Sun StorEdge™ 3000 Family CLI 2.4 User's Guide

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Contents

Preface

Use the Sun StorEdge™ 3000 Family Command-Line Interface (Sun StorEdge CLI) to manage Sun StorEdge 3000 family array controllers, examine and configure Sun StorEdge 3000 family arrays, save and restore configuration data, and download new firmware to RAID controllers and Just a Bunch of Disks (JBODs). The Sun StorEdge CLI communicates with the storage subsystem using inband or out-of-band communication with the RAID controller over low voltage differential (LVD) SCSI, Fibre Channel, or Ethernet connections.

The commands in this document apply to the:

- Sun StorEdge 3120 SCSI array
- Sun StorEdge 3310 SCSI array
- Sun StorEdge 3320 SCSI array
- Sun StorEdge 3510 FC array
- Sun StorEdge 3511 SATA array

Note – The Sun StorEdge 3120 SCSI array is a standalone JBOD. It does not have a RAID controller to manage the disks. For a list of the Sun StorEdge CLI commands that work with JBODs, see "JBOD Commands" on page 195.

For instructions on installing the Sun StorEdge CLI, refer to the *Sun StorEdge 3000 Family Software Installation Guide*.

This guide is written for experienced system administrators who are familiar with Sun hardware and software products.

How This Book Is Organized

This book covers the following topics:

Chapter 1 introduces the Sun StorEdge CLI and provides an overview.

Chapter 2 provides the available system function commands with sample code.

Chapter 3 provides the available controller and disk commands with sample code.

Chapter 4 provides the available host and drive channel commands with sample code.

Chapter 5 provides the available Sun StorEdge CLI commands with sample code for logical drives, partitions, and logical volumes.

Chapter 6 provides the firmware, disk drive, SCSI Enclosure Services (SES), SCSI Accessed Fault-Tolerant Enclosure (SAF-TE), programmable logic device (PLD), and serial ATA (SATA) router and path controller show and download commands.

Appendix A contains a list of the Sun StorEdge CLI options, a list of Sun StorEdge CLI commands for RAID arrays, and a list of Sun StorEdge CLI commands for JBODs.

Appendix B lists error and status messages and error codes.

Appendix C includes a list of the items included in the output of the `show configuration` command and the sample XML output of the `show configuration XML` file command.

The Glossary provides RAID terminology and definitions used throughout the product documentation.

Using UNIX Commands

This document does not contain information on basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices. See the following for this information:

- Software documentation that you received with your system
- Solaris™ operating system documentation, which is at

  `http://docs.sun.com`

Shell Prompts

Shell	Prompt
C shell	*machine-name*%
C shell superuser	*machine-name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#

Typographic Conventions

The Sun StorEdge CLI syntax and examples use the typeface conventions described in the following table.

Typeface[1]	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output	Edit your .login file. Use ls -a to list all files. % You have mail.
AaBbCc123	What you type, when contrasted with on-screen computer output	% **su** Password:
AaBbCc123	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the *User's Guide*. These are called *class* options. You *must* be superuser to do this. To delete a file, type rm *filename*.

1 The settings on your browser might differ from these settings.

The Sun StorEdge CLI syntax and examples use the special characters described in the following table.

Character	Description	Example
[ ] brackets	Brackets indicate that the option or argument is optional. If the brackets are omitted, the argument must be specified.	mute [controller]
{ } braces	Braces indicate that the enclosed options or arguments are mutually dependent. Treat everything enclosed in braces as a unit.	`check parity {`*ld-index* | *ld-id*`}`
| separator	A separator indicates that only one of the arguments separated by this character can be specified.	`shutdown logical-drive` *ld-index* | *ld-id*

Related Documentation

The following table contains a list of related software documentation. For a complete list of all related documentation, refer to the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual* for your array.

Title	Part Number
Sun StorEdge 3120 SCSI Array Release Notes	816-7955
Sun StorEdge 3310 SCSI Array Release Notes	819-7109
Sun StorEdge 3320 SCSI Array Release Notes	817-7660
Sun StorEdge 3510 FC and 3511 SATA Array Release Notes	817-6597
Sun StorEdge 3000 Family 2.4 Software Installation Guide	817-3764
Sun StorEdge 3000 Family RAID Firmware 4.2 User's Guide	817-3711
Sun StorEdge 3000 Family Configuration Service 2.4 User's Guide	817-3337
Sun StorEdge 3000 Family Diagnostic Reporter 2.4 User's Guide	817-3338
Sun StorEdge 3000 Family RAID Controller Firmware Migration Guide	819-6573

Accessing Sun Documentation

All Sun StorEdge 3000 family documentation is available online in both PDF and HTML format at the following location:

http://www.sun.com/products-n-solutions/hardware/docs/Network_Storage_Solutions/Workgroup/

You can view, print, or purchase a broad selection of Sun documentation at:

http://www.sun.com/documentation

Contacting Sun Technical Support

For late-breaking news and troubleshooting tips, review the Release Notes for your array located in the appropriate directory:

http://www.sun.com/products-n-solutions/hardware/docs/Network_Storage_Solutions/Workgroup/

If you have technical questions about this product that are not answered in the documentation, go to:

http://www.sun.com/service/contacting

To initiate or check on a USA-only service request, contact Sun support at:

800-USA-4SUN

To obtain international technical support, contact the sales office of each country at:

http://www.sun.com/service/contacting/sales.html

508 Accessibility Features

The Sun StorEdge documentation is available in Section 508-compliant HTML files that can be used with assistive technology programs for visually impaired personnel. These files are provided on the Documentation CD for your product as well as on the web sites identified in the previous "Accessing Sun Documentation" section. Additionally, the software and firmware applications provide keyboard navigation and shortcuts, which are documented in the user's guides.

Sun Welcomes Your Comments

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`http://www.sun.com/hwdocs/feedback`

Please include the title and part number of your document with your feedback: *Sun StorEdge 3000 Family CLI 2.4 User's Guide*, part number 817-4951-17.

CHAPTER 1

Overview

This chapter introduces the Sun StorEdge™ Command-Line Interface (Sun StorEdge CLI) and includes the following topics:

Supported Communication Modes

The Sun StorEdge CLI provides the capability to monitor and configure Sun StorEdge 3000 family arrays from an operating system command-line interface using inband or out-of-band interfaces.

Note – All methods that involve accessing a local device require superuser privileges. Only when an IP address is specified on the command line can the user invoke the Sun StorEdge CLI without being `root`.

The management mode is determined based on the following:

- If a host name or IP address is specified on the command line, it is used. This is out-of-band mode. For more details, see "Device Names for Out-of-Band Communication" on page 11.
- If a local Fibre Channel (FC) or SCSI device is specified on the command line, it is used. This is inband mode. For more details, see "Device Names for Inband Communication" on page 10.
- When no address or device is specified, a search of local devices is done. If only one device is found, it is automatically selected. If more then one device is found, a list of devices to select from is displayed. This is inband mode. For more details, see "Device Names for Inband Communication" on page 10.
- If the user selects a local device and specifies the `--oob` option, the Sun StorEdge CLI retrieves the network address of the device using inband methods. However, from that point forward, out-of-band access is used.

Note – If the array's IP address cannot be found, the `--oob` option does not switch to out-of-band mode. This prevents scripts from failing when the array's IP address is not set.

Accessing the Sun StorEdge CLI

The Sun StorEdge CLI must be installed on the server attached to the array that you want to access. For instructions about installing the Sun StorEdge CLI, refer to the *Sun StorEdge 3000 Family Software Installation Guide*.

Note – If the same array is connected to multiple servers, it is possible to have the Sun StorEdge CLI running on each of these servers trying to manage and monitor the same array. Due to a restriction on monitoring commands sent to the array controller by only one server at a time, some monitoring commands might fail if sent simultaneously by multiple servers. This could cause inaccurate reporting or the processes to stop responding. To prevent this from happening, the CLI can be configured to enable and disable array monitoring on a server.

Note – You cannot use the Sun StorEdge CLI and Sun StorEdge Configuration Service at the same time to configure, monitor, or maintain an array.

To access the Sun StorEdge CLI, follow the appropriate procedure for your operating system.

The Sun StorEdge CLI start-up time depends on several factors:

- the number of device files in `/dev/es` and `/dev/rdsk`
- the I/O load that is presented to any devices on the system
- the behavior of the SES driver

The SES driver exhibits undesirable behavior when the Sun StorEdge CLI attempts to open a device file corresponding to a non-existent SES device. This is similar to the way the `format(1M)` command startup time depends on the number of disk devices on the system and the I/O load presented to those devices.

Note – To prevent unauthorized access to administrative functions of the RAID controller, the Sun StorEdge CLI requires superuser or system administrator privileges for in-band access, and uses the controller password to authorize users of the out-of-band interface.

▼ To Access the Sun StorEdge CLI from UNIX Operating Systems

To access the Sun StorEdge CLI from the Solaris operating system or Linux, HP-UX, or AIX operating systems, perform the following steps.

1. **To access the Sun StorEdge CLI, log in as `root` on the server that is attached to the array.**
2. **Type:**

```
# sccli (with options and commands as described in this guide)
```

Note – If you do not have `/usr/sbin` in your PATH environment variable, you can run the Sun StorEdge CLI as `/usr/sbin/sccli`.

▼ To Access the Sun StorEdge CLI from the Microsoft Windows Operating System

To access the Sun StorEdge CLI, go to Start → Programs → Sun StorEdge CLI Family → Command Line Interface. This launches the file: `c:\program files\sun\sccli\sccli.bat`. You can modify this file if you want to change the command-line options passed to the Sun StorEdge CLI.

You can also access the Sun StorEdge CLI from a command shell. In the shell window, type:

```
c:\program files\sun\sccli\sccli.exe
```

Accessing the Man Page and Help

Refer to the Sun StorEdge CLI man page and the Release Notes for the latest documentation updates.

▼ To Access the Man Page from UNIX Operating Systems

For the Solaris operating system or Linux, HP-UX, or AIX operating systems, to access the man page, type:

```
# man sccli
```

▼ To Access Help from the Microsoft Windows Operating System

To access help in Windows, go to Start → Programs → Sun StorEdge CLI Family → Command Line Help.

Interactive Command Mode

The Sun StorEdge CLI supports single-command mode and interactive mode. In interactive mode no command is specified on the command line. Specifying the device name on the command line is optional. If the device name is omitted, the Sun StorEdge CLI searches for any locally attached Sun StorEdge 3000 family arrays. If one is found, it is selected automatically. If more than one device is found, a list of choices is displayed. If no device is found, the Sun StorEdge CLI exits with an error.

In interactive mode, specify the device on the command line. For instance, type:

```
# sccli 206.1.111.111
sccli: selected se3000://206.1.111.111:58632 [SUN StorEdge 3310
SN#000001]
sccli> show disks free
sccli: no free disks found
```

To choose from a list of available devices, do not specify a device on the command line. For instance, in Solaris, type:

```
# sccli
Available devices:

  1. /dev/rdsk/c1t0d0s2 [SUN StorEdge 3310 SN#000001] (Primary)
  2. /dev/rdsk/c6t40d0s2 [SUN StorEdge 3510 SN#003CE3] (Primary)

Please enter selection: 1
sccli> version
sccli version 2.0.0
```

Note – In interactive mode, special characters must be enclosed in single or double quotes, which are parsed and stripped off. For example, if you want to set your password to an empty string, specify an empty string by typing two quote characters with nothing in between, such as `set password ""`.

Single-Command Mode

In single-command mode, the name of the target device and the command to execute are specified on the command line. The Sun StorEdge CLI executes the command and exits.

To start single-command mode, type:

```
# sccli option [device-name |host-name [:port]] command  parameters
```

TABLE 1-1 Single-Command Syntax

Syntax	Description
device-name	Specify a native operating system device file name for a locally attached SCSI target.
host-name	Specify a controller name or the IP address for the host of the primary agent.
port	Specify a port number for the primary agent on the specified controller or IP address.

In single-command mode, type the entire command on the command line. For instance, in Solaris, type:

```
# sccli /dev/rdsk/c1t0d0s2 show events
```

In single-command mode in Windows, type:

```
c:\> sccli \\.\PhysicalDrive3 show events
```

When the Sun StorEdge CLI performs a single command, an exit code indicates the success or failure of the command. An exit code of 0 indicates success, and any non-zero code indicates the command failed.

Command Keywords

Sun StorEdge CLI commands are case-independent. Uppercase, lowercase, or mixed case parameters, commands, and options can be used. Options have a long form and a single-letter form. Options begin with a single dash "-" for single-letter form and with two dashes "--" for long form.

In most cases, you can abbreviate command keywords to the shortest unambiguous substring. For example, abbreviate the `show disks` command to `sh d`. Or, type `show lds` to execute the `show logical-drive` command. However, to avoid ambiguity, do not abbreviate the command name.

The general syntax for commands in single-command mode is:

```
# sccli option [device-name | host-name [:port]] command parameters
```

Except for the `help`, `about`, and `version` commands, all Sun StorEdge CLI commands require the specification of a device name.

The following table shows the parameters and options that are used with commands in the following chapters. TABLE 1-2 also shows the options that can be used to simplify script creation and retrieve information.

TABLE 1-2 Command Parameters and Options

Parameter or Option	Short Form	Description
ch.id.lun		A single-host LUN mapping for a logical unit on a host channel can be specified using 3 dotted decimals in this form, where `ch` is the physical host channel number, `id` is the SCSI ID of the logical unit, and `lun` is the logical unit number.
device		For more information, see "Device Names for Inband Communication" on page 10 and "Device Names for Out-of-Band Communication" on page 11.
disk		Physical disk drives are specified as two decimal integers separated by a period. The first number is the physical channel number, and the second number is the SCSI target ID for the drive on that channel. For example, specify the disk with target ID 1 on channel 2 as `2.1`.

TABLE 1-2 Command Parameters and Options *(Continued)*

Parameter or Option	Short Form	Description
`--disk` *disk*	`-d` *disk*	*LVD JBOD enclosure only.* Selects the disk enclosure containing the specified disk. Specify a Solaris device name such as `sd31` or `c1t0d0`. This option is an alternative to specifying an enclosure services device such as `/dev/es/ses`*n* when selecting a JBOD enclosure. The `disk` option does not support split-bus JBOD enclosures.
disk-list		A list of disk specifiers, separated by commas. For example, `1.0, 1.1, 1.2`.
`--help`, `--usage`	-h	Displays a usage message and exits without processing any commands. This option can also be used as a command. For information about the `help` command, see "`help`" on page 19.
`inter-controller-link`	`icl`	The command abbreviation, `icl`, provides an alternative to typing the full command name.
ld-list		A comma-separated list of logical drive indexes, for example, `ld0,ld1,ld2`, or a list of logical drive identifiers. Note that these logical drive numbers do not necessarily correspond to the single-digit logical drive identifiers in the firmware menu interface. The Sun StorEdge CLI logical drive indexes might change when logical drives are deleted.
--list	-l	Displays a list of local or remote devices that the Sun StorEdge CLI manages, and exits without processing any commands. The output includes a file name or URL that can be used to access the device in subsequent commands and the SCSI inquiry data and serial number of the subsystem. If a network URL is specified on the command line, the output is limited to that device. If a local device file name or directory name is specified, the search is limited to matching devices. The output includes the device name, vendor, product ID, and serial number.
logical-drive	*ld* or *lds*	A logical drive can be represented by a logical drive index (a small decimal number distinguished by an ld prefix), or a logical drive identifier (an eight-digit hexadecimal number). For example, a logical drive might be identified both by its logical drive index `ld3` and its logical drive ID `71038221`. For additional information, see "Logical Drive Syntax" on page 13. Note that these logical drive numbers do not necessarily correspond to the single-digit logical drive identifiers in the firmware menu interface. The Sun StorEdge CLI logical drive indexes might change when logical drives are deleted.

