SANtricity™ Storage Manager

Product Release Notes for Version 8.33

AQ13282-E1, First Edition

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Document Description

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This document describes version 8.33 of SANtricity™ Storage Manager and will remain the official reference source for all revisions/releases of this product until rescinded by an update.

Intended Readers

This book is intended for end users, system operators, system administrators, and service technicians who are responsible for preparing for or maintaining an installation of one or more disk subsystems that will be managed using the SANtricity Storage Manager software. Readers should have knowledge of RAID, SCSI, and Fibre Channel technology and a working knowledge of the applicable operating systems used with the storage management software.

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Chapter 1

Restrictions

IMPORTANT Always refer to this chapter before installing or modifying a disk subsystem. This chapter contains important, late-breaking information that was not available when the documentation set was released.

This chapter provides two types of information:

- Restrictions that apply to using the storage management software in general, regardless of the operating-system environment
- Restrictions that apply to using the storage management software with a specific operating system

You should familiarize yourself with all general restrictions before installing any hardware or software. In addition, you should read the restrictions specific to your operating system to better understand any known issues in your system environment.

Quick Search for Known Issues

If you are looking for a particular known issue, use Table 1-1 to search by the specific type of restriction or operating system.

Table 1-1 Restrictions by Operating System and Problem Type

	Disk Subsystem Configuration	Host System Configuration	Operation	Errors	Cluster
General	page 1-6	page 1-13	page 1-14	page 1-16	
Linux		page 1-17			
Netware™	page 1-19	page 1-19	page 1-20		
Solaris®	page 1-21	page 1-23	page 1-24	page 1-26	
Windows® 2000	page 1-27	page 1-28	page 1-28	page 1-29	page 1-30

General Reference

This section contains information on basic configuration issues.

Link Rate Speed Restricted to 2 Gb/s on the D240 Array Module

IMPORTANT The Link Rate Switch on any drive modules attached to an D240 array module must be set to the 2 Gb/s link rate speed.

The D240 array module's link rate speed is restricted to operate at 2 Gb/s on both the host and drive sides. If the link rate switch on the array module is set to 1 Gb/s, it will be ignored by the controller firmware.

If a drive module that is configured to operate at 1 Gb/s is attached to the D240 array module, it will automatically be bypassed on the Fibre Channel drive loop.

Supported Operating Systems for SANtricity Storage Manager for Version 8.33

The following operating systems are supported for this release:

- NetWare 6.0
- Red Hat Linux 7.2
- Solaris 8
- Windows 2000

Frameworks Integration Package Not Supported

The Frameworks integration package is not supported for this release. Disregard any reference to this package in the *Storage System Planning Guide for SANtricity Storage Manager Version 8.3x* checklists.

Battery Status Reporting for the 2882 Controller

If a D240 array module has the optional controller battery bit in the NVSRAM enabled, the 2882 controller will not distinguish between a charging battery and a missing battery.

If the NVSRAM is set to not recognize the battery and a battery is physically present but is not optimal, a configuration mismatch will not be reported.

Single Controller Environment

If you configure a new disk subsystem with a single controller, you must place the controller in controller slot A. The controller firmware cannot recognize or communicate with a single controller unless slot A is populated.

You are also required to have a specially configured NVSRAM file to properly manage your disk subsystem with a single controller.

NOTE This restriction does not apply to disk subsystems that were originally configured with two controllers.

For a D240 array module in a deskside configuration, the controller must be in the top slot. In a rackmount configuration, it must be in the left slot (Figure 1-1).

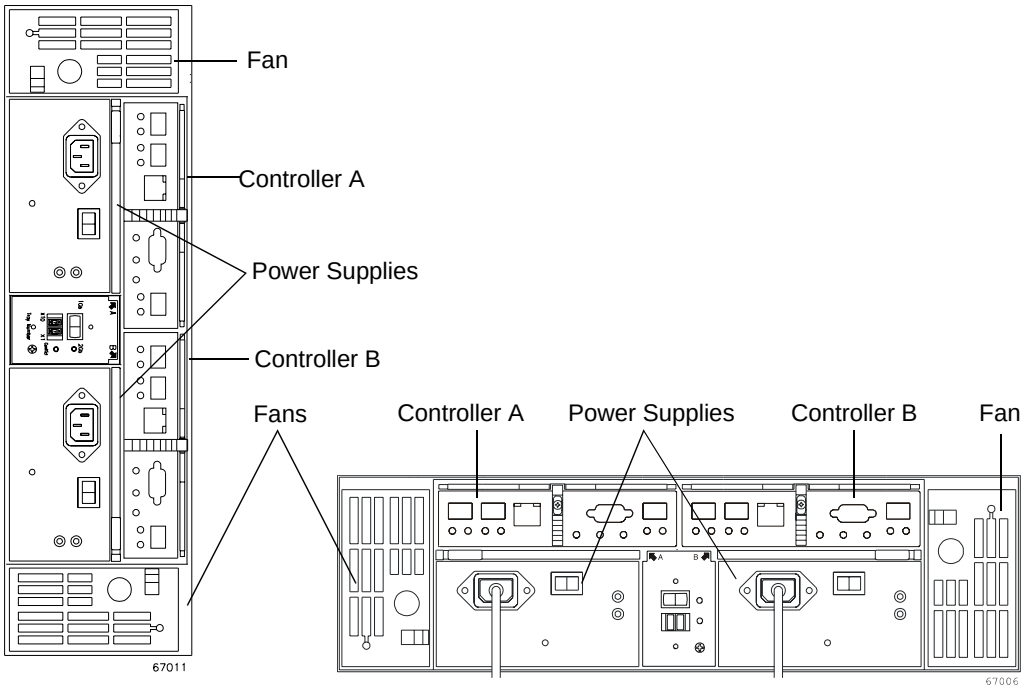

Figure 1-1 Back View of an D240 Array Module

DVE Platform Compatibility

Increasing the capacity of a standard volume is only supported on certain operating systems. If you increase the volume capacity on a host operating system that is unsupported, the expanded capacity will be unusable and you cannot restore the original volume capacity.

The following operating systems support dynamic volume expansion:

- Linux
- NetWare
- Windows 2000 Dynamic Disks

General Restrictions

This section contains restrictions and issues that are valid on any operating system. The restrictions are organized within the following topics:

- Disk Subsystem Configuration – problems related to the overall disk subsystem network configuration
- Host System Configuration – problems related to an individual host or storage management station
- Operation – problems related to the general operation of the storage management software
- Errors – problems that display an error message

Disk Subsystem Configuration

This section contains restrictions and issues related to disk subsystem and disk subsystem network setup and configuration. Workaround information is supplied, if applicable.

WARNING Risk of permanent damage to control module. The controllers in the D173-010, D173-014, and D240 array modules are not interchangeable. Installing the wrong controller will permanently damage the array module and will render the controller inoperable. Always install the controllers that are compatible with your model as follows: use 2772 controllers in a D173-010 and D173-014 array module, and 2882 controllers in a D240 array module.

ESM and Controller Coexistence in an D240 Array Module Not Supported

Problem or Restriction

An Environmental Services Monitor (ESM) and 2882 controller cannot coexist within the same D240 array module.

If you replace one controller in a dual-controller configuration with an ESM, conflicts will occur when the ESM attempts to communicate with the attached devices. Drives may fail and become inaccessible to the host.

Workaround

To avoid data loss, never attempt to replace a controller with an ESM in a dual-controller configuration without consulting technical support first.

ESM Firmware Download Fails after Removing Controller

Problem or Restriction

Physically removing a controller from an array module that is connected to multiple drive modules while ESM firmware is downloading will result in the loss of the array module's redundant path. The ESM firmware download will fail.

Workaround

To avoid loss of access to data, never remove a controller from an array module while downloading ESM firmware.

