



Release Notes

Compaq StorageWorks HSG80 Array Controller (ACS V8.3) for Windows NT Server – Intel

This document summarizes features and characteristics of the StorageWorks HSG80 Array Controller (Array Controller Software Version 8.3) for Windows NT Server–Intel systems that are supported in the release of the RA8000/ESA12000 Fibre Channel Solution Software V8.4 / V8.3 for Windows NT Intel platform kit.

These *Release Notes* provide information for the HSG80 Array Controller Software (ACS) Version 8.3 not covered elsewhere in the documentation. This document is intended for use by individuals responsible for configuring, installing, and using the HSG80 Array controller.

NOTE:

Read this entire document before installing or upgrading the software.

These release notes include the following sections:

- 1.0 Identifying Your ACS Software Revision Level
- 2.0 Hardware and Software Support
- 3.0 New Features
- 4.0 Configuration Rules
- 5.0 ACS V8.3 Operating Constraints
- 6.0 Saving Your Configuration
- 7.0 Avoiding Problem Situations Using V8.3
- 8.0 Documentation Update
- 9.0 StorageWorks Command Console (SWCC)
- 10.0 SWCC Operating Constraints
- 11.0 Avoiding Problem Situations Using SWCC
- 12.0 Command Console Client V2.1

Release Package Contents

The RA8000/ESA12000 Fibre Channel (ACS Version 8.4/8.3) Solution Software Kit for Windows NT - Intel supports both V8.3 and V8.4 StorageWorks products. Provided below are the kit items pertinent to the V8.3 (Fibre Channel Hub) Solution:

- A cover letter
- The HSG80 Array Controller documentation set:
 - *Quick Setup Guide – RA8000/ESA12000 HSG80 FC Storage System for Windows NT Server–Intel (ACS V8.3 with Fibre Channel Hub)*
 - *RA8000/ESA12000 Fibre Channel Solution Software for Windows NT- Intel - Installation Reference Manual*
 - *StorageWorks Command Console Version 2.1 User’s Guide*
 - *HSG80 Array Controller ACS Version 8.3 Configuration and CLI Reference Guide*
 - *HSG80 Array Controller ACS Version 8.3 and 8.4 Maintenance and Service Guide*
 - *HSG80 Array Controller ACS Version 8.3 Illustrated Parts Map*
 - *HSG80 Solutions Software License*
 - *Registration Card*
 - *StorageWorks Warranty Booklet*

NOTE

The Warranty book uses DIGITAL and DIGITAL terminology. A COMPAQ Warranty booklet is not yet available. Please check with your COMPAQ service representative for any questions on warranty items.

- *Release Notes –COMPAQ StorageWorks HSG80 Array Controller (ACS V8.3) for Windows NT Server–Intel (This document)*
- *Application Notes –RA8000/ESA12000 FC-AL Configurations for Windows NT – Intel*
- *Application Notes –RA8000/ESA12000 FCAL High Availability Configurations for Windows NT - Intel*
- *RA8000/ESA12000 Fibre Channel Cluster Solutions for Windows NT – User’s Guide*
- RA8000/ESA12000 Fibre Channel Solution Software V8.4/V8.3 for Windows NT/Intel CD-ROM

Intended Audience

This document has been prepared for customers who have purchased the RAID Array 8000/ESA12000 Fibre Channel with an HSG80 controller and for COMPAQ Multi-vendor Customer Services personnel responsible for installing and maintaining systems which include the HSG80 Array controller.

Visit our Web Site for the Latest Information

Check our web for the latest drivers, technical tips and documentation for the HSG80 Array Controller. We can be found in the technical area of our web page:

<http://www.compaq.com/>

1.0 IDENTIFYING YOUR ACS SOFTWARE REVISION LEVEL

You can identify ACS Software Version 8.3 by entering the SHOW THIS_CONTROLLER command at the CLI prompt. The resulting display lists the software revision level as **V8.3G-0**.

2.0 HARDWARE AND SOFTWARE SUPPORT

This section lists the hardware and software supported by RA8000/ESA12000 Fibre Channel storage subsystem.

2.1 Required Driver Revision

HSZDISK.SYS Version 4.2 is a class driver required for all HSG80 Array Controller configurations. It is designed to enhance the many availability and error recovery features built into your COMPAQ RAID subsystem, and to provide more robust operation than the native Windows NT Server SCSI disk class driver. HSZDISK.SYS Version 4.2 only affects COMPAQ RAID devices. Other SCSI disk drives in your system continue to be serviced by the native SCSIIDISK.SYS class driver. The HSZDISK.SYS Version 4.2 driver is included in the CD-ROM labeled *RA8000/ESA12000 Solution SW V8.4/V8.3 for Windows NT Server – Intel*.

2.2 Operating System Support

ACS Version 8.3 on HSG80 controllers is used in conjunction with Windows NT Server Version 4.0 (Intel) and Service Pack 3.

2.3 Microsoft Clusters Server Support

ACS V8.3 supports Windows NT cluster. Refer to the *RA8000/ESA12000 Cluster Solution for Windows NT Installation Guide* for more information.

2.4 Host Adapter for Intel

The KGPSA-BC host adapter is supported by the Windows NT Server operating system for HSG80 controllers operating with Intel Servers, refer to Table 1 below.

Table 1 Intel Server Adapter KGPSA-BC

Bus	Operating System Version	Supported Systems	Adapter Firmware Version	Driver Version
PCI to Fibre Channel	WNT4.0 Service Pack 3	Intel Based Server	SF2.20X1	NTSCSI 4.10X1

NOTE

The required adapter firmware and installation procedure are included on the RA8000/ESA12000 Solution Software V8.4/V8.3 CD (P/N AG-RFAAC-BE).

2.5 Device Support

ACS Software Version 8.3 supports the devices listed in the Table 2 at the indicated hardware and microcode levels.

Table 2 Supported Disk Drives

Device	Capacity in Gigabytes	Spindle Speed (RPM)	Minimum Microcode Version	Minimum Hardware Version
DS-RZ1CB-VW	4.3	7,200	LYJ0 or 0656	A01
DS-RZ1CD-VW	4.3	10,000	0306	A01
DS-RZ1CF-VW 380691-B21	4.3	7,200	N1H1 or 1614	A01
DS-RZ1DB-VW	9.1	7,200	LYJ0 or 0307	A01
DS-RZ1DF-VW 380595-B21	9.1	7,200	N1H1, 0372, or 1614	A01
DS-RZ1DD-VW 380588-B21	9.1	10,000	0306	A01
DS-RZ1EF-VW 380694-B21	18.2	7,200	N1H1 or 0372	A01
DS-RZ1ED-VW 380589-B21	18	10,000	0306	A01

NOTE

Additional disk drive information is available in the following Product Notes:

<u>DEVICE</u>	<u>PRODUCT NOTE</u>
DS-RZ1CB-VW/DS-RZ1DB-VW	EK-SM2DS-PN
DS-RZ1CD-VW	EK-RZ1CD-PN
DS-RZ1EF-VW	EK-RZ1EF-PN

3.0 NEW FEATURES

This section briefly describes features that are supported by the HSG80 controller. For more information on these features, see the *HSG80 Array Controller ACS Version 8.3 Configuration and CLI Reference Guide*.