TABLE 1-2 Command Parameters and Options *(Continued)*

Parameter or Option	Short Form	Description
logical-volume	*lv* or *lvs*	Logical volumes are specified using either a logical volume index, such as `lv12`, or an eight-digit hexadecimal logical volume ID. For additional information, see "Logical Volume Syntax" on page 14. Note that these logical volume numbers do not necessarily correspond to the single-digit logical volume identifiers in the firmware menu interface. The Sun StorEdge CLI logical volume indexes might change when logical volumes are deleted.
lun		Partitions of a logical drive or logical volume are made available to hosts by mapping each partition to a target ID and logical unit number on one or more channels of the array controller. Commands with a *lun* parameter accept the physical channel number, target ID, and logical unit as three decimal numbers separated by periods. For example, `4.1.2` represents physical channel 4, target ID 1, logical unit number 2.
lv-list		A comma-separated list of logical volume indexes, for example, `lv0,lv1,lv2`, or a list of logical volume identifiers. Note that these logical volume numbers do not necessarily correspond to the single-digit logical volume identifiers in the firmware menu interface. The Sun StorEdge CLI logical volume indexes might change when logical volumes are deleted.
--no	-n	Assumes a `no` response to any yes/no prompts. Use this option to prompt the user before running scripts.
--oob	-o	Accesses the selected device using out-of-band communication rather than using the SCSI or Fibre Channel host bus adapter (HBA) with which the array is connected to the host. This option accesses the device using a local HBA only briefly, to retrieve the array's network address, and all subsequent access is done over the network. This can provide better performance when the array is processing large quantities of SCSI I/O. If the IP address for the array cannot be determined, inband communication is used instead.
partition		A logical drive or logical volume identifier with a suffix indicating a specific partition within the logical drive or volume, for example, `ld2-03` or `2CA48914-03`. The suffix is a hexadecimal number ranging from 0 to 7F.

TABLE 1-2 Command Parameters and Options *(Continued)*

Parameter or Option	Short Form	Description
`--password` *password*	`-w` *password*	Specifies the password assigned to the array controller. The user must supply the correct password when issuing potentially dangerous commands to the array over a network connection. For security reasons, it is preferable to supply this password using the Sun StorEdge CLI `password` command, or enter the password interactively when prompted for it. No password is required for commands which do not modify the state of the controller, or commands issued using the inband communication mode.
target-list		A comma-separated list of SCSI target ID numbers.
--version	-v	Displays the version number of the Sun StorEdge CLI and exits without processing any commands.
--yes	-y	Assumes a `yes` response to any `yes/no` prompts. Use this option to run scripts without prompting the user.

Device Names for Inband Communication

For inband communication, device names include one of the following:

- Native SCSI or FC disk device file names
- Native device file names with the directory names and partitions removed

For systems using the Solaris operating system, the device name is typically specified as:

```
/dev/rdsk/cXtYdZs2
```

In the preceding device name code:

X = controller number

Y = SCSI target number

Z = logical unit number

s2 = slice 2 of the (logical) disk. Usually, slice 2 is specified when identifying a disk for administrative purposes, but any slice number between 0 and 7 (if the slice exists) works.

An example of the device name in Solaris is:

```
/dev/rdsk/c2t0d0
```

To access a JBOD enclosure services device using Solaris, specify the device name as shown in the following example, or use the `--disk` option and specify the name of a disk device within the enclosure.

```
/dev/es/sesn
```

For Windows operating systems, the device name is specified using the Windows internal device name for the physical device, where *N* corresponds to the disk number displayed in the Disk Administrator.

```
\\.\PhysicalDriveN
```

For example:

```
PhysicalDrive3
```

Note – If no device is specified on the command line, and more than one array is connected to the host, a menu of devices is presented with one device file name for each array. If there is only one Sun StorEdge 3000 family array device connected to the host, that device is selected automatically.

Note – If inband management access has been disabled by Sun StorEdge CLI—the firmware application—or Sun StorEdge Configuration Service, and a user attempts to use inband management, the message "RAID controller not responding" displays when a command is run. If this occurs, use out-of-band management to access Sun StorEdge CLI. For details, see "Device Names for Out-of-Band Communication" on page 11.

Device Names for Out-of-Band Communication

To access a RAID array using its out-of-band network interface rather than using the SCSI or FC host bus adapter (HBA) with which the array is connected to the host, specify the `--oob` option. This option accesses the device using a local HBA only briefly, to retrieve the array's network address, and all subsequent access is done over the network. Out-of-band communication is useful when heavy SCSI I/O makes inband access slow. It can also be used when the host has no path to the primary controller, but can still retrieve the IP address of the array from a logical unit number (LUN) mapped from the secondary controller.

Alternately, if the host on which the Sun StorEdge CLI is running is not connected to the array with a SCSI or FC HBA, a URL can be specified to indicate that the Sun StorEdge CLI should connect to the remote array over the network.

In out-of-band management, the device name is typically specified as a URL in the format:

```
[se3000://] hostname-or-address[:port]
```

TABLE 1-3 Out-of-Band Device Name Syntax

Syntax	Description
[*se3000://*]	Optionally, use this prefix to ensure that the string that follows is interpreted only as a host name and not as a device name.
hostname-or-address	Specify a host name or the IP address for the host of the primary agent.
port	Optionally, specify the TCP/IP port number to use. The default value, 58632, is the only supported value.

Disk Device Syntax

A physical disk attached to the array can be identified with any of the following:

TABLE 1-4 Disk Device Syntax

Syntax	Description
ch.id	Dotted-decimal format where `ch` is physical device channel and `id` is the SCSI ID of the device.
ch.m-n	Where `ch` is physical device channel and `m` to `n` represents a contiguous range of IDs on the same channel.
sdn or *c<X>t<Y>d<Z>*	*JBOD LVD disks only.* Specify a disk device using a Solaris or SPARC device name such as `sd31` or `c1t0d0` when a JBOD chassis is selected.

Logical Drive Syntax

Logical drives can be specified by one of the following alphanumeric strings:

- an eight-digit hexadecimal logical drive identifier.
- a logical drive index composed of the prefix "ld" followed by a temporary decimal ordinal number ranging from 0 to n-1, where n is the number of logical drives configured on the array.

Note – Logical drive indexes can change whenever a logical drive is deleted, while a logical drive identifier never changes over the life of the logical drive.

The logical drive index number referenced with each logical drive is dynamic; it might change when logical drives are created or deleted. The index number is used strictly as a placeholder that enables you to *visually* keep track of logical drives. For example, if four logical drives exist, and LD2 is deleted, the existing LD3 dynamically changes to LD2, and LD4 changes to LD3. Only the LD index number changes; all LUN mapping and data on the logical drives remains unchanged. Care must be taken not to assume that a logical drive keeps the same logical drive index after creating or deleting any logical drive or rebooting the array controller.

Caution – Any time logical drives are created or deleted, the numbering of logical drive indexes might change. After creating or deleting logical drives, issue a `show logical-drive` command to view an updated list of logical drive indexes. Or, use logical drive IDs, which do not change over the lifetime of the logical drive, rather than logical drive indexes.

Note – In contrast, in the firmware application, the LG number on the View and Edit Logical Drives menu is not dynamic. After a logical drive is deleted, you see an empty placeholder.

Some commands accept a list of logical drives, or LD-list. This list is constructed by concatenating one or more logical drive identifiers or indexes as shown in the following examples.

This example lists logical drives using the local drive identifier.

```
0043BF50,05CC1F19,025E42E1
```

This example lists logical drives using the index number.

```
ld0,ld1,ld2
```

Note – Do not include spaces before or after the commas when specifying a logical drive list.

Logical Volume Syntax

Logical volumes are specified by one of the following alphanumeric strings:

- an eight-digit hexadecimal logical volume identifier.
- a logical volume index composed of the prefix "lv" followed by a temporary decimal ordinal number ranging from 0 to n-1, where n is the number of logical volumes configured on the array.

Note – Logical volume indexes can change whenever a logical volume is deleted, while a logical volume identifier never changes over the life of the logical volume.

The logical volume index number referenced with each logical volume is dynamic; it might change when logical volumes are created or deleted. The index number is used strictly as a placeholder that enables you to *visually* keep track of logical volumes. For example, if four logical volumes exist, and LV2 is deleted, the existing LV3 dynamically changes to LV2, and LV4 changes to LV3. Only the LV index number changes; all LUN mapping and data on the logical volume remains unchanged. Care must be taken not to assume that a logical volume keeps the same logical volume index after creating or deleting any logical volume or rebooting the array controller.

A list of logical volumes identifiers or indexes can be specified by concatenating one or more logical drive identifiers or logical volume indexes, separating them with commas.

Caution – Any time logical volumes are created or deleted, the numbering of logical volume indexes might change. After creating or deleting logical volumes, issue a `show logical-volumes` command to view an updated list of logical volume indexes. Or, use logical volume IDs, which do not change over the lifetime of the logical volume, rather than logical volume indexes.

Note – In contrast, in the firmware application, the LG number on the View and Edit Logical Drives menu is not dynamic. After a logical volume is deleted, you see an empty placeholder.

This example lists logical volumes using the local volume identifier.

```
52AD5DEB,472C1397,E2054317
```

This example lists logical volumes using the local volume index number.

```
lv0,lv1,lv2
```

Device Capacity

In the Sun StorEdge CLI, all device capacity is displayed in powers of 1024.

1 Kbyte = 1024 bytes

1 Mbyte = 1024 Kbyte = 1,048,576 bytes

1 Gbyte = 1024 Mbyte = 1,073,741,824 bytes

1 Tbyte = 1024 Gbyte = 1,099,511,627,776 bytes

CHAPTER 2

System Function Commands

This chapter provides the available system function commands with sample code. Topics covered in this chapter include:

Note – To prevent unauthorized access to administrative functions of the RAID controller, the Sun StorEdge CLI requires superuser or system administrator privileges for inband access, and uses the controller password to authorize users of the out-of-band interface.

Note – If no command is entered on the command line, the Sun StorEdge CLI enters an interactive mode, prompting you to enter commands until the `quit` command is entered. All commands operate on the currently selected device.

Basic Commands

The following commands are explained in this section:

about

Description

The about command displays version, copyright, build, and operating system information.

Syntax

```
about
```

Examples

The following example shows the about text for the Sun StorEdge CLI.

```
sccli> about
Sun StorEdge 3000 Family CLI
Copyright 2002-2005 Dot Hill Systems Corporation.
All rights reserved. Use is subject to license terms.
sccli version 2.1.0
built 2005.04.30.21.02
build 11 for solaris-sparc
```

exit

Description

The exit command exits the interactive mode. You can also use the quit command to exit the Sun StorEdge CLI.

Syntax

```
exit
```

help

Description

The `help` command displays a short summary of the available commands.

Syntax

```
help [command]
```

If no command is specified, basic usage information is displayed.

Examples

The following example shows the help text for the `show channels` command.

```
sccli> help show channels
  show channels
        display channel configuration
```

quit

Description

The `quit` command exits the interactive mode. You can also use the `exit` command to exit the Sun StorEdge CLI.

Syntax

```
quit
```

select

Description

The `select` command selects a new device to which subsequent commands are issued. If no device is specified, and more than one choice exists, a menu of choices is displayed. This command should not be used on the command line because a `select` command is automatically executed if no device name is specified.

Syntax

```
select device
```

Examples

The following example selects an out-of-band FC device.

```
sccli> select 199.249.246.28
sccli: selecting se3000://199.249.246.28:58632[SUN StorEdge 3510 SN#000187]
```

The following example selects an inband SCSI device.

```
sccli> select c15t0d0
sccli: selected /dev/rdsk/c0t5d0s2 [SUN StorEdge 3310 SN#00028E]
```

version

Description

The `version` command displays the version number of the Sun StorEdge CLI.

Syntax

```
version
```

Examples

In the following example, version 2.1.0 is displayed.

```
# sccli version
sccli: selected se3000://199.249.246.28:58632[SUN StorEdge 3510
SN#000187]
sccli version 2.1.0
```

Network Commands

The following commands are explained in this section:

- configure network-interface
- create host-wwn-name
- delete host-wwn-name
- set protocol
- show host-wwn-names
- show ip-address
- show network-parameters
- show port-wwn
- show protocol
- show rs232-configuration

configure network-interface

Description

The `configure network-interface` command configures the local area network (LAN) interface, enabling the telnet, File Transfer Protocol (FTP), Simple Network Management Protocol (SNMP), and out-of-band management functions.

Note – If you assign an IP address to an array to manage it out-of-band, for security reasons consider using an IP address on a private network rather than a publicly routable network. Using the controller firmware to set a password for the controller limits unauthorized access to the array. Changing the firmware's Network Protocol Support settings can provide further security by disabling the ability to remotely connect to the array using individual protocols such as HTTP, HTTPS, telnet, FTP, and SSH. Refer to the "Communication Parameters" section of the *Sun StorEdge 3000 Family RAID Firmware User's Guide* for more information.

Syntax

For dynamic addressing, use the following syntax.

```
configure network-interface lan0 [rarp | dhcp]
```

For static addressing, use the following syntax.

```
configure network-interface lan0 [ip-address ip-address | netmask
netmask-ip | gateway gateway-ip]
```

Arguments

The following *dynamic* options are accepted.

TABLE 2-1 Dynamic Options for `configure network-interface`

Argument	Description
`rarp`	Specify whether the Reverse Address Resolution Protocol (RARP) is used to establish an IP address.
`dhcp`	Specify whether the Dynamic Host Configuration Protocol (DHCP) is used to obtain an IP address.

Note – The `rarp` and `dhcp` options can be combined to specify that the controller try the protocols in the listed order.

Note – All LAN parameters must be specified on the same command line.

Alternately, if none of the dynamic options are specified on the same command line, a *static* IP address can be specified along with optional netmask and default gateway parameters.

TABLE 2-2 Static Options for `configure network-interface`

Argument	Description
`ip-address` *n.n.n.n*	The IP address of the array.
`netmask` *m.m.m.m*	The netmask, in dotted-decimal format; for example, `255.255.255.0`
`gateway` *g.g.g.g*	The IP address of a default router.