Incompatible Drive Firmware Levels Can Lead to Data Loss

Problem or Restriction

There is a minimum drive firmware level required for the proper operation of the D200 drive module. Filling empty drive slots or replacing a drive with an older drive can cause data availability or data corruption problems.

Workaround

Contact technical support for more information on supported drive firmware levels.

Mixing 1 Gb and 2 Gb Drives within a Single Array Module or Drive Module

Problem or Restriction

Inserting a 1 Gb drive into an array module or drive module containing 2 Gb drives will cause drives to fail, and may cause entire array modules or drive modules to become unavailable to the host.

Workaround

Ensure that any drive being inserted into your array module or drive module is certified for use with your model. Contact technical support for information on certified drives for your array module or drive module.

Controller Firmware Download Error - Drive Not Ready

Problem or Restriction

To download controller firmware, you must select the drive where the firmware is located. If the drive you select does not respond, the File Chooser dialog box will revert to the A: drive and display an error message that drive A: is not ready.

Workaround

The originally selected drive has the error. Close the error message and select a different drive.

Minimum ESM Firmware Levels Required for D200 Drive Module

Problem or Restriction

There is a minimum drive module ESM firmware level required for the proper operation of the D200 drive module.

Workaround

Contact technical support for more information on supported drive module ESM firmware levels and the proper upgrade procedures.

ESM Firmware Mismatch

Problem or Restriction

Upgrading the ESM hardware or ESM firmware from an older version may lead to an ESM firmware mismatch and drive availability issues, such as drive lockout or an unresponsive drive module.

Workaround

Contact technical support for more information about ESM hardware replacement or ESM firmware upgrade in older equipment.

Tray ID Conflict Moves Drive Module Location in Array Management Window

Problem or Restriction

When duplicate drive modules are detected, one of the duplicates will show up at the bottom of the Array Module Window. They will not be sorted by Tray ID.

Workaround

Change the Tray ID of the duplicate drive module to a unique ID.

Tray ID is Listed Incorrectly in Array Management Window

Problem or Restriction

Tray IDs may be listed incorrectly in the Array Management Window, even if the Tray ID switch settings appear to be correct.

Workaround

Because of the physical design and movement of the Tray ID switch, it is possible to leave the switch setting in between ID numbers, which will return an incorrect Tray ID to the storage management software. The most commonly returned Tray ID is zero.

When setting the Tray ID, ensure the switch has actuated completely and settled where the value is clearly in the viewing window.

Fabric Topology Zoning Requirement

Problem or Restriction

Because of possible restrictions at the host level, all Fibre Channel switches must be zoned such that a single host bus adapter can only access one controller per disk subsystem.

Workaround

None.

Unable to Modify Configuration File

Problem or Restriction

If you have modified the configuration of your system (added or removed devices from your management domain, or added or removed alert destinations) through the command line interface while the Enterprise Management Window is open, subsequent attempts to modify the configuration through the Enterprise Management Window will cause errors or will not save.

Workaround

Stop and restart the client software to refresh the listing of the configuration information in the Enterprise Management Window.

Low Voltage Current of Full Rack May Exceed Breaker Capacity

Problem or Restriction

If the available AC power supply voltage drops to 180V, the current requirements of a 72-inch cabinet that is fully populated with D200 drive modules will exceed the current capacity of the 20-Amp circuit breaker by nearly 2 Amps. At nominal voltages, the circuit breaker is within limits.

Workaround

Both of the qualified part suppliers have a 25-Amp circuit breaker in the same form factor. Migrating the power supplies to the 25-Amp circuit breaker will ensure continued operation in situations where the voltage may fluctuate.

Maximum Drive Space per Volume Group

Problem or Restriction
There are limits to how much drive space capacity you can have in a single volume group. For example, with 73.4 GB drives, the maximum number of data drives that can be configured in a single volume group is 29; with 180 GB drives, the maximum is 12. This restriction does not count RAID 1 mirror drives or RAID 3 or 5 parity drives.

NOTE Check the operating system specific section for further restrictions that may apply.

Workaround
None.

Switch Port Identifier Misconfiguration

Problem or Restriction
If the switch port identifier is substituted as a host port identifier, the host system will lose access to the disk subsystem.

Workaround
Type the World Wide Names (WWN) manually, rather than relying on those presented by the software interface.

Multiple Cluster Server Environments

Problem or Restriction
To set up multiple cluster environments using the same disk subsystems, you must complete all of the cluster server installations before using the disk subsystem for data storage.

Workaround
None.

Single Drive Module Configuration Does Not Appear in the Array Management Window

Problem or Restriction
The storage management software does not recognize disk subsystems configured with a single drive module, if that drive module does not contain any drives.

Workaround
Install at least one drive in the drive module.

Storage Management Software Does Not Report Missing Temperature Sensor

Problem or Restriction

The storage management software reports an erroneous “maximum temperature exceeded” notification when the fan CRU containing the temperature sensor is removed.

Workaround

None.

Configuring New Disk Subsystems with a Single Controller

Problem or Restriction

If you configure a new disk subsystem with a single controller, you must place the controller in the top slot (slot A) for deskside configurations and in the left slot (slot A) for rackmount configurations. The controller firmware cannot recognize or communicate with a single controller unless slot A is populated.

Workaround

None. Refer to “Supported Operating Systems for SANtricity Storage Manager for Version 8.33” on page 1-3 for assistance in identifying the correct location.

This restriction does not apply to disk subsystems that were originally configured with two controllers.

Moving Drives During Snapware Download Causes Drives to Fail

Problem or Restriction

Physically removing and replacing drives while downloading controller firmware to controllers in an D240 array module causes drives to be displayed as unassigned, and associated volume groups to be displayed as Degraded.

Workaround

Wait until the controller firmware download is completed before removing and replacing drives.

Moving Individual Drives or a Drive Module

Problem or Restriction

Potential data loss. Physically moving drives and drive modules after they have been installed in a disk subsystem and configured as part of a volume group can cause data loss.

Workaround

To avoid data loss, always consult technical support before you move drives or drive modules after they are installed and configured.

Moving Drives in a Disk Subsystem

Problem or Restriction

When removing a drive from a disk subsystem to install it into a different slot, wait 60 seconds before re-inserting the drive into the new slot. Re-inserting the drive sooner may cause lost data or data corruption.

Workaround

None.

Controllers in the Same Disk Subsystem Appear as Separate Devices

Problem or Restriction

After cabling a disk subsystem, the controllers appear as separate disk subsystems after they are added to the management domain through the Enterprise Management Window.

Workaround

The cabling in the disk subsystem showing the error is incorrect. Check the drive-side cabling connections and ensure the cabling is a supported configuration.

Array Module Unable to Establish a Connection using QLogic™ Switch after Direct Connection

Problem or Restriction

When a D240 array module is disconnected from a directly attached configuration, and the controllers are then connected to a QLogic SANBox 2 switch running firmware level 1.3.x, the array module is unable to establish a connection with the fabric.

Workaround

Prior to connecting the QLogic SANBox 2 switch to the array module, reboot the controllers in the D240 array module.

Direct Connect Configurations and QLogic™ Host Bus Adapters

Problem or Restriction

A direct, or point-to-point, connection can be used to physically connect the host bus adapters (HBAs) to the array module host connectors, without using external devices such as a switch or hub.

If using a direct connect configuration with QLogic QLA2310F or QLA2342F HBAs with *Stratos* transceiver, host I/O timeouts and degradation in I/O processing performance may occur.

Workaround

Use host bus adapters with either *Infineon* or *Finisar* transceivers to avoid host I/O timeouts and a degradation in I/O processing performance.

Host System Configuration

This section contains restrictions and issues related to host system and management station setup and configuration. Workaround information is supplied, if applicable.

Online Help Search Function Causes Error with JRE 1.3.0

Problem or Restriction

Attempting to use the online help Search function under IBM's proprietary JRE (based on version 1.3.0) causes the JRE to close out all open Java windows, including the Array Management Window and Enterprise Management Window.