3.1 External Cache Battery

COMPAQ recommends that you replace the ECB every two years to prevent battery failure.

If you are shutting down your controller for longer than one day, complete the additional steps in “Shutting Down the Subsystem” in the *HSG80 Array Controller ACS Version 8.3 Maintenance and Service Guide*. This will prevent the ECB from discharging during planned power outages.

3.2 CLI Commands

ADD CONNECTIONS and SET CONNECTIONS now support the following Operating Systems:

- DIGITAL_UNIX
- IBM
- SNI
- VMS
- WINNT
- SGI
- HP

3.3 Host Ports

Each controller has two host ports. Each HBA will see a maximum of 8 units on a host port. This maximum is a limitation of the host. Refer to the *COMPAQ StorageWorks RA8000/ESA12000 FC-AL Application Notes* for information about unit numbering.

4.0 CONFIGURATION RULES

The following list outlines the configuration rules for the controller:

- Maximum 128 visible LUNs/200 assignable unit numbers
- Maximum 512 GB LUN capacity
- Maximum 72 physical devices
- Maximum 20 RAID-5 storagesets
- Maximum 30 RAID-5 and RAID-1 storagesets
- Maximum 45 RAID-5, RAID-1, and RAID-0 storagesets
- Maximum 8 partitions of a storageset or individual disk
- Maximum 6 members per mirrorset
- Maximum 14 members per RAID-5 storageset
- Maximum 24 members per Stripeset
- Maximum 48 physical devices per striped mirrorset

5.0 ACS V8.3 OPERATING CONSTRAINTS

This section describes the operating constraints for ACS Software Version 8.3. An operating constraint is a limitation placed on the operation of the controller. Other constraints on host adapters or other system components may also apply. Keep these constraints in mind to avoid problems and to help achieve the maximum performance from your controller.

5.1 Boot Support

Installation of the Windows NT operating system on the RA8000/ESA12000 storage system is not supported.

5.2 Using FRUTIL to Insert a New Controller

When using FRUTIL to insert a new controller in a dual-redundant controller configuration, the user will see a new set of instructions after the new controller has been inserted:

If the other controller did not restart, follow these steps:

1. Press and hold the other controller's reset button.
2. Insert the other controller's program card.
3. Release the reset button.

NOTE

Whenever you are running FRUTIL you must quiesce all I/O.

5.3 Dual External Cache Battery Failures

The HSG80 Array Controller cache policy provides for proper handling of a single ECB failure as described in Table 2-8 of the *HSG80 Array Controller ACS Version 8.3 Configuration and CLI Reference Guide*. For dual ECB failures, Table 2-8 states that no failover occurs. For this release, if a dual ECB failure is detected both controllers will be restarted.

5.4 Fault Management Utility (FMU)

For this release, the number of last failure entries maintained by FMU has been reduced from 16 to 4.

5.5 Disk Geometry Limitations

The Table 3 presents known limitations that certain operating systems have regarding storage unit size.

Table 3 Operating System Storage Unit Limitation

Disk Size	Storageset Configuration	Operating System and Version
4 GB	Any	Windows NT 4.0 FAT File System
16 Terabytes	Any	Windows NT 4.0 NTFS File System

5.6 PVA Switch Setting

After installing the EMU in each cabinet, ensure that the SCSI ID number on the PVA is set according to Table 4.

Table 4 SCSI ID Number on the PVA

Cabinet	PVA SCSI ID Setting
Master enclosure	0
First expansion enclosure	2
Second expansion enclosure	3

6.0 SAVING YOUR CONFIGURATION

6.1 Saving a Configuration to Previously Initialized Stagesets

When enabled, the `SAVE_CONFIGURATION` switch allows you to do the following on single-configurations only:

- Save a configuration to a disk or stageset. The configuration may be retrieved later and downloaded onto a replacement controller.
- Retain code patches to the operating software.

If any stageset within your configuration was previously initialized with the `INITIALIZE` container-name `SAVE_CONFIGURATION` command to save your configuration to disk, it will not be necessary to reconfigure your devices with a new controller. `SAVE_CONFIGURATION` also retains code patch information to the software. This option is supported on single controller configurations only.

ACS Software Version 8.3 saves any installed software patches on disks initialized with the `SAVE_CONFIGURATION` option. Should you need to replace a controller and restore the configuration from a disk, you will not have to reinstall any software patches.

NOTE

You must use the same software version when replacing the controller. You can also hold in port button 6 on the operator control panel, and press the reset button to restore the configuration.

Configuration information cannot be retrieved from stagesets created on other HSx controllers (for example, HSD, HSJ, or HSZ controllers). You can only restore a configuration from a configuration saved on this or another HSG80 array controller.

7.0 AVOIDING PROBLEM SITUATIONS USING ACS V8.3

Under certain conditions, you may experience unusual controller behavior. This section presents information to help you avoid such situations and to recover from them if they occur.

7.1 Adding, Moving, and Changing Devices

The controller maintains a configuration map of a device's type and location. This map is used to communicate with devices. If you add, move, or change a device while the controller is powered off without first changing the controller configuration, the controller is not able to communicate with the changed device when it returns to service.

If a device is removed by mistake while the controller is off, delete all containers associated with the removed device after power has been restored to the controller.

If a device is replaced while the controller is off, remove the device before restoring power to the controller. Correctly remove the current device and add the new device after restoring power to the controller.

See the *HSG80 Array Controller ACS Version 8.3 Maintenance and Service Guide* for correct device removal and addition procedures.

7.2 Moving Stagesets

Move only normal stagesets. Do not move stagesets that are reconstructing or reduced, or data corruption will result.

7.3 Adding, Moving, and Changing Controllers, Cache Modules, or External Cache Batteries

It is permissible to replace the controller, cache module, or external cache battery while the subsystem is shut down. However, you must enter the SHUTDOWN THIS_CONTROLLER command before shutting the subsystem down to make configuration changes. If two controllers are configured in a dual-redundant configuration, you must first enter the SHUTDOWN OTHER_CONTROLLER command. These commands instruct the controllers to flush all unwritten data from the cache modules and discontinue all I/O activity. For more information regarding the SET controller command or maintenance and replacement of the controller, cache module, and external cache battery, see the HSG80 Array Controller ACS Version 8.3 Configuration and CLI Reference Guide.

7.4 Establishing a SWCC SCSI Direct Connection

Establishing a SCSI direct connection lists all available drives, including the system drive. You must select a drive that belongs to the HSG80 controller, otherwise the connection will fail.