Examples

The following example configures the controller IP address as 192.168.0.10, netmask as 255.255.255.0, and gateway as 192.168.0.1.

```
# sccli c2t0d0 configure network-interface lan0 ip 192.168.0.10
netmask 255.255.255.0 gateway 192.168.0.1
```

The following example specifies that the DHCP protocol be used to establish an IP address.

```
# sccli c2t0d0 configure network-interface lan0 dhcp
```

create host-wwn-name

Description

Sun StorEdge 3000 family FC and SATA devices only. The `create host-wwn-name` command creates a list of Host ID/worldwide name (WWN) entries to associate a symbolic name with a host worldwide port name (WWPN). This enables the user to use the symbolic name instead of the numeric WWPN when creating host LUN filters. To review the available WWPN values, run the `show port-wwn` command. For details, see "`show port-wwn`" on page 29.

Note – A maximum of 64 host WWN entries can be created.

Syntax

```
create host-wwn-name wwn name [position]
```

Arguments

TABLE 2-3 Arguments for `create host-wwn-name`

Argument	Description
wwn	Specify a WWPN corresponding to a host bus adapter, expressed as a 16-digit hexadecimal number.
name	Specify a symbolic name for the host bus adapter. Names that contain special characters, such as spaces, must be enclosed in double quotation marks.
[*position*]	Specify a number representing the position in the list of names where this name will appear. To add the WWN to the top of the WWN list, specify `head`. To add the WWN to the bottom of the WWN list, specify `tail`.

Examples

The following example creates the alias `sun-hba-1` for the HBA WWPN value 210000e08b095562.

```
# sccli c2t0d0 create host-wwn-name 210000e08b095562 sun-hba-1
```

To see the existing WWNs, use the `show host-wwn-names` command. For details, see "`show host-wwn-names`" on page 27.

`delete host-wwn-name`

Description

Sun StorEdge 3000 family FC and SATA devices only. The `delete host-wwn-name` command deletes a Host ID/worldwide name (WWN) entry.

Syntax

```
delete host-wwn-name [name | wwn]
```

Note – Names that contain special characters, such as spaces, must be enclosed in double quotation marks.

Examples

The following example deletes the alias `test name 2`.

```
sccli> delete host-wwn-name "test name 2"
```

set protocol

Description

The `set protocol` command enables or disables the specified network protocol and sets the telnet inactivity timeout value. For security reasons, you might want to disable the network protocols that you do not want to support. This limits the ways security can be breached.

Syntax

```
set protocol {protocol-name {enabled | disabled} | telnet-inactivity-timeout s}
```

Arguments

Note – The PriAgentAll protocol must remain enabled for Sun StorEdge Configuration Service and Sun StorEdge CLI to receive information from the controller firmware. Do not disable this protocol.

TABLE 2-4 Arguments for `set protocol`

Argument	Description
`protocol-name {enabled | disabled}`	Specify the protocol name and enabled or disabled to control the protocols that can be used to access the Sun StorEdge CLI. For instance, to prohibit data access through a protocol, specify the protocol name and disabled. The supported protocol values include: • TELNET – Telnet access to the IP address (enabled by default). • HTTP – Hypertext Transport Protocol (enabled by default). • HTTPS – Hypertext Transport Protocol Secure (disabled by default). • FTP – File Transfer Protocol (enabled by default). • SSH – Secure Socket Handling (disabled by default). • PriAgentAll – Controller internal communication protocol (enabled by default). • SNMP – Simple Network Management Protocol (disabled by default). SNMP might be used to communicate with external management software. • DHCP – Dynamic Host Configuration Protocol (enabled by default). DHCP is used in some networks to dynamically assign IP addresses to systems on the network. • Ping – Ping enables hosts in the network to determine if an array is online (enabled by default). Valid values: `enabled`, `disabled`.
`telnet-inactivity-timeout` *s*	Specify the amount of time before the telnet connection times out. Valid values: `0` (disabled), `60s`, `120s`, `300s`, `600s`, `1200s`, `1500s`, `1800s`, `2700s`.

Examples

The following example sets the telnet inactivity time period to 60 seconds.

```
# sccli c2t0d0 set protocol telnet-inactivity-timeout 60s
```

The following example disables FTP access.

```
# sccli c2t0d0 set protocol ftp disabled
```

show host-wwn-names

Description

Sun StorEdge 3000 family FC and SATA devices only. The `show host-wwn-names` command displays all registered host bus adapter (HBA) worldwide name (WWN) entries in the controller for host channels.

Note – A maximum of 64 host WWN entries can be created.

Syntax

```
show host-wwn-names
```

Arguments

TABLE 2-5 Arguments for `show host-wwn-names`

Argument	Description
[*name* | *wwn*]	Specify the host name or WWN.

Examples

The following example shows all host WWN entries for the specified device.

```
# sccli c2t0d0 show host-wwn-names
  Host-ID/WWN       Name
-------------------------------------
210000e08b095562  sun-hba-1
210100e08b295562  sun-hba-2
```

If no host WWN entries are defined, a message is displayed onscreen, but it is not considered an error. For details on defining host WWN entries, see "`create host-wwn-name`" on page 23.

show ip-address

Description

The `show ip-address` command displays the IP address of the array controller.

Note – Before running this command, make sure the network parameters on the controller are set.

Syntax

```
show ip-address
```

Examples

The following example shows the IP address for device `c2t0d0`.

```
# sccli c2t0d0 show ip-address
206.1.111.11
```

show network-parameters

Description

The `show network-parameters` command displays the IP address, netmask, and default router address of the network management port.

Syntax

```
show network-parameters
```

Examples

The following example shows the network parameters for the network management port.

```
sccli> show network-parameters
 ip-address: 206.235.238.223
 netmask: 255.255.255.0
 gateway: 0.0.0.0
 mode: static
```

show port-wwn

Description

Sun StorEdge 3000 family FC and SATA devices only. The `show port-wwn` command displays the worldwide name (WWN) entries for the FC host channels.

Note – A maximum of 64 host WWN entries can be created.

Syntax

```
show port-wwn
```

Examples

The following example shows the worldwide port name (WWPN) entries for the FC host channels.

```
sccli> show port-wwn
Ch  Id   WWPN
-------------------------
 0  40   216000C0FF800238
 0  41   216000C0FF900238
 1  43   226000C0FFB00238
 1  42   226000C0FFA00238
 4  44   256000C0FFC00238
 4  45   256000C0FFD00238
 5  47   266000C0FFF00238
 5  46   266000C0FFE00238
```

show protocol

Description

The `show protocol` command displays all possible network protocols supported by the controller and protocol parameters including the Telnet inactivity timeout value. To enable and disable network protocols, see "`set protocol`" on page 25.

Syntax

```
show protocol
```

Examples

The following example shows all network protocols for the specified device and shows that the telnet connection does not time out if it is not being used.

```
sccli> show protocol
 Identifier      Status    Port  Parameters
 ---------------------------------------
 telnet          enabled   23    inactivity-timeout=disabled
 http            enabled   80    n/a
 https           enabled   443   n/a
 ftp             enabled   21    n/a
 ssh             enabled   22    n/a
 priagentall     enabled   1     n/a
 snmp            enabled   161   n/a
 dhcp            enabled   68    n/a
 ping            enabled   n/a   n/a
```

Returned Values

The returned protocol values include:

- `telnet` – Telnet access to the IP address (enabled by default) and the Inactivity-timeout parameter which indicates the amount of time before the Telnet connection times out.
- HTTP – Hypertext Transport Protocol (disabled by default).
- HTTPS – Hypertext Transport Protocol Secure (disabled by default).
- FTP – File Transfer Protocol (disabled by default).
- SSH – Secure Socket Handling (disabled by default).
- PriAgentAll – Controller internal communication protocol (enabled by default).

- SNMP – Simple Network Management Protocol (enabled by default). SNMP might be used to communicate with external management software.
- DHCP – Dynamic Host Configuration Protocol (enabled by default). DHCP is used in some networks to dynamically assign IP addresses to systems on the network.
- `ping` – Ping enables hosts in the network to determine if an array is online (enabled by default).

`show rs232-configuration`

Description

The `show rs232-configuration` command displays the RS-232 connection configuration. Returned values include the port number and current baud rate. In a redundant-controller configuration, the COM port rate is always the same for both ports. Valid rates include: 2400, 4800, 9600, 19200, 38400, and 115200.

Syntax

```
show rs232-configuration
```

Examples

The following example shows the baud-rate is set to `38400 bps` for COM1 and COM2.

```
sccli> show rs232-configuration
 COM1 speed: 38400bps
 COM2 speed: 38400bps
```

Component Status Commands

The following commands are explained in this section:

- show frus
- show peripheral-device-status

For details on displaying all the components for an array, see "show configuration" on page 57.

set auto-write-through-trigger

Description

Use the set auto-write-through-trigger command to configure the array to dynamically switch from write-back cache to write-through cache, or to shut down the controller, if a specified event occurs. For details on setting the write policy, see "set cache-parameters" on page 73.

Syntax

```
set auto-write-through-trigger param value
```

Arguments

TABLE 2-6 Arguments for set auto-write-through-trigger

Argument	Description
controller-failure	If the cache setting is set to write-back, specify whether the cache setting automatically defaults to write-through cache when a controller event trigger operation, such as a controller failure, occurs. Valid values: enabled, disabled.
battery-backup-failure	If the cache setting is set to write-back, specify whether the cache setting automatically defaults to write-through cache when a battery backup event trigger operation, such as low voltage on a battery backup device, occurs. Valid values: enabled, disabled.
ac-power-loss	If the cache setting is set to write-back, specify whether the cache setting automatically defaults to write-through cache when a power loss event trigger operation, such as a power failure, occurs. Valid values: enabled, disabled.

TABLE 2-6 Arguments for `set auto-write-through-trigger` *(Continued)*

Argument	Description
`power-supply-failure`	If the cache setting is set to write-back, specify whether the cache setting automatically defaults to write-through cache when a power supply event trigger operation, such as a power supply failure, occurs. Valid values: `enabled`, `disabled`.
`fan-failure`	If the cache setting is set to write-back, specify whether the cache setting automatically defaults to write-through cache when a fan event trigger operation, such as a fan failure, occurs. Valid values: `enabled`, `disabled`.
`temperature-exceeded-delay`	Specify whether to force a controller shutdown if a temperature is detected that exceeds system threshold limits. Adjust this setting to shut down the controller as soon as the temperature limit is exceeded, or after a configurable delay. Valid values: `enabled`, `disabled`, `2min`, `5min`, `10min`, `20min`, `30min`, `45min`, `1hour`.

Examples

The following example sets the temperature threshold time period to two minutes.

```
sccli> set auto-write-through-trigger temperature-exceeded-delay 2min
```

The following example disables the automatic write policy change on controller failure.

```
sccli> set auto-write-through-trigger controller-failure disabled
```

show access-mode

Description

The `show access-mode` command displays whether the communication mode being used to manage the device uses data channels (inband) or an Ethernet connection (out-of-band). Returned values include inband and out-of-band.

Note – If inband management access has been disabled by Sun StorEdge CLI—the firmware application—or Sun StorEdge Configuration Service, and a user attempts to use inband management, the message "RAID controller not responding" displays when a command is run. If this occurs, use out-of-band management to access Sun StorEdge CLI. For details, see "Device Names for Out-of-Band Communication" on page 11.

Syntax

```
show access-mode
```

Examples

The following example shows the Sun StorEdge CLI communication mode is inband.

```
sccli> show access-mode
 access-mode: inband
```

show auto-write-through-trigger

Description

The `show auto-write-through-trigger` command displays the controller event trigger configuration including whether the array dynamically switches from write-back cache to write-through cache, or shuts down the controller, if a specified event occurs. The specified events include fan failure, power supply failure, battery back-up failure, AC power loss, and temperature that exceeds system threshold limits.

Syntax

```
show auto-write-through-trigger
```

Examples

The following example shows the event trigger information for a Sun StorEdge 3510 FC array.

```
sccli> show auto-write-through-trigger
 controller-failure: enabled
 battery-backup-failure: enabled
 ups-ac-power-loss: disabled
 power-supply-failure: enabled
 fan-failure: enabled
 temperature-exceeded-delay: enabled
```

Returned Values

The returned values are described in the following table.

TABLE 2-7 Output for `show auto-write-through-trigger`

Field	Description
`controller-failure`	Controller failure event trigger status.
`battery-backup-failure`	Battery backup unit has failed or is not fully charged.
`ups-ac-power-loss`	UPS AC power loss.
`power-supply-failure`	Power supply failure.
`fan-failure`	Fan failure.
`temperature-exceeded-delay`	Number of seconds delay before controller shutdown after exceeding the temperature threshold Valid values: `enabled, disabled, 2min, 5min, 10min, 20min, 30min, 45min, 1hour`.

show battery-status

Description

Sun StorEdge 3000 family FC and SATA arrays only. The `show battery-status` command displays the expiration and hardware status of the battery modules, which preserve the contents of the write cache in each RAID controller. For redundant controllers, status for both batteries is shown.

If you run the `show battery-status` command and the battery in-service date is not set, run the `show battery-status -u` command. Early model battery boards were not programmed with an in-service date. The `show battery-status -u` command sets the in-service date to the battery board manufacturing date and prompts the user to verify the date. For details on replacing the battery, refer to the *Sun StorEdge 3000 Family FRU Installation Guide*.

Note – To successfully execute scripts using the Sun StorEdge CLI, the battery in-service date must be set. Newer battery boards are programmed with the in-service date.

If the battery type is an early board module (FRU ID 370-5545 REVB), then battery expiration monitoring is not supported. In this case, a message displays, “battery board type is not supported.” If your configuration requires the battery expiration feature, consult your sales representative to obtain a new battery.

Syntax

```
show battery-status [-u |--update]
```

Arguments

TABLE 2-8 Arguments for `show battery-status`

Argument	Description
`-u` | `--update`	Specify `-u` or `--update` to automatically enter interactive mode if the battery in-service date is not set. The in-service date is set to the battery board manufacturing date. Newer battery boards are programmed with the battery in-service date. This option is only required for early model battery boards.