SANtricity Storage Manager version 8.20 and version 8.21 were packaged with JRE version 1.3.1, but the IBMdirector frameworks applications may reinstall the IBM 1.3.0 JRE.

Workaround

None. The online help Search function is restricted when using the IBMdirector frameworks package.

Windows Management Stations

Problem or Restriction

Any Windows management station attempting to use the SANtricity Storage Manager client software to connect to a host-agent system requires that the TCP/IP protocol software be installed for that workstation to be supported.

Workaround

Install the TCP/IP protocol software on the Windows workstation and assign the workstation a static IP address.

Operation

This section contains restrictions and issues that relate to normal day-to-day operations of the disk subsystem network. Workaround information is supplied, if applicable.

Replaced Drive Appears Offline

Problem or Restriction

When replacing an optimal drive with a spare drive, the new drive displays an offline status in the Array Management Window for approximately 10 seconds.

Workaround

Wait at least 60 seconds between removing a drive and inserting a replacement. The storage management software can take up to ten seconds to detect changes in the hardware. The software must find the removed drive before the replacement is discovered.

Password Fails to Access System

Problem or Restriction

After removing all drives from a disk subsystem, the storage management software prompts for a password when you attempt to start the software or perform protected operations. Any password you enter fails.

Workaround

Insert one of the original drives into the disk subsystem and retry the operation.

Password information is stored on a reserved area of each drive on the disk subsystem. Each drive stores a mirrored copy of the password data. With no drives in the disk subsystem, the storage management software does not find the password data when you attempt password-protected operations.

Maximum Number of Open Clients

Problem or Restriction
The maximum number of clients that can concurrently monitor a direct managed disk subsystem is eight. This number assumes that each client is actively managing the disk subsystem and opens the maximum number of three concurrent connections to the controller.

Workaround
None.

NOTE This monitoring limit does not apply to client workstations that are managing the disk subsystem through the host-agent software.

Wordpad Incorrectly Displays State Capture

Problem or Restriction
When viewing a State Capture text file in Microsoft® WordPad, the information is truncated.

Workaround
To see all information in the file, maximize and then minimize the WordPad program.

Table Cell Text in Online Help Overlaps

Problem or Restriction
When viewing nested tables (tables within tables) in an online help topic, the text from one cell may overlap the text in the adjacent cell (to the left or right) in the table.

Workaround
To correctly display all the text in the nested tables, maximize the online help window.

Errors

This section contains information relating to error messages that may be encountered. Workaround information is supplied, if applicable.

Buffer Overflow Error in System Capture Log File

Problem or Restriction

When viewing the State Capture log file, the following message may appear repeatedly:

```
DATA TRUNCATED DUE TO BUFFER OVERFLOW!!!
```

Workaround

This error is caused if more than 128 volumes are defined across ten or fewer drives. To eliminate this error message in the log file, reduce the number of volumes to less than 128 across the drives.

Dynamic Segment Size (DSS) Modification Operation Error

Problem or Restriction

When attempting to increase the capacity of a volume group using Dynamic Segment Sizing (DSS), the following error message may be received:

```
Error 40 - The operation cannot complete because either (1) the
segment size requested is not valid,  or (2) the segment size you
specified is not allowed because this volume has an odd number
of segments. Therefore, you can only decrease the segment size
for this volume to a smaller number.
```

Workaround

Use the Dynamic Capacity Expansion (DCE) modification operation to increase the capacity of the volume group, and then retry the DSS operation. If you continue to receive this error, contact technical support.

Linux Specific Restrictions

This section contains restrictions and issues that are valid on disk subsystem networks using the Linux operating system. The restrictions are organized within the following topics:

- Disk Subsystem Configuration – problems related to overall disk subsystem network configuration
- Host System Configuration – problems related to an individual host or storage management station

Disk Subsystem Configuration

This section contains restrictions and issues related to disk subsystem and disk subsystem network setup and configuration. Workaround information is supplied, if applicable.

Volume Capacity Limitation for Linux Kernel Versions up to 2.4.18

Problem or Restriction

Due to a limitation of the standard Linux kernel, up to and including version 2.4.18, the maximum volume capacity should be limited to 1023.999 GB.

This limitation is due to the file system block size being set to 1 KB in the kernel.

Workaround

There is no workaround available. Do not attempt to create volumes with a capacity greater than 1023.999 GB on Linux operating systems running kernel version up to and including 2.4.18.

Host System Configuration

This section contains restrictions and issues related to host system and management station setup and configuration. Workaround information is supplied, if applicable.

SCSI Aborts after ISP System Error Recovery Failed During sysReboot

Problem or Restriction

If a Qlogic host bus adapter (HBA) attempts to recover from an ISP system error and the recovery fails, a notification appears in /var/log/messages and a failover to the alternate host bus adapter occurs. If the remaining path to the disk subsystem is optimal, data is accessible. If the alternate path is compromised, data is inaccessible until at least one path is restored.

Workaround

Manually reinstall the Qlogic HBA drivers. Type the following commands at the system console in the order provided to reinstall the driver:

```
# modprobe -r qla2300 (or qla2200)
# modprobe -v qla2300 (or qla2200)
```

Non-Existent Volumes are Displayed in the Array Management Window

Problem or Restriction

A host running SuSE Linux 7.3 with QLogic QLA2310 host bus adapters shows volumes that do not exist on a disk subsystem.

Workaround

Do the following:

1. From the Enterprise Management Window, select the disk subsystem where the non-existent volumes appear.
2. Select Tools >> Execute Script.
3. Type the following script into the text area:

   ```
   set controller[a] HOSTNVSRAMByte[6,0x11]=0x7f;
   set controller[b] HOSTNVSRAMByte[6,0x11]=0x7f;
   ```

4. Select Tools in the menu bar, and then select one of the options to either Verify or Execute the script.

NetWare Specific Restrictions

This section contains restrictions and issues that are valid on disk subsystem networks using the Novell NetWare operating system. The restrictions are organized within the following topics:

- Host System Configuration – problems related to an individual host or storage management station
- Operation – problems related to the general operation of the storage management software

Host System Configuration

This section contains restrictions and issues related to host system and management station setup and configuration. Workaround information is supplied, if applicable.

Drop-Down Menus Become Unreadable after Loading JVM 1.2.2

Problem or Restriction

The text in the drop-down menu at the title bar icon becomes unreadable when the JVM 1.2.2 for NetWare, dated 07/26/2001, is loaded. The locale.rcf file is being overwritten, and the system is attempting to display Chinese through the English character set.

Workaround

1. Copy the file sys:\java\nwgfx\icewm\i18n\locale.rcf to the hard disk of the Windows machine from which the JVM will be installed.
2. Install the JVM.
3. Copy the stored locale.rcf file to sys:\java\nwgfx\icewm\i18n\locale.rcf.

Screen Lock or Repaint Issues

Problem or Restriction

Screen fails to repaint after command is issued, or it appears that the screen is creating dialog boxes that are covered in gray or text that is unreadable.

Workaround

Lower the system's screen resolution.

Operation

This section contains restrictions and issues that relate to normal day-to-day operations of the disk subsystem network. Workaround information is supplied, if applicable.

Command Line Interface Limits

Problem or Restriction
The command line interface in the NetWare environment is limited to nine inputs/modifiers.

Workaround
None.

Online Help Pages Cannot be Printed

Problem or Restriction
The online help pages cannot be printed from a NetWare host system. Novell did not implement print functionality in the NetWare version of the Java Runtime Environment.

Workaround
Print online help pages from a Windows workstation.

Glossary Definitions are Not Displayed When Selecting Blue Arrow Icons

Problem or Restriction
When selecting the blue arrow icon next to a glossary term in the online help, the glossary definition for that term is not displayed.

