allow the Client to open a storage page. Detailed Status allows the Client to open a storage page, but it cannot make modifications.

Configuration allows the client to make changes to the subsystem configuration. Please see the readme.txt file for information on network configuration and access.

Agent Password

The Agent password allows you to change the configuration of a subsystem, provided that you have Access Privilege Level 2.

Configuring the RA200 Agent on DIGITAL OpenVMS

Instructions on how to configure a RA200 Agent on a DIGITAL OpenVMS system are as follows:

1. At the DCL prompt, enter the following: **@sys$manager:ra200config.com**

2. The SWCC Agent Configuration Menu is divided into two areas (Agent Admin Options and Client Options). The following is an example of the menu with the steps highlighting the options:

```
Agent Admin Options:

-------------------

1) Change Agent password

2) Start Agent

Client Options:

--------------

3) Add a Client

4) Remove a Client

5) Modify a Client

6) View Clients

Q) Quit
```

3. If you selected option **1**, change the Agent password. The following prompts/statements appear:

```
Changing Agent Password

-----------------------

Enter a new password (4 > 16 characters):

Verify the password:

The Agent's password has been successfully updated!
```

4. If you select option **3**, add a client, then the following prompts/statements appear:

   ```
   Adding a Client system

   ----------------------
   ```

5. Enter the host name of the Client system, as an example: `bogus.shr.dec.com`

6. Enter the subsystem access privilege, which controls the level of access a client has for communicating with the storage subsystems. The possible options are the following:

   ```
   0 = Overall Status

   1 = Detailed Status

   2 = Configuration

   Enter Access Level (0, 1, 2): 1
   ```

   For a definition of each access privilege level, please see the section, "Client Access Options", located at the beginning of this chapter.

7. The Agent server can notify a client when an error condition occurs. Notification schemes available are the following:

   ```
   0 = No Error Notification

   1 = Notification via a TCP/IP Socket

   2 = Notification via the SNMP protocol

   3 = Notification via both TCP/IP and SNMP

   Enter Error Notification Level (0, 1, 2, 3): 0

   Adding client--

     name: bogus.shr.dec.com

     access level: 1

     error notification: 0

   Is this information correct? [y,n]: y

   Would you like to add another client? [y, N]: n
   ```

8. To modify the client added above (bogus.shr.dec.com), follow the prompts/statements listed in the following example:

```
Modify a client system

----------------------

 Host Name                 Access Level      Error Notification

 ----------------          ------------      --------------

 bigearmouse.cat.cmr.com   Configuration     via TCP/IP

 mountain.rat.tre.com      Configuration     via TCP/IP and SNMP

 water.ari.sea.com         Overall           No Notification
                           Status

 bogus.shr.dec.com         Detailed          No Notification
                           Status

Enter the Client name: bogus.shr.dec.com

Current settings for client bogus.shr.dec.com are:

  1) Access level - Detailed Status

  2) Error notification scheme - No Notification

Which entry would you like to change (c to cancel, d if
done)? 1

The possible options are:

   0 = Overall Status

   1 = Detailed Status

   2 = Configuration

New access level? (0, 1, 2): 2

Current settings for client bogus.shr.dec.com are:

  1) Access level - Configuration

  2) Error notification scheme - No Notification

Which entry would you like to change (c to cancel, d if
done)? 2

The possible options are:

   0 = No Error Notification

   1 = Notification via TCP/IP

   2 = Notification via SNMP

   3 = Notification via both TCP/IP and SNMP
```

```
New error notification scheme? (0, 1, 2, 3): 3

Current settings for client bogus.shr.dec.com are:

   1) Access level - Configuration

   2) Error notification scheme - via TCP/IP and SNMP

Which entry would you like to change (c to cancel, d if
done)? d
```

9. The following is an example of the prompts/statements that are printed on the screen for an Authorized Client List:

```
Authorized client list

----------------------

Host Name                Access Level        Error Notification
-------------------      ------------        ------------------
mountain.rat.tre.com     Configuration       via TCP/IP
water.ari.sea.com        Overall Status      No Notification
bogus.shr.dec.com        Configuration       via TCP/IP and SNMP
```

10. The following is an example of the prompts/statements that are printed on the screen for removing a Client:

```
Remove a client system

----------------------

Host Name                Access Level        Error Notification
-------------------      ------------        ------------------
mountain.rat.tre.com     Configuration       via TCP/IP
water.ari.sea.com        Overall Status      No Notification
bogus.shr.dec.com        Configuration       via TCP/IP and SNMP


Enter the Client name: bogus.shr.dec.com

Are you sure you want to remove bogus.shr.dec.com [y,n]: y
```

11. To start the Agent from the configuration utility:

```
Starting RA200 agent

%RUN-S-PROC_ID, identification of created process is
00000064
```

12. If the Agent is already running and you try to start the Agent, the message in step 11 appears.

_____ **Note** _____

Stop and restart the Agent after making modifications for the changes to take effect.
_____

New SYS$DRDRIVER.EXE for OpenVMS Alpha

A new version of SYS$DRDRIVER.EXE is available. The file, SYS$DRDRIVER.EXE, is the OpenVMS Alpha device driver for the KZESC, KZPSC, and KZPAC backplane RAID controllers. This driver is required for the support of StorageWorks Command Console. The device driver will be available on the following TIMA kits for OpenVMS Alpha V6.2-1H3 and V7.1-1H1:

ALPDRIV09_071 for V7.1-1H1

ALPDRIV18_062 for V6.2-1H3

The driver will create a new device unit, DRM *c*0:, for each controller. This unit serves as a communication point for the SWCC agent to allow it to perform its configuration and monitoring functions. To obtain the TIMA kits, go to the following Web site:

http://www.service.digital.com/

Refer questions to your DIGITAL Customer Service Representative.

Configuring the RA200 Agent on DIGITAL UNIX

In this section, you will learn how to change the current password for the RA200 Agent, how to add or delete a Client, and how to change the current access level and error notification scheme for a Client.

Changing the Access Password

To change the access password for the RA200 Agent on DIGITAL UNIX:

1. At the prompt, enter the following: **/usr/sbin/RA200config.sh**

   The *Agent Admin Options* menu appears.

2. Select *Change Admin Password*.

   A message, telling you to enter a new password, appears. Your case-sensitive password must be between 4 and 16 characters.

3. Enter the new password. Press *ENTER*.

A message, asking you to verify the new password, appears.

4. Enter the new password again. Press *ENTER*.

A message, telling you that the password has been changed, appears.

Adding a Client

Instructions on how to add a Client are as follows:

1. At the prompt, enter the following: **/usr/sbin/RA200config.sh**

The *Agent Admin Options* menu appears.

2. Select *Add a Client*.

A message, asking you to enter the host name of the Client system, appears.

3. Enter the host name for the new Client system. Press *ENTER*.

A message, asking you to enter a subsystem access privilege for the Client, appears.

4. Enter the access level for the new Client, and press *ENTER*. You have three choices:

   0 Overall

   1 Detailed Status

   2 Configuration

For a definition of each access privilege level, please see the section, "Client Access Options", located at the beginning of this chapter.

A message, asking you to enter an error notification scheme for the client, appears.

5. Enter an error notification scheme for the Client, and press *ENTER*. You have four choices:

   0 No Error Notification

   1 Notify via a TCP/IP Socket

   2 Notify via a SNMP Protocol

   3 Notify via TCP/IP and SNMP

A message, asking you if this information is correct, appears.

6. Enter *Y* if the information is correct. Press *ENTER*.

Removing a Client

Instructions on how to remove a Client are as follows:

1. At the prompt, enter the following: **/usr/sbin/RA200config.sh**

The *Agent Admin Options* menu appears.

2. Select *Remove a Client*.

   A current list of Clients that have access to the Agent appears. The host name, access level, and error notification for each Client is also provided. A message, asking you to enter the name of the Client that you want to remove, also appears.

3. Enter the name of the Client that you want to remove. A message, asking if you are sure about removing the Client, appears.

4. Enter *Y* to remove the Client.

Modifying a Client Entry

The *Modify a Client* option on the *Agent Admin Options* menu lets you modify a Client entry in two ways: by changing the current access level of the Client and by changing the current error notification scheme of the Client. Instructions for accomplishing both tasks are as follows:

1. At the prompt, enter the following: **/usr/sbin/RA200config.sh**

   The *Agent Admin Options* menu appears.

2. Select *Modify a Client*.

   A window containing the current access level and error notification scheme for the Client appears, along with a message:

   ```
   Which entry would you like to change?
   ```

3. Enter **1** to change the current access level of the Client. You have three choices:

   0 Overall

   1 Detailed Status

   2 Configuration

   For a definition of each access privilege level, please see the section, "Client Access Options", located at the beginning of this chapter.

4. At the prompt, enter the new access level for the Client. Press *ENTER*.

5. Enter the current error notification scheme for the client. You have four choices:

   0 No Error Notification

   1 Notify via a TCP/IP Socket

   2 Notify via a SNMP Protocol

   3 Notify via TCP/IP and SNMP

6. At the prompt, enter the new error notification scheme for the Client. Press *ENTER*.

Viewing the Authorized Client List

To view a list of Clients that are authorized to access the RA2000 Agent, follow these steps:

1. At the prompt, enter the following: **/usr/sbin/RA200config.sh**

   The *Agent Admin Options* menu appears.

2. Select *View Clients.*

   A list of Clients authorized to access the Agent appears.

Starting, Stopping, and Restarting the RA200 Agent

You must restart the Agent after making any changes to the configuration.

Enter the following command to restart the Agent:

/usr/opt/SWCCRA200/bin/CCAgentRA200.sh restart

Enter the following command to start the Agent:

/usr/opt/SWCCRA200/bin/CCAgentRA200.sh start

Enter the following command to stop the Agent:

/usr/opt/SWCCRA200/bin/CCAgentRA200.sh stop

Configuring the RA200 Agent on Windows NT

To add new clients, change security options and modify network ports. Click the Agent Configure entry in the StorageWorks program group. When you first install the Windows NT Agent, the host machine automatically is registered as a client with full privileges.

Changing the Access Password

The password controls access to the Agent configuration. To change the access password, follow these steps:

1. Click the Agent Configure entry in the StorageWorks program group, and click the *Password* option.

2. Type the new password and then type it again for verification.

Adding a Client

To add a Client on Windows NT, follow these steps:

1. Click the Agent Configure entry in the StorageWorks program group, and click the *Clients* option.

2. Enter the client's TCP/IP address in the *Selected Clients* field.

3. Select the *Notification Scheme* (TCP/IP or SNMP or both).

4. Select an *Access Privilege Level*. For a definition of each access privilege level, please see the section, "Client Access Options", located at the beginning of this chapter.

5. Click *Add Client*.

    A message, asking you to enter the host name of the new Client system, appears.

6. Enter the host name of the new Client system. Press *ENTER*.

    A message, asking you to enter the access level for the Client, appears.

7. Enter an access level for the Client. Press *ENTER*.

Modifying a Client Entry

This section contains instructions on how to modify a Client entry on Windows NT. In particular, it provides instructions on how to change the Access Privilege Level and the Notification Scheme.