Examples

The following example shows battery status for a set of redundant controllers.

```
sccli> show battery-status
 Upper Battery Type: 1
 Upper Battery Manufacturing Date: Sat Sep 20 16:17:57 2003
 Upper Battery Placed In Service:  Mon Jun 21 18:24:58 2004
 Upper Battery Expiration Date:    Wed Jun 21 18:24:58 2006
 Upper Battery Expiration Status: OK

 Lower Battery Type: 1
 Lower Battery Manufacturing Date: Mon Sep 22 15:54:47 2003
 Lower Battery Placed In Service:  Mon Sep 22 15:54:47 2003
 Lower Battery Expiration Date:    Wed Sep 21 15:54:47 2005
 Lower Battery Expiration Status: Expired
 ------------------------------------------------------
 Upper Battery Hardware Status: OK
 Lower Battery Hardware Status: OK
```

The following example uses the `-u` option, which prompts the user to verify the battery date if the battery in-service date has not been set previously.

```
sccli> show battery-status -u
 Upper Battery Type: 1
 Upper Battery Manufacturing Date: Mon Feb  2 08:00:00 2004
 Upper Battery Placed In Service:  Wed Aug 11 20:18:02 2004
 Upper Battery Expiration Date:    Fri Aug 11 20:18:02 2006
 Upper Battery Expiration Status: OK


 Lower Battery Type: 1
 Lower Battery Manufacturing Date: Tue Mar 30 14:32:26 2004
 Lower Battery Placed In Service:  Wed Sep 29 21:04:39 2004
 Lower Battery Expiration Date:    Fri Sep 29 21:04:39 2006
 Lower Battery Expiration Status: OK
 ------------------------------------------------------
 Upper Battery Hardware Status: OK
 Lower Battery Hardware Status: OK
```

Returned Values

The returned expiration and hardware status values for the `show battery-status` command are described in the tables below.

TABLE 2-9 Battery expiration status values for `show battery status`

Value	Description
`OK`	Battery is neither near nor at expiration
`Warning`	Three weeks or less to battery expiration
`Expired`	Battery expired

TABLE 2-10 Battery hardware status values for `show battery status`

Value	Description
`OK`	Battery fully charged and functioning
`Charging`	Battery slightly drained and charging
`Critical`	Battery almost drained and charging
`Missing`	Battery not installed
`BAD`	Battery completely drained or not functioning

show enclosure-status

Description

The `show enclosure-status` command shows the status for all chassis components. If the selected device is a RAID subsystem consisting of more than one chassis, status displays for each chassis in the system. For details on the controller environmental sensor status, see "`show peripheral-device-status`" on page 47.

Sun StorEdge 3000 family SCSI arrays display the status for the:

- SCSI Accessed Fault-Tolerant Enclosure (SAF-TE) revision number and status information
- fan
- power supply
- temperature sensor
- drive slot

Note – In split-bus configurations on Sun StorEdge 3000 SCSI devices, half the drives display a status of Unknown. The drives are present, but because of a SAF-TE design limitation, the information does not display.

Sun StorEdge 3510 FC arrays and Sun StorEdge 3511 SATA arrays display the status for the:

- SCSI Enclosure Services (SES) revision number and status information
- fan
- power supply
- temperature sensor
- drive slot
- voltage sensors – 16 sensors display for SATA devices and 12 sensors display for FC devices

---

Note – Sun StorEdge 3000 family FC and SATA enclosures contain two SES processors in a dual-controller array, and there can be more than one enclosure in a RAID subsystem.

Syntax

```
show enclosure-status
```

Examples

The following example shows the enclosure status for a Sun StorEdge 3310 SCSI device.

Note – The Enclosure SCSI channel type values include single-bus and split-bus. Throughout the documentation and the Sun StorEdge CLI, the term “split-bus” is interchangeable with the term “dual-bus.” For details on configuring an array, refer to the *Sun StorEdge 3000 Family RAID Firmware User’s Guide* for your array.

```
sccli> show enclosure-status
Ch  Id  Chassis  Vendor  Product ID        Rev   Package   Status
-------------------------------------------------------------
 0  14  002A4C   SUN     StorEdge 3310  A  1170  1170      OK

Enclosure Component Status:
     Type Unit Status   FRU P/N   FRU S/N   Add'l Data
-------------------------------------------------------------
      Fan 0    OK       370-5398  016626     --
      Fan 1    OK       370-5398  016625     --
       PS 0    OK       370-5398  016626     --
       PS 1    OK       370-5398  016625     --
     Temp 0    OK       370-5524  002A4C     temp=25
     Temp 1    OK       370-5524  002A4C     temp=27
     Temp 2    OK       370-5398  016626     temp=26
     Temp 3    OK       370-5394  013924     temp=30
     Temp 4    OK       370-5394  013919     temp=28
     Temp 5    OK       370-5524  002A4C     temp=28
     Temp 6    OK       370-5398  016625     temp=25
      EMU 0    OK       370-5394  013924
      EMU 1    OK       370-5394  013919
 DiskSlot 0    Unknown  370-5524  002A4C     addr=0,led=off
 DiskSlot 1    Unknown  370-5524  002A4C     addr=1,led=off
 DiskSlot 2    Unknown  370-5524  002A4C     addr=2,led=off
 DiskSlot 3    Unknown  370-5524  002A4C     addr=3,led=off
 DiskSlot 4    Unknown  370-5524  002A4C     addr=4,led=off
 DiskSlot 5    Unknown  370-5524  002A4C     addr=5,led=off
 DiskSlot 6    OK       370-5524  002A4C     addr=0,led=off
 DiskSlot 7    OK       370-5524  002A4C     addr=1,led=off
 DiskSlot 8    OK       370-5524  002A4C     addr=2,led=off
 DiskSlot 9    OK       370-5524  002A4C     addr=3,led=off
 DiskSlot 10   OK       370-5524  002A4C     addr=4,led=off
 DiskSlot 11   OK       370-5524  002A4C     addr=5,led=off

Enclosure SCSI Channel Type: split-bus
```

The following example shows the enclosure status for a Sun StorEdge 3510 FC device.

```
sccli>  show enclosure-status
Ch  Id Chassis Vendor/Product ID    Rev  PLD  WWNN             WWPN
------------------------------------------------------------------------------
 2  12 003CE3  SUN StorEdge 3510F A 1046 1000 204000C0FF003CE3 214000C0FF003CE3
                                     Topology: loop(a)  Status:      OK
 3  12 003CE3  SUN StorEdge 3510F A 1046 1000 204000C0FF003CE3 224000C0FF003CE3
                                     Topology: loop(b)  Status:      OK

Enclosure Component Status:
     Type Unit Status   FRU P/N   FRU S/N   Add'l Data
------------------------------------------------------------------
      Fan 0    OK       370-5398  017243     --
      Fan 1    OK       370-5398  017243     --
      Fan 2    OK       370-5398  016962     --
      Fan 3    OK       370-5398  016962     --
       PS 0    OK       370-5398  017243     --
       PS 1    OK       370-5398  016962     --
     Temp 0    OK       370-5535  003CE3     temp=23
     Temp 1    OK       370-5535  003CE3     temp=23
     Temp 2    OK       370-5535  003CE3     temp=25
     Temp 3    OK       370-5535  003CE3     temp=23
     Temp 4    OK       370-5535  003CE3     temp=23
     Temp 5    OK       370-5535  003CE3     temp=25
     Temp 6    OK       370-5537  008307     temp=31
     Temp 7    OK       370-5537  008307     temp=41
     Temp 8    OK       370-5537  008226     temp=30
     Temp 9    OK       370-5537  008226     temp=35
     Temp 10   OK       370-5398  017243     temp=22
     Temp 11   OK       370-5398  016962     temp=25
 DiskSlot 0    Absent   370-5535  003CE3     addr=0,led=off
 DiskSlot 1    Absent   370-5535  003CE3     addr=1,led=off
 DiskSlot 2    Absent   370-5535  003CE3     addr=2,led=off
 DiskSlot 3    OK       370-5535  003CE3     addr=3,led=off
 DiskSlot 4    OK       370-5535  003CE3     addr=4,led=off
 DiskSlot 5    Absent   370-5535  003CE3     addr=5,led=off
 DiskSlot 6    OK       370-5535  003CE3     addr=6,led=off
 DiskSlot 7    OK       370-5535  003CE3     addr=7,led=off
 DiskSlot 8    OK       370-5535  003CE3     addr=8,led=off
 DiskSlot 9    OK       370-5535  003CE3     addr=9,led=off
 DiskSlot 10   OK       370-5535  003CE3     addr=10,led=off
 DiskSlot 11   Absent   370-5535  003CE3     addr=11,led=off
```

Returned Values

The following table describes the location of the enclosure devices from the back of the Sun StorEdge 3120 SCSI array, as shown in FIGURE 2-1.

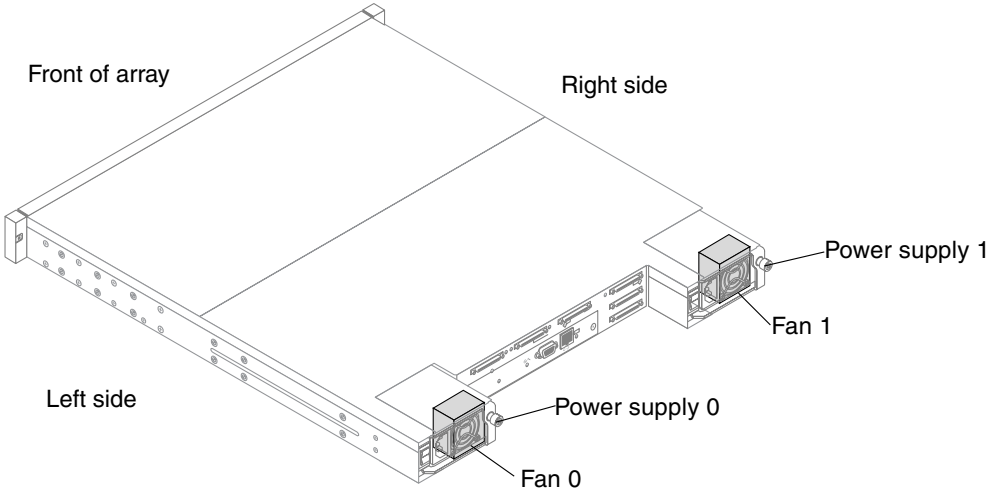

FIGURE 2-1 Sun StorEdge 3120 SCSI Array Enclosure Device Orientation

The returned values for the Sun StorEdge 3120 SCSI array are described in the following table.

TABLE 2-11 Sun StorEdge 3120 SCSI array output for `show enclosure-status`

Enclosure Types	Description
`Fan 0`	Left side power supply fan
`Fan 1`	Right side power supply fan
`PS 0`	Left side power supply
`PS 1`	Right side power supply
`Temp 0`	Left drive temperature sensor
`Temp 1`	Center drive temperature sensor
`Temp 2`	Temperature sensor on left side power supply module (Power supply 0 in FIGURE 2-1)
`Temp 3`	Temperature sensor on left side I/O module
`Temp 4`	Temperature sensor on right side I/O module

TABLE 2-11 Sun StorEdge 3120 SCSI array output for `show enclosure-status`

Enclosure Types	Description
`Temp 5`	Right drive temperature sensor
`Temp 6`	Temperature sensor on right side power supply module (Power supply1 in FIGURE 2-1)
`Disk Slot 0-3`	Disk slot identifier refers to the backplane field-replaceable unit (FRU) to which disks are connected

The following table describes the location of the enclosure devices from the back of the Sun StorEdge 3310 SCSI array, as shown in FIGURE 2-2.

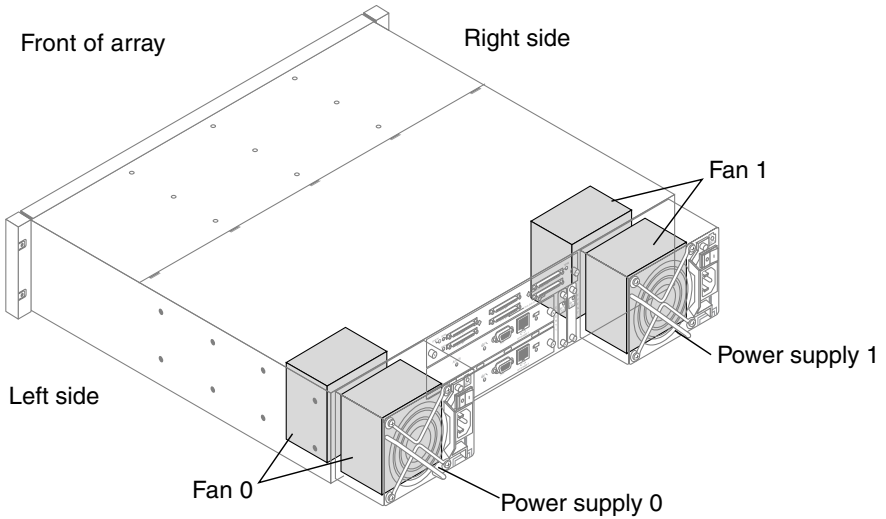

FIGURE 2-2 Sun StorEdge 3310 SCSI Array and Sun StorEdge 3320 SCSI Array Enclosure Device Orientation

The returned values for Sun StorEdge 3310 SCSI arrays and Sun StorEdge 3320 SCSI arrays are described in the following table.

TABLE 2-12 Output for Sun StorEdge 3310 SCSI array and Sun StorEdge 3320 SCSI array `show enclosure-status`

Enclosure Types	Description
`Fan 0`	Left side power supply fan
`Fan 1`	Right side power supply fan
`PS 0`	Left side power supply
`PS 1`	Right side power supply

TABLE 2-12 Output for Sun StorEdge 3310 SCSI array and Sun StorEdge 3320 SCSI array `show enclosure-status` *(Continued)*

Enclosure Types	Description
`Temp 0, 1, 5`	Temperature sensor on chassis
`Temp 2`	Temperature sensor on left side power supply module (Power supply 0 in FIGURE 2-2)
`Temp 3`	Temperature sensor on left side event monitoring unit (EMU) module
`Temp 4`	Temperature sensor on right side EMU module
`Temp 6`	Temperature sensor on right side power supply module (Power supply 1 in FIGURE 2-2)
`EMU 0`	Left side event monitoring unit
`EMU 1`	Right side event monitoring unit
`Disk Slot 0-11`	Disk slot identifier refers to the backplane field-replaceable unit (FRU) to which disks are connected

The following table describes the location of the enclosure devices from the back of the Sun StorEdge 3510 FC array and the Sun StorEdge 3511 SATA array, as shown in FIGURE 2-3.

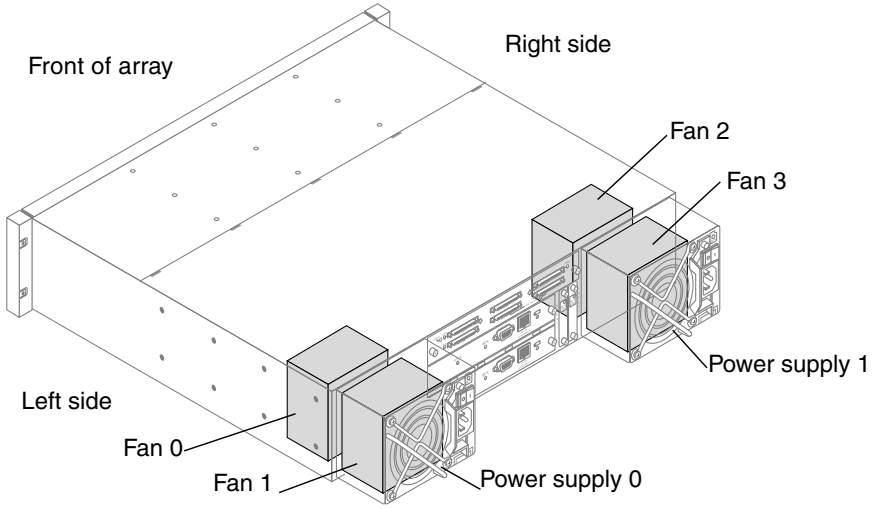

FIGURE 2-3 Sun StorEdge 3510 FC Array and Sun StorEdge 3511 SATA Array Enclosure Device Orientation

The returned values for the Sun StorEdge 3510 FC array and the Sun StorEdge 3511 SATA array are described in the following table.