Workaround
View the definition of the term from the Glossary tab in the Navigation Pane.

Solaris Specific Restrictions

This section contains restrictions and issues that are valid on disk subsystem networks using the SUN Solaris operating system. The restrictions are organized within the following topics:

- Disk Subsystem Configuration – problems related to overall disk subsystem network configuration
- Host System Configuration – problems related to an individual host or storage management station
- Operation – problems related to the general operation of the storage management software
- Errors – problems that display an error message

Disk Subsystem Configuration

This section contains restrictions and issues related to disk subsystem and disk subsystem network setup and configuration. Workaround information is supplied, if applicable.

Maximum Number of Drives in a Volume Group

Problem or Restriction

The Solaris operating system limits the total capacity of drives used in a volume group to one terabyte.

Workaround

Limit the number of data drives selected when creating a volume group to ensure that you do not exceed the maximum capacity. When using the entire capacity of each drive, the recommended limits are:

- 146 GB drives – limit the number of drives in a volume group to six or less.
- 73 GB drives – limit the number of drives in a volume group to 15 or less.
- 36 GB drives – limit the number of drives in a volume group to 19 or less.

This restriction does not count RAID 1 mirror drives or RAID 3 or 5 parity drives.

Slow Boot Times on Host-Agent

Problem or Restriction
If you add volumes (for example, using hot_add) without assigning labels to the volumes, the time required to subsequently restart the host-agent can take longer than expected.

Workaround
Use labels when adding volumes to reduce the time required for Solaris to open and read the volume information.

Host Bus Adapter Conflict on Disk Subsystem Network

Problem or Restriction
There is a known issue when JNI and LSI Logic host bus adapters (HBAs) are being used in the same disk subsystem network. At system boot, the JNI HBA detects the LSI Logic HBA as a volume (target) rather than as a host (initiator). The management software's genfca script locates and binds to the correct volumes, but this adds approximately one minute per target to the boot time. This issue has been sent back to both vendors to find a solution.

Workaround
To ensure proper performance, use only one manufacturer's host bus adapter in a disk subsystem network.

Host Bus Adapter Conflict on Disk Subsystem Network

Problem or Restriction
There is a known issue when QLogic and JNI host bus adapters (HBAs) are being used in the same disk subsystem network. At system boot, the QLogic HBA detects the JNI HBA as a volume (target) rather than as a host (initiator).

Workaround
To ensure proper performance, use only one manufacturer's host bus adapter in a disk subsystem network.

Setting the Ports on a Brocade® Switch

Problem or Restriction
When using a Brocade 3800 switch, moving host port cables from an F-port to an FL-port causes the controller to go offline.

Workaround
You must use F-ports to connect to the host. If an F-port fails, you cannot use an available FL-port as a substitute. Replace the F-port interface card to recover from the port failure. Refer to the Brocade switch documentation for more information.

Host System Configuration

This section contains restrictions and issues related to host system and management station setup and configuration. Workaround information is supplied, if applicable.

SMdevices Does Not Report All of the Volumes Being Mapped

Problem or Restriction

Manually changing the volume mapping to different LUN numbers may cause SMdevices to disconnect from the volume, because dual LUN connections to the same volume are not permitted.

Workaround

Perform a reconfiguration reboot to reconnect to the volumes using the new mappings.

Format Command Device Node Display Error

Problem or Restriction

The device nodes displayed by the format command do not represent the current controller owner of the volume. In the command output, all of the device nodes are associated with Controller A.

Workaround

Use the Array Management Window to determine the correct controller owner for the volume.

Forceload Statements Disappear from /etc/system File When Using hot_add Utility

Problem or Restriction

Running the hot_add utility to automatically detect and configure volumes can cause forceload entries for the sd and ssd drivers to be removed from the /etc/system file if they are located in the area that the utility rewrites.

Workaround

Ensure that any forceload: drv/sd or forceload: drv/ssd entries that you manually insert into the file are before the “* BEGIN RAID Manager addition” tag.

Configuring the System Log for Additional .info Entries

Problem or Restriction
No messages are reported to the System Log file when:

- SMmonitor Daemon is automatically installed and started after the installation of SMclient
- SMmonitor starts automatically at boot time
- SMmonitor starts manually
- Exiting the Enterprise Management Window after adding new configuration data, such as entering a comment to the disk subsystem

Workaround
Users who want to log informational events in the System Log need to edit the etc/syslog.conf file and add "*.info" to the front of the line for "/var/adm/messages."

Operation

This section contains restrictions and issues that relate to normal day-to-day operations of the disk subsystem network. Workaround information is supplied, if applicable.

Host Port Dialog Box Has Inactive Fields

Problem or Restriction
When specifying the host port identifier or changing the port name, the text boxes or drop-down menus may be inactive, or the Add button may be grayed out.

Workaround
Click outside the Host Port dialog box and then select a text field again.

Unable to Navigate through Help Topics

Problem or Restriction
You are not able to scroll through a context-sensitive help topic that is displayed by either selecting a Help button in a dialog box, or by selecting Help >> Contents >> How To.

Workaround
If you select a Help button in a dialog and a long help topic displays, access the same topic from the Table of Contents in the Navigation Pane.

This is a documented JRE error for the Solaris platform. It will be corrected in a future release of the JRE and integrated into a future release of the storage management software.

Search in Online Help Incorrectly Highlights Returned Values

Problem or Restriction

When searching for a term in online help, the right pane highlights only the first match found in the topic rather than all matches.

Workaround

None. This is a documented JRE issue for the Solaris platform. It will be corrected in a future release of the JRE and integrated into a future release of the storage management software.

Automatic Discovery Does Not Detect All Devices

Problem or Restriction

If the Automatic Discovery option of the Enterprise Management Window does not detect all of the appropriately configured disk subsystems on a subnetwork, it may be because of a network broadcast configuration whereby all messages broadcast with a ttl 1 are ignored.

Workaround

Add the devices manually using the Add Device option. Refer to the Enterprise Management Window Help for more information.

Older Video Cards May Not Display Fonts Properly

Problem or Restriction

Older video cards on Sun servers may automatically use font types or font sizes that cause the text in dialog boxes and pop-up windows to be truncated.

Workaround

Resize the dialog box to view the full text.

Unable to Select Script Editor

Problem or Restriction

After selecting a target device and starting the Script Editor, you cannot select the editor window to type script commands. There is no blinking cursor or other indication that the Script Editor is active.

Workaround

Click once outside the Script Editor, then click inside the editor window and begin typing.

Errors

This section contains information relating to error messages that may be encountered. Workaround information is supplied, if applicable.

No Devices Detected; nvutil Terminated

Problem or Restriction

The following error message is displayed during the boot process:

```
There are no devices (controllers) in the system; nvutil
terminated
```

Workaround

Ignore the message and run SMdevices to determine whether or not the devices are there. If no devices are detected, contact technical support.

Windows 2000 Specific Restrictions

This section contains restrictions and issues that are valid on disk subsystem networks using the Microsoft Windows 2000 operating system. The restrictions have been organized within the following topics:

- Disk Subsystem Configuration – problems related to overall disk subsystem network configuration
- Host System Configuration – problems related to an individual host or storage management station
- Operation – problems related to the general operation of the storage management software
- Errors – problems that display an error message
- Cluster – problems related to the setup, configuration, and operation of the Microsoft Cluster Server package

Disk Subsystem Configuration

This section contains restrictions and issues related to disk subsystem and disk subsystem network setup and configuration. Workaround information is supplied, if applicable.

Character Restriction in Disk Subsystem Names

Problem or Restriction

Because of a specific architectural difference in the Windows 2000 environment, the backslash character (\) cannot be used in any disk subsystem names (disk subsystem, host, or host group). The Windows 2000 host system will crash on startup because it is unable to connect to the disk subsystem using that name.