1. Click the Agent Configure entry in the StorageWorks program group. Then click the *Clients* option.

2. Select the Client from the Client list.

3. Select the *Notification Scheme* (TCP/IP or SNMP or both).

    Select an *Access Privilege Level*. For a definition of each access privilege level, please see the section, "Client Access Options", located at the beginning of this chapter.

4. Click *Modify Client*.

Modifying TCP/IP Port Numbers Used by the Agent and Clients

1. Click the Agent Configure entry in the StorageWorks program group and click *Network Ports*.

2. Enter the new Discovery or Agent Port numbers.

_____ **Note** _____

The port numbers are the Windows NT TCP/IP network socket numbers for Discovery and Agent. Please refer to the appendix.
_____

7

Installing the HS series Agents

The DIGITAL HS series of high-performance, storage subsystem standalone components include the following.

- HSD30 (OpenVMS only)

- HSD50 (OpenVMS only)

- HSJ30 (OpenVMS only)

- HSJ40 (OpenVMS only)

- HSJ50 (OpenVMS only)

- HSZ20

- HSZ40

- HSZ50

- HSZ70

Each Agent provides the configuration and monitoring support for all of the above RAID storage systems. When you install the Command Console Client to operate over a network, you must install an Agent. The Agent is responsible for establishing communication between the Client and the Agent's subsystem(s) on the network.

This chapter contains instructions on how to install the HS series Agents on the following platforms: DIGITAL OpenVMS, DIGITAL UNIX, and Windows NT (Intel & Alpha).

_____ **CAUTION** _____

Verify that the RAID Array is running and your firmware updates and drivers are properly installed from your platform kit, before you begin the installation procedures for the Agent.

_____

Installing a HS series Agent on a DIGITAL OpenVMS System

All Agent installations must be done locally. Do not attempt to install an Agent over the network.

Instructions for installing the HS series Agent on a DIGITAL OpenVMS system are as follows:

_____ **Note** _____

The entries that you make during this installation are case sensitive. Refer to the UCX host database if you are having trouble correctly matching the Client's case.

_____

1. Insert the SWCC CD-ROM into the host system connected to the subsystem controller, or unzip the file downloaded from the Web.

   For the examples in this section, assume the CD-ROM device is DKB600; assume the directory to which the files have been unzipped from the Web is DKB0:[ZIPS].

   The unzip utility creates subdirectories under the directory into which you unzipped SWCC 2.0. If you do not see subdirectories it was not unzipped properly. Unzip the installation kit again. For more information on unzipping a file, please see the section, "Unzipping Files", in the introduction of this manual.

   If you are installing from the SWCC CD-ROM, type the following command (substituting the name of your CD-ROM device):

   $ MOUNT/OVER=ID/MEDIA=CD DKB600:

2. Determine if the host system connected to the subsystem controller is a VAX or an Alpha system. This will determine how you proceed in step 3.

3. In this step you will copy the files from the installation medium, and change the file names to a format acceptable to the POLYCENTER ™ Software Installation (PCSI) Utility. First, create a local directory on your host system to which you will copy the files from the installation medium.

   If your host system is an Alpha system:

   Copy the file name from the installation medium to the correct PCSI file name on your computer. To determine the correct file name (which may change with different versions of the SWCC kit), first access the file called AXPVMS.TXT. The correct file name for the kit is listed in AXPVMS.TXT.

   Type the text file, AXPVMS.TXT. Then, copy the AXPVMS.PCS file to the file name specified in AXPVMS.TXT for example `DEC-AXPVMS-SWCC-V0200-`

1A-1.PCSI. The following examples assume you created a directory called DKB100:[TEMP]:

Installed from the SWCC CD-ROM:

```
$ COPY DKB600:[VMS.AGENTS.HSA]AXPVMS.PCS -

_$DKB100:[TEMP]DEC-AXPVMS-SWCC-V0200-1A-1.PCSI
```

Unzipped from the Web:

```
$ COPY DKB0:[ZIPS.VMS.AGENTS.HSA]AXPVMS.PCS -

_$DKB100:[TEMP]DEC-AXPVMS-SWCC-V0200-1A-1.PCSI
```

The PCSI installation kit for your system has now been copied into DKB100:[TEMP] with the correct file name for the PCSI installation utility.

If your host system is a VAX:

Copy the file name from the installation medium to the correct PCSI file name on your computer. To determine the correct file name (which may change with different versions of the SWCC kit), first access the file called VAXVMS.TXT. The correct file name for the kit is listed in VAXVMS.TXT.

Type the text file, VAXVMS.TXT. Then, copy the VAXVMS.PCS file to the file name specified in VAXVMS.TXT for example DEC-VAXVMS-SWCC-V0200-1A-1.PCSI. The following examples assume you created a directory called DKB100:[TEMP]:

Installed from the SWCC CD-ROM:

```
$ COPY DKB600:[VMS.AGENTS.HSA]VAXVMS.PCS -

_$DKB100:[TEMP]DEC-VAXVMS-SWCC-V0200-1A-1.PCSI
```

Unzipped from the Web:

```
$ COPY DKB0:[ZIPS.VMS.AGENTS.HSA]VAXVMS.PCS -

_$DKB100:[TEMP]DEC-VAXVMS-SWCC-V0200-1A-1.PCSI
```

The PCSI installation kit for your system has now been copied into DKB100:[TEMP] with the correct file name for the PCSI installation utility.

4. Invoke the PCSI installation utility to install the kit by typing the following command:

```
$ PRODUCT INSTALL SWCC/SOURCE=DKB100:[TEMP]
```

If you mistype the PCSI file name in step 3 or use a file name from a previous kit (which is no longer valid for the current kit), you will see the following error messages when you try to install the kit:

%PCSI-E-READERR, error reading DEC-AXPVMS-SWCC-V200-2Q-7.PCSI;1

-PCSI-E-INVDOCSTR, internal error - product document has invalid domain structure

%PCSI-E-S_OPFAIL, operation failed

%PCSIUI-E-ABORT, fatal error encountered - operation terminated

If this error message appears, verify that you copied the kit to the correct PCSI file name.

If you did not see the previous error message, the following text appears:

```
The following product has been selected:

DEC xxxVMS SWCC V2.0-XX

Do you want to continue? [YES] <return>

Configuration phase starting ...

You will be asked to choose options, if any, for each
selected product and for

any products that may be installed to satisfy software
dependency requirements.

DEC xxxVMS SWCC V2.0-XX: StorageWorks Command Console
Agent, OpenVMS

    Copyright (c) Digital Equipment Corporation, 1998

    Digital Equipment Corporation

* This product does not have any configuration options.

    This agent requires a TCP/IP service product to be
installed.

    Do you want to continue? [YES] <return>

Execution phase starting ...

The following product will be installed:

    DEC xxxVMS SWCC V2.0-XX                    Layered
Product

Portion done:
0%...30%...40%...50%...60%...70%...80%...100%

The following product has been installed:
```

```
     DEC xxxVMS SWCC V2.0-XX                    Layered
Product

DEC xxxVMS SWCC V2.0-XX: StorageWorks Command Console
Agent, OpenVMS

     Postinstallation configuration for SWCC agent;
@sys$manager:swcc_config

     $
```

Before Installing the HSZ Agent on DIGITAL UNIX System

In most cases, you will be installing the HSZ Agent on DIGITAL UNIX to the
`/usr/opt/` directory. The structure of this directory appears as follows:

```
/usr/opt/SWCC200/          Top Level = Product Name

               bin      steamd and other executables

               etc      *.ini files used at startup

               data     Run time data

               scripts  Support shell scripts
```

During the HSZ Agent installation, the following files will be automatically updated:

`/etc/inittab` A line to respawn the Agent is added to this file.

`/etc/services` The port numbers and protocols for the Agent and the Client are added to
this file.

_____ **CAUTION** _____

Please read the README.TXT file before installing SWCC V2.0 HSZ Agent on
your system. The README.TXT file contains the latest information you
should know about removing a V1.1b Agent along with helpful hints to make
your installation successful.

_____

Installing the HSZ Agent on DIGITAL UNIX

The method of installing the HSZ Agent on DIGITAL UNIX depends on whether you
install the software from the CD-ROM or the Web. The following sections tell you how to
install the HSZ Agent.

All Agent installations must be done locally. Do not attempt to install an Agent over the
network. You must be logged in as root. Prior to installing on a DIGITAL UNIX 3.2g

system, install the SWRAID product from the platform CD-ROM you received with you StorageWorks controller.

From CD-ROM

The following instructions assume you have a directory /mnt to which you can mount the CD-ROM. If you do not, you will have to create a mount point and replace /mnt in the following sequence with the mount point you create. It also assumes your CD-ROM device is /dev/rz4c. If not, replace /dev/rz4c with the actual CD-ROM device. Instructions for installing the HSZ Agent on a DIGITAL UNIX system are as follows:

1. Insert the Agent CD-ROM into the host machine connected to the subsystem controller.

2. At the prompt, enter the following: **`mount -t cdfs /dev/rz4c /mnt`**

   Press *ENTER*.

3. At the prompt, enter the following: **`setld -l /mnt/DUNIX/Agents/hsa`**
   Press *ENTER*.

   A menu giving you the choice of continuing or canceling the installation appears.

4. Go to step 3 in the next section, "From the Web".

From the Web

The following instructions assume you had downloaded the file SWCC20DUNIX.zip from the Web. Unzip the file into /tmp. If you unzipped the file to a different directory replace /tmp with the directory to which you unzipped the file. Instructions on how to install the HSZ Agent on a DIGITAL UNIX system are as follows:

1. Confirm that your unzip utility created subdirectories under the directory into which you unzipped SWCC 2.0. If you do not see subdirectories, it was not unzipped properly. Unzip the installation kit again.

   For more information on unzipping a file, please see the section, "Unzipping Files", in the introduction of this manual.

2. At the prompt, enter the following: **`setld -l /tmp/DUNIX/Agents/hsa`**
   Press *ENTER*.

   A menu, giving you the choice of continuing or canceling the installation, appears.

3. To continue with the installation, select **1** *"All of the Above"*. Press *ENTER*.

   A message, asking if the above choice is correct, appears.

4. Enter **Y** and press *ENTER* to continue with the installation.

As the installation continues, you see several system messages, telling you that the subset has been installed and is being loaded. A prompt for adding the Client System appears.

5. Enter the host name of the Client System. Press *ENTER*.

   A menu for selecting the subsystem access level appears, giving you three choices:

   0 Overall Status

   1 Detailed Status

   2 Configuration & Status

   Overall Status allows the Client to add a system to the Applet Manager's navigation tree, but it does not allow the Client to open a storage page. Detailed Status allows the Client to open a storage page, but it cannot make modifications. Configuration & Status allows the client to make changes to the subsystem configuration.