TABLE 2-13 Output for Sun StorEdge 3510 FC array and Sun StorEdge 3511 SATA array `show enclosure-status`

Enclosure Types	Description
`Fan 0, 1`	Left side power supply fan
`Fan 2, 3`	Right side power supply fan
`PS 0`	Left side power supply
`PS 1`	Right side power supply
`Temp 0-5`	Temperature sensor on chassis
`Temp 6, 7`	Temperature sensor on upper I/O module
`Temp 8, 9`	Temperature sensor on lower I/O module
`Temp 10`	Temperature sensor on left side power supply module (Power supply 0 in FIGURE 2-3)
`Temp 11`	Temperature sensor on right side power supply module (Power supply 1 in FIGURE 2-3)
`Disk Slot 0-11`	Disk slot identifier refers to the backplane field-replaceable unit (FRU) to which disks are connected

Note – Voltage sensors make sure that the array's voltage is within normal ranges. To check the status and determine the location of voltage sensors, refer to the *Sun StorEdge 3000 Family RAID Firmware User's Guide*.

Enclosure status values include:

Status	Description
`OK`	This component has a status of OK.
`Absent`	This component is absent.
`Fault`	The component is exhibiting a fault condition.
`Missing`	The field-replaceable unit (FRU) is missing, status cannot be determined.
`Unknown`	This component status is not available.

show frus

Description

The `show frus` command displays field-replaceable unit (FRU) ID information for the RAID and any related JBODs, including dynamic FRU status information. All FRU information is retrieved from the SAF-TE device (Sun StorEdge 3000 family SCSI device), SES (Sun StorEdge 3000 family FC or SATA device), and SATA MUX board (Sun StorEdge 3511 SATA device). Use the `-q` option to exclude SATA MUX board information from the results, which will speed data return.

Syntax

```
show frus [-q | --quick]
```

Arguments

TABLE 2-14 Arguments for `show frus`

Argument	Description
[`-q	--quick`]	Excludes SATA MUX board information from the results, which will speed data return.

Examples

The following example returns all FRU information in a RAID array.

```
# sccli c2t0d0 show frus
```

The following example returns all FRU information in a JBOD unit.

```
# sccli /dev/es/ses2 show frus
```

The following example shows a partial list of the FRUs in a Sun StorEdge 3310 SCSI device.

```
sccli> show frus
 Name: PRI RAID CONTROLLER
 Description: SE3310 LVD RAID CTLR, 512MB MEM, BATT
 Part Number: 370-5403
 Serial Number: 007725
 Revision: 02Revision: 02
 Initial Hardware Dash Level: 02
 FRU Shortname: 370-5522
 Manufacturing Date: Wed Jul 16 19:24:30 2003
 Manufacturing Location: Milpitas California, USA
 Manufacturer JEDEC ID: 0x0301
 FRU Location: PRIMARY CONTROLLER SLOT
 Chassis Serial Number: 002A4C
 FRU Status: OK
 Name: SEC RAID CONTROLLER
 Description: SE3310 LVD RAID CTLR, 512MB MEM, BATT
 Part Number: 370-5403
 Serial Number: 006550
 Revision: 02
 Manufacturing Date: Thu Jul 17 19:24:47 2003
 Manufacturing Location: Milpitas California, USA
 Manufacturer JEDEC ID: 0x0301
 FRU Location: SECONDARY CONTROLLER SLOT
 Chassis Serial Number: 002A4C
 FRU Status: OK

7 FRUs found in chassis SN#002A4C at ch 0 id 14

 Name: RAID_CHASSIS_BKPLN
 Description: Minnow BOX, RAID, LVD, Chassis+Bkpln
 Part Number: 370-5524
 Serial Number: 002A4C
 Revision: 01
 Manufacturing Date: Thu Jun 26 15:15:17 2003
 Manufacturing Location: Milpitas,CA,USA
 Manufacturer JEDEC ID: 0x0301
 FRU Location: SCSI RAID MIDPLANE SLOT
 Chassis Serial Number: 002A4C
 FRU Status: OK
...
```

Returned Values

The returned status values for the `show frus` command are described in the following table.

TABLE 2-15 FRU Status Values

Status	Description
`OK`	All subcomponents of this FRU have a status of `OK`.
`Fault`	One or more of the FRU components is exhibiting a fault condition.
`Absent`	No FRU is located in the device.
`N/A`	Not applicable.

Note – In a dual controller configuration, if one controller has been removed, the surviving controller will show a `Fault` status because SES sensors on the removed controller are not available. The surviving controller SES will lose heartbeat to the other controller and thus detect `fault` status.

show peripheral-device-status

Description

The `show peripheral-device-status` command displays the status for all controller environmental sensors. For environmental status of the chassis (the SAF-TE or SES chassis components), see "`show enclosure-status`" on page 38.

The threshold ranges for peripheral devices are set using the firmware application. If a device exceeds the threshold range that was set, its status displays "Over upper threshold." If a device does not meet the threshold range, its status displays "Under lower threshold." For information on how to set the threshold ranges, refer to the *Sun StorEdge 3000 Family RAID Firmware User's Guide*.

Syntax

```
show peripheral-device-status
```

Examples

The following example shows the sensor status for a Sun StorEdge 3510 FC array.

```
sccli> show peripheral-device-status
 Item                                 Value      status
-------------------------------------------------------------
 CPU Temp Sensor(primary)            41.50C    within safety range
 Board1 Temp Sensor(primary)         46.00C    within safety range
 Board2 Temp Sensor(primary)         55.00C    within safety range
 +3.3V Value(primary)                3.384V    within safety range
 +5V Value(primary)                  5.126V    within safety range
 +12V Value(primary)                 12.442V   within safety range
 Battery-Backup Battery(primary)      --        OK
 CPU Temp Sensor(secondary)          45.00C    within safety range
 Board1 Temp Sensor(secondary)       53.00C    within safety range
 Board2 Temp Sensor(secondary)       60.00C    within safety range
 +3.3V Value(secondary)              3.368V    within safety range
 +5V Value(secondary)                5.126V    within safety range
 +12V Value(secondary)               12.381V   within safety range
 Battery-Backup Battery(secondary)    --        OK
```

Note – Voltage sensors make sure that the array's voltage is within normal ranges. To check the status and determine the location of voltage sensors, refer to the *Sun StorEdge 3000 Family RAID Firmware User's Guide*.

Note – Battery sensor status indicates hardware status only. Returned values include `OK`, `Charging`, `Critical`, `Missing`, and `BAD`. To view battery expiration status, issue the `show battery-status` command, which returns both hardware and expiration status values. For more information, refer to "`show battery-status`" on page 35.

Configuration Commands

The following commands are explained in this section:

- download nvram
- reset nvram
- show bypass device
- show bypass RAID
- show bypass SFP
- show configuration
- show loop-map
- upload nvram

For details on uploading and downloading the controller configuration, see "download controller-configuration" on page 68 and "upload controller-configuration" on page 89.

download nvram

Description

The download nvram command restores the NVRAM configuration from an NVRAM file to the RAID controller. The binary NVRAM file contains information specific to the host device, such as channel settings, RAID controller parameters, and so on. The IP address, password, and controller name and unique ID are not downloaded from the NVRAM file to the host device since these settings differ for each controller. After the download completes, reset the controller for the NVRAM settings to take effect.

Note – The saved NVRAM file is operating system-dependent. You must download the file to the same operating system that the file is saved on. For instance, if the file is saved to the Solaris operating system, you must download it from a Solaris operating system.

Syntax

```
download nvram filename [-r | --reset]
```

Arguments

TABLE 2-16 Arguments for `download nvram`

Argument	Description
filename	Specify the file name for the file that you want to download.
[`-r` | `--reset`]	Reset the controller after the download completes.

Examples

The following example downloads the NVRAM file, `tmpsn2-1.nvram`, and then resets the controller.

```
# sccli 192.168.0.1 download nvram /tmpsn2-1.nvram -r
```

`reset nvram`

Description

The `reset nvram` command clears the NVRAM configuration memory and restores the original default settings, including all controller, host, and drive parameters. The controller unique ID is set to the chassis serial number and the controller name is not set.

Caution – This command does not restore the controller IP address, instead it configures the network for DHCP. You must have a serial connection to reset the IP address, netmask, and default gateway settings. And, the serial connection must be set to 38400. Use the RAID array's COM port and the firmware application to restore these settings. For more information, refer to the *Sun StorEdge 3000 Family RAID Firmware User's Guide*.

After issuing the `reset nvram` command, reset the controller and reconfigure the controller to restore any non-default configuration options for your array, such as cache write policy and LUN maps. When you run the `reset nvram` command, LUN maps are not restored. To review the existing LUNs before running this command, run the `show lun-maps` command. For details, see "`show lun-maps`" on page 158.

Caution – Logical drives and logical volumes are not deleted, but it is possible for them to become inaccessible after this command is run. This might result in data loss.

Caution – All reset commands cause the array to stop responding to I/O requests from the host for a period of time. This might result in data loss unless all I/O activity is suspended by halting all applications that are accessing the array, and unmounting any file systems that are mounted from the array. In redundant-controller configurations, these commands affect all LUNs on both controllers.

Syntax

```
reset nvram
```

Examples

The following example shows the message prompts that are displayed when you run the `reset nvram` command.

```
sccli> reset nvram
WARNING: The configuration of the array controller will be erased.
Factory default parameters will take effect at next controller
reset.
Logical devices may not be accessible until mappings are
reconfigured.
If your configuration contains more than 32 partitions, data on
partitions may no longer be accessible.
Are you sure?
```

show bypass device

Description

Note – This command should only be used by support personnel during troubleshooting procedures.

Sun StorEdge 3000 family FC and SATA arrays only. The `show bypass device` command displays the bypass status of all disks and SES devices on a specified loop.

Note – Loop A and Loop B refer to the redundant FC loops that each device is connected to. The SES device in the top slot of the chassis is connected to Loop A, which is the first drive channel. The bottom SES device is connected to Loop B, which is the second drive channel.

Sun StorEdge 3511 SATA Array

The Sun StorEdge 3511 SATA array contains a Sierra Logic SR-1216 FC-to-SATA protocol router. Unlike Sun StorEdge 3000 family FC disk drives, the SR-1216 router presents multiple FC target IDs on a single physical hardware port. Therefore, if a target ID that is presented by an SR-1216 is bypassed, the SR-1216 physical port is bypassed. This causes the IDs of all SATA drives (target IDs) that are presented by the SR-1216 port to be removed from the loop. Conversely, if a target ID that is presented by an SR-1216 is unbypassed, all SATA drives (target IDs) that are presented by the SR-1216 port are restored to the loop.

Syntax

```
show bypass device ses-channel channel loop [loopa|loopb]
```

Arguments

TABLE 2-17 Arguments for `show bypass device`

Argument	Description
`ses-channel` *channel*	Specify the drive channel number of the FC port from which to send the command. The channel must be configured as a drive channel.Valid values: `0-5`.
`loop`	Specify the drive loop of the small form-factor (SFP) transceiver for which the bypass information is displayed. Loop a is the top slot and loop b is the bottom slot. Valid values: `loopa`, `loopb`, `a`, or `b`.

Examples

The following example is sent on channel 2 and shows the bypass information for loop A.

```
sccli> show bypass device ses-channel 2 loop loopa

CH      ID      TYPE    ENCL    LOOP    BYP-STATUS      ATTRIBUTES
--      --      ----    ----    ----    ----------      SHF-------
2       0       DISK    RAID    LOOP-A  Unbypassed       ---
2       1       DISK    RAID    LOOP-A  Bypassed         S
2       2       DISK    RAID    LOOP-A  Unbypassed       ---
2       3       DISK    RAID    LOOP-A  Unbypassed       ---
2       4       DISK    RAID    LOOP-A  Unbypassed       ---
2       5       DISK    RAID    LOOP-A  Unbypassed       ---
2       6       DISK    RAID    LOOP-A  Unbypassed       ---
2       7       DISK    RAID    LOOP-A  Unbypassed       ---
2       8       DISK    RAID    LOOP-A  Unbypassed       ---
2       9       DISK    RAID    LOOP-A  Unbypassed       ---
2       10      DISK    RAID    LOOP-A  Unbypassed       ---
2       11      DISK    RAID    LOOP-A  Bypassed         HF
2       12      SES     RAID    LOOP-A  Unbypassed       ---
```

The following example is sent on channel 3 and shows the bypass information for loop B.

```
sccli> show bypass device ses-channel 3 loop loopb

CH      ID      TYPE    ENCL    LOOP    BYP-STATUS      ATTRIBUTES
--      --      ----    ----    ----    ----------      SHF-------
3       0       DISK    RAID    LOOP-B  Bypassed         S
3       1       DISK    RAID    LOOP-B  Bypassed         H
3       2       DISK    RAID    LOOP-B  Unbypassed       ---
3       3       DISK    RAID    LOOP-B  Unbypassed       ---
3       4       DISK    RAID    LOOP-B  Unbypassed       ---
3       5       DISK    RAID    LOOP-B  Unbypassed       ---
3       6       DISK    RAID    LOOP-B  Unbypassed       ---
3       7       DISK    RAID    LOOP-B  Unbypassed       ---
3       8       DISK    RAID    LOOP-B  Unbypassed       ---
3       9       DISK    RAID    LOOP-B  Unbypassed       ---
3       10      DISK    RAID    LOOP-B  Unbypassed       ---
3       11      DISK    RAID    LOOP-B  Unbypassed       ---
3       12      SES     RAID    LOOP-B  Unbypassed       ---
```

Returned Values

If a device is bypassed, the Attributes returned values include `S`, `F`, or `H`.

- An `S` means the device was bypassed due to a Sun StorEdge CLI command.
- An `F` means a drive fault caused the bypass.
- An `H` means the device was bypassed due to a hardware problem (no signal was present).

`show bypass RAID`

Description

Note – This command should only be used by technical support personnel during troubleshooting procedures.