Workaround

Ensure that the backslash character is not used in disk subsystem names. For example, change 76\77 to 76-77.

Host System Configuration

This section contains restrictions and issues related to host system and management station setup and configuration. Workaround information is supplied, if applicable.

Unusable Entries in Control Panel >> Add/Remove Applet

Problem or Restriction

If the SANtricity Storage Manager version 7.10 host-agent or RDAC utilities were installed from the Windows 2000 installation CD #348-0043922, duplicate software entries in the Add/Remove applet are possible.

Workaround

This installation packaging error has no effect on the operation of the software. Contact technical support for directions on how to remove the extra entry.

Operation

This section contains restrictions and issues that relate to normal day-to-day operations of the disk subsystem network. Workaround information is supplied, if applicable.

Windows 2000 Service Pack 3 and Force Unit Accesses (FUA)

Problem or Restriction

In configurations running Windows 2000 with Service Pack 3, I/O write errors and parity corruption may be detected. If the Force Unit Accesses (FUA) bit in the NVSRAM is not enabled in this configuration, all I/Os will are sent as Force Unit Accesses (FUA) where data bypasses the cache and is written directly to the disk.

Even if write caching has been enabled, I/Os continue to run in write-through mode (with no write caching and mirroring).

Workaround

Verify that the FUA bit in the NVSRAM is enabled. If this bit is not enabled, contact technical support.

Restoring I/O Path Failover after Controller Replacement

Problem or Restriction
After controller failure occurs in an active/active controller pair, and the volumes are automatically transferred to the alternate controller, the failed controller can be replaced and brought online.

Until the volume group ownership is returned to the preferred controller owner, you lose I/O path failover protection for the second controller.

Workaround
It may take five minutes after the failed controller is replaced and brought online for a rescan to detect and return ownership to the preferred controller.

To ensure I/O path failover protection after replacing the controller, *immediately* select the Disk Subsystem >> Redistribute Volume Groups option in the Array Management Window to transfer volume groups to the preferred controller owners.

For more information, refer to the Array Management Window Help.

Digital Signature Not Found Message

Problem or Restriction
During RDAC installation, the Digital Signature Not Found message is displayed.

Workaround
This message is a normal occurrence when installing RDAC. Select Yes, and continue the installation.

Errors

ESM Firmware Does Not Download through Serial Connection

Problem or Restriction
When using a serial connection to download ESM firmware, the following error message is displayed:

```
Cannot communicate with the controller to complete this request
```

Workaround
Confirm that no one is making configuration changes to the disk subsystem, such as adding volumes or modifying volume groups, and then restart the ESM firmware download.

Cluster

This section contains information relating to restrictions/issues that are specific to cluster environments. Workaround information is supplied, if applicable.

Cluster *Is Alive* Timeout

Problem or Restriction

Cluster hosts and resources may failover to another host system when downloading firmware to a disk subsystem with I/O running.

During a firmware upgrade, the volumes are being moved back and forth between the controllers. If the cluster service is unable to access the volumes within the *is alive* timeout value, this problem may result.

Workaround

Change the *is alive* timer value to 120,000 milliseconds for all resources. The default value is 60,000. Refer to the operating system documentation for the procedure to change this value.

Chapter 2

User Documentation Updates

This chapter provides corrections and updates to the user documentation. Information in this chapter is presented as it would be displayed or printed in its appropriate location, so references to other material in the original document may seem out of context within this Product Release Notes.

IMPORTANT Always refer to this chapter before installing or modifying a disk subsystem. This chapter contains documentation corrections, additions, and important last-minute information that was not available when the documentation set was released. Always refer to this chapter before installing or modifying a disk subsystem.

Document Set Corrections

SANtricity Storage Manager Installation Guide for Version 8.3x

Correction: Page 2-33

The paths were mislabeled in steps 9 and 10. The correct paths are listed in the following steps:

9 Create a file system on the newly populated logical volume. Type the following and press Enter:

```
newfs -o largefiles /dev/vglabel/rlvol1
```

where *vglabel* is the label name of the HP Volume Group.

For example, to create a file system on Volume Group 01, volume 1, you would type the following and press Enter:

```
newfs -o largefiles /dev/vg01/rlvol1
```

10 Create a mount point. Type the following and press Enter:

```
mkdir /mountpoint
```

where *mountpoint* is the drive to which you will mount the file system.

For example, to create a mountpoint on ar1, you would type the following and press Enter:

```
mkdir /ar1
```

11 Mount the file system to the mount point by typing the following and pressing Enter:

```
mount /dev/vglabel/lvol1 /ar1
```

For example, to mount the file system on ar1, you would type the following and press Enter:

```
mount /dev/vg01/lvol1 /ar1
```

SANtricity Storage Manager Concepts Guide for Version 8.3x

The description of the Dynamic Volume Expansion feature was stated incorrectly. Corrected information follows:

Dynamic Volume Expansion (DVE)

CAUTION Increasing the capacity of a standard volume is only supported on certain operating systems. If volume capacity is increased on a host operating system that is unsupported, the expanded capacity will be unusable, and you cannot restore the original volume capacity. For information on supported operating systems, refer to the *SANtricity Storage Manager Product Release Notes* shipped with the storage management software.

Dynamic Volume Expansion (DVE) is a modification operation used to increase the capacity of standard or snapshot repository volumes. The increase in capacity can be achieved by using any free capacity available on the volume group of the standard or snapshot repository volume.

Data will be accessible on volume groups, volumes, and disk drives throughout the entire modification operation.

During the modification operation, the volume having its capacity increased shows a status of Operation in Progress, together with its original capacity and the total capacity being added. After the increase in capacity is completed, the volume's expanded capacity is displayed, and the final capacity for the Free Capacity node involved will show a reduction in capacity. If all of the free capacity is used to increase the volumes size, then the Free Capacity node involved will be removed from the Logical View.

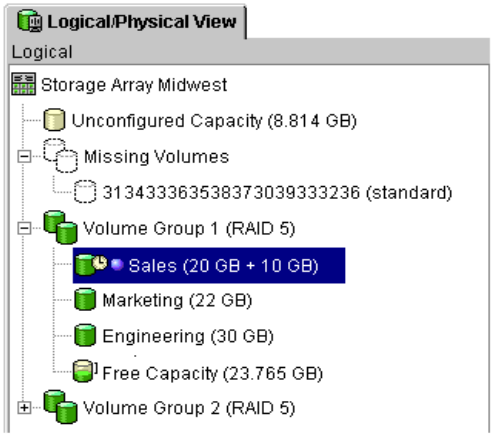

Figure 2-1 DVE Modification Operation in Progress

An increase in storage capacity for snapshot repository volumes would be completed if a warning is received that the snapshot repository volume is in danger of becoming full.

Increasing the capacity of a snapshot repository volume does not increase the capacity of the associated snapshot volume. The snapshot volume's capacity is always based on the capacity of the base volume at the time the snapshot volume is created.

Storage System Planning Guide for SANtricity Storage Manager Version 8.3x:

Frameworks Integration Package Not Supported

The Frameworks integrations package is not supported for this release. Disregard this option in the Storage System Planning Guide for SANtricity Storage Manager Version 8.3x operating system-specific checklists.

Correction: Pages 7-1, 7-9

Workstations running the Windows 98 operating system may be used as storage management stations, but cannot be used as hosts.

Control Module and Drive Module Installation Guide:

Link Rate Speed Restricted to 2 Gb/s on the D240 Array Module

---

IMPORTANT The Link Rate Switch on any drive modules attached to a D240 array module must be set to the 2 Gb/s link rate speed.

The D240 array module's link rate speed is restricted to operate at 2 Gb/s on both the host and drive sides. If the link rate switch on the array module is set to 1 Gb/s, it will be ignored by the controller firmware.