6. Enter an access level for the subsystem. Press *ENTER*.

   A menu for selecting a client notification scheme appears, giving you four choices:

   0 No Error Notification

   1 Notification via a TCP/IP Socket

   2 Notification via the SNMP Protocol

   3 Notification via both TCP/IP and SNMP

7. Enter a notification scheme for the Client.

   Once the Client is added to the system, the Client name, access level, and error notification scheme appears, along with a message asking you if this information is correct.

8. Enter **Y** and press *ENTER* to complete the installation.

   A message, asking if you would like to add another Client, appears.

9. Enter **Y** and press *ENTER* to add another Client. *R*epeat steps 5 through 8.

10. You are asked for a password, which is required to do remote configurations in the SWCC Client GUI. If an old password is found, you are asked if you want to use it.

11. Enter a password and press *ENTER*. You are asked to re-enter the password.

12. Re-enter the password and press *ENTER*.

   Once the password has been entered, the system scans for subsystems. You will be asked for the name and monitoring interval for each RAID subsystem found.

13. You are asked for the RAID subsystem name. Enter the subsystem name and press *ENTER*.

14. You are asked for the monitoring interval in seconds. Enter the number of seconds you desire and press *ENTER*.

15. You are asked if the information is correct. If it is not, enter **N** and correct the information.

16. Enter **Y** and press *ENTER* to continue.

    You are asked if you want E-Mail enabled.

17. Enter **Y** and press *ENTER* to enable the E-Mail. The software asks for the address of the person to notify.

18. Enter the address of the person to notify and press *ENTER*. The software asks for the notification levels, which are the following:

    1 Fatal Errors

    2 Warnings and Fatal Errors

    3 Information, Warnings and Fatal Errors

19. Enter the level of notification and press *ENTER*. The software asks if the information is correct.

20. Enter **Y** and press *ENTER*.

    A message, asking if you would like to add another person to notify, appears.

21. Enter **N** to end the dialog or **Y** to add another.

    When you have finished with the E-Mail notification section, the system will automatically start the new Agent. If the installation script detects a problem at Agent startup, it will alert you of the problem.

Uninstalling the HSZ Agent on DIGITAL UNIX

To uninstall, issue the following command: **setld -d SWCC200**

The uninstall procedure will ask the following: Are you sure you want to delete all agent data?

If you type "*yes*", all configuration files for the Agent will be deleted.

If you type "*no*", the subsystem, client access, password, and e-mail notification will be saved. You will be able to use the data if you re-install the Agent or install a newer version.

Installing the HSZ Agent on Windows NT (Alpha and Intel)

Instructions on how to install the HSZ Agent on Windows NT (Alpha and Intel) are as follows:

All Agent installations must be done locally. Do not attempt to install an Agent over the network. You must be logged into an account that is a member of the administrator group.

1. Insert the HSZ Agent CD-ROM into the host machine connected to the subsystem controller or if you downloaded from the Web, unzip the file SWCC20ntx86.zip or SWCC20ntaxp.zip.

2. If you unzipped the file from the web, confirm that your unzip utility created subdirectories under the directory into which you unzipped SWCC 2.0. If you do not see subdirectories, it was not unzipped properly. Unzip the installation kit again.

    For more information on unzipping a file, please see the section, "Unzipping Files", in the introduction of this manual.

3. Using Microsoft Explorer or File Manager, open the following subdirectory on the CD-ROM or in the directory you unzipped the files from the Web:

    `\NTAlpha\Agents\hsa` for Alpha systems

    `\NTIntel\Agents\hsa` for Intel systems

4. Double click `SETUP.EXE` to start the installation.

    The software will display several windows while it is being installed. When the installation is complete, the *Welcome NT Agent Configuration Utility* window appears.

5. Click *Continue.* The *NT Agent Configuration Step 1 of 3* window appears.

6. Enter your password in the *New* field, and re-enter it in the *Verification* field. The password must be between 4 and 16 characters.

7. Click *Next* to continue. The following message appears: `Password Validation Successful.`

8. Click *OK* to continue. The *NT Agent Configuration Step 2 of 3* window appears.

9. Enter the name of the client that you want to have access to this Agent in the *Selected Client* field. Choose TCP/IP and/or SNMP for your notification scheme.

10. Select one of the following for your access privileges: overall status, detail status, and configuration. Overall Status allows the Client to add a system to the Applet Manager's navigation tree, but it does not allow the Client to open a storage page. Detailed Status allows the Client to open a storage page, but it cannot make modifications. Configuration allows the client to make changes to the subsystem configuration.

For more information on adding, deleting, or modifying a client see the following chapter, "Configuring the HS series Agents".

11. Click *Add Client.* The name of the added client appears in the *Clients* field.

12. Repeat steps 9 through 11 for each client that you want to add.

13. Click *Next* to continue. If the *NT Agent Configuration Step 3 of 3* window appears, go to step 14.

   The following message appears on the screen if you had previously added a subsystem:

   ```
   A previous storage list is detected.  Would you like to
   scan the subsystem to update the information? (Subsystem
   will revert to default settings.)
   ```

   If you click *Yes*, the software will automatically add entries for the new subsystems and restore default subsystem information for the existing entries.

   If you click *No*, the software will keep the current settings.

   The *NT Agent Configuration Step 3 of 3* window appears.

14. The configuration wizard should have created an entry for all subsystems attached to this system. To modify the name or other settings for a subsystem, please see the following chapter, "Configuring the HS series Agents".

15. Click *Finish*. A message, warning you to restart your agent, appears.

16. Click *OK*. You exit the NT Agent Configuration Utility.

Starting the Windows NT Service

You must manually start the Agent after it has just been installed on a Windows NT system.

Instructions on how to start an Agent for the first time after its installation are as follows:

1. Click the *Control Panel* icon to open it.

2. Click the *Services* icon.

3. Click *steam.*

4. Click *Start.* Your Windows NT Agent starts and executes as a service.

8

Configuring the HS series Agents

This chapter contains instructions on how to configure the HS series Agents on the following platforms: DIGITAL OpenVMS, DIGITAL UNIX, and Windows NT (Alpha and Intel) systems. Topics in this chapter include:

- Adding a Client Entry

- Adding a Subsystem Entry

- Agent Password

- Changing the access level of a Client

- Changing the access password for the HS series Agent

- Client Access Options

- Client Notification Options

- Deleting a Client Entry

- Deleting a Subsystem Entry

- Modifying a Subsystem Entry

- Removing a Client Entry

Client Notification Options

The notification scheme defines the network method to be used by the Agent when notifying the selected Client of a subsystem fault. The TCP/IP option is the Client notification scheme. If you do not select it, your Client will not display spontaneous faults until it polls the Agent to update its status. To use the SNMP option, you must have an SNMP-compatible monitoring program (ServerWORKS, for example) running on your Client system. You can select one or both options.

Client Access Options

The Access Privilege Level defines the level of storage subsystem access you wish to grant to the selected Client through this Agent. You can select Overall Status (No Access), Detailed Status (Show Level Access Only), or Configuration (Storage Subsystem Configuration Capability). Overall Status does not allow the Client to open a storage page. Detailed Status allows the Client to open a storage page, but it cannot make modifications. Configuration allows the client to make changes to the subsystem configuration. Please see the readme.txt file for information on network configuration and access.

Agent Password

The Agent password allows you to change the configuration of a subsystem, provided that you have Access Privilege Level 2.

Configuring the HS series Agent on DIGITAL OpenVMS

Instructions for configuring the HS series Agent on a DIGITAL OpenVMS system are divided into two parts: configuring for a first time installation and configuring for changes.

_____ **Note** _____

Stop and restart the Agent after making modifications for the changes to take effect.

_____

The instructions are as follows:

Configuring for First Time Installation

1. At the prompt, enter the following: **@sys$manager:swcc_config**

   The following message appears:

   ```
   SWCC-I-UCX, SWCC using UCX stack.

   StorageWorks Command Console Agent Configuration Procedure

   This procedure helps you define the parameters required to
   run the StorageWorks Command Console VMS agent on this
   system.

   The Agent cannot be run until the following questions are
   answered.

   Entering Client Data ...
   ```

```
The client computer(s) you name will be allowed the access
you specify.

Any blank entry will exit client addition and return to
main menu

NOTE: Input is case sensitive!  Match client's case in UCX
host database.
```

2. Enter the host name of the Client system, the following message appears:

```
Enter the host name of the Client system:
panther.dwh.wdw.com

Each client requires an access level which controls the
capabilities a client has when communicating with the Agent
server.
```

3. The following options are available for system access: No Access, Show Level Access Only, and Storage Subsystem Configuration Capability. No Access, indicates that the specified client does not have any access to the HS series subsystems. Show Level Access Only, indicates that the specified client can monitor the HS series subsystems only but it cannot modify the configuration. Storage Subsystem Configuration Capability, indicates that the specified client can monitor and modify the configuration of the HS series subsystems.

```
The possible options are:

0 = No Access

1 = Show Level Access Only

2 = Storage Subsystem Configuration Capability

Enter Access Level (0, 1, 2) : 2
```

4. The following option are available for notification of the specified Client when an event occurs on any HSZ subsystem.

```
The Agent server can notify a client when an error
condition is detected.  Notification schemes available are:

0 = No Error Notification

1 = Notification via a TCP/IP Socket

2 = Notification via the SNMP protocol

3 = Notification via both TCP/IP and SNMP
```

```
Enter Error Notification Level (0, 1, 2, 3) : 3
```

The following message appears.

```
Adding client: panther.dwh.wdw.com, access level: 2, error
notification: 3

Creating file SWCCGUI:CLIENT.INI.
```

The following message appears to prompt you for additional Clients. If you do not
wish to add any more Clients, press *RETURN* to continue and then enter **y**es to
confirm your choice.

```
Enter the host name of the Client system :

* Done adding client data? [NO] ? y
```

5. The next step is to enter the Storage Subsystem Data. You must enter an arbitrary
    name for the subsystem. This is the name that will appear in the Client navigation
    tree. You must also specify the OpenVMS device name used to access the subsystem.

```
Entering Storage Subsystem Data ...

Any blank entry will exit storage addition and return to
main menu

NOTE: Input will be converted to lower case!

Enter a name for a subsystem: hsz40

Enter the device name used to access this subsystem: dkb0:
```

For the HSD and the HSJ controllers, enter the node name of the controller. For the
HSZ controller, enter a device attached to the controller.

```
SWCC-I-HSZ, dkb0: assumed to be HSZ controller.
```

6. Enter the monitoring interval in seconds. The monitoring interval is the rate at which
    the Agent queries the specified subsystem for status.

_____ **Note** _____

If you have several OpenVMS nodes monitoring the same subsystem, it helps
performance if you vary the monitoring intervals.