7.5 Virtual Disk Wizard in Multiple-Bus Failover Mode

In Step 4 of 5 of the *Add Virtual Disk Wizard*, the default value for *host access* is “none.” You must change this to one of the host names provided; otherwise, the virtual disk you have just added will be inaccessible.

8.0 DOCUMENTATION UPDATE

The following corrections are for the *HSG80 Array Controller ACS Version 8.3 Maintenance and Service Guide*.

Add the following part numbers to Table 1-1, The HSG80 Subsystem:

Table 1-1 The HSG80 Subsystem

Item	Description	Part Number
2	Cooling fan, gray	402602-001
14	Disk drive, 4 GB, 7200	402153-001
	Disk drive, 9 GB, 7200	400289-001
	Disk drive, 18 GB, 7200	400290-001
	Disk drive, 9 GB, 10K	402154-001
	Disk drive, 18 GB, 10K	402229-001
3	Power cable kit, white	401916-001

Add the following part numbers to Table 1-2, HSG80 Fibre Channel Array Controller:

Table 1–2 HSG80 Fibre Channel Array Controller

Item	Description	Part Number
1	Gigabit Link Module (GLM)	402603-001
2	Program card	402604-001
4	Maintenance port cable	402605-001

Add the following part numbers to Table A-1, The HSG80 Subsystem:

Table A–1 The HSG80 Subsystem

Item	Description	COMPAQ Part Number	DIGITAL Part Number
2	Cooling fan, gray	402602-001	FC-BA35X-ML
14	Disk drive, 4 GB, 7200 Disk drive, 9 GB, 7200 Disk drive, 18 GB, 7200 Disk drive, 9 GB, 10K Disk drive, 18 GB, 10K	402153-001 400289-001 400290-001 402154-001 402229-001	FC-RZ1CF-VW FC-RZ1DF-VW FC-RZ1EF-VW FC-RZ1DD-VW FC-RZ1ED-VW
3	Power cable kit, white	401916-001	17-03718-10

Add the following part numbers to Table A-2, HSG80 Fibre Channel Array Controller:

Table A–2 HSG80 Fibre Channel Array Controller

Item	Description	COMPAQ Part Number	DIGITAL Part Number
1	Gigabit Link Module (GLM)	402603-001	70-GLMS1-02
2	Program card	402604-001	BG-RFNUA-BA
4	Maintenance port cable	402605-001	70-32873-02

The following corrections are for the *HSG80 Array Controller Illustrated Parts Map (355217-001/EK-HSG80-MP.A01)*

Correct the following part numbers in the Subsystem Components – Spares List

Item	Description	Spare Part Number
3	Power cable kit, white	401916-001 17-03718-10

9.0 STORAGEWORKS COMMAND CONSOLE (SWCC)

This section of the release notes provides application information on version 2.1 of StorageWorks Command Console HSG80 Client software. Command Console HSG80 Client 2.1 is a feature-rich graphical user interface (GUI) for StorageWorks HSG80, Fibre Channel controllers.

Product Description - Command Console HSG80 Client 2.1 is a standalone or plug-in GUI for HSG80 controller-based storage subsystems. It does not operate with other subsystem types. Command Console contains two, main component: Client and Agent. For most versions of Command Console, Client includes the following components:

- Navigation Tree - The enterprise storage management window from which you can open multiple Storage windows. Client can be shipped with or without the Navigation Tree component depending upon the application of the product.
- Storage Window - The graphical window into a specific storage subsystem. There is a separate Storage Window type for each controller type to be managed. You must open a separate Storage Window for each subsystem you wish to manage.
- CLI Window - The text-based, command-line window into a specific storage subsystem, from which you can manage the subsystem using CLI commands.

9.1 Topics Covered

This section of the release notes cover the following topics:

- Minimum system configuration/qualification
- Clarifications - Explanations of the behavior of the software in certain situations
- Operational constraints - Limitations placed on the operation of the software by the nature of its design
- Avoiding Problem Situations - Information to help you avoid and recover from unusual behavior with the software
- Installation instructions
- Identification of the software revision level

9.2 Minimum System Configuration

Client requires the minimum system configuration shown in Table 4 to operate.

Table 4 Client Minimum System Configuration Requirements

Feature	Requirement
Architecture Intel 486	66 MHz, 16 MB memory, 1 MB free disk space, CD-ROM drive OR Windows NT - compatible Digital Equipment Corporation Alpha(r) system 1 MB free disk space, CD-ROM drive
Operating System	Windows NT version 4.0 (with Service Pack 3) OR Windows 95 (build 950 or later)
Monitor	15-inch VGA monitor
Input Devices	Keyboard, mouse
Modem	Hayes-compatible
Fibre Channel	Fibre Channel PLDA host adapter, adapter Special Windows NT device driver, (for local connection HSZDISK.SYS, version 4.2 via host bus only) or later required.
Serial Port	(for Standard, PC serial port capable of at connection via least 9600 baud. serial port only)
Network Adapter	TCP/IP-compatible network card (for network connection only)
Controller	StorageWorks HSG80 controller running
Compatibility	Operating software version 8.3

9.3 Clarifications

This section presents clarifications on the behavior of the software in certain situations.

9.3.1 Cautions When Configuring from a Configuration File

When reconfiguring a storage subsystem from a configuration file, the program prompts you to choose whether or not the program initializes your virtual disks. You must choose the appropriate option or you risk the loss of your data as the configuration file is loaded and your subsystem is reconfigured.

- Do not initialize virtual disks – Choose this option when your virtual disks contain valuable user data, and you wish to retain that data. You might, for instance, need to replace a failed subsystem component such as a controller or cache module. In this case, your subsystem configuration must be transferred to the new hardware, but you do not wish to change any information on your storage devices themselves.
- Initialize virtual disks – Choose this option when your virtual disks do not contain user data, or when you do not care if the data on them is lost. You might use this option when configuring a storage subsystem from scratch, to make it match the configuration in your configuration file.

9.3.2 Virtual Disk Recovery from a Configuration File

Note that when you delete a virtual disk, the disk's member drives are all reinitialized and any user data is lost. You cannot restore the virtual disk's data by reconfiguring your subsystem from a configuration file. A configuration file contains only information about the structure of a virtual disk and does not contain the disk's data itself.

9.3.3 Warning Message Windows

The controller software responds to problems in parsing and executing commands from Client and Agent by returning a message window entitled "Warning". The content of such messages may contain such indications as "Command Execution Error," along with pertinent detailed information. These messages are simply passed through for display by Client and Agent. They are not errors associated with problems in the software, rather in the controller.

9.3.4 Virtual Disk Maximum Capacity

- The maximum capacity of RAID-based virtual disks is determined by the capacity of the smallest member, not the largest.
- The maximum capacity of RAID 0 virtual disks is equal to the number of members times the capacity of the smallest member.
- The maximum capacity of RAID 1 virtual disks is equal to the capacity of the smallest member.
- The maximum capacity of RAID 0+1 virtual disks is equal to the number of members in one stripe times the capacity of the smallest mirrorset member.
- The maximum capacity of RAID 3/5 virtual disks is equal to the number of members minus one times the capacity of the smallest member.