If a drive module that is configured to operate at 1 Gb/s is attached to the D240 array module, it will automatically be bypassed on the Fibre Channel drive loop.

Chapter 3

Fibre Channel Hardware Specifications

This chapter provides information about the available Fibre Channel equipment that is part of the tested hardware solution for this version of the storage management software. Included in this information are the model numbers of the supported host bus adapters, hubs, switches, tested driver and firmware levels, and specific hardware restrictions.

More information on host bus adapters and switches is available through the following sources:

- Operating system specific information sheets following the tables
- Any documentation that came with a particular host bus adapter or switch
- Vendor and manufacturer support web sites
- Technical support

Fibre Channel Host Bus Adapters

NOTE The installation CD does not contain any configuration files or drivers for the host bus adapters tested with this version of the storage management software. Current Internet download sites have been provided to assist in obtaining these files.

Table 3-1 contains a list of Fibre Channel host bus adapters tested with this version of the storage management software.

Table 3-1 Fibre Channel Host Bus Adapters (1 of 2)

Linux
• 2-Gigabit adapters: QLogic QLA2310F QLogic QLA2342F For driver and setup information, refer to "Host Bus Adapter Information – Linux" on page 3-4.
NetWare
• 2-Gigabit adapters: QLogic QLA2310F QLogic QLA2342F For driver and setup information, refer to "Host Bus Adapter Information – NetWare" on page 3-5.
Solaris
• 2-Gigabit adapters: LSI Logic LSI44929O PCI LSI Logic LSI40919O PCI For driver and setup information, refer to "Host Bus Adapter Information – Solaris" on page 3-9.

Table 3-1 Fibre Channel Host Bus Adapters (2 of 2)

Windows 2000
• 2-Gigabit adapters: QLogic QLA2310F QLogic QLA2342F For driver and setup information, refer to "Host Bus Adapter Information – Windows 2000" on page 3-15.

Host Bus Adapter Information – Linux

2-Gigabit Adapters

QLogic QLA2310F The QLogic QLA2310F was tested with the following driver and BIOS revisions:

- Driver: 5.38.1
- Files: v5.38-rh72.cgz
- BIOS: 1.17

Drivers for the QLogic HBA can be obtained from the following Internet locations:

http://www.qlogic.com/lsi/2200/linux/v5.38-rh72.cgz

http://www.qlogic.com/lsi/2300/bios/23bios1_17_nvrm.zip

NOTE Internet URLs on the QLogic website are case sensitive.

Refer to "BIOS Settings for QLogic Host Bus Adapters" on page 3-16 to configure the driver.

QLogic QLA2342F The QLogic QLA2342F was tested with the following driver and BIOS revisions:

- Driver: 5.38.1
- Files: v5.38-rh72.cgz
- BIOS: 1.21

Drivers for the QLogic HBA can be obtained from the following Internet locations:

http://www.qlogic.com/lsi/2300/linux/v5.38-rh72.tgz

http://www.qlogic.com/lsi/2300/bios/23bios1_21_nvrm.zip

NOTE Internet URLs on the QLogic website are case sensitive.

Refer to "BIOS Settings for QLogic Host Bus Adapters" on page 3-16 to configure the driver.

Host Bus Adapter Information – NetWare

2-Gigabit Adapters

QLogic QLA2310F The QLogic QLA2310F was tested with the following *failover* driver and BIOS revisions:

- Driver: 6.50q
- Files: ql2300.ham and ql2300.ddi
- BIOS: 1.17

Drivers for the QLogic HBA can be obtained from the following Internet location:

http://www.qlogic.com/lsi/2300/NetWare/NetWare_6_50q.zip

http://www.qlogic.com/lsi/2300/bios/23bios1_17_nvrm.zip

NOTE Internet URLs on the QLogic website are case sensitive.

Refer to "Host Bus Adapter Configuration" to configure the driver.

QLogic QLA2342F The QLogic QLA2342F was tested with the following *failover* driver and BIOS revisions:

- Driver: 6.50q
- Files: ql2300.ham and ql2300.ddi
- BIOS: 1.21

Drivers for the QLogic HBA can be obtained from the following Internet locations:

http://www.qlogic.com/lsi/2200/NetWare/NetWare_6_50q.zip

http://www.qlogic.com/lsi/2300/bios/23bios1_21_nvrm.zip

NOTE Internet URLs on the QLogic website are case sensitive.

Refer to "Host Bus Adapter Configuration" to configure the driver.

Host Bus Adapter Configuration

Use the following procedure to configure your host bus adapters once they are installed:

1. Set the BIOS tunable parameters according to "BIOS Settings for QLogic Host Bus Adapters" on page 3-16.
2. Load NetWare server.
3. Ensure that the HBA initialization line in the sys:\system\STARTUP.NCF file contains all of the following settings:

   `LOAD driver-name SLOT=x /LUNS /XRETRY=600`

   where the *driver-name* (ql2200.ham or ql2300.ham) and the SLOT=*x* setting are correct for your HBA. If the host system contains additional host bus adapters, a copy of this line must be entered into the STARTUP.NCF file for each HBA.
4. Using SANtricity Storage Manager, set the default host type to NWRFO to enable the NetWare failover NVSRAM settings.
5. Reboot the controllers.
6. Connect the controller to the host.
7. Reboot the NetWare host.

NOTE The QLogic configuration utility for NetWare can be obtained from the following Internet location:

http://www.qlogic.com/lsi/2200/NetWare/cfg.zip

---

8. Set up load balancing using the executable file CFG.NLM as follows:
   a. Copy CFG.NLM to sys:\system on the server.
   b. If the file c:\nwserver\QL2X00.CFG exists, delete it.

      IMPORTANT The load balancing settings stored in the QL2X00.CFG file are valid until a configuration change occurs that involves adding/replacing controllers/disk subsystems. If the old QL2X00.CFG file is present when attempting to add new hardware, the devices will not be detected.

      When connecting to a new disk subsystem, it is suggested that the QL2X00.CFG file be deleted, the devices added using the hot_add utility, and the following steps used to recreate the QL2X00.CFG file and set up load balancing. Also note that if the disk subsystem has never been connected to the server, a *restart server* may be necessary for the devices to be detected, rather than using the hot_add utility.

c Type the following command and press Enter:

```
cfg /I
```

d Write down the node name for each HBA.

e Type the following command and press Enter:

```
cfg /s
```

f Verify that each HBA is listed, followed by the controllers to which the HBA is attached.

NOTE Controller node and port names can be determined by selecting Disk Subsystem >> Profile in the SANtricity Storage Manager.

g To create a new c:\nwserver\QL2X00.CFG file, type the following command and press Enter:

```
cfg /fs
```

This command can also be used to edit the QL2X00.CFG file.

h Edit the QL2X00.CFG file similar to the following:

IMPORTANT Two typical path masks are given in the example below. The path mask that starts with the numeral 5 designates access to the odd volumes through the listed controller and HBA. The path mask that starts with the letter A designates access to the even volumes through the listed controller and HBA. Refer to the cfg1.txt and cfg2.txt readme files that accompany the cfg.nlm executable for more information.

```
2
2
210000E08B01613A (1st host bus adapter world wide name)
3  (number of devices)
200400A0B809368E (controller world wide node name)
200500A0B809368F (controller world wide port name)
5555555500000000 0000000000000000 0000000000000000
   0000000000000000 (path mask)
0000000000000000 0000000000000000 0000000000000000
   0000000000000000 (lun mask)
0
200400A0B807B16E
200500A0B807B16F
5555555500000000 0000000000000000 0000000000000000
   0000000000000000
0000000000000000 0000000000000000 0000000000000000
   0000000000000000
0
200400A0B80B1DE1
200500A0B80B1DE2
5555555500000000 0000000000000000 0000000000000000
```

```
   0000000000000000
0000000000000000 0000000000000000 0000000000000000
   0000000000000000
0
210000E08B00C8BA (2nd host bus adapter wwn)
3
200400A0B807B16E
200400A0B807B16F
AAAAAAAA00000000 0000000000000000 0000000000000000
   0000000000000000
0000000000000000 0000000000000000 0000000000000000
   0000000000000000
0
200400A0B809368E
200400A0B809368F
AAAAAAAA00000000 0000000000000000 0000000000000000
   0000000000000000
0000000000000000 0000000000000000 0000000000000000
   0000000000000000
0
200400A0B80B1DE1
200400A0B80B1DE2
AAAAAAAA00000000 0000000000000000 0000000000000000
   0000000000000000
0000000000000000 0000000000000000 0000000000000000
   0000000000000000
0
```