_____

```
Enter monitoring interval in seconds (0 => no monitoring):
30
```

The following confirmation message is displayed.

```
Adding subsystem: hsz40, access device: dkb0:, monitoring
interval: 30
```

```
Creating file SWCCGUI:STORAGE.RAW.
```

The following message appears to prompt you for additional subsystems. If you do
not wish to add any more subsystems, press *RETURN* to continue and then enter **y**es to
confirm you do not want to enter any more subsystems.

```
Enter a name for a subsystem:
```

```
* Done adding storage data? [NO] ? y
```

7. Enter a password for the current subsystem. The password must be a text string
    between 4 and 16 characters.

```
Entering SWCC Password
```

```
Enter the client access password: 19dwh47
```

8. The next step is to enable the Agent as a TCP/IP service and optionally start the Agent
    as a detached process.

```
Enabling services
```

```
The SWCC agent can be enabled either as a UCX auxiliary
service or as a detached process.  Enabling is necessary on
each cluster node you desire the Agent to run on.  Select
only nodes that are attached to the storage subsystems you
have selected to be to be monitored.
```

```
* Enable SWCC agent as a service of UCX? [YES] ? y
```

```
SWCC is enabled as a UCX service now and for future boots.
```

```
* Immediate start of SWCC agent? [NO] ? y
```

```
Starting SWCC agent on node UNLOAD
```

The following confirmation message appears when the Agent starts identifying the
Process ID.

```
Starting the  SWCC Agent image...
```

```
%RUN-S-PROC_ID, identification of created process is
00000067
```

```
SWCC Agent swcc_startup complete.

$
```

Modifying the Configuration

1. At the prompt, enter the following: **@sys$manager:swcc_config**

2. The SWCC Agent Configuration Menu is divided into three areas (Agent Admin Options, Client Options, and Storage Subsystem Options). Below is an example of the menu and the following steps highlighting each section:

```
SWCC Agent Configuration Menu

Agent is enabled as UCX service.

Agent is now:  active

Agent Admin Options:

1) Change Agent password

2) Agent Enable/Start

3) Agent Disable/Stop

4) Uninstall Agent

Client Options:

5) Add a Client

6) Remove a Client

7) View Clients

Storage Subsystem Options:

8) Add a subsystem

9) Remove a subsystem

10)View subsystems

E) Exit configuration procedure.
```

3. To change the Agent password, select **1** from the Agent Admin Options and press *ENTER*. A message asking you to enter the Client access password appears. The password must be a text string between 4 and 16 characters.

```
Entering SWCC Password

Enter the client access password: 19dwh47

Press Return to continue...
```

For the change to take affect, the Agent must be stopped and restarted. This changes the client access password.

4. To enable and start the Agent, select **2** from the Agent Admin Options and press *ENTER*. The following message appears:

```
Enabling services

New enabling on the cluster...

The SWCC agent can be enabled either as a UCX auxiliary
service or as a detached process.  Enabling is necessary on
each cluster node you desire the Agent to run on.  Select
only nodes that are attached to the storage subsystems you
have selected to be to be monitored.

* Enable SWCC agent as a service of UCX? [YES] <return>

SWCC is enabled as a UCX service now and for future boots.

* Immediate start of SWCC agent? [NO]Y

Starting SWCC agent on node UNLOAD

Starting the SWCC Agent image...

%RUN-S-PROC_ID, identification of created process is
0000006D

SWCC Agent swcc_startup complete.

Press Return to continue...
```

5. To disable or stop the Agent, select **3** from the Agent Admin Options and press *ENTER*. The following message appears asking if you want to disable SWCC. The next message asks if you want to stop the Agent on this node:

```
* Do you want to disable SWCC on UNLOAD? [NO]

* Immediately stop SWCC agent on this node? [NO] Y

SWCC agent id: 0000006D being stopped on this node.

Press Return to continue...
```

6. To show what Clients are allowed to access the OpenVMS Agent and what level of access each has, select **7** from the Client options and press *ENTER*.

The contents of the client file appears, similar to the following example:

```
Contents of client file:
```

```
Client host          Notification policy     Access level
-----------          -----------------       ----------
mred.dwh.wdw.com     1                       2
gemvax.dwh.wdw.com   1                       2
oluo.dwh.wdw.com     3                       2


0 = No Error Notification              0 = No Access
1 = Notification via a TCP/IP Socket   1 = Show Access
2 = Notification via the SNMP protocol  2 = Set Access
3 = Notification via both TCP/IP
    and SNMP
Press Return to continue...
```

7. To remove a Client select **6** from the Client options and press *ENTER.* The Client removal message appears, similar to the following example:

```
Enter the Client name to be removed (blank to return to
menu): ?

Contents of client file:

Client host          Notification policy     Access level
-----------          -------------------     ------------
mred.dwh.wdw.com     1                       2
gemvax.dwh.wdw.com   1                       2
oluo.dwh.wdw.com     3                       2


0 = No Error Notification              0 = No Access
1 = Notification via a TCP/IP Socket   1 = Show Access
2 = Notification via the SNMP protocol  2 = Set Access
3 = Notification via both TCP/IP
    and SNMP


Enter the Client name to be removed (blank to return to
menu): mred.dwh.wdw.com

Contents of client file:
```

```
Client host          Notification policy      Access level
-----------          -------------------      ------------
mred.dwh.wdw.com     1                        2


0 = No Error Notification              0 = No Access
1 = Notification via a TCP/IP Socket   1 = Show Access
2 = Notification via the SNMP protocol 2 = Set Access
3 = Notification via both TCP/IP
     and SNMP
* Are you sure you want to remove this client? [NO] Y

Enter the Client name to be removed (blank to return to
menu):

Press Return to continue...
```

8. To view subsystems, monitor interval, and the unit used to connect, SWCC requires a unit to establish a connection to the HSZ controllers.

   Select **10** from the Storage Subsystems options and press *ENTER*.

   The Storage Subsystem message appears, similar to the following example:

```
Contents of storage file:

Subsystem    Access device              Monitoring
                                        Interval
---------    -------------              --------
hsz50        dkd2  HSZ50-AX             66
hsz70        $1$DKB300  HSZ70CCL  ccl   80
Press Return to continue...
```

9. To add a Subsystem, select **8** from the Storage Subsystems options and press *ENTER*. The following message appears:

```
Entering Storage Subsystem Data...

Any blank entry will exit storage addition and return to
main menu

NOTE: Input will be converted to lower case!

Enter a name for a subsystem: ?

Contents of storage file:
```

```
Subsystem    Access device              Monitoring
                                        Interval

--------      -------------              ---------
hsz70        $1$DKB300   HSZ70CCL  ccl   80
Enter a name for a subsystem: hsz50

Enter the device name used to access this subsystem: dkd4:
```

For the HSD and the HSJ controllers, enter the node name of the controller. For the HSZ controller, enter a device attached to the controller.

```
SWCC-I-HSZ, dkd4: assumed to be HSZ controller.

Enter monitoring interval in seconds (0 => no monitoring):
77

Enter a name for a subsystem:

* Done adding storage data? [NO] Y

Press Return to continue...
```

_____ **Note** _____

If you have several OpenVMS nodes monitoring the same subsystem, it helps performance if you vary the monitoring intervals.

_____

E-Mail Fault Notification

The DIGITAL OpenVMS Agent provides automatic E-Mail notification when a subsystem fault occurs. You can enable and configure this feature by editing the following according to the instructions in its file:

SYS$SYSDEVICE:[SWCC$AGENT]PAGEMAIL.COM

The PAGEMAIL.COM command procedure is executed by the Agent when the subsystem has a change of state. Such a situation might be a failed disk drive being repaired and returned to operational status. You can modify this file for Agent to log errors in the operating system or to notify you of errors by E-Mail. Client does not need to be running to perform these actions. By default, the mail account notified is the SYSTEM account. You can change the account by editing the file.

Configuring the HS series Agent on DIGITAL UNIX

In this section you will learn how to:

- Add and delete client information

- Change an access password

- Configure E-Mail notification options

- Enable and disable an Agent

- Modify a storage subsystem

- Restart an Agent

Adding Client Information

Instructions on how to add the Client information are as follows:

1. At the prompt, enter the following: **swcc_config**

   The SWCC Agent Configuration Utility menu appears.

2. Select *1 – Add/Delete Client Information*.

   The following prompt appears: Do you want to Add, Delete or Quit? [a,d,q]

3. Type **A** and press *ENTER*. A message asking you to enter the host name of the Client system appears.

4. Enter the host name of the Client system. Press *ENTER*. A message asking you to enter the subsystem access privilege appears. The subsystem access privilege controls the capabilities a client has when communicating with a storage subsystem.

5. Enter a subsystem access privilege for the Client. You have three choices:

   0 Overall Status

   1 Detailed Status

   2 Configuration + Status

   For a definition of each access privilege level, please see the section, "Client Access Options", located at the beginning of this chapter.

6. Enter an error notification scheme for the Client, and press *ENTER*. You have four choices:

   0 No Error Notification

   1 Notification via a TCP/IP Socket

   2 Notification via a SNMP Protocol

   3 Notification via both TCP/IP and SNMP

   A review of the Client information appears, along with a message asking you if the information is correct.

7. Enter **Y** if the information is correct. Press *ENTER*.

Deleting Client Information

Instructions on how to delete Client information are as follows:

1. At the prompt, enter the following: **swcc_config**

   The *SWCC Agent Configuration Utility* menu appears.

2. Select **1** – *Add/Delete Client Information*.

   The following appears: `Do you want to Add, Delete or Quit?`
   `[a,d,q]`

3. Type *D* and press *ENTER*.

   The following appears: `Enter number of Client System to delete:`

4. Enter the number of the Client System that you want to delete, as it appears on the display.

5. The following appears: Are you sure that you want to DELETE Number *?

6. Type **Y** to delete the Client System. Press *ENTER*.

How to Modify a Storage Subsystem

The *Modify Storage Subsystem Information* routine uses a program that scans your SCSI buses looking for new and/or modified raid subsystems. Instructions for running this routine are as follows:

1. At the prompt, enter the following: **swcc_config**

   The *SWCC Agent Configuration Utility* menu appears.

2. Select **2** – *Modify Storage Subsystem Information*.

   The following appears: `Invoke scan and discover new/modified`
   `subsystems [y,n]`

3. Enter **Y** to invoke the scanner. Press *ENTER*.

_____ **Note** _____

DIGITAL does not recommend running this procedure during normal system usage because the possibility of bus resets exist.

_____

Changing the Access Password

Instructions on how to change the Access Password for the HSZ Agent on DIGITAL UNIX are as follows:

1. At the prompt, enter the following: **swcc_config**

   The *SWCC Agent Configuration Utility* menu appears.

2. Select **3** - *Change SWCC Agent Password*.

   A message, telling you to enter a new password, appears. Your case-sensitive password must be between 4 and 16 characters.

3. Enter the new password. Press *ENTER*.

   A message asking you to verify the new password appears.

4. Enter the new password. Press *ENTER*.

   A message, telling you that the password has been changed, appears.

Enabling the E-Mail Notification Option

Instructions for enabling the *E-Mail Notification* option are as follows:

1. At the prompt, enter the following: **swcc_config**

   The SWCC Agent Configuration Utility Menu appears.

2. Select **4** - *Turn E-Mail Notification ON/OFF*. The following appears: `Do you want to Enable it? [y, n, q]`

3. Enter **Y** to change the E-Mail notification status to "*ENABLED*". Press *ENTER*.

   A message, telling you the new status of the E-Mail notification option, appears.