9.3.5 Local Client/Agent Network Connection

To create a local connection to take advantage of Agent's event notification features, you can run both Client and Agent on the same Windows NT host machine and connect them using a network connection. No special installation instructions are necessary to implement this type of connection.

Install each component as if Client were to run on a system remote from the host machine. Note that, because Client only runs on Windows NT or Windows 95 systems, and Agent only runs on Windows NT and UNIX-based systems, you can only implement this type of connection on a Windows NT system. Note also that you cannot use Client with a local connection of either type while an Agent is running on the local machine.

9.3.6 Operating System Considerations

Client provides a graphical interface that replaces your controller's CLI interface. It cannot, however, perform all the operating system configuration necessary to make your subsystem's virtual disks visible to the user in the operating system. When you create or delete virtual disks using either the CLI or Client, you are adding or removing "disks" in the subsystem in a manner similar to plugging or unplugging physical disk drives on the host bus. In either case, there are certain operating system configuration actions you must perform to make these "disks" visible or invisible to the operating system's file system.

9.3.7 Enabling Subsystems in NT Agent Configurator

In the Step 3 dialogue box of the NT Agent Configurator, a check box entitled "Subsystem Enabled" has been added. If this box is not checked, the program configures the storage.ini file such that the subsystem selected in the dialogue box is invisible to the host. If the box is checked, the subsystem is visible. The default state for all subsystems is "enabled."

9.3.8 Case Sensitivity in Client, Host, and Storage Subsystem Names

In configuring Command Console for network operation, you must enter names or IP addresses to identify your hosts, storage subsystems, and Client systems. If you use names (as opposed to IP addresses) the names in Client and Agent must be consistent to allow the programs to communicate with each other. This section discusses issues of case sensitivity associated with name entry in Client and Agent. This information does not apply when you use IP addresses. In the connection dialogues in Client, you are required to enter host names, and you also have the option to enter specific storage subsystem names. In the Agent installation and configuration programs, you are required to enter Client and storage subsystem names.

Host and Subsystem Names in Client

Enter host and subsystem names in Client without regard to case. The software converts all names internally to lower case, regardless of the way you enter them.

Subsystem Names in Agent Installation/Configuration Programs

Enter subsystem names in the Agent installation/configuration programs without regard to case. The software converts all names internally to lower case, regardless of the way you enter them.

Client Names in Agent Installation/Configuration Programs

For Windows NT and UNIX-based Agents: Enter Client names in the installation/configuration programs without regard to case. The software converts all names internally to lower case, regardless of the way you enter them.

9.3.9 Case Sensitivity in Agent STORAGE.INI File

If you choose to manually edit an Agent STORAGE.INI file, enter storage subsystem names only in lower-case form. If you use upper-case characters in a name, Client and Agent may not be able to communicate because of a name mismatch.

9.3.10 Case Sensitivity in Agent CLIENT.INI File

For Windows NT and UNIX-based Agents: If you choose to manually edit an Agent client.ini file, enter Client names exactly as formatted within your network. The names you enter must match the names your name server recognizes, or Client and Agent may not be able to communicate with each other.

9.3.11 ServerWORKS Connections

You can manually configure any Agent to send SNMP traps to a host running Digital Equipment Corporation's ServerWORKS by editing the client.ini file. Edit the file to include the ServerWORKS host name and SNMP notification.

9.3.12 Running Client via Network Connections

You can operate Client over PPP, SLIP, or RAS network connections. Be aware though, that some restrictions on features exist. See Operating Constraints.

9.3.13 Display in VGA Mode

There are numerous issues involving the use of Client on a system with standard, VGA resolution. The Storage window requires a minimum amount of screen space to properly display its contents. When you use VGA display resolution, screen space becomes more limited. It is highly recommended that you use Client with a minimum of SVGA (800x600) display resolution. If you must use VGA resolution, consider the following suggestions:

- If you are running under Windows 95, enable the Auto Hide feature for the Task Bar. This feature provides more screen space when the Task Bar is not being used.
- You may not be able to see the scroll bars on the bottom of the display. You can use the Storage window's menu settings to remove the toolbar from the display to make room for the bottom scroll bars.
- If you are using Client with a 24-device, high-availability enclosure, it may be easier to configure the subsystem if you set the system type to Generic for configuration purposes. Return the setting to High-Availability 24-Device Pedestal for monitoring and viewing.

9.3.14 Tuning Fault Notification

For faster fault notification, remove any unused host system names in the client.ini file for each of your Agent programs. Inactive systems may force timeouts that slow Client response to your commands. Also, ensure that you are not using event notification while using RAS connections. See "Delayed Event Notification on RAS Connections" in the next section, for more details.

9.3.15 Paging and Event Logging Continues After Client Is Terminated

In certain situations, you may experience continuing paging and Window NT Event Logging in response to subsystem faults, even though Client is not running. This behavior is normal and is a result of paging and Event Logging activity started by Client when it was running. Client's Asynchronous Event Services (AES) module runs under either Windows NT or Windows 95 as a Service, and continues to run, even after Client itself has terminated.

The AES module communicates with Agents whenever it is running, and activates paging and Event Logging when a subsystem event occurs. In Windows NT, to terminate paging and Event Logging after Client has been closed, go to the Services section of Control Panel, select the "AsyncEventSvc" Service, and stop it. In Windows 95, the state of the AES module and a control for it are available in Control Panel as a separate icon named "ASYNCEVENTSVC".

9.3.16 Operating Parameters of Partition Virtual Disks

Keep in mind that virtual disks based on partitions on any container are all closely related. They all share the same target and operating parameters of the container. If you change any of this information for one partition on the container, it automatically changes for all the partitions on that container.

10.0 SWCC OPERATING CONSTRAINTS

This section describes the operating constraints for the software. An operating constraint is a limitation placed on the operation of the controller by the nature of its design. Keep these constraints in mind, to avoid problems and to help you to get the maximum performance from your controller.

10.1 Compatibility Among Product Versions

CAUTION:

Pay particular attention to the instructions below for uninstalling existing Client and Agent components from your local system. Failure to remove existing components before installation may result in Windows Registry corruption.

Version 2.x software components are not compatible with version 1.1 components, and operation with mixed components is not supported. You must uninstall your version 1.1 software, including Clients and Agents, before you install version 2.x components.

Use the instructions that came with your version 1.x software to uninstall it. Before you install your new Client software, you must uninstall any existing version 2.x CLI Window. Use the Windows NT or Windows 95 "Add/Remove Programs" feature or the instructions that came with your existing software to uninstall it. The installation program will install a newer CLI Window version in your old version's place.

Before you install your new Client software, you must uninstall any existing version 2.x Storage Window of the same type as the one you wish to install. Use the Windows NT or Windows 95 "Add/Remove Programs" feature or the instructions that came with your existing software to uninstall it. The installation program will install a newer Storage Window version in your old version's place.