Sun StorEdge 3000 family FC and SATA arrays only. The `show bypass RAID` command displays the hardware bypass status of the RAID controllers on Loop A and Loop B. In a redundant RAID controller system, there is a RAID controller in the top slot of the chassis and a RAID controller in the bottom slot of the chassis. Each RAID controller has a connection to Loop A and Loop B. In a normal redundant RAID controller system, the top and bottom RAID controllers indicate unbypassed status on both loops. If a RAID controller has failed due to natural causes, or has failed as a result of the `fail primary` or `fail secondary` command, the `show bypass RAID` command indicates that the RAID controller is bypassed.

Syntax

```
show bypass raid
```

Examples

The following example shows the bypass status of the RAID controllers.

```
sccli> show bypass raid

SLOT    LOOP    BYP-STATUS
----    ----    ----------
TOP     LOOP-A  Bypassed
TOP     LOOP-B  Bypassed
BOTTOM  LOOP-A  Unbypassed
BOTTOM  LOOP-B  Unbypassed
```

show bypass SFP

Description

Note – This command should only be used by support personnel during troubleshooting procedures.

Sun StorEdge 3000 family FC and SATA arrays only. The `show bypass SFP` command displays the bypass status of all small form-factor (SFP) transceivers on a specified loop.

Note – Loop A and Loop B refer to the redundant FC loops that each device is connected to. The SES device in the top slot of the chassis is connected to Loop A, which is the first drive channel. The bottom SES device is connected to Loop B, which is the second drive channel.

Syntax

```
show bypass sfp ses-channel channel loop [loopa|loopb]
```

Arguments

TABLE 2-18 Arguments for `show bypass SFP`

Argument	Description
`ses-channel` *channel*	Specify the drive channel number of the FC port from which to send the command. The channel must be configured as a drive channel.
`loop`	Specify the drive loop of the SFP for which the bypass information is displayed. Valid values: `loopa`, `loopb`, `a`, or `b`.

Examples

The following example is sent on channel 2 and shows the bypass information for Loop A.

```
sccli> show bypass sfp ses-channel 2 loop loopa

PORT    ENCL-ID ENCL-TYPE       LOOP    BYP-STATUS      ATTRIBUTES
----    ------- ---------       ----    ----------      SH--------
0       0       RAID            LOOP-A  Unbypassed      --
1       0       RAID            LOOP-A  Not-Installed   --
L       0       RAID            LOOP-A  Bypassed        -H
R       0       RAID            LOOP-A  Not-Installed   --
4       0       RAID            LOOP-A  Not-Installed   --
5       0       RAID            LOOP-A  Bypassed        -H
```

The following example is sent on channel 2 and shows the bypass information for a Sun StorEdge 3511 SATA array on loop A.

```
sccli> show bypass sfp ses-channel 2 loop loopa

PORT    ENCL-ID ENCL-TYPE       LOOP    BYP-STATUS      ATTRIBUTES
----    ------- ---------       ----    ----------      SH--------
0L      0       RAID            LOOP-A  Unbypassed      --
0R      0       RAID            LOOP-A  Unbypassed      --
1L      0       RAID            LOOP-A  Not-Installed   --
1R      0       RAID            LOOP-A  Not-Installed   --
2       0       RAID            LOOP-A  Bypassed        -H
3       0       RAID            LOOP-A  Not-Installed   --
4       0       RAID            LOOP-A  Not-Installed   --
5       0       RAID            LOOP-A  Bypassed        -H
AL      1       JBOD            LOOP-A  Unbypassed      --
AR      1       JBOD            LOOP-A  Unbypassed      --
BL      1       JBOD            LOOP-A  Unbypassed      --
BR      1       JBOD            LOOP-A  Bypassed        -H
```

Returned Values

The Port returned values indicate the type of device, FC or SATA, that is attached to the loop.

- On a Sun StorEdge 3510 FC RAID IOM board, from left to right, there are six ports: channel 0, channel 1, channel 2(3) Left, channel 2(3) Right, channel 4 and channel 5. Valid values for the Sun StorEdge 3510 FC RAID IOM board include 0, 1, 4, 5, L and R.

- On a Sun StorEdge 3510 FC JBOD IOM board, from left to right, there are two ports: Left and Right. Valid values for port include L and R.
- On a Sun StorEdge 3511 SATA RAID IOM board, from left to right, there are eight ports: channel 0 left, channel 0 right, channel 1 left, channel 1 right, channel 2, channel 3, channel 4 and channel 5. Valid values for the Sun StorEdge 3511 SATA RAID IOM board include 0L, 0R, 1L, 1R, 2, 3, 4 and 5.
- On a Sun StorEdge 3511 SATA JBOD IOM board, from left to right, there are four ports: loop A left, loop A right, loop B left and loop B right. Valid value ports for the Sun StorEdge 3511 SATA JBOD IOM include AL, AR, BL and BR.

If a device is bypassed, the Attributes returned values include `S` or `H`.

- An `S` means the device was bypassed due to a Sun StorEdge CLI command.
- An `H` means the device was bypassed due to a hardware problem (no signal was present).

show configuration

Description

The `show configuration` command displays the array configuration including inquiry information, field-replaceable unit (FRU) information, SATA information, protocol support, automatic write-through event triggers, peripheral device status, redundancy mode, redundant-controller configuration, access mode, controller boot time and date, and the enclosure status, which includes the status for the SES or SAF-TE device and all chassis components—the fan, power supply, temperature sensor, and drive slots. The configuration can be displayed onscreen, or written to the specified file. The output is plain text by default, but XML output can be obtained by specifying the `--xml` option. To see a sample XML report, see "Show Configuration Command Output" on page 207.

Note – In split-bus configurations on Sun StorEdge 3000 family SCSI devices, half the drives display a status of Unknown. The drives are present, but because of a SAF-TE design limitation, the information does not display.

Note – Sun StorEdge 3000 family FC and SATA enclosures contain two SES processors in a dual-controller array, and there can be more than one enclosure in a RAID subsystem.

Syntax

```
show configuration [--xml | -x] [filename]
```

Arguments

TABLE 2-19 Arguments for `show configuration`

Argument	Description
{`--xml` | `-x`}	If the `-x` or `--xml` options are specified, XML output is generated.
filename	Specify the file name for the configuration file that you want to show.

Examples

The following example shows a portion of a Sun StorEdge 3510 FC RAID configuration.

```
sccli> show configuration

* inquiry-data

 Vendor: SUN
 Product: StorEdge 3510
 Revision: 411G
 Peripheral Device Type: 0x0
 NVRAM Defaults: 411G01 3510 S410F
 Bootrecord version: 1.31H
 Serial Number: 003CE3
 Page 80 Serial Number: 003CE3161637C100
 Page 83 Logical Unit Device ID: 600C0FF000000000003CE3161637C100
 Page 83 Target Device ID: 206000C0FF003CE3
 IP Address: 206.6.181.213
 Page D0 Fibre Channel Address: A7 (id 40)
 Page D0 Node Name: 206000C0FF003CE3
 Page D0 Port Name: 216000C0FF803CE3
 Ethernet Address: 00:C0:FF:00:3C:E3
 Device Type: Primary
 unique-identifier: 03CE3
 controller-name: ""

* network-parameters

 ip-address: 206.1.111.111
 netmask: 255.255.255.0
 gateway: 206.1.111.2
 mode: static

* host-parameters

 max-luns-per-id: 32
 queue-depth: 1024
 fibre-connection-mode:loop
 inband-mgmt-access: enabled
...
```

The following example writes the RAID configuration information to the `myconfig.xml` file.

```
# sccli c2t0d0 show configuration --xml myconfig.xml
```

Returned Values

Configuration values in the report include inquiry data, network parameters, host parameters, drive parameters, redundant-controller configuration, redundancy mode, cache parameters, RS-232 configuration, channels, disks, logical drives, logical volumes, partitions, LUN maps, FRUs, protocols, automatic write-through event triggers, peripheral device status, enclosure status, access mode, controller date and time, disk array parameters, host WWNs (Sun StorEdge 3000 family FC and SATA devices only), port WWNs (Sun StorEdge 3000 family FC and SATA devices only), intercontroller link (Sun StorEdge 3000 family FC and SATA devices only), battery status (Sun StorEdge 3000 family FC and SATA devices only), SATA router (Sun StorEdge 3511 SATA devices only), SATA MUX (Sun StorEdge 3511 SATA devices only), SES (Sun StorEdge 3000 family FC and SATA devices only), voltage sensors (Sun StorEdge 3000 family FC and SATA devices only), and SAF-TE (Sun StorEdge 3000 family SCSI devices only).

Note – Some redundant-controller configuration values, including local/remote redundancy mode, secondary RS-232 port status, and communication channel type, are legacy parameters that are no longer used.

`show loop-map`

Description

Note – This command should only be used by technical support personnel during troubleshooting procedures.

Sun StorEdge 3000 family FC and SATA devices only. The `show loop-map` command shows the FC loop positional map for a given channel. This information shows how the FC devices are connected in the loop. The positional map displays the Arbitrated Loop Physical Address (ALPA) and the SCSI Select ID that corresponds to that ALPA. Use the positional loop map during the diagnostic process to determine which devices to selectively bypass in order to isolate faulty devices.

There can be two RAID controllers on each drive loop. The first device displayed in the loop map is the RAID controller that executes the diagnostics and performs the port bypass operations. Both ALPAs and SCSI Select IDs are displayed. Additional information is also displayed including device type, chassis enclosure ID, and slot number that the device resides in.

Sun StorEdge 3511 SATA Array

The Sun StorEdge 3511 SATA array contains a Sierra Logic SR-1216 FC-to-SATA protocol router. Unlike FC disk drives, the SR-1216 router presents multiple FC target IDs on a single physical hardware port. Therefore, if a target ID that is presented by an SR-1216 is bypassed, the SR-1216 physical port is bypassed. This causes the IDs of all SATA drives (target IDs) that are presented by the SR-1216 port to be removed from the loop. Conversely, if a target ID that is presented by an SR-1216 is unbypassed, all SATA drives (target IDs) that are presented by the SR-1216 port are restored to the loop.

Note – If one of the SATA disk drives is not installed or has suffered a catastrophic failure, the target ID of the SATA disk drive does not appear in the loop map.

Syntax

```
show loop-map channel channel
```

Arguments

TABLE 2-20 Arguments for `show loop-map`

Argument	Description
`channel` *ch*	Specify the drive channel number of the FC port from which the loop map information is to be obtained. Valid values: 0–5.

Note – The channel must be configured as a drive channel and there must be an SES device present on the channel.

Examples

The following example displays the loop map on channel 2.

```
sccli> show loop-map channel 2

14 devices found in loop map

=== Channel Loop Map retrieved from CH 2 ID 12 ===

AL_PA   SEL_ID  SEL_ID  TYPE    ENCL_ID SLOT
(hex)   (hex)   (dec)
-----   -----   -----   ----    ------  ----
CE      0F      15      RAID    N/A     N/A
D4      0B      11      DISK    0       11
DC      06      6       DISK    0       6
D5      0A      10      DISK    0       10
DA      07      7       DISK    0       7
D3      0C      12      SES     0       N/A
E8      01      1       DISK    0       1
E1      04      4       DISK    0       4
E4      02      2       DISK    0       2
E2      03      3       DISK    0       3
E0      05      5       DISK    0       5
EF      00      0       DISK    0       0
D9      08      8       DISK    0       8
D6      09      9       DISK    0       9
```

Note – The first line of output in the loop map identifies the primary RAID controller that requested the loop map and that issues any subsequent FC diagnostic commands.

upload nvram

Description

The `upload nvram` command saves the NVRAM configuration to a host file. The binary NVRAM file contains information specific to the host device, such as channel settings, RAID controller parameters, IP address, RAID controller password and name, and unique IDs.

Note – The saved NVRAM file is operating system dependent. You must download the file to the same operating system that the file is saved on. For instance, if the file is saved to the Solaris operating system, you must download it from the Solaris operating system.

Syntax

```
upload nvram file
```

For details on downloading the NVRAM file, see "download nvram" on page 49.

Event Message Commands

The following commands are explained in this section:

- clear events
- show events
- show persistent-events

clear events

Description

The clear events command clears the RAID controller event log. These events are not saved in the persistent event disk reserved space.

Syntax

```
clear events
```

Examples

The following example clears the event log for controller c0t5d0s2.

```
# sccli /dev/rdsk/c0t5d0s2 clear events
```

show events

Description

The `show events` command displays the events for the specified RAID controller. Events are erased from the controller cache when the controller is reset or power cycled. When the events are erased from the controller cache, they are stored as persistent events. For more information, see "`show persistent-events`" on page 65.

Syntax

```
show events [last {n} | all][-v]
```

Arguments

TABLE 2-21 Arguments for `show events`

Argument	Description
`last` {*n*}	Gets the latest *n* events for the controller.
`latest` {*n*}	Gets the latest *n* events for the controller.
`all`	Gets all the events for the controller.
`[-v]`	Specifying the -v option displays more detailed information about event messages if you are using a 3.xx RAID controller. If you are using a 4.xx RAID controller, the default is without the -v option. Using this option with this controller results in messages that are not valid, due to the fact that the 4.xx RAID controller uses a different interface than the 3.xx RAID controller. Do not use the -v option with this version of controller.

Examples

If no option is specified, the command shows all events.

```
sccli> show events

Wed Apr  9 05:45:55 2003
[Primary]       Notification
Controller Initialization Completed

Wed Apr  9 05:45:54 2003
[Secondary]     Notification
Controller Initialization Completed

Thu Apr 10 05:53:33 2003
[Primary]       Notification
LG:0 Logical Drive NOTICE: Starting Parity Regeneration
```

To show the last 10 events for a controller, type:

```
# sccli c2t0d0 show events last 10
```

show persistent-events

Description

Out-of-band connections only. The `show persistent-events` command displays the events recorded in disk reserved space. When a controller is reset or power cycled, all events are moved to disk reserved space and can only be viewed with this command. Unlike regular events in the controller cache that display with the `show events` command, persistent events are not erased from the cache when the controller is reset or power cycled. However, only 512 events can be stored. This command must be issued out-of-band. For details, see "Device Names for Out-of-Band Communication" on page 11.

To view current events, or any events that have occurred since the last reset or power cycle, use the `show events` command. For details, see "`show events`" on page 64.

Syntax

```
show persistent-events {[from date] [to date]}
```

Arguments

TABLE 2-22 Arguments for `show persistent-events`

Argument	Description
date	Specify the date for the events you want to display in the format MMDDhhmmYYYYss or mm/dd/yy. If no DD value is entered, the default value is 1. If no hh, mm, or ss value is entered, the default value is 0. If no YYY is entered, the default value is the current year.