Disabling the E-Mail Notification Option

Instructions for disabling the *E-Mail Notification* option are as follows:

1. At the prompt, enter the following: **swcc_config**

   The *SWCC Agent Configuration Utility* menu appears.

2. Select **4** - *Turn E-Mail Notification ON/OFF*. The message appears: `Do you want to Disable it? [y, n, q]`

3. Enter **Y** to change the E-Mail notification status to "*DISABLED*". Press *ENTER*.

   A message, telling you the new status of the E-Mail notification option, appears.

Adding a Storage E-Mail Notification User

Instructions for adding a Storage E-Mail Notification User are as follows:

1. At the prompt, enter the following: **swcc_config**

   The *SWCC Agent Configuration Utility* menu appears.

2. Select **5** - *Add/Delete a Storage E-Mail Notification User.*

   A list of the current Storage E-Mail Notification Users appears, along with a message: `Do you want to Add, Delete or Quit? [a, d, q]`

3. Enter **A** to add a new Storage E-Mail Notification User to the list. A message appears: `Enter the E-mail address of a person to notify.`

4. Enter the E-Mail address of the person that you want to notify. Press *ENTER*. A message containing three levels of mail notification appears.

5. Enter a mail notification level for the new E-Mail recipient. Press *ENTER*. You have three choices:

   1 Fatal Errors

   2 Warnings and Fatal Errors

   3 Information Warnings and Fatal Errors

   A message appears: `Is this information correct? [y, n]`

6. Enter **Y** if the information is correct. Press *ENTER*.

Deleting a Storage E-Mail Notification User

Instructions for deleting a Storage E-Mail Notification User are as follows:

1. At the prompt, enter the following: **swcc_config**

   The SWCC Agent Configuration Utility Menu appears.

2. Select **5** - *Add/Delete a Storage E-Mail Notification User.* Press *ENTER.*

   A list of the current Storage E-Mail Notification Users appears, along with a message: `Do you want to Add, Delete or Quit? [a, d, q]`

3. Enter **D** to remove a Storage E-Mail Notification User from the list. Press *ENTER*. A message appears: `Enter number of the person to delete.`

4. Enter the number of the person that you want to delete, as it appears on the display. The message appears: `Are you Sure you want to DELETE Number *?`

5. Enter **Y** if the E-Mail recipient that you want to delete is correct. Press *ENTER*.

Restarting the Agent with Changes Made

When you make changes to the configuration data of an Agent, you must restart the Agent for the new data to take effect. If you choose not to restart the Agent immediately after

making configuration changes, you can do so at a later time by entering an `init q` command or by doing a system reboot.

Instructions for restarting the Agent immediately after making changes to its configuration data are as follows:

1. At the prompt, enter the following: **swcc_config**

   The *SWCC Agent Configuration Utility* menu appears.

2. Select **6** - *Restart Agent with Changes*. Press *ENTER*. The following appears: `Do you want to Re-Start the Agent NOW? [y, n, q]`.

3. Enter **Y** to immediately restart the Agent. Press *ENTER*. A message, telling you that the Agent has been restarted, appears. This message includes the Process ID (PID) of the Agent.

Enabling the Agent

When you enable the Agent, it will start and remain running until you disable it by selecting this option again from the *SWCC Agent Configuration Utility* menu. Instructions for enabling the Agent are as follows:

1. At the prompt, enter the following: **swcc_config**

   The *SWCC Agent Configuration Utility* menu appears.

2. Select **7** - *Enable/Disable Agent*. Press *ENTER*. A message appears: `Do you want to ENABLE and start the Agent NOW [y, n, q]`.

3. Enter **Y** to enable the Agent. Press *ENTER*. You see a message, telling you that the Agent has been enabled, along with the PID of the Agent.

Disabling the Agent

When you select to disable the Agent, it is automatically killed. You will be unable to run the Agent again until you re-select this menu item from the *SWCC Agent Configuration Utility* menu, and choose to enable it.

Instructions for disabling the Agent are as follows:

1. At the prompt, enter the following: **swcc_config**

   The *SWCC Agent Configuration Utility* menu appears.

2. Select **7** - *Enable/Disable Agent*. Press *ENTER*. The message: `Do you want to kill and disable the Agent NOW [y, n, q]` appears.

3. Enter **Y** to disable the Agent. Press *ENTER*. You see a message, telling you that the Agent has been killed and disabled.

Configuring the HS series Agent on Windows NT

To add new clients, change security options, and add storage subsystems, click the HSZ NT Agent Configurator entry in the HSZ NT Agent program group.

Changing the Access Password

The password controls access to the Agent configuration. Instructions for changing the access password are as follows:

1. Click the HSZ NT Agent Configurator entry in the HSZ NT Agent program group.

   The *Welcome NT Agent Configuration Utility* window appears.

2. Click *Continue.* The *NT Agent Configuration Step 1 of 3* window appears.

3. Enter your new password in the *New* field, and re-enter it in the *Verification* field. The password must be between 4 and 16 characters.

4. Click *Next* to continue. The following message appears: `Password Validation Successful.`

5. Click *OK* to continue. The *NT Agent Configuration Step 2 of 3* window appears.

6. Click *Next* to continue. If the *NT Agent Configuration Step 3 of 3* window appears, go to step 7.

   The following message appears on the screen if you had previously added a subsystem:

   `A previous storage list is detected.  Would you like to scan the subsystem to update the information? (Subsystem will revert to default settings.)`

   If you click *Yes*, the software will automatically add entries for the new subsystems and restore default subsystem information for the existing entries.

   If you click *No*, the software will keep the current settings.

   The *NT Agent Configuration Step 3 of 3* window appears.

7. Click *Finish.* A message, warning you to restart your agent, appears.

8. Click *OK.* You exit the NT Agent Configuration Utility.

Adding a Client Entry

Instructions for adding a Client entry are as follows:

1. Click the HSZ NT Agent Configurator entry in the HSZ NT Agent program group.

   The *Welcome NT Agent Configuration Utility* window appears.

2. Click *Continue.* The *NT Agent Configuration Step 1 of 3* window appears.

3. Click *Next* to continue. You do not need to enter your password. The *NT Agent Configuration Step 2 of 3* window appears.

4. Enter the name of the client you wish to have access to this Agent in the *Selected Client* field. Choose TCP/IP and/or SNMP for your notification scheme. Select one of the following for your access privileges: overall status, detail status, and configuration. For a definition of each access privilege level, please see the section, "Client Access Options", located at the beginning of this chapter.

5. Click *Add Client.* The name of the added client appears in the *Clients* field.

6. Repeat steps 4 and 5 for each client that you want to add.

7. Click *Next* to continue. If the *NT Agent Configuration Step 3 of 3* window appears, go to step 8.

   The following message appears on the screen if you had previously added a subsystem:

   ```
   A previous storage list is detected.  Would you like to
   scan the subsystem to update the information? (Subsystem
   will revert to default settings.)
   ```

   If you click *Yes*, the software will automatically add entries for the new subsystems and restore default subsystem information for the existing entries.

   If you click *No*, the software will keep the current settings.

   The *NT Agent Configuration Step 3 of 3* window appears.

8. Click *Finish*. A message, warning you to restart your agent, appears.

9. Click *OK*. You exit the NT Agent Configuration Utility.

Modifying a Client Entry

This section contains instructions on how to modify a Client entry on Windows NT. Instructions for modifying a Client entry on Windows NT are as follows:

1. Click the HSZ NT Agent Configurator entry in the HSZ NT Agent program group.

   The *Welcome NT Agent Configuration Utility* window appears.

2. Click *Continue.* The *NT Agent Configuration Step 1 of 3* window appears.

3. Click *Next* to continue. You do not need to enter your password. The *NT Agent Configuration Step 2 of 3* window appears.

4. Highlight the client that you want to modify. You can change your notification scheme and/or your access privileges.

5. Click *Modify Client* to confirm your changes.

6. Repeat steps 4 and 5 for each client that you want to modify.

7. Click *Next* to continue. If the *NT Agent Configuration Step 3 of 3* window appears, go to step 8.

   The following message appears on the screen if you had previously added a subsystem:

   ```
   A previous storage list is detected.  Would you like to
   scan the subsystem to update the information? (Subsystem
   will revert to default settings.)
   ```

   If you click *Yes*, the software will automatically add entries for the new subsystems and restore default subsystem information for the existing entries.

   If you click *No*, the software will keep the current settings.

   The *NT Agent Configuration Step 3 of 3* window appears.

8. Click *Finish*. A message, warning you to restart your agent, appears.

9. Click *OK*. You exit the NT Agent Configuration Utility.

Deleting a Client Entry

Instructions for deleting a Client entry are as follows:

1. Click the HSZ NT Agent Configurator entry in the HSZ NT Agent program group.

   The *Welcome NT Agent Configuration Utility* window appears.

2. Click *Continue*. The *NT Agent Configuration Step 1 of 3* window appears.

3. Click *Next* to continue. You do not need to enter your password. The *NT Agent Configuration Step 2 of 3* window appears.

4. Highlight the client that you want to delete in the *Selected Client* field. Click *Delete Client.*

5. Repeat step 4 for each client that you want to delete.

6. Click *Next* to continue. If the *NT Agent Configuration Step 3 of 3* window appears, go to step 7.

   The following message appears on the screen if you had previously added a subsystem:

   ```
   A previous storage list is detected.  Would you like to
   scan the subsystem to update the information? (Subsystem
   will revert to default settings.)
   ```

If you click *Yes*, the software will automatically add entries for the new subsystems and restore default subsystem information for the existing entries.

If you click *No*, the software will keep the current settings.

The *NT Agent Configuration Step 3 of 3* window appears.

7. Click *Finish*. A message, warning you to restart your agent, appears.

8. Click *OK*. You exit the NT Agent Configuration Utility.

Adding a Subsystem Entry

Instructions for adding a subsystem entry are as follows:

_____**CAUTION**_____

Verify that you have the correct communication drive before you manually add a subsystem.

_____

1. Click the HSZ NT Agent Configurator entry in the HSZ NT Agent program group.

   The *Welcome NT Agent Configuration Utility* window appears.

2. Click *Continue*. The *NT Agent Configuration Step 1 of 3* window appears.

3. Click *Next* to continue. You do not need to enter your password. The *NT Agent Configuration Step 2 of 3* window appears.

4. Click *Next* to continue. If the *NT Agent Configuration Step 3 of 3* window appears, go to step 5.

   The following message appears on the screen if you had previously added a subsystem:

   ```
   A previous storage list is detected.  Would you like to
   scan the subsystem to update the information? (Subsystem
   will revert to default settings.)
   ```

   If you click *Yes*, the software will automatically add entries for the new subsystems and restore default subsystem information for the existing entries.

   If you click *No*, the software will keep the current settings.

   The *NT Agent Configuration Step 3 of 3* window appears.

5. Enter the name of the subsystem in the *Selected Subsystem* field. Enter the communication drive letter and monitoring interval in seconds. A reasonable monitoring interval in seconds would be 120. You may also select *Subsystem Enabled*.