Note that, in configurations with existing version 2.x components, you need not remove the Navigation Tree components. You also need not remove any Storage Window components other than one matching the one you wish to install. The installation program will install your new Client Storage and CLI Windows seamlessly under your existing Navigation Tree.

10.2 Failover Mode Set in CLI

Client is intended to be used to configure and monitor your storage only, and there are some functions available in the CLI that are not available in graphic form in the GUI. If you wish to use your controller's multiple-bus failover mode, you must enable and control that function via the CLI. Also, if you wish to use virtual disk preferencing in multiple-bus failover mode, you must set your virtual disk preferences via the CLI when you set the failover mode.

10.3 No Direct Host Bus Connections on Windows 95

Direct host bus connections are not supported on Windows 95. Only serial and network connections are supported.

10.4 Connection Limitations

Local SCSI or serial connections are only available with standalone Storage windows. You cannot use the Navigation Tree to connect locally to a subsystem.

10.5 Some Features Dependent Upon Connection Type

Because of the nature of the connections you can use between Client and your subsystems, the features available with each connection type vary slightly. Some connection types impose limitations on Client's features, as noted in Table 5.

Table 5 Feature Limitations

Feature Connection Type	Create Virtual Disk	Delete Virtual Disk	Fault Events: Client Visual Notification
Local Serial Connection (Navigation tree and Agent not used)	Supported	Supported	Supported
Local SCSI Bus Connection (Navigation Tree and Agent not used)	Supported	Supported	Supported
Local Network Connection (Client and Agent running on the same host)	Supported	Supported	Supported
Remote network Connection (Client running on a PC remote from Agent on a host)	See Note*	See Note*	See Note*
Remote Ras Connection (Client running on a remote PC with a dialup network connection)	See Note*	See Note*	See Note**
Local Serial Connection (Navigation Tree and Agent not used)	Not Supported	Not Supported	Not Supported
Local SCSI Bus Connection (Navigation Tree and Agent not used)	Not Supported	Not Supported	Not Supported
Local Network Connection (Client and Agent running on the same host)	Supported	Supported	Supported
Remote Network Connection (Client running on a remote PC with a dialup network connection)	See Note*	See Note*	See Note*
Remote RAS Connection (Client running on a remote PC with dialup network connection)	See Note *	See Note *	Supported

*Supported, but not recommended. Followup operating system configuration cannot be performed remotely.

**Supported reliably only while RAS intact. Some events may be missed while dialup connection is broken.

10.6 Delayed Event Notification on RAS Connections

Visual fault notification, paging, and NT Event Logging may be delayed significantly in situations where RAS connections are used for multiple Clients. An Agent with multiple Clients in its client.ini file must poll each Client whenever a fault occurs. Any Clients not currently network-connected significantly delay this process, because Agent must wait for their connections to time out before moving on to the other Clients. To avoid this situation, set the notification_method parameter for each Client in the client.ini file to "0", to defeat event fault notification.

10.7 CLI RUN Commands

Do not issue RUN commands in the CLI Window. Use only a maintenance terminal connection to issue RUN commands.

10.8 No Code Load in Multiple-Bus Failover Mode

The controller code load feature is not fully implemented in multiple-bus failover mode. If you must use code loading to update you ACS, you will have to update the PCMCIA cards in two, separate steps. The controller set as "this controller" is the only one through which you can do a code load, shut down your storage subsystem, swap PCMCIA cards, and repeat the code load procedure.

10.9 Maximum Members Dependent Upon Virtual Disk Type

The maximum number of members allowed in a RAID-based virtual disk is dependent on the disk type.

- JBOD virtual disks - maximum of one member
- Striped virtual disks - maximum of 14 members
- Mirrored virtual disks - maximum of 6 members
- Striped mirrored virtual disks - maximum of 28 members
- Parity virtual disks - maximum of 14 members

10.10 Maximum Number of Active Connections Limited

The controller maintains a table of host port connections that can contain up to 32 named connections. Only 8 of those connections can be active (that is, "on line") at any time, however. Client shows only those connections that the controller recognizes as "on line".

11.0 AVOIDING PROBLEM SITUATIONS USING SWCC

In certain situations, under specific conditions, you may experience unusual behavior with the SWCC software. This section presents information to help you to avoid such situations and to recover from them if they occur.

11.1 Incomplete Scans Cause Connection Loss

For proper display of subsystem status, Client performs a "scan" to collect information about your storage subsystems. The program displays scan progress screens while the process occurs. In some, rare situations, you may experience incomplete scans or scans that appear to hang.

In these cases, the likely cause is that Client has lost its connection with the virtual disk it was using for communication with your subsystem. This problem may show up with either local SCSI or network connections. To remedy this situation, you must first restart both of your controllers, followed by restarting Client and Agent. If the system still does not operate properly, you must reboot your host system. If your host is running Windows NT, you must ensure that the special device driver, HSZDISK.SYS, is installed and running properly after it is booted.

11.2 Mirrored Cache Mode Not Retained After Configuration Restore

If you restore your controller configuration from a configuration file, the mirrored cache setting may not be properly enabled. You must restore the mirrored cache setting manually, using a CLI Window.

11.3 Error Message on Exiting Storage Window

Under certain conditions, when you exit a Storage Window, you may experience an "Illegal Operation Error" message. You may ignore this message.

11.4 Inappropriate Error Message on Device Delete

If you select a disk, then chose Device/Delete, a dialog box may appear, asking "Are you sure?" If you choose the "NO" option, the message "Nothing selected to delete!" is displayed. You may ignore this message.

11.5 Storage Window Corruption After Making/Removing Spare Device

If you select a disk and make it a spare (using either menu or context menu options), then remove the device as a spare, some information in the Storage Window may be left corrupted. To reconstruct the window, you must exit the window and open a new one.

11.6 Cache Policy Not Shown in Controller Properties Sheet

The controller cache policy may not be properly shown in the controller properties sheet. The field may be blank. You must use a CLI Window to obtain the cache policy setting.

11.7 Incorrect Capacity Shown in Add Virtual Disk Wizard

In some circumstances, in Step 3 of the Add Virtual Disk wizard, if you specify a capacity greater than the available disk capacity, an error message results. If you back up to Step 2 of the wizard and return to Step 3, the correct capacity is then displayed. An attempt to move to Step 4 of the wizard at this point, however, results in the same error message, even though the correct capacity is shown. To complete your virtual disk, you must exit the wizard and attempt to recreate the virtual disk.

11.8 Storage Window Corruption While Deleting a Virtual Disk

In some circumstances, if you delete and confirm deletion of a RAID-based virtual disk, a "Subsystem Connection Status" window may be displayed, and the Storage Window goes blank. The Storage Window may remain blank for several seconds until the "Subsystem Connection Status" window disappears.