Examples

The following example displays the events from October 26 to October 27. No persistent events occurred on October 26.

```
# sccli 206.6.181.214 show persistent-events from 1026 to 1027
sccli: selected se3000://206.6.181.214:58632 [SUN StorEdge 3310
SN#000001]
Wed Oct 27 11:28:42 2004
[Primary]       Notification
Controller Initialization Completed

Wed Oct 27 11:28:43 2004
[Secondary]     Notification
Controller Initialization Completed
```

The following example shows all events from November 24, 2004.

```
# sccli 206.6.181.214 show persistent-events from 11/24/04
sccli: selected se3000://206.6.111.111:58632 [SUN StorEdge 3310
SN#000001]
Wed Nov 24 14:18:57 2004
[Primary]       Notification
SAF-TE Device(0) NOTICE: Fan Back On-Line(Idx:1)

Wed Nov 24 14:18:57 2004
[Primary]       Notification
SAF-TE Device(0) NOTICE: Power Supply Back On-Line(Idx:0)
```

CHAPTER 3

Controller and Disk Commands

This chapter provides the available controller and disk commands with sample code. Topics covered in this chapter include:

Note – To prevent unauthorized access to administrative functions of the RAID controller, the Sun StorEdge CLI requires superuser or system administrator privileges for inband access, and uses the controller password to authorize users of the out-of-band interface.

Note – If no command is entered on the command line, the Sun StorEdge CLI enters an interactive mode, prompting you to enter commands until the `quit` command is entered. All commands operate on the currently selected device.

Controller Commands

The following commands are explained in this section:

- download controller-configuration
- fail
- mute
- password
- reset controller
- set cache-parameters
- set controller-date
- set controller-name
- set controller-password
- To remove an existing password, specify a zero-length string with a pair of double-quote characters. For example:
- set unique-identifier
- show cache-parameters
- show controller-date
- show controller-name
- show inquiry-data
- show redundancy-mode
- show redundant-controller
- show shutdown-status
- show unique-identifier
- shutdown controller
- unfail
- upload controller-configuration

For details on downloading controller firmware, see "download controller-firmware" on page 175.

Note – The secondary controller in dual-controller configurations does not support any administrative functions. In *active/active* configurations where LUNs are assigned to both the primary and secondary controllers, a Sun StorEdge CLI command can be used only with those LUNs assigned to the primary controller.

---

download controller-configuration

Description

The `download controller-configuration` command restores controller configuration information previously saved using the `upload controller-configuration` command. The configuraton file includes channel settings; host

and drive side parameters; array parameters; network port setup; controller general parameters; logical drive, logical volume, and physical drive information; partition information and mappings on host channels.

A logical drive or logical volume create operation might be required to completely restore the saved configuration. However, creating a logical drive might take a long time, and block other operations. The command provides an option to specify whether to build the logical drive.

Caution – The `download controller-configuration` command unmaps all existing logical drives if they do not match the configuration file that is being downloaded.

Note – Optimally, rebuild any logical drives before running this command.

Syntax

```
download controller-configuration [-b | --build] filename
```

Arguments

TABLE 3-1 Arguments for `download controller-configuration`

Argument	Description
`-b, --build`	Rebuild RAID sets specified in the saved configuration. If this option is not specified, RAID sets are not created, and the configuration will not be completely restored.

Caution – All reset commands cause the array to stop responding to I/O requests from the host for a period of time. This might result in data loss unless all I/O activity is suspended by halting all applications that are accessing the array, and unmounting any file systems that are mounted from the array. In redundant-controller configurations, these commands affect all LUNs on both controllers. After running a `reset` command, to stay in prompt mode, run the `select` command to reselect the device.

fail

Description

The `fail` command simulates a controller failure and causes all the LUNs assigned to the specified controller to fail over to the redundant controller, if it is configured for failover. If the controller is configured for failover, the inter-controller link is not disconnected with this command.

Note – Before running this command, perform a `show redundancy-mode` command to make sure a secondary controller exists. For details, see "`show redundancy-mode`" on page 84.

Note – This command prompts the user to confirm the failure, unless the `--yes` option is specified.

Syntax

```
fail {primary | secondary}
```

Arguments

TABLE 3-2 Arguments for `fail`

Argument	Description
`primary`	Fails the logical drive to the primary controller.
`secondary`	Fails the logical drive to the secondary controller.

Examples

The following example fails the secondary controller if `Y` is specified at the prompt. Specify `N` to cancel the failure.

```
sccli> fail secondary
Are you sure?
```

The following example fails the primary controller and uses the `-yes` option so no prompt is displayed before the controller fails.

```
# sccli c2t0d0 -yes fail primary
```

mute

Description

The `mute` command silences the controller's audible alarm. After the fault condition that caused the alarm to sound is cleared, the next fault condition causes the alarm to sound again. For details on alarms, refer to the *Sun StorEdge 3000 Family Installation, Operation, and Service Guide* for your array.

Note – This command works on RAID subsystems. It does not work on JBODs. To manually silence a JBOD alarm, push the Reset button on the right ear of the array.

Syntax

```
mute [controller]
```

password

Description

Use the `password` command in scripts to specify the password assigned to the array controller when the user is not available to respond to password prompts. The correct password must be supplied when issuing potentially dangerous commands to the array over a network connection. For interactive sessions, the Sun StorEdge CLI prompts the user for this password only when necessary. No password is required when accessing the array using inband SCSI. For details on setting the password, see "`set controller-password`" on page 77.

Syntax

```
password password
```

Note – Use quotation marks around password strings that contain spaces or apostrophes.

Examples

The following example supplies the controller password, `test password`.

```
sccli> password "test password"
```

reset controller

Description

The `reset controller` command shuts down the controller, flushes its cache to disk, and then restarts the controller. This temporarily causes the array to go offline, which might affect applications running on any hosts connected to the array. After running a reset command, to stay in prompt mode, run the `select` command to reselect the device.

Caution – All reset commands are potentially dangerous. Reset commands cause the array to stop responding to I/O requests from the host for a period of time. This might result in data loss unless all I/O activity is suspended by halting all applications that are accessing the array, and unmounting any file systems that are mounted from the array. In redundant-controller configurations, these commands affect all LUNs on both controllers.

Syntax

```
reset controller
```

Examples

The following example resets the controller for the specified device.

```
# sccli /dev/rdsk/c0t5d0s2 reset controller
WARNING: This is a potentially dangerous operation. The controller
will go offline for several minutes. Data loss may occur if the
controller is currently in use.
Do you want to reset the controller now? y
sccli: resetting controller...
sccli: controller has been reset
sccli: /dev/rdsk/c0t5d0s2: waiting for device to be ready
sccli: /dev/rdsk/c0t5d0s2: device reset
sccli: /dev/rdsk/c0t5d0s2: device is ready
```

set cache-parameters

Description

The `set cache-parameters` command sets cache policy (write-back or write-through), optimization mode (sequential or random), and a periodic cache synchronization value.

Caution – Data inconsistency can occur when a controller configured with one optimization mode is used to replace a failed controller with a different mode.

Caution – In a single-controller configuration, if you set the cache policy to write-back, data corruption might occur in the event of a controller failure. To avoid the possibility of data corruption, set the write policy to write-through.

The controller must be reset for this command to take effect.

Caution – All reset commands cause the array to stop responding to I/O requests from the host for a period of time. This might result in data loss unless all I/O activity is suspended by halting all applications that are accessing the array, and unmounting any file systems that are mounted from the array. In redundant-controller configurations, these commands affect all LUNs on both controllers.

Cache Policy

The cache policy determines when cached data is written to the disk drives. The ability to hold data in cache while it is being written to disk can increase storage device speed during sequential reads.

Using write-through cache, the controller writes the data to the disk drive before signaling the host OS that the process is complete. Write-through cache has lower write operation and throughput performance than write-back cache, but it is the safer strategy, with minimum risk of data loss on power failure. Because a battery module is installed, power is supplied to the data cached in memory and the data can be written to disk when power is restored.

Using write-back cache, the controller receives the data to write to disk, stores it in the memory buffer, and immediately sends the host OS a signal that the write operation is complete, before the data is actually written to the disk drive. Write-back caching improves the performance of write operations and the throughput of the controller card. Write-back cache is enabled by default.

The controller cache write policy is the default setting for all logical drives. When you create a logical drive, if you do not specify a write policy, the logical drive uses the write policy specified by the `set cache-parameters` command. If the write policy changes for the controller, the write policy automatically changes for the logical drive as well. If you specify write-back or write-through for individual logical drives, the write policy for those drives remains the same regardless of any changes to the global write policy. For details about setting individual logical drive cache policy, see "`set logical-drive`" on page 138.

You can also configure the write policy to automatically change from write-back cache to write-through cache when certain environmental events, such as a fan failure, occur. For details, see "`set auto-write-through-trigger`" on page 32.

For more information on cache policy, refer to the *Sun StorEdge 3000 Family RAID Firmware User's Guide*.

Optimization Mode

Before creating or modifying logical drives, determine the appropriate optimization mode for the RAID array. The controller supports two optimization modes, sequential I/O and random I/O. Sequential I/O is the default mode.

The RAID array's cache optimization mode determines the cache block size used by the controller for all logical drives:

- For sequential optimization, the cache block size is 128 Kbyte.
- For random optimization, the cache block size is 32 Kbyte.

An appropriate cache block size improves performance when a particular application uses either large or small stripe sizes:

- Video playback, multimedia post-production audio and video editing, and similar applications read and write large files in sequential order.
- Transaction-based and database update applications read and write small files in random order.

Since the cache block size works in conjunction with the default stripe size set by the cache optimization mode for each logical drive you create, these default stripe sizes are consistent with the cache block size setting. You can, however, specify a different stripe size for any logical drive at the time you create it. For more information, "`create logical-drive`" on page 131.

Once logical drives are created, you can use the `set cache-parameters` command to change the optimization mode while logical drives exist. However, using the Sun StorEdge CLI `set cache-parameters` command to change optimization mode can result in a pre-existing logical drive having a stripe size that, because it is inappropriate for that optimization mode, could not have been selected at the time the logical drive was created. This combination will not yield the best

performance possible, but there is no risk of data loss or other data-related problems. You can avoid this inefficiency by choosing stripe sizes and an optimization mode that are appropriate for your applications.

For information on stripe size and optimization modes, refer to the *Sun StorEdge 3000 Family RAID Firmware User's Guide*.

Syntax

```
set cache-parameters [random | sequential] [write-policy] [sync-period value]
```

Arguments

TABLE 3-3 Arguments for `set cache-parameters`

Argument	Description
`random`	Optimizes for random access. Random I/O indicates small blocks of data are written across each drive.
`sequential`	Optimizes for sequential access. Sequential I/O indicates large blocks of data are written across each drive.
write-policy	Specify when cached data is written to the disk drives. The controller cache write policy is the default setting for all logical drives. When you create a logical drive, if you do not specify a write policy option, the logical drive uses the write policy specified by the `set cache-parameters` command. Then, if the write policy changes for the controller, the write policy automatically changes for the logical drive as well. Valid values: `write-back`, `write-through`.
`sync-period` *value*	Specify the periodic cache synchronization value in seconds. Valid values: `0` (continuous syncing), `30s`, `60s`, `120s`, `300s`, `600s`, `disabled` (default value)

Examples

The following example sets the cache mode to write-back.

```
sccli> set cache-parameters write-back
```

The following example sets the cache mode to write-back, the optimization to sequential, and the sync period to 30 seconds.

```
sccli> set cache-parameters sequential write-back sync-period 30s
```

set controller-date

Description

The `set controller-date` command sets a controller date, time, and time zone which enables you to reference and correlate messages and errors.

Syntax

```
set controller-date month day hh:mm:ss year time-zone
```

Arguments

TABLE 3-4 Arguments for `set controller-date`

Argument	Description
month	Specify the month in abbreviated format. Valid values: `Jan`, `Feb`, `Mar`, `Apr`, `May`, `Jun`, `Jul`, `Aug`, `Sep`, `Oct`, `Nov`, `Dec`.
day	Specify the day of the month. Valid values: 1–31.
hh:mm:ss	Specify the controller time based on a 24-hour system. hh: Specify the hour. Valid values: 0–23. mm: Specify the minute. Valid values: 1–59. ss: Specify the seconds. Valid values: 1–59.
year	Specify the year. If you do not specify the year, it is automatically set to the year set in the RAID firmware.
time zone	Specify the time zone based on Greenwich Mean Time (GMT) followed by a plus (+) or minus (-) sign and the number of hours earlier or later your location is from the Greenwich mean time. For instance, the time zone setting for Japan is GMT +9 and the time zone for New York is GMT -4 or -5 depending on daylight savings. If you do not specify the time zone, it is automatically set to the time zone set in the RAID firmware.

Examples

The following example sets the controller time and date to September 22, 2004 at 1:43 pm in the Pacific Standard time zone during daylight savings time.

```
# sccli c2t0d0 set controller-date sep 22 13:43:00 gmt -7
```

set controller-name

Description

The `set controller-name` command specifies a name for the array.

Note – The controller password and controller name share a 32-character space. Because the minimum length of the controller password is 1 (when the controller password is empty), the maximum length for the controller name is 31. When the controller name occupies 31 characters, there is only one character left for the controller password, and vice versa.

Syntax

```
set controller-name controller-name
```

Examples

The following example sets the controller name as `testname`.

```
# sccli c2t0d0 set controller-name "testname"
```

To remove an existing controller name, specify a zero-length string with a pair of double-quote characters. For example:

```
# sccli c2t0d0 set controller-name ""
```

set controller-password

Description

The `set controller-password` command specifies a password that protects the RS-232 character interface, telnet, and FTP services from unauthorized use.

Note – The controller password and controller name share a 32-character space. Because the minimum length of the controller name is 1 (when the controller name is empty), the maximum length for the controller password is 31. When the controller password occupies 31 characters, there is only one character left for the controller name, and vice versa.

Syntax

```
set controller-password password
```

Examples

The following example sets the controller password as `test123`.

```
# sccli c2t0d0 set controller-password "test123"
```

The following example shows how the password length is checked. If you enter a maximum length for the password that exceeds the maximum allowed based on the length of the controller name, you will get an error. As shown in this example, the controller name has been set to 1023456789 (10 characters), so the maximum length of the password allowed is 22:

```
# sccli c2t0d0 set controller-password "1234567890abcdef1234567890abcdef"
controller current acceptable max length of password: 22
sccli> get/set operation: error: failed to check/set password
```

To remove an existing password, specify a zero-length string with a pair of double-quote characters. For example:

```
# sccli c2t0d0 set controller-password ""
```

set rs232-configuration

Description

The `set rs232-configuration` command specifies the speed, in bits per second, for the specified RAID controller port. Single-controller configurations have a single RS-232 port (port 1). Redundant controllers have a second port (port 2). Usually, both ports are connected to support controller failover, so both should be set to the same speed. The default speed is 38400. The controller must be reset for this change to take effect.

Caution – All reset commands cause the array to stop responding to I/O requests from the host for a period of time. This might result in data loss unless all I/O activity is suspended by halting all applications that are accessing the array, and unmounting any file systems that are mounted from the array. In redundant-controller configurations, these commands affect all LUNs on both controllers. After running a `reset` command, to stay in prompt mode, run the `select` command to reselect the device.