6. Click *Add Subsystem.* The name of the added subsystem appears in the *Storage Subsystems* field.

7. Repeat steps 5 and 6 for each subsystem that you want to add.

8. Click *Finish*. A message, warning you to restart your agent, appears.

9. Click *OK*. You exit the NT Agent Configuration Utility.

Modifying a Subsystem Entry

Instructions for modifying a subsystem entry are as follows:

1. Click the HSZ NT Agent Configurator entry in the HSZ NT Agent program group.

   The *Welcome NT Agent Configuration Utility* window appears.

2. Click *Continue*. The *NT Agent Configuration Step 1 of 3* window appears.

3. Click *Next* to continue. You do not need to enter your password. The *NT Agent Configuration Step 2 of 3* window appears.

4. Click *Next* to continue. If the *NT Agent Configuration Step 3 of 3* window appears, go to step 5.

   The following message appears on the screen if you had previously added a subsystem:

   ```
   A previous storage list is detected.  Would you like to
   scan the subsystem to update the information? (Subsystem
   will revert to default settings.)
   ```

   If you click *Yes*, the software will automatically add entries for the new subsystems and restore default subsystem information for the existing entries.

   If you click *No*, the software will keep the current settings.

   The *NT Agent Configuration Step 3 of 3* window appears.

5. Highlight the subsystem to modify in the *Selected Subsystem* field.. You may change the communication drive letter, the monitoring interval, and the subsystem's name. A reasonable monitoring interval in seconds would be 120. You may also select *Subsystem Enabled*.

   When you highlight the subsystem, the following properties are shown: controller type, devices, EMU type, firmware version, serial number of controller 1, serial number of controller 2, and total number of devices

6. Click *Modify Subsystem* to confirm your changes.

7. Repeat steps 5 and 6 for each subsystem that you want to modify.

8. Click *Finish*. A message, warning you to restart your agent, appears.

9. Click *OK*. You exit the NT Agent Configuration Utility.

Deleting a Subsystem Entry

Instructions for deleting a subsystem entry are as follows:

1. Click the HSZ NT Agent Configurator entry in the HSZ NT Agent program group.

   The *Welcome NT Agent Configuration Utility* window appears.

2. Click <u>C</u>ontinue. The *NT Agent Configuration Step 1 of 3* window appears.

3. Click <u>N</u>ext to continue. You do not need to enter your password. The *NT Agent Configuration Step 2 of 3* window appears.

4. Click <u>N</u>ext to continue. If the *NT Agent Configuration Step 3 of 3* window appears, go to step 5.

   The following message appears on the screen if you had previously added a subsystem:

   ```
   A previous storage list is detected.  Would you like to
   scan the subsystem to update the information? (Subsystem
   will revert to default settings.)
   ```

   If you click <u>Y</u>es, the software will automatically add entries for the new subsystems and restore default subsystem information for the existing entries.

   If you click <u>N</u>o, the software will keep the current settings.

   The *NT Agent Configuration Step 3 of 3* window appears.

5. Highlight the subsystem to delete in the *Selected Subsystem* field. Click <u>D</u>elete *Subsystem.*

6. Click *Finish*. A message, warning you to restart your agent, appears.

7. Click *OK*. You exit the NT Agent Configuration Utility.

9

Setting Up ServerWORKS Support

Command Console provides two mechanisms for operation through ServerWORKS. The first allows a ServerWORKS user to launch Command Console from the ServerWORKS tool bar for a selected node. The second allows ServerWORKS to receive SNMP traps from Command Console agents.

_____**Caution**_____

Do not install SWCC from the ServerWORKS CD-ROM because it contains an older version of SWCC.

_____

ServerWORKS Tool Bar

To launch Command Console from the ServerWORKS tool bar, you must configure the Agent system and the Client System.

Configuring Agent System

On the Agent system, the system connected to the storage devices, you must install the following:

- The ServerWORKS agent

- The Command Console agent(s)

Configuring Client System

On the Client system, you must install the following:

1. Install the ServerWORKS client software.

2. Install the Command Console client software.

3. Copy the integration programs from the CD-ROM or Web.

   The integration files are in the \NTIntel\srvrwrks directory, either on the Command Console CD-ROM or in the Web distribution zip file SWCC20Client.zip. Copy the files from that directory to the directory to which Command Console was installed (the directory that contains the file swcc.exe).

   As an example, if your CD-ROM is drive E: and you installed Command Console to the default location, you would copy E:\NTIntel\srvrwrks*.* to C:\Program Files\swcc*.*

   Run the integration program, SWInt32, specifying the directory to which Command Console is installed. As an example:

   > SWInt32 c:\progra~1\SWCC

   _____ **Note** _____

   Directory names longer than 8 characters must be shortened to the 8 character by 3 character form (12345678.123), as an example: c:\program_files\SWCC would be shortened to c:\progra~1\SWCC.

   _____

4. Start ServerWORKS and discover systems (refer to ServerWORKS documentation for detail on this operation).

5. Nodes with Command Console agents will display the Command Console icon in the tool bar. Click that icon to launch Command Console.

Before uninstalling Command Console, run the SWDis32 program to remove the ServerWORKS integration.

Command Console SNMP Traps

Command Console provides support for the DIGITAL ServerWORKS Version 3.0 by sending alarms to ServerWORKS when events occur. When a Command Console Agent detects an event with a controller, virtual disk, or physical device, it generates SNMP traps and sends them to ServerWORKS. These traps are standard traps. Defined traps are traps that can be defined for your application. Although ServerWORKS provides a means of executing some action when an alarm occurs, Command Console does not support the automatic launching of Command Console when an alarm occurs.

Command Console Agents generate SNMP traps that specify:

- Category (subsystem, virtual disk, or physical device)
- Computer (where event occurred)

- Date

- Description of the event

- Severity level (error, warning, or informational)

- Source (will always be Command Console)

- Time

- User

Manually Configuring an Agent to Send SNMP Traps

You can manually configure an Agent to send SNMP traps to a host running Digital Equipment Corporation's Server WORKS. Refer to the appropriate Agent configuration section for adding a ServerWORKS Client host name and SNMP notification.

Tuning Fault Notification

Because an inactive host system has the ability to force time-outs that slow Client responses to your commands, consider removing any unused Client host system names from each of your Agent configurations to establish a faster fault notification.

Adding the Command Console MIB

To add Command Console support to ServerWORKS, follow these steps:

_____ **Note** _____

You need to install the Command Console Client on Windows NT or Windows 95 before setting up ServerWORKS support.

_____

1. Start ServerWORKS Version 3.0.

2. From the *Tools* menu, select the *MIB Enroller*.

3. From the *Compile* menu, select the *MIB Compiler*.

4. Click *OK* to the warning about compiling a new MIB group.

5. In the MIB compiler, select *Open*.

6. Choose the file swccv2.mib in the `swcc\ra200window` subdirectory from the same directory to which you installed the Command Console Client.

7. Select *Enroll* in the MIB Compiler window.

8. Click *OK* to store the MIB in the permanent database.

9. Follow the remaining instructions in the MIB Compiler window.

_____ **Note** _____

Refer to the ServerWORKS online help if you need further assistance in
compiling the Command Console MIB.

_____

After you have compiled and enrolled the Command Console MIB, you can define alarms
based on the Command Console SNMP traps. For more information about defining
alarms, please refer to the ServerWORKS documentation or online help.

A
Usage Notes and Troubleshooting

This appendix describes the general usage notes and tips for troubleshooting problems for Command Console Client and Agent:

- System Requirements

- General Usage Notes

- Cluster Integration

- RA200 Agents

- HS series Agents

- Configuring the Communication LUN

- About the .ini Files

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 Service File

- Minimal RA200 Driver for Windows NT

- Network Port Assignments

- Reconfiguration After Controller Replacement (HS series only)

- Running SWXCR and SWXCRMGR Utilities for the RA200 Agents

- SNMP MIB (Simple Network Management Protocol Management Information Basis)

Add System Error - Windows 95 Service File

You will receive an "Add System Error" 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 2.0. The error window states "No Agent running on specified host".

This error occurred because the entries for SWCC were removed when Windows 95 (and possibly Windows NT) updated the \windows\services file. You are still able to access the systems that are already listed in the SWCC Navigation Tree without problems.

To fix this problem, edit the \windows\services file and re-enter the following commands or re-install SWCC:

ccagent   4997/tcp

spagent   4999/tcp

spagent2   4995/tcp

spagent3   4994/tcp

spgui   4998/tcp

The system does not need to be rebooted after editing the services file.

Minimal RA200 Driver for Windows NT

It is recommended that you upgrade your RA200 driver to version 4.12 for the Alpha systems and to version 4.11 for the Intel systems. If the computer connects to a KZESC Controller, upgrade to version 4.03h. The newer drivers conflict with the KZESC Controllers.

Download the updated Alpha driver from the following Web site:

http://www.windows.digital.com/support/drivers/drivers.asp

The updated Intel driver is part of the KZPAC Controller kit. For further information on obtaining the drivers, please call 1-800-STORWORK.

For the Alpha systems, install DEC SWXCR-Ex 4.12 NT ALPHA driver in most cases. If you have a KZESC (RAID Array 210) controller on the computer system, install the DEC SWXCR-Ex 4.03h NT ALPHA driver. The KZESC (RAID Array 210) controller is not supported by SWCC.

If the Web site has a SWXCR-Ex device driver that is above version 4.12, read the release notes for the driver to determine if the SWXCR-Ex device driver should be used for your configuration.

If you use the 4.03h NT driver, you must reboot your computer system after adding a virtual disk. The reboot allows the operating system to recognize the new virtual disk. In addition, if you use this driver, KZPSC and KZPAC controllers will not be available to

SWCC unless a valid configuration has been created (that is, virtual disks or hot spares). As a result, you will have to run the RCU (standalone configuration utility) to create a virtual disk before booting your system. This will then make the controller accessible to SWCC.

You can find the version of your RA200 driver as follows:

Under Windows NT V4.0:

1. Start *Windows NT Explorer*. This is usually in your Start Menu, immediately under the *Programs* group.

2. Select the folder WINNT\SYSTEM32\DRIVERS, replacing *WINNT* with the actual Windows NT directory name.

3. With the mouse, "right-click" on the file DAC960NT.SYS, and choose *Properties* from the pop-up menu that appears.

4. At the top of the *Properties* dialog, click the *Version* tab to view version information for the driver. You will find the version number listed at the top of the property sheet, labeled *File Version*.

Under Windows NT V3.51:

1. Start *File Manager*. You will find this icon in your *Main* program group by default.

2. Select the folder \WINNT\SYSTEM32\DRIVERS, replacing *WINNT* with the actual Windows NT directory name.

3. With the mouse, "left-click" on the file DAC960NT.SYS to highlight it.

4. Bring up the *Properties* dialog for the file by performing one of the following actions:

   - Under the *File* menu of *File Manager*, click *Properties*.
   - Press "Alt+Enter" on your keyboard. You will find the version number of the driver file in the dialog box that appears.

Network Port Assignments

SWCC Clients and Agents communicate by using sockets. The SWCC installation procedures attempt to add entries into each system list of services (services file or for UCX, the local services database).