NOTE A volume does not need to be present to define the path mask for that volume. Therefore, if the path masks for all possible volumes are defined in the above step (such as 32 or 128), reconfiguration of the QL2X00.CFG file is not necessary after any volume deletion/creation changes (provided, of course, that the preferred path specified is still the desired preferred path for the new volume).

i To load the new settings, type the following command and press Enter:

```
cfg /fl
```

Host Bus Adapter Information – Solaris

2-Gigabit Adapters

LSI Logic LSI44929O The LSI Logic LSI44929O was tested with the following driver and BIOS revisions:

- Driver (ITItmp): 5.03.00.01
- Firmware: 1.00.07
- BIOS: 1.00.21

LSI Logic drivers can be obtained from the following Internet location:

ftp://ftp.lsil.com/pub/symchips/fibre_ch/Metastor/sonoran3/solaris.zip

ftp://ftp.lsil.com/pub/symchips/fibre_ch/Metastor/sonoran3/metastor.zip

Refer to "Configuration Settings for LSI Logic Drivers" on page 3-10 for more information on setting up your host bus adapter.

LSI Logic LSI40919O The LSI Logic LSI40919O was tested with the following driver and BIOS revisions:

- Driver (ITItmp): 5.03.00.01
- Firmware: 1.00.07
- BIOS: 1.00.21

LSI Logic drivers can be obtained from the following Internet location:

ftp://ftp.lsil.com/pub/symchips/fibre_ch/Metastor/sonoran3/solaris.zip

ftp://ftp.lsil.com/pub/symchips/fibre_ch/Metastor/sonoran3/metastor.zip

Refer to "Configuration Settings for LSI Logic Drivers" on page 3-10 for more information on setting up your host bus adapter.

Configuration Settings for LSI Logic Drivers

After installation of the LSI Logic host bus adapter driver, the following message is displayed:

```
Entries added. For support of more than 15 targets or nonzero
LUNs it may be necessary to edit /kernel/drv/ssd.conf to add
additional entries.
```

To successfully connect the LSI Logic host bus adapter to the disk subsystem, do these configuration steps after the message is displayed:

1. Assign target identification numbers to the controllers on the disk subsystem. Go to "Binding at the Software Level."
2. Configure the driver to probe for multiple LUNs on the assigned targets. Go to "Editing the ssd.conf" on page 3-12.
3. If you are configuring the Solaris operating system to boot from a disk subsystem, go to "Root Boot Support" on page 3-13 and set the persistent bindings at the firmware level.

End Of Procedure

Binding at the Software Level Specific instructions on this procedure are detailed in the /kernel/drv/itmpt.conf file. Use the following reference material to ensure proper configuration.

Persistent Bindings of wwn to Target

To persistently map a Fibre Channel world wide name (wwn) to a given target, use the following syntax:

`target-X-wwn="`*`port wwn`*`"`

For example:

`target-4-wwn="2200002037102d0f"`

This will persistently map the wwn *2200002037102d0f* to target *4* on all itmpt busses.

Restrict Mapping to a Single Bus

To restrict the mapping to a single bus, use the syntax:

```
hba-X-target-Y-wwn="port wwn"
```

For example:

```
hba-1-target-4-wwn="2200002037102d0f"
```

This will persistently map the wwn *2200002037102d0f* to target *4* on bus *itmpt1* only.

General Information on WWNs

It is important to use the “port” wwn for the device you want to map, rather than the “node” wwn, or only part of the wwn. The wwn displayed in the boot log or displayed by probe-scsi-all at the OBP (ok) prompt is the correct wwn to use (i.e. the port wwn).

A node wwn for devices generally looks something like:

```
2000002037102d0f
```

If the device was connected to the Fibre Channel bus using port A, then the port wwn for that device would generally be:

```
2100002037102d0f
```

If the device was connected to the Fibre Channel bus using port B, then the port wwn for that device would generally be:

```
2103002037102d0f
```

Many times the wwn printed on the physical device is only part of the full wwn. For example, for the wwn used in the preceding example, the wwn listed on the disk case itself is missing first four characters:

```
002037102d0f
```

Editing the ssd.conf When installing the LSI Logic host bus adapter driver, the installation program puts entries into the ssd.conf file for LUN 0 only.

To successfully detect all available devices on the disk subsystem, add entries for LUNs 0 through 31 using the following procedure:

1 Open the ssd.conf file in an editor, and find the following section:

```
name="ssd" parent="itmpt" target=0;
name="ssd" parent="itmpt" target=1;
name="ssd" parent="itmpt" target=2;
name="ssd" parent="itmpt" target=3;
name="ssd" parent="itmpt" target=4;
      ******
name="ssd" parent="itmpt" target=15;
```

2 Locate the entry that references the target identification number that you used to bind to one of the disk subsystem controllers. Edit that line to contain lun=0, such as the following example:

```
name="ssd" parent="itmpt" target=7 lun=0;
```

3 Below that line, add entries for LUNs 1 through 31 so that the driver probes each possible LUN on that target.

NOTE This example list is truncated. When editing the ssd.conf file, enter each line from lun=1 to lun=31.

```
name="ssd" parent="itmpt" target=7 lun=1;
name="ssd" parent="itmpt" target=7 lun=2;
name="ssd" parent="itmpt" target=7 lun=3;
name="ssd" parent="itmpt" target=7 lun=4;
name="ssd" parent="itmpt" target=7 lun=5;
name="ssd" parent="itmpt" target=7 lun=6;
name="ssd" parent="itmpt" target=7 lun=7;
      ******
name="ssd" parent="itmpt" target=7 lun=29;
name="ssd" parent="itmpt" target=7 lun=30;
name="ssd" parent="itmpt" target=7 lun=31;
```

4 Repeat this procedure for each target identification number that is associated with a disk subsystem controller.

Root Boot Support The LSI Logic Fcode BIOS that resides on the host bus adapter allows the system administrator to configure a target device that will become the Root Boot device. The host bus adapter keeps this information persistently in non-volatile memory. When the Root Boot capability is required by the system, the LSI Logic Fibre Channel host bus adapter may need to be configured to allow the target device to be locked to a persistent unit number.

The number of devices attached to the host bus adapter will determine the need to configure a persistent unit number as follows:

- If only one target device is attached to the LSI Logic host bus adapter, a persistent unit number should *not* be configured with the LSI Logic host bus adapter.
- If more than one target device is attached to the LSI Logic host bus adapter, *only one* of the target devices should be configured as a persistent unit number with the LSI Logic host bus adapter.

NOTE These guidelines must be followed to ensure the Root Boot feature functions as expected.

The following is an example of the user interaction with the Fcode BIOS to select target devices to be mapped in the persistent device table.

All configuration command requests are specified from the ‘ok’ prompt in the Fcode BIOS. The command to be entered is shown in **bold** print.