11.9 Application Errors When Restarting Agent

You may experience an "application error" error when attempting to restart Agent after manually changing the Agent configuration files. Either of the following issues may be the cause:

- The client.ini file must end with a carriage return. If any other character terminates the file, it may cause an application error.
- The storage.ini file must not end with a carriage return. If a carriage return terminates the file, it may cause an application error.

11.10 False Restart Message on Agent Installation

When you first install a Windows NT Agent, and you modify more than one configuration parameter, the installation program may prompt you with a message indicating the Agent must be "restarted", even though it has not yet been completely installed. You may ignore this message, and you must respond to the subsequent prompt, "Would you like to start the Agent service now?" by answering "Yes".

11.11 Client Access Changes Not in Effect

After manually editing or changing the Agent client.ini file with a configurator program, you may notice that your Clients' access has not changed. To place your changes in effect, you must restart Agent after editing any of the Agent configuration files.

11.12 Reconfiguration After Controller Replacement

If you replace either of the controllers in your subsystem, you must reconfigure your Agent storage.ini file to match the serial numbers of the new hardware. See your Agent documentation for details on reconfiguring your storage.ini file.

11.13 Storage Window Won't Open

If you cannot open a Storage Window from the Navigation Tree or in standalone mode, the client.ini ACCESS_ALLOWED parameter for your Client is probably set to "0", disabling Storage Window access. Use the Agent configuration script or edit the client.ini file to enable access to the subsystem.

11.14 Configuration File Deleted on Reinstallation or Upgrade

Make sure to save a copy of the current swcc2.mdb file to another directory if you intend to reinstall or upgrade Client. If you uninstall the program, you may inadvertently delete the swcc2.mdb file. This file contains your configuration of host systems and storage subsystems used in the Navigation Tree window display. To reinstate your current Navigation Tree window configuration after installing a new version of Command Console, copy your saved swcc2.mdb file back to the directory in which you installed Command Console.

11.15 Character Limit on Max Cached Transfer Quantity Entry

There is a four-character limit on the maximum cached transfer entry field in the Advanced Options dialogue box accessed when creating virtual disks. The range of acceptable entries is 1-1024. Do not enter more than four digits in this field, as it may terminate Client with an error.

11.16 Invalid Network Port Numbers During Installation

During Client or Agent installation, you may experience an error if the installation program cannot find an acceptable pair of network port numbers. Your Client uses Windows sockets (sometimes called "network ports") to communicate with its Agents. The socket numbers at the Client and Agent ends must match for network communication to occur.

In Windows NT, the socket numbers are assigned in the services file in the \winnt\system32\drivers\etc subdirectory.

In Windows 95, the socket numbers are assigned in the services file in the \windows" directory.

In UNIX-based systems, the socket numbers are assigned in the services file in the /etc subdirectory.

In the unlikely event that you experience a conflict with the socket numbers, you may edit the file manually. The default socket numbers for Command Console are "4998" and "4999". If you are installing either Client or Agent and these numbers are already taken by another application, the installation program prompts to warn you that you must choose another pair.

To select another pair for Client, open the file containing the sockets in an ASCII editor, after you have installed Client. Pick two numbers above 1023 that are not already used in the file, and add the following two lines:

- spgui number1/tcp # StorageWorks Command Console spagent number2/tcp # StorageWorks Command
- Console Note that the port numbers that you select must match the port numbers used by all of the Clients to which you wish to connect your Agent.

11.17 Error on First Attempt to Make Connection

You may experience a system error such as a "Command Execution Error" on your first attempt to make a network connection using the Storage Window. If this happens, try the connection again, and it will succeed.

11.18 Client Hangs When Virtual Disk Deleted

If Client is monitoring a particular subsystem, and you delete the virtual disk being used to communicate with that subsystem, the program may hang. To delete the virtual disk Client is using for communications with an Agent, you must first reassign another virtual disk as the communications LUN, using the Agent configurator. If you are using the Command Console LUN (CCL) as your communications LUN, and you disable it, Client may lose its connection with your subsystem. If you wish to disable the communication LUN, you must first reassign another virtual disk as the communications LUN.

11.19 Missing Tabs in Search Menu in Help

When you select the Search button in Command Console Help, Windows Help may not display an Index or Find Tab. To prevent this problem, delete any hidden files with a .GID extension that are in the Command Console directory. The WinHelp engine uses .GID files to construct the Index and Find Tabs. If the files are corrupted, the engine may not display one or both of the tabs. Deleting the files causes the engine to reconstruct the .GID files.

11.20 Invalid Cache Errors

Your controller module, cache module, and subsystem devices all contain configuration information used to keep their activity synchronized. This data is called metadata. The controller software reports an invalid cache error on the affected controller in situations in which there is a mismatch between the metadata in the controller module and a cache module containing unwritten data. This mismatch can result in loss of the unwritten cache data if the error is not cleared properly.

CAUTION:

Use extreme care in responding to the Command Console
invalid cache error prompt.

If you inappropriately instruct the program to delete unwritten cache data, you may lose valid user data. Client displays a message and prompt box when an invalid cache error occurs. You must tell the program whether or not to delete unwritten cache data as the error is cleared. If you are not familiar with the proper treatment of unwritten cache data, see the information in the online Help documentation under the topic "Invalid Cache Errors."

11.21 Connecting via the Host SCSI Port

Client may indicate that it cannot find your subsystem if you attempt to connect via the host SCSI port under either Windows NT or Windows 95 in either of the following situations:

- A StorageWorks controller subsystem is connected to the host, but the subsystem has no virtual disks configured on it.
- A StorageWorks controller subsystem is not connected to the host.

To avoid the problem, a StorageWorks controller subsystem with at least one virtual disk configured on it must be connected to the host before you attempt to connect Client. If your subsystem has no virtual disks configured on it, and you are using a host port SCSI connection, you must temporarily establish a connection via the controller's serial maintenance port to create at least one virtual disk on the subsystem.

You can use the controller's "Command Console LUN" feature to emulate a LUN for Client communication on UNIX systems. See your controller documentation for details. Note that, because Agent uses a SCSI host bus connection to its subsystems, you must also adhere to this requirement on any host system on which an Agent is running.

11.22 Communications Failure on Power Up with Low Batteries

If the battery in your cache is discharged when you power up the controller, the controller may produce an invalid cache error. If you are using Client as your controller interface at that time, the error may prevent communication with the controller. In this case, the controller status bar in Client changes to yellow, and the program displays a window containing error information. To clear the error, you must exit Client and use a normal controller maintenance terminal to issue the `CLEAR ERRORS INVALID_CACHE` command before you can use the controller. See your controller documentation for instructions on use of the `CLEAR ERRORS INVALID_CACHE` command.

If the battery remains low, the invalid cache error may reappear. In this case, you can operate your controller with reduced capability, or you can change its cache policy to get around its built-in battery protection, although at some risk to your data. Refer to your controller documentation for details on its cache policy controls. After you have cleared the invalid cache error, you can use either a normal maintenance terminal or Client as your controller interface.