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

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 update 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. The OpenVMS configuration files add the services entries, not the PCSI installation kit.

Port names and the default numbers are listed below:

spgui   4998/tcp# All SWCC components

spagent   4999/tcp# HS* client and agent

ccagent   4997/tcp# RA200 client and agent

spagent2   4995/tcp# RA200 client and agent

spagent3   4994/tcp# HSZ22 client and agent

Port names and numbers must be exactly the same for all systems that need to communicate with each other on the network, running SWCC.

Running SWXCR and SWXCRMGR Utilities for the RA200 Agents

Do not run RA200 Agents on the same machine with the old SWXCR and SWXCRMGR utilities. If SWXCR, SWXCRMGR and SWCC are running simultaneously, each utility might not obtain certain events and state changes. This can result in the reporting of erroneous information.

SNMP MIB

Use the Management Information Basis (MIB) compiler provided by your Simple Network Management Protocol (SNMP) Management Application for viewing at a remote management site.

Agent will send SNMP Traps to hosts that have been added to Agent's Client list with the TRAP TYPE set to SNMP upon a change of state.

Only SNMP Traps will be generated. There is no provision for SNMP `Get` or `Set` `Requests`. Use SWCC to get detailed subsystem status information and for configuration of the subsystem.

Reconfiguration After Controller Replacement (HS series only)

If you replace a controller in your subsystem, you must reconfigure your Agent's storage list to match the new hardware. See your Agent's documentation for details on reconfiguring your storage list.

General Usage Notes

This section provides general information, regarding Command Console and its Agents, to help you understand certain error messages. The following topics are presented in this section:

- Authorization Error When adding the Server to the SWCC Navigation Tree

- Lost Connections Cause Invalid or Missing Fault Displays and Event Logs

- Paging and Event Logging Continues After Client is Terminated

- Starting Client with Network Connections

Authorization Error When adding an Agents

If the Client receives an authorization error when attempting to add an Agent's system to the SWCC Navigation Tree, that Client may be missing from one of the Agent's authorized client list. SWCC 2.0 includes support for different SWCC Agents. Each Agent supports a different subset of DIGITAL StorageWorks' storage subsystems. Each Agent maintains its list of authorized Client nodes. If you have more than one type of subsystem installed or attached to a server, you must keep the list of authorized Clients in sync so that every Client listed in one Agent's authorized client list is also listed in every other Agent's authorized client list with at least "Overview Status" access rights. Please refer to the readme.txt file for further information.

Invalid or Missing Fault Displays and Event Logs

Invalid or lost notifications may occur when Client's connection with its subsystems is broken. Client receives notification for most changing subsystem faults at monitored intervals. Windows NT Event Logs that might have been added while the connection was broken are also lost.

Client may continue to display faults that are cleared while its connection is broken among its subsystems. Similarly, faults that occur while the connection is broken are not displayed.

To clear an invalid fault indication in Client, exit and restart Client once its subsystem connections are intact. Monitor and maintain Client's connection with its subsystems to avoid lost fault indications.

Broken connections can occur for a variety of reasons:

- For RAS connections - Remote access service (RAS) connections are not full time. Events that occur when there is no RAS connection are not logged to the Windows NT's Event Logging facility.

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

- For host port SCSI connections - There may be a bad or missing SCSI host cable. No logical unit numbers (LUNs) may be configured on the controller that is on the Client startup.

- For network connections - Agent may be missing or not running. There may be network discontinuity. The Agent may not be properly configured for your Clients.

- This controller may have halted, reset or hung - To repair this situation, restart or replace this controller.

Paging and Event Logging Continues After Client is Terminated

You may experience continuous paging and NT Event Logging in response to subsystem faults, even though Client has been terminated. This behavior is normal. It is the result of Client starting the paging and Event Logging activity while it was running.

Client's Asynchronous Event Service (AES) module runs under either Windows NT or Windows 95 as a service. It continues to run, even after Client has terminated. The AES module communicates with agents, and it activates paging and event logging when a subsystem event occurs.

To stop paging and event logging after Client has been terminated, perform the following:

- Windows NT - Go to the Services section of the Control Panel, select the "AsyncEventSvc" Service, and click the Stop button.

- Windows 95 - Click the icon named "AsyncEventSvc" in the Control Panel. When the Control Panel Applet appears, click the Stop button.

Starting Client with Network Connections

To start Command Console Client with network connections to your storage subsystems, double click the StorageWorks Command Console icon in the Command Console V2.0 program group.

You can also enter the following command line at a Windows NT or Windows 95 command prompt to start 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 host system and a subsystem to start Client. If you specify these parameters, Client opens with the host system selected and the subsystem displayed in the Storage Window. If Client is not already aware of the system and subsystem, it adds them to the Navigation Window.

Cluster Integration

You can integrate SWCC with the Windows NT Server, Enterprise Edition™ (with Microsoft Cluster Server™) so that you can configure and monitor a subsystem within the cluster environment. You will need the following to perform cluster integration:

- A valid, working stable cluster

- An Agent installed on a disk that is on a non-shared SCSI bus

- An Agent on each cluster node of the cluster

Instructions for integrating a Windows NT cluster with SWCC are as follows:

1. Click *Settings* under the *Start* menu, then click *Control Panel.* Double click *Services.* The *Services* window appears.

2. Highlight *Steam* listed in the *Service* field, and click the *Stop* button. *Steam* is the service name. This action will stop *Steam*, and its status will no longer be shown as *Started* in the *Services* window.

3. Click the *Startup* button. A smaller *Services* window appears.

4. Select *Manual*, and click *OK* to disable the automatic starting of the service. You return to the main *Services* window.

5. Click the *Close* button to exit the *Services* window.

6. Repeat steps 1 through 5 for each cluster node.

7. Click the Cluster Administrator Utility entry under the Administrative Tools group. The program's main screen appears.

_____ **Note** _____

Microsoft develops Cluster Administrator Utility™. For further information on the software, please see Microsoft's documentation.
_____

8. Click your cluster group. The resources that are in your cluster group appear.

9. Verify that the quorum disk is in the cluster group.

10. Right click the cluster group. A drop-down menu appears.

11. Select *New*, then *Resource*. The *New Resource* window appears.

12. Enter the SWCC Agent's name and description. Under *Resource Type* choose "Generic Service" from the drop-down menu. Under *Group* select "cluster group".

13. Click *Next*. The *Possible Owners* window appears.

14. In the *Possible Owners* field, highlight the nodes in your cluster where you want the SWCC Agent to run.

15. Click *Next*. The *Dependencies* window appears.

16. Highlight the following resources, then click *Add*: Cluster IP Address, Cluster Name, and quorum disk. This action brings these resources online before starting the SWCC agent.

17. Click *Next*. The *Generic Service Parameters* window appears.

18. Enter *Steam* in the *Service Name* field. Leave the *Start-up Parameters* field empty.

19. Select *Use Network Name for computer name*.

20. Click *Next*. The *Registry Replication* window appears.

21. Click *Finish*. A message, saying that you have successfully created a generic service resource, appears.

Multiple Communication Lost Messages

AES on a client system monitors each Agent system currently in the client's database, as shown in the Navigation Tree. If an Agent fails on any of the systems that AES is monitoring, AES will generate a page and an event long entry for the failed agent at each polling interval, indicating that communication has been lost. Remove the system in the SWCC navigation tree to stop the pages and event log entries.

Event Updates

Any node that you add to the Applet Manager by using cluster alias and any applet window open off that cluster alias must be manually updated. If you have a pager configured, you will need to add the individual nodes of the cluster to the Navigation Tree for automatic updates.

Multiple Pages

AES may send multiple pages when an Agent moves from a failing node to a better one. When the Agent fails over, a TCP/IP peer reset error may appear in the running client window that had been connected to that Agent.

Troubleshooting for RA200 Agents

The following information provides solutions for various situations. For additional troubleshooting, please see the readme.txt file. The following topics are presented in this section:

- Agent Applet Window does not Report Failed TCP/IP Communications

- Changing the RA200 Controller Settings

- Delayed Event Notification on RAS Connections

- Firmware Update

- Virtual Disk Initialization Warning

Agent Applet Window does not Report Failed TCP/IP Communications

If you stop and restart the RA200 Agent while a RA200 window is open on the Client, the computer will not report the resulting communication failures.

However, the communication failure will be reported if Agent has stopped but it has not restarted. With this scenario, the icons in the Applet Manager window will be updated.

In both cases, further commands from the RA200 window will fail to reach the RA200 Agent. When this occurs, you will receive no warnings. Once Agent is restarted, you must close and reopen the RA200 Client window to restore the active connection.

Changing the RA200 Controller Settings

To change the controller settings, first shut down your operating system. You can then run the RAID Array 200 Series Standalone Configuration Utility that came with your controller. Run this utility at the console level. Controller parameters that you can modify include the following:

- Battery backup (enable or disable)
- Command tagging (enable or disable)
- Controller read ahead (enable or disable)
- Default rebuild rate
- Delay the interval the controller waits before spinning up the next number of devices
- Device spin up option (automatic or on power up)
- Number of devices to spin up at a time
- SCSI data transfer rate
- StorageWorks Fault Management (enable or disable)
- Stripe size

For more information about controller parameters, refer to the documentation provided with your RA200 Series controller kit.

Delayed Event Notification on RAS Connections

Paging and NT Event Logging may be delayed significantly when multiple Clients are using remote access service (RAS) connections. The Agent broadcasts fault messages to each Client listed in the `raclient.ini` file when a fault occurs. Clients that are frequently not connected to the network delay this process. The delay occurs because Agent must wait for its connections to time out before serving the other Clients.

Move your most important systems, such as the one that pages, to the top of the client list in the configuration utility and the systems with RAS connections to the bottom. The Agent begins communicating to each client from the top of the list. This will allow your most important systems to receive recent fault messages. You may also want to deselect the TCP/IP notification scheme for less important systems. The Agent is prevented from sending fault messages to systems without the TCP/IP notification scheme; however, these systems are unable to page and provide the Applet Manager with updated information.

Firmware Update

Before running the RA200 Agents, you must upgrade your RA200 controller firmware to Version 2.49. Please reference the readme.txt file.

Virtual Disk Initialization Warning

Your user data may become corrupt if you allow other applications to access a virtual disk during its initialization. This is because an initialization writes "blank data" to the entire virtual disk. Confirm that the initialization of a RA200 virtual disk is completed before allowing another application to use the disk.

When you used the RA200 client to create a virtual disk on a remote system, the operating system immediately makes this disk available to all processes. Other processes are able to read data from and write data to the new virtual disk while the RA200 Client initializes the disk.