NOTE Select the Fibre Channel host bus adapter to configure by typing the bold entries at the prompts specified:

```
ok show-disks
   a) /pci@1f,0/pci@1/IntraServer,fc@2/disk

   b) /pci@1f,0/pci@1/IntraServer,Ultra2-scsi@1/disk
   c) /pci@1f,0/pci@1,1/ide@3/cdrom
   d) /pci@1f,0/pci@1,1/ide@3/disk
   e) /pci@1f,0/pci@1,1/ebus@1/fdthree@14,3203f0
   q) NO SELECTION

   Enter Selection, q to quit: a

   /pci@1f,0/pci@1/IntraServer,fc@2/disk has been selected.
```

NOTE Type ^Y (Control-Y) to insert it in the command line. For example, to create devalias mydev for /pci@1f,0/pci@1/IntraServer,fc@2/disk, type:

```
ok nvalias mydev ^Y
```

```
ok select /pci@1f,0/pci@1/IntraServer,fc@2
ok show-children

   MPT Firmware Version 1.01
      Target 0
       Unit 0   Disk     SEAGATE ST39173FC       6615
       WWN 200000203710c4e8  PortID a3

ok set-persistent
```

NOTE Enter the command with no parameters to print the following help information:

```
usage is <current-target-id> <persistent-target-id> set-
persistent
```

```
ok 0 0 set-persistent
ok show-persistent

   Entry 1  WWN 200000203710c4e8  Target 0

ok
```

NOTE To clear an entry in the persistent device map, use the clear-persistent command.

```
ok 1 clear-persistent
ok show-persistent
ok
```

NOTE Entry 1 has been deleted from the table, and the table is now empty, so there is no response.

Host Bus Adapter Information – Windows 2000

2-Gigabit Adapters

QLogic QLA2310F The QLogic QLA2310F was tested with the following driver and BIOS revisions:

- Driver (ql2300.sys): 08.01.04.10
- BIOS: 1.17

Drivers for the QLogic HBA can be obtained from the following Internet locations:

http://www.qlogic.com/lsi/2300/w2k/q23w2kv81410.zip

http://www.qlogic.com/lsi/2300/bios/23bios1_17_nvrm.zip

NOTE Internet URLs on the QLogic website are case sensitive.

Refer to "BIOS Settings for QLogic Host Bus Adapters" on page 3-16 to configure the driver.

QLogic QLA2342F The QLogic QLA2342F was tested with the following driver and BIOS revisions:

- Driver (ql2300.sys): 08.01.04.10
- BIOS: 1.21

Drivers for the QLogic HBA can be obtained from the following Internet locations:

http://www.qlogic.com/lsi/2300/w2k/q23w2kv81410.zip

http://www.qlogic.com/lsi/2300/bios/23bios1_21_nvrm.zip

NOTE Internet URLs on the QLogic website are case sensitive.

Refer to "BIOS Settings for QLogic Host Bus Adapters" on page 3-16 to configure the driver.

BIOS Settings for QLogic Host Bus Adapters

The host bus adapter BIOS settings allow for minor adjustments to the HBA configuration. These values can be changed through the BIOS interface at boot time. Use the following procedure to ensure proper operation of the QLogic host bus adapter with different operating systems.

1 Press Alt-Q on booting to gain access to QLogic BIOS utility.

2 Select the Host Bus Adapter to change.

3 Select Configuration Settings.

4 Select Host Bus Adapter Settings, and verify the following:

Frame Size = 2048
Loop Reset Delay = 8
Adapter Hard Loop ID = Enabled
Hard Loop ID = * (assign a unique value)

NOTE In an Arbitrated Loop environment, it is always recommended to assign unique Arbitrated Loop Physical Addresses (ALPA) to the devices attached. The QLogic host bus adapter is automatically assigned an ALPA of 125 decimal during installation.

---

5 Select Advanced Adapter Settings, and verify the following:

Execution Throttle = 255 (cannot exceed IOCB Allocation)
LUNs per Target = 0 (‘0’ is used to activate maximum LUN support)
Enable LIP Reset = NO
Enable LIP Full Login = YES
Enable Target Reset = YES
Login Retry Count = 30
Port Down Retry Count = 70
IOCB Allocation = 256

Exceptions:

- In the NetWare environment, set LUNs per Target = 32.
- In the Linux environment, set Port Down Retry Count = 12.

6 Repeat steps 2 through 5 for other QLogic host bus adapters.

7 Reboot the system.

End Of Procedure

Fabric Switches

2-Gigabit Switches

QLogic SANbox2-16A

The QLogic SANbox2-16A was tested with this version of the storage management software using firmware version 01.03-25 and switch management software version 1.03-28.

This switch has the following restrictions:

The storage network may have poor fabric/switched performance if switch settings allow for interleaved data frames.

Brocade® SilkWorm®

The Brocade® SilkWorm® 3200 8-port and SilkWorm 3800 16-port switch were tested with firmware version 3.0.2f.

This switch has the following restriction:

The storage network may have poor fabric/switched performance if switch settings allow for interleaved data frames.

Chapter 4

Firmware Configuration and Support

This chapter contains information about the NVSRAM packages, controller firmware, and ESM firmware that are supported with this release of the storage management software. These files are needed to properly use the storage management software and all its features.

Control Module and Array Module Controllers

The controllers in the control modules and array modules are not interchangeable. The following list provides a reference for the appropriate controllers to use in each model of control module and array module:

- 9176 control module – 4774 controllers
- D178 control module – 4884 controllers
- D280 control module – 5884 controllers
- D173-010 and D173-014 array modules – 2772 controllers
- D240 array module – 2882 controllers

NVSRAM Packages

This section contains information about the NVSRAM files, including filenames and general NVSRAM settings. NVSRAM files are downloadable packages that specify default settings for the disk subsystem controllers. You will install these files on the host system and download them to the disk subsystem controllers as necessary. Refer to the *SANtricity Storage Manager Installation Guide* for instructions on when and how to download these files.

CAUTION Do *not* attempt to download these NVSRAM packages unless instructed to do so in the *SANtricity Storage Manager Installation Guide* or by technical support. Inappropriate application of these files could cause serious problems with your disk subsystem.

The *nvsram* directory on the installation CD contains the following downloadable NVSRAM package files:

- N2882-533834-400.dlp (Dual 2772 controller configuration)
- N2882-533834-401.dlp (Single 2772 controller configuration)

All NVSRAM files contain Host User Configuration regions as follows:

Host 0: Windows NT® Non-Clustered, SP5 or higher
Host 1: Windows® 2000 Non-Clustered
Host 2: Solaris® (Sparc)
Host 3: HP-UX®
Host 4: AIX®
Host 5: IRIX®
Host 6: Linux®
Host 7: Windows NT Clustered
Host 8: Windows 2000 Clustered
Host 9: NetWare™
Host 10: PTX
Host 11: NWRFO (NetWare Failover)

Controller Firmware Packages

The controller firmware files will be installed onto the host system for use on the disk subsystem controllers. Refer to the *SANtricity Storage Manager Installation Guide* for instructions on when and how to download these files to the disk subsystem controllers. A description of the firmware packages has been included under each specific firmware filename.

The installation CD contains the following downloadable firmware package files:

- snap_05330000.dlp

  This firmware is bundled for use on the 2772 controller with this version of the storage management software. This .dlp file contains the following snapware file:

  05330000.snd

- snap_04010230.dlp

  This firmware is bundled for use on the 2772 controller. This file is the highest release level of 04.xx code and the stepping-stone for controller migration to firmware version *05.x*. This .dlp file contains the following snapware file:

  04010230.snd

CAUTION Failure to use the stepping-stone firmware levels can lead to data loss.

Environmental Services Monitor Firmware Packages

The Environmental Services Monitor (ESM) firmware files will be copied to the host system for use on the ESMs, which are located on the back of the drive modules. Refer to the Array Management Window online help for instructions on when and how to download these files to the ESM cards. A description of the firmware packages has been included under each specific firmware filename.

The installation CD contains the following downloadable firmware package files:

- esm9321.s3r

  This firmware is included to support the 2 Gb Fibre Channel drive module (D200) with this version of the storage management software.

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