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

Client receives notification for most types of changing subsystem fault conditions on the next monitor interval after they occur. You may experience invalid or lost notifications in situations in which Client's connection with its subsystems is broken. Any Windows NT Event Logs that might have occurred while the connection was broken are also lost.

If the connection between Client and its subsystems is broken for any reason, Client may continue to display faults that are cleared while the connection is broken. Similarly, faults that occur while the connection is broken are not displayed at all. To avoid lost fault indications, make sure that Client's connections with its subsystems are monitored and maintained. To reestablish a connection with a storage subsystem, you must exit and restart Client. Broken connections can occur for a variety of reasons:

- For RAS connections - It is the nature of a RAS connection that it is not a full-time connection. Events that occur during a period when the RAS connection is not made are not logged to Windows NT's Event Logging facility.
- For serial controller connections - Bad or missing serial cable. To repair this situation, plug in or replace the cable.
- For host port SCSI connections - Bad or missing SCSI host cable, no LUNs configured on controller on Client startup.
- For network connections - Agent missing or not running, network discontinuity, Agent not properly configured for your Clients.
- THIS controller halted, reset or hung - To repair this situation, restart or replace THIS controller.
- The virtual disk being used for communications with the storage subsystem is no longer available.

11.24 No Agent Notification Causes Invalid or Missing Fault Displays

For some types of faults, Agent does not send Client notification of changes in status as they occur. Client displays whatever fault information it last received. Following are three situations in which a fault can occur without immediate display in Client:

- The OTHER controller fails or is shut down.
- A cache battery on either controller fails or goes low.
- A cache module fails.
- A fan fails.
- A power supply fails.

In all of these cases, you can get current status by viewing the subsystem in question using the REFRESH option in the View menu.

11.25 Incompatibility with Windows 95 Monitor Energy Saver Mode

If you are using Windows 95, do not use the "energy saver" (low power) monitor mode available with some monitors and graphics adapters. Your system may lock up with a blank screen when the energy saver mode is activated. You may use any screen saver you wish with Command Console.

11.26 Manual Restart Required in Some Situations

In some situations in multiple-bus mode, both controllers must be restarted to properly continue subsystem operation. This function is performed automatically by the software, in most cases. If only one controller in a dual-redundant pair restarts, however, you must manually restart the other controller.

11.27 Enable Read-Ahead Cache Before Enabling Write-Back Cache

The controller requires that read-ahead cache mode is enabled when enabling write-back cache mode. Client, however, has no provision for enabling both modes concurrently. To properly enable write-back caching using Client, you must first enable read-ahead mode, and then enable write-back mode.

11.28 Allocation Class

When specifying the allocation class from SWCC, the limit is between 0 and 65535. SWCC contains an online manual, which can be accessed in the online Help. For the latest information about SWCC, refer to the product links available on the Compaq Web site at:

<http://www.compaq.com>

11.29 Identifying Your Command Console Software Revision Level

You can identify your version of Client software by accessing the Help|About menu in any window type. The resulting display lists the software revision level as "Version 2.1" or "V2.1".

12.0 COMMAND CONSOLE CLIENT V2.1

This portion of the release notes covers version 2.1 of the Command Console Client. This includes last-minute notes specific to the Command Console Client, such as installation, removal of the Client, and troubleshooting, in addition to troubleshooting connection and access problems.

12.1 Installation Notes

12.1.1 Client Installation Claims System Files are Out-of-Date, Even After Installing New Files

SWCC 2.x Client software requires at least version 2.20.0.0 of Microsoft's OLEAUT32.DLL file. If the version installed is older than 2.20.0.0, the SWCC installation will show a dialog box with the following information:

- Systems files are out-of-date.
- It will install new system files.
- Rerun the installation after the system reboots.

With some versions of OLEAUT32.DLL, the version check will fail and InstallShield will not overwrite with the newer file. This action will cause the install to always say that the system files need to be upgraded and to never allow you to install SWCC. To fix this, ensure that a proper version of OLEAUT32.DLL was installed by installing a clean version of the operating system.

12.1.2 Invalid Network Port Numbers During Installation

During Client or Agent installation, you may experience an error if the installation program cannot find an acceptable pair of network port numbers. Your Client uses Windows sockets (sometimes called "network ports") to communicate with its Agents. The socket numbers at the Client and Agent ends must match for network communication to occur. In Windows NT, the socket numbers are assigned in the services file in the \winnt\system32\drivers\etc subdirectory.

In Windows 95, the socket numbers are assigned in the services file in the \windows" directory. In UNIX-based systems, the socket numbers are assigned in the services file in the /etc subdirectory. In the unlikely event that you experience a conflict with the socket numbers, you may edit the file manually.

The default socket numbers for Command Console are "4998" and "4999". If you are installing either Client or Agent and these numbers are already taken by another application, the installation program warns you to choose another pair. If you do not choose another pair, the program uses the defaults, regardless of conflicts with other programs.

To select another pair for Client, open the file containing the sockets in an ASCII editor, after you had installed Client. Pick two numbers above 1023 that are not already used in the file, and add the following two lines:

- spgui number1/tcp # StorageWorks Command Console
- spagent number2/tcp # StorageWorks Command Console

Note that the port numbers that you select must match the port numbers used by all of the Clients to which you wish to connect your Agent.

12.1.3 Stand-Alone Installations

After doing a stand-alone install of any Client, exit Command Console before adding or accessing a system with that type of controller. Command Console will then recognize the installation.

12.1.4 SWCC 1.1B Client Will Not Work if Version 2.x Client Was Already Installed

SWCC 1.1b will malfunction if you already have SWCC 2.x on a Windows NT operating system. The Asynchronous Event Service that comes with SWCC 2.x uses the same port as SWCC 1.1b. SWCC 1.1b can be removed without impacting SWCC or ServerWORKS 3.3.

Perform the following to solve this:

1. Uninstall SWCC 1.1b. Ignore the error box that appears.
2. Reboot the computer. The integration for SWCC 1.1b will have been removed.
3. Integrate SWCC 2.x with ServerWORKS 3.3 by referencing "Getting Started."

12.1.5 Remove Version 1.1 Components Before Installation (HS-Series Except HSZ22)

Remove the version 1.1 software, including Clients and Agents before you install version 2.x components. Version 2.x software components are not compatible with version 1.1 components, and the operation with mixed components is not supported. Use the instructions that came with your version 1.x software to remove it.

Before you install your new Client software, you must remove any existing version 2.x CLI Window. Use the Windows NT or Windows 95 Add/Remove Programs feature or the instructions that came with your existing software to remove it. The installation will upgrade your CLI window.

Before you install your new Client software, you must remove any existing version 2.x Storage window of the same type as the one that you wish to install. Use the Windows NT or Windows 95 Add/Remove Programs feature or the instructions that came with your existing software to remove it. The installation will upgrade your Storage window.