Troubleshooting for HS series Agents

The following information provides solutions for various situations. For additional troubleshooting, please see the readme.txt file. The following topics are presented in this section:

- Agent Sensitive to Alpha Numeric Names

- Client Hangs When LUN is Deleted

- CLI RUN Commands

- Delayed Event Notification on RAS Connections

- Event Notification for Subsystems Connected to a Client System

- HSZterm Utility Interaction Problems

- Invalid Cache Errors

- Mirrored Cache Mode not Retained After Configuration Restore

- Unnecessary Event Log Entries

- Storage Window does not Open

- Virtual Disk Recovery from a Configuration File

- Warning Message Windows

Agent Sensitive to Alpha Numeric Names

Agent may not accept some numeric name forms, particularly those with embedded underscores. If you experience difficulties with a particular node name, change the name of the node to one that Agent will accept. Refer to the following section, "About the .ini Files", in this appendix. See the readme.txt file for more details on network configurations.

Client Hangs When LUN is Deleted

You will no longer be able to communicate with the controller if you delete the logical unit number (LUN) that is used by the communication drive. You must re-assign another LUN to the monitored subsystem before deleting the original LUN.

If you disable the Command Console LUN (HSZ70), the Client may lose its connection with the subsystem. If you wish to disable the communication LUN, you must first re-assign another LUN as the communication LUN.

CLI RUN Commands

Do not issue RUN commands in the Command Line Interface (CLI) Window. Instead, input RUN commands from a maintenance terminal connection.

Delayed Event Notification on RAS Connections

Visual fault notification, paging, and NT Event Logging may be delayed significantly when multiple Clients use remote access service (RAS) connections. When a fault occurs, the Agent broadcasts fault messages to each Client in the client.ini file. Clients that are frequently not connected to the network delay this process. The delay occurs because Agent must wait for its connections to time out before serving the other Clients.

Move your most important systems, such as the one that pages, to the top of the client list in the configuration utility and the systems with RAS connections to the bottom. The Agent begins communicating to each client from the top of the list. This will allow your most important systems to receive recent fault messages. You may also want to deselect the TCP/IP notification scheme for less important systems. The Agent is prevented from sending fault messages to systems without the TCP/IP notification scheme; however, these systems are unable to page and provide the Applet Manager with updated information.

Event Notification for Subsystems Connected to a Client System

No event notification will occur if serial or SCSI local connections are used to communicate with a local subsystem. To use the event notification features, an Agent must be installed. Create a local network connection by running Client and Agent on the

same Windows NT host computer and linking them with a network connection. Install each component as if Client was to run on a remote system.

Do not use the Client with serial or SCSI local connections while an Agent for that subsystem is running on the local computer.

HSZterm Utility Interaction Problems

If you use the HSZterm Utility (Set host/SCSI), do not use the same unit that SWCC uses to make a connection manually. If this is done, the connection will interfere with SWCC. Set host/SCSI may be used with any other unit, but do not make modifications from other sources if SWCC is being used to make modifications.

Invalid Cache Errors

You may lose valid user data if you instruct the program to delete unwritten cache data. Client displays a message and prompt box when an invalid cache error occurs. Tell SWCC to delete unwritten cache data as the error is cleared. If you are not sure how to delete unwritten cache data, see the topic "Invalid Cache Errors" in the online help documentation.

Your controller module, cache module, and subsystem contain configuration information that is used to keep their activity synchronized. This configuration information is called metadata. The firmware reports an invalid cache error on the affected controller when there is an mismatch between the metadata in the controller module and a cache module containing unwritten data. This mismatch can result in the loss of the unwritten cache data if the error is not cleared properly.

Mirrored Cache Mode not Retained After Configuration Restore

The mirrored cache setting may not be properly enabled if you restore your controller configuration from a configuration file. Use a CLI window to manually restore the mirrored cache setting.

Unnecessary Event Log Entries

You may notice an influx of unwanted, unnecessary event log entries if you use SCSI system disks rather than IDE system disks when configuring Command Console for Windows NT. This problem is probably the result of a conflict with an Adaptec ASPI driver. In particular, the problem is with the `aic78xx.sys`, version 1.01 file. One way to rectify this problem is to use the June, 1994 version of the `aic78xx.sys`.

There are two ways to obtain a copy of the `aic78xx.sys` file, dated June, 1994: you can download this file from Adaptec's BBS, or you can access Adaptec's World Wide Web site: `http://www.adaptec.com`

Another way to prevent extraneous event log entries from appearing is to configure the NT Event Viewer to overwrite them. You can do this via the **File|Log** menu.

Storage Window does not Open

If you cannot open a Storage Window from the Navigation Tree or in standalone mode, the access parameter in Agent for the subsystem that you wish to connect to is probably set to "0". This situation disables the Storage Window access. Use the Agent configuration script or edit the `client.ini` file to enable access to the subsystem.

Virtual Disk Recovery from a Configuration File

When you delete a virtual disk, the disk's member drives are all reinitialized and user data is lost. You cannot restore a virtual disk's data by reconfiguring your configuration. A configuration file contains only information about the structure of a virtual disk. It does not hold the disk's data.

Warning Message Windows

You may see "Warning" messages, containing such indications as "Command Execution Error" along with detailed information. The contr oller software is responding to problems in parsing and executing commands from Client and Agent by sending these messages. These messages indicate problems with the controller, rather than with the software.

Configuring the Communication LUN (HS series Agents Only)

This section provides suggestions to prevent errors when configuring the Communication's logical unit number (LUN). The following topics are presented in this section:

- Configuring the Communication LUN (HSZ70 only)

- Enabling and Disabling the LUN

- The Fixed/Floating Option

- Special Cautions When Using the Communication's LUN

Configuring the Communication LUN (HSZ70 only)

With a local SCSI or network connection, Command Console communicates with your controller through a virtual disk that you must specify. There must be at least one virtual disk on your subsystem, so that Client (local SCSI) or Agent can make a connection.

Command Console can use either a normal, user-configured virtual disk or a communication logical unit number (LUN) to make a connection with your controllers. The LUN is a simulated virtual disk. The communication LUN is not supported on Windows NT, and it is strictly for connecting Command Console with your storage subsystem.

If you enable the communication LUN in your controller, the controller reserves one target/LUN address for Client or Agent use. The reserved target/LUN address is displayed in the Communication LUN tab.

The communication LUN is only used for local SCSI or network connections and is not used for local serial connections. Please refer to your controller hardware manual for further information.

Enabling and Disabling the LUN

_____**CAUTION**_____

Do not use your controller's CLI to disable the communication's LUN while Command Console is running. You may not only lose communication between the Client and the Agent, but you may also corrupt your data. For most situations, you should leave the communication's LUN enabled when you use Command Console.

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- Initial configuration -- There may be no virtual disks for Command Console to use because your storage subsystem may be completely unconfigured when you first install it. You cannot configure virtual disks because you cannot establish a connection. The communication LUN provides the means to establish that first connection.

  Set up the communication LUN on your controller by using the controller's CLI interface *before* you run Command Console For detailed information on enabling and disabling the communication LUN, see your controller documentation and the Release Notes for your version of Command Console.

- Preserving Virtual Disk IDs -- You may want to disable the communication LUN to preserve virtual disk IDs in some operating systems. In Windows NT, for instance, the LUN appears as a CD-ROM drive letter that is otherwise unusable. In this case, you must use your controller's CLI interface to configure at least one virtual disk for communications purposes, *before* you run Command Console.

- Safely Disabling the LUN -- If you wish to disable the communication LUN while Command Console is connected, ensure that at least one virtual disk remains on your subsystem. Then, exit Client and stop Agent from running. Disable the LUN by using the controller's CLI, and restart Agent and Client, using the remaining virtual disk for communications.

The Fixed/Floating Option

In Command Console, the communication logical unit number (LUN) stays at a fixed location if you select the Fixed option. Client reserves the LUN's target/LUN address, preventing you from using it to create virtual disks.

Selecting the Floating option enables you to use the target/LUN address currently occupied by the communication LUN to create a new virtual disk. If you use this address, your

controller automatically "floats" its communication LUN to another address and you will lose communications with your subsystem.

Setting the Fixed/Floating Option

1. Access your controller's property sheets by double clicking the controller's icon in the Device Window. If you have a dual-redundant controller configuration, you can use either controller's property sheets.

2. Click the Communication LUN tab. The communication LUN operating parameters display.

3. Click either Floating or Fixed, depending upon your needs.

_____ **Note** _____

Any changes to your controller configuration require password access. The program prompts you in such cases for the appropriate password on your first attempt to make changes.

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Special Cautions When Using the Communication LUN

Be aware of the following cautions when using the communication logical unit number (LUN):

- If you select Client's Floating option and use the communication LUN's target/LUN address to create a virtual disk, you will lose communication between Client and your Agent. You must then reconfigure and restart your Agent to recognize either the new communication LUN address or one of your existing virtual disks for communications purposes.

- Within your controller, the communication LUN always floats to another target/LUN address if you attempt to use its address to create a virtual disk. Client's Floating/Fixed option only affects the way Client presents available target/LUN combinations to you in the Add Virtual Disk Wizard.

If you restart your controller, its communication LUN floats to the lowest, available target/LUN combination that is not already assigned to a virtual disk. This action occurs regardless of the setting of Client's Floating/Fixed option. If you delete a virtual disk at a target/LUN address lower than that of the communication LUN and subsequently restart the controller, the LUN automatically floats to the lower address. This action will result in loss of communication with your subsystem. You must then reconfigure and restart your Agent to recognize either the new communication LUN address or one of your existing virtual disks for communications purposes.

About the .ini Files

The Agent views three `.ini` files at start-up:

- `client.ini`

- `notify.ini`

- `storage.ini`

Most of the information that you supply during the Agent installation are written to these files.

client.ini

The `client.ini` file maintains information about each system running the SWCC graphical user interface (GUI). If a system on your network is going to monitor and/or configure a RAID system, then you must include it in this file. You must include in the `client.ini` file for each computer:

- Client's host name

- Client's access privilege

- Client's notification level

Updating the client.ini File

To avoid application errors when restarting Agent, insert a carriage return at the end of the `client.ini` file. Refer to the readme.txt for naming constraints.

notify.ini (HS series Agents only)

The `notify.ini` file contains information needed to E-Mail personnel if an error or other type of event is detected in your RAID subsystem. However, the only way that this file can exist is if the mail notification is *ENABLED*.

If the system locates an old `notify.ini` file from a previous installation, then you are given the option to use the older version. However, if you elect to use the new installation, you must provide the following information for each recipient that you want to notify (only for previous installations of version 1.1):

- E-Mail address of the recipient

- Notification level for the recipient

storage.ini

The `storage.ini` file is one of the first files read by the SWCC Agent at startup. It maintains information about each RAID device connected to your server. At least one entry must be made to this file, and the fields of the entry must be valid.

If the system locates an old `storage.ini` file from a previous installation, you are given the option to use the older version. However, if you elect to use the new installation, you must provide the following information for each RAID subsystem (only for previous installations of version 1.1):

- The name of the RAID subsystem

- The monitoring interval, in seconds

Updating the storage.ini File

The `storage.ini` file is case sensitive. When adding or modifying Storage Subsystem names in this file, use only lower-case characters, as upper-case entries may cause communication between the Client and the Agent to fail.

To avoid application errors when restarting Agent, verify that a carriage return does not appear at the end of the `storage.ini` file. Refer to the readme.txt file for further information.

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