Note that, in configurations with existing version 2.x components, you need to only remove the Storage window component that you plan to upgrade. Do not remove the navigation tree and any other Storage window components. The installation will install your new Client Storage and CLI windows seamlessly under your existing navigation tree. If you remove your Agent, you may lose your configuration data. To learn how to keep your configuration data, please see the section, "Before Installing the SWCC 2.x Agents on Compaq's DIGITAL UNIX."

Note that, in configurations with existing version 2.x components, you need to only remove the Storage window component that you plan to upgrade. Do not remove the navigation tree and any other Storage window components. The installation will install your new Client Storage and CLI windows seamlessly under your existing navigation tree.

If you remove your Agent, you may lose your configuration data. To learn how to keep your configuration data, please see the section, "Before Installing the SWCC 2.x Agents on Compaq's DIGITAL UNIX."

12.2 Uninstall Notes

12.2.1 Configuration File Deleted on Reinstallation or Upgrade

Save a copy of the current swcc2.mdb file to another directory if you intend to reinstall or upgrade Client. If you uninstall the program, you will delete the swcc2.mdb file. This file contains your configuration of host systems and storage subsystems used in the Navigation Tree window.

To reinstate your current Navigation Tree window configuration after installing a new version of Command Console, copy your saved swcc2.mdb file back to the directory to which you installed Command Console.

12.2.2 SWCC Client Uninstall Does Not Remove AsyncEventService Entries

Before uninstalling StorageWorks Command Console (but not individual controller Clients), first remove the AsyncEventService entries. Under Windows 95, go into Control Panel Async Event Service and uncheck "Automatic startup on boot." Under Windows NT, change to the directory to which you installed SWCC and run the following command:

AsyncEventService - remove

Then remove the SWCC Client. Failing to remove the service will cause the system to report that a service failed to start every time the system is booted.

12.3 Command Console Client Troubleshooting

12.3.1 Authorization Error when Adding the Server to the SWCC Navigation Tree

SWCC 2.x includes support for different SWCC Agents. Each Agent supports a different subset of Compaq 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. Every Client listed in the Client list of an Agent must also be listed in every other Client list of an Agent, with at least "Overview Status" access rights.

If a Client is missing from any of the authorized Client list of an Agent, all Clients will receive an authorization error when attempting to add the server to the SWCC navigation tree.

12.3.2 Help Files Still Appear after Uninstall

After you have uninstalled a storage subsystem Client, its help files will still appear. Delete the CCONSOLE.GID file, which may be hidden. This file will regenerate the next time you use the Client's help files.

12.3.3 Missing Help Files

You may be unable to access the help files for a particular storage subsystem Client if you install that storage subsystem Client on a computer that already has SWCC. Delete the CCONSOLE.GID file, which may be hidden. This file will regenerate the next time you use a help file.

12.3.4 Some Graphics Do Not Scale Well with Large Fonts

It is recommended that small fonts be used when utilizing the SWCC client software in Windows 95 and Windows NT. Some of the graphics do not scale as well when large fonts are used.

12.3.5 Windows 95 SWCC Installation Problem

When you run SWCC on Windows 95, the operating system will gradually increase its use of memory, especially when SWCC opens and closes a large number of sockets. Microsoft has released an upgraded version of kernel32.dll that corrects this situation. This file is available from the following Web site:

www.microsoft.com/windows/downloads/contents/Updates/W95Kernel32/default.asp

The following is the name of the file:

kernel32.dll version 4.00.951 (7/29/97, 337016 bytes) or later

NOTE:

Microsoft may not support the Kernel32 upgrades on all versions of Windows 95. Check Microsoft's Web page to determine if it is supported for your operating system revision and language kit. Do not install the kernel32 upgrade unless Microsoft supports it.

12.4 Troubleshooting Connection and Access Problems

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

There are several references in the following sections to gethostname, gethostbyaddr, and hostent. For more information, please see your system documentation (DUNIX man pages), programming environment documentation (C++ Books Online), or a good book on TCP/IP application programming.

12.4.1 Dynamic IP Address Allocation, Such as DHCP, Not Supported

SWCC will not work properly if the Client or Agent systems are obtaining an IP address dynamically. This means the Dynamic Host Configuration Protocol (DHCP) is not supported. RAS servers and IP tunneling servers are not supported unless they can be configured not to allocate IP addresses dynamically.

12.4.2 WINS Not Supported

WINS is a name resolution service available for Windows NT and Windows 95. SWCC does not support WINS. Each system using SWCC must have access to either a DNS server or a valid hosts file.

12.4.3 Access Denied Problem

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

Check Client Lists

The Client is probably not in the authorized Client list for the Agent. Please see the section in the "Getting Started" guide on configuring the appropriate Agent.

Multiple Agents

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

HSZ-series Agent and Mixed or Uppercase Node Names (Except HSZ22)

The HSZ-series Agent does not handle mixed case node names properly. The case of the node name in the Client authorization list must match the case returned by the DNS server or hosts file.

The Windows NT configuration utility for the HSZ Agent forces node names to be entered in lowercase. If the actual node name contains uppercase letters, the authorization check against the Client list will fail.

Manually edit the Client authorization list to change the node name to the correct case. The Client authorization list is a file named "client.ini". It can be found in the subdirectory "etc" under the directory to which the HSZ Agent was installed (d:\steam\etc for example, or /usr/opt/SWCC200/etc on Compaq's DIGITAL UNIX systems).

CAUTION:

Verify the last entry in the client.ini file ends in a <newline>
(CR/LF on NT, LF on UNIX, etc.).

Aliases Not Checked

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

12.4.4 Add New System Using IP Address Crashes

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

If you receive an "Invalid host" or "Host not known" message when you attempt to connect to an Agent system, the solution is not to try the IP address. Fix your DNS server configuration, or if that is correct, confirm the DNS server knows the Agent system. If you are not using DNS, make sure the Agent system is in the Client system's hosts file. Remember, WINS is not supported by SWCC.

12.4.5 "No Agent Running" Message

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

- Wrong system name was entered.
- Agents were not installed on the entered system.
- Agents were installed on a system that stopped functioning.
- The specific Client required to support the Agents, running on the Agent system, was not installed. For example, if the Agent system only has a HSZ70 Agent and the Client system has only RA200 support, the message will appear. To check if Client support for an Agent had been installed, look at the following registry key:

HKEY_LOCAL_MACHINE\Software\DigitalEquipmentCorporation\AppletManager

You should see a series of keys for supported products. Port names and numbers in the services file may be missing or may not match between Client and Agent. This may occur if the default value for a SWCC port was already in use. There is a list of port numbers and their default values in the Getting Started guide, Appendix A under System Requirements, Network Port Assignments.

If you change the network card on a computer running Windows 95, your services file may be deleted and replaced by the version on the Windows 95 distribution kit. In this case, you will need to add the entries required for SWCC. For a list of the ports and their defaults, please see the "Getting Started" guide, Appendix A, System Requirements, Add System Error - Windows 95 Service file.