Syntax

```
set rs232-configuration port-number speed
```

Arguments

TABLE 3-5 Arguments for `set rs232-configuration`

Argument	Description
port-number	Specify the controller RS-232 port number. Port 1 is external. Valid values: `1`, `2`
speed	Specify the controller RS-232 baud-rate parameter. Valid values: `2400`, `4800`, `9600`, `19200`, `38400`

Examples

In the following example, the RAID controller RS-232 port 1 band rate is set to 38400.

```
# sccli c2t0d0 set rs232-configuration 1 38400
```

set unique-identifier

Description

Caution – This value is used to construct unique values for the Ethernet address, FC WWNs, and other identifiers, and changing it unnecessarily might cause the logical units to become inaccessible to hosts.

The `set unique-identifier` command specifies the unique identifier for the array subsystem as a six-digit hexadecimal number from 0 to 0xfffff. This identifier is initialized from the chassis serial number automatically, and should not be changed unless the chassis is replaced. The controller must be reset for this change to take effect.

Caution – All reset commands cause the array to stop responding to I/O requests from the host for a period of time. This might result in data loss unless all I/O activity is suspended by halting all applications that are accessing the array, and unmounting any file systems that are mounted from the array. In redundant-controller configurations, these commands affect all LUNs on both controllers. After running a `reset` command, to stay in prompt mode, run the `select` command to reselect the device.

Note – If the value `0` is specified, it is interpreted as a request to set the controller unique ID to match the chassis serial number, which is obtained from the enclosure services device in the chassis.

Syntax

```
set unique-identifier number
```

Examples

The following example sets the controller unique identifier as `0x1234`.

```
# sccli c2t0d0 set unique-identifier 0x1234
```

The following example sets the controller unique identifier to the default value based on the chassis serial number. This command must be followed by the `reset controller` command before the change takes effect.

```
# sccli c2t0d0 set unique-identifier 0
```

show cache-parameters

Description

The `show cache-parameters` command displays the RAID controller parameters that influence the performance of the read/write cache. Returned values include write policy (write-through or write-back), optimization mode (random or sequential), periodic cache synchronization period, and current global write policy (write-through or write-back). For details on setting the cache parameters, see "`set cache-parameters`" on page 73.

Syntax

```
show cache-parameters
```

Examples

The following example shows all the cache settings for a Sun StorEdge 3510 FC device.

```
sccli> show cache-parameters
 mode: write-back
 optimization: sequential
 sync-period: 30s
 current-global-write-policy: write-back
```

show controller-date

Description

The `show controller-date` command displays the boot time and date, current time and date, and time zone of the RAID controller.

Syntax

```
show controller-date
```

Examples

The following example shows the controller boot time and date, current time and date, and time zone.

```
sccli> show controller-date
 Boot time    : Thu Sep 16 02:37:36 2004
 Current time : Wed Sep 22 13:43:06 2004
 Time Zone    : GMT -07:00
```

show controller-name

Description

The `show controller-name` command displays the RAID controller name. If the RAID controller name is not set, the command returns "" (an empty set of quotation marks).

Syntax

```
show controller-name
```

Examples

The following example shows the controller name is `test`.

```
sccli> show controller-name
 controller-name: test
```

show inquiry-data

Description

The `show inquiry-data` command displays the data returned by the array controller including the inquiry vendor ID, product ID, firmware revision, and if applicable, IP address. The output of this command varies from one product to another, and from one channel to another.

When addressing a primary controller, the Ethernet address is also displayed. A "Serial Number" field is also displayed; this may contain a RAID controller unique ID value, which defaults to the RAID enclosure's serial number, or a JBOD serial number, depending on the type of device selected.

When inband communication is used with the array, additional data derived from Vital Product Data are also displayed. The additional data may vary from one invocation to the next, even if the same device is selected, depending on the type of HBA that is used to communicate with the array, whether HBA load-balancing software is used, and which LUN received the command.

Syntax

```
show inquiry-data
```

Note – The abbreviation `inquiry` can be substituted for the `show inquiry-data` command.

Examples

The following example shows an inband Sun StorEdge 3310 SCSI array inquiry.

```
sccli> show inquiry-data
 Vendor: SUN
 Product: StorEdge 3310
 Revision: 411G
 Peripheral Device Type: 0x0
 NVRAM Defaults: 411G 3310 S415S
 Bootrecord version: 1.31G
 Serial Number: 000001
 Page 80 Serial Number: 000001250FF1DC00
 Page 83 Logical Unit Device ID: 600C0FF00000000000000001250FF1DC00
 IP Address: 206.1.111.111
 Page D0 Target ID: 0
 Ethernet Address: 00:C0:FF:80:00:01
 Device Type: Primary
```

The following example shows an inband Sun StorEdge 3510 FC array inquiry.

```
sccli> inquiry
 Vendor: SUN
 Product: StorEdge 3510
 Revision: 411G
 Peripheral Device Type: 0x0
 NVRAM Defaults: 411G01 3510 S410F
 Bootrecord version: 1.31H
 Serial Number: 003CE3
 Page 80 Serial Number: 003CE3161637C100
 Page 83 Logical Unit Device ID: 600C0FF000000000003CE3161637C100
 Page 83 Target Device ID: 206000C0FF003CE3
 IP Address: 206.1.111.111
 Page D0 Fibre Channel Address: A7 (id 40)
 Page D0 Node Name: 206000C0FF003CE3
 Page D0 Port Name: 216000C0FF803CE3
 Ethernet Address: 00:C0:FF:00:3C:E3
 Device Type: Primary
```

The following example shows an out-of-band Sun StorEdge 3510 FC array inquiry.

```
# sccli 206.1.111.111 inquiry
sccli: selected se3000://206.1.111.111:58632 [SUN StorEdge 3510
SN#004DE2]
 Vendor: SUN
 Product: StorEdge 3510
Revision: 411G
 NVRAM Defaults: 411G 3510 S415F
 Bootrecord Version: 1.31H
 Serial Number: 004DE2
 IP Address: 206.1.111.111
 Ethernet Address: 00:C0:FF:00:4D:E2
```

show redundancy-mode

Description

The `show redundancy-mode` command shows whether the two controllers are operating correctly as a redundant pair. Returned values include Active-Active, disabled, enabled, failed, scanning, detected, and primary or secondary.

You can also use the `show redundancy-mode` command to monitor the status of an automatic firmware update. The Sun StorEdge CLI will display the progression of “Failed,” “Scanning,” “Detected,” and “Enabled” states. Returned values include:

1. **Initial Failed Status Response:** This is the response to the command upon a controller failure and is shown for completeness.
2. **Scanning Status: Install Controller FRU.** The installed controller is performing self-test and scanning disk channels. This is also the state where the controller updates the firmware on the newly installed controller if it is not identical to the running firmware version. The controllers can remain in this state for up to 10 minutes depending upon system activity.
3. **Detected Status: Redundant Controller Process Starts.** The installed controller has completed the scanning of the disk channels, updated installed controller firmware as required, and communicated to the primary controller. This status is transitional and normally cannot be detected unless repetitive operations are executed.
4. **Enabled State: Redundant Controller Procedure Completed.** The installed controller has completed the redundant controller procedure enabling the active-active operation.

Syntax

```
show redundancy-mode
```

Examples

The following example shows the redundancy status is `Enabled` and the mode is `Active-Active` for a Sun StorEdge 3510 FC array.

```
sccli> show redundancy-mode
 Primary controller serial number: 8009328
 Primary controller location: Lower
 Redundancy mode: Active-Active
 Redundancy status: Enabled
 Secondary controller serial number: 8009200
```

Note – The primary controller location displays as “N/A” for Sun StorEdge 3000 family SCSI arrays. The controller location is provided only for Sun StorEdge 3510 FC arrays and Sun StorEdge 3511 SATA arrays.

---

show redundant-controller

Description

The `show redundant-controller` command displays the redundant-controller information.

Syntax

```
show redundant-controller
```

Examples

The following example shows the redundant-controller information.

```
sccli> show redundant-controller
  Redundant Controller Configuration:         primary
  Cache Synchronization:                      enabled
  Host Channel Failover Mode:                 shared
  Local/Remote Redundant Mode:                local
  Write-Through Data Synchronization:         enabled
  Secondary RS-232 Port Status:               disabled
  Communication Channel Type:                 SCSI
```

show shutdown-status

Description

The `show shutdown-status` command displays the controller shutdown status.

Syntax

```
show shutdown-status
```

Examples

The following example shows the controller shutdown is complete.

```
sccli> shutdown controller
WARNING: This is a potentially dangerous operation.
The array will remain offline until it is reset.
Data loss may occur if the controller is currently in use.
Do you want to reset the controller now? y
sccli: shutting down controller...
sccli: controller is shut down
sccli> show shutdown-status
        Controller shutdown complete.
```

Status values include:

- Controller-online – No pending or previously issued shutdown command
- Shutdown-busy – Busy with another shutdown command
- Shutdown-in-progress – Shutdown in progress
- Shutdown-complete – Controller shutdown complete
- Unknown – Unknown status

show unique-identifier

Description

The `show unique-identifier` command displays the RAID controller unique identifier. A valid controller unique identifier is a hexidecimal number from `0` to `0xfffff`. It is displayed as a six-digit value, where the first digit is always `0` for consistency with the presentation of FRU serial numbers. The default value for the unique ID is the FRU serial number of the midplane/chassis in which the controller resides.

Syntax

```
show unique-identifier
```

Examples

The following example shows the unique identifier is `00476F`.

```
sccli> show unique-identifier
 unique-identifier: 00476F
```

shutdown controller

Description

The `shutdown controller` command shuts down the RAID controller and stops I/O processing. This temporarily causes the array to go offline, which might affect applications running on any hosts connected to the array. Data in the controller cache is flushed to logical drives. After issuing this command, issue the `reset controller` command.

Caution – The shutdown command causes the array to stop responding to I/O requests from the host. This might result in data loss unless all I/O activity is suspended by halting all applications that are accessing the array, and unmounting any file systems that are mounted from the array. In redundant-controller configurations, these commands affect all LUNs on both controllers.

Note – Use this command whenever the RAID array is powered off. It ensures that all data is written to disk, and that the backup battery (if present) is not drained by the cache memory.

Note – A controller shutdown does not generate an event message. To view the status of the shutdown, use the `show shutdown-status` command. For details, see "`show shutdown-status`" on page 86.

Syntax

```
shutdown controller
```

Examples

The following example shows the message prompts that are displayed when you run the `shutdown controller` command.

```
# sccli /dev/rdsk/c0t5d0s2 shutdown controller
WARNING: This is a potentially dangerous operation. The controller
will go offline for several minutes. Data loss may occur if the
controller is currently in use.
Do you want to reset the controller now? y
sccli: shutting down controller...
sccli: controller is shut down
```

unfail

Description

The `unfail` command restores the controller pair to redundant operation. When a primary controller fails, the secondary controller becomes the primary controller. The `unfail` command makes the initial primary controller the secondary controller.

Note – The `unfail` command reverses the `fail secondary` command, permitting the secondary controller to resume operation and restore the controller pair to redundant operation.

Syntax

```
unfail
```

Examples

The following example reverses the `fail secondary` command.

```
sccli> unfail
Are you sure? y
```

upload controller-configuration

Description

The `upload controller-configuration` command saves a description of the configuration of the array to a user-specified file. The file can be used to restore the same configuration to the array at a later date, or to copy the configuration to another array. The file includes channel settings; host and drive side parameters; array parameters; network port setup; controller general parameters; logical drive, logical volume, and physical drive information; partition information and mappings on host channels. For details on downloading the controller configuration file, see "download controller-configuration" on page 68.

Note – The file contains binary data and cannot be viewed with a text editor.

Syntax

```
upload controller-configuration file
```

Examples

The following example saves the RAID configuration into the binary file `raidcfg.bin`.

```
# sccli c2t0d0 upload controller-configuration raidcfg.bin
```

Disk Commands

The following commands are explained in this section:

- `abort clone`
- `clone`
- `configure global-spare`
- `scan disk`
- `set disk-array`
- `set led`
- `show clone`
- `show disk-array`
- `show disks`
- `show led-status`
- `unconfigure global-spare`

For details on downloading disk firmware, see "`download disk-firmware`" on page 177.

`abort clone`

Description

The `abort clone` command stops the cloning of the specified disk drive.

To clone a disk, use the `clone` command. For details, see "`clone`" on page 91.

To view the progress of a clone, use the `show clone` command. For details, see "`show clone`" on page 97.

Syntax

```
abort clone disk-dest
```

Arguments

TABLE 3-6 Arguments for `abort clone`

Argument	Description
disk-dest	Specify the disk to stop cloning.

Examples

The following example aborts the clone disk drive operation for ID 5 on channel 2.

```
# sccli c2t0d0 abort clone d2.5
```

clone

Description

The `clone` command uses a destination disk to copy and replace a drive that is suspected of failing. The disk that you are replacing must be a member of a logical drive. The `clone` command is not supported for NRAID arrays.

The `clone` command might be issued in response to a self-monitoring analysis and reporting technology (SMART) warning. To enable SMART, see "`set drive-parameters`" on page 108.

Note – You cannot create a logical drive composed of Sun StorEdge 3510 FC drives and Sun StorEdge 3511 SATA drives. If you try to mix drive types in a logical drive, by cloning a disk with a different drive type, an error is displayed. For more information, refer to the *Sun StorEdge 3000 Family RAID Firmware User's Guide*.

Syntax

```
clone source-disk dest-disk [priority]
```

Arguments

TABLE 3-7 Arguments for `clone`

Argument	Description
source-disk	Specify the disk to copy and replace. For example, specify the source disk with target ID 1 on channel 2 as `2.1`.
dest-disk	Specify the disk to use as the replacement. For example, specify the destination disk with target ID 3 on channel 2 as `2.3`.
priority	Specify the priority of the disk replacement. Valid values: `low`, `normal`, `improved`, `high`. The higher the priority selected, the greater amount of system resources required to perform the clone. For example, specify `low` to have the replacement occur using minimal system resources.

Examples

The following example copies and replaces disk drive ID 5 on channel 2 with disk drive ID 0 on channel 3.

```
# sccli c2t0d0 clone d2.5 d3.0
```

configure global-spare

Description

The `configure global-spare` command specifies a global spare disk. The disk drive status is set to standby.

Note – If you connect one or more Sun StorEdge 3511 SATA expansion units to a Sun StorEdge 3510 FC array, configure an FC drive and a SATA drive as global spares. Then, if a drive fails in the RAID chassis, a FC global spare is used to replace the failed drive. Or, if a drive fails in the SATA expansion unit, a SATA global spare is used to replace the failed drive. If a failure occurs and the appropriate drive type is not available as a global spare, the failed drive will not be replaced automatically. For more information, refer to the *Sun StorEdge 3000 Family RAID Firmware User's Guide*.

Syntax

```
configure global-spare disk
```

Arguments

TABLE 3-8 Arguments for `configure global-spare`

Argument	Description
disk	Specify the disk to configure. For example, specify the disk with target ID 1 on channel 2 as `2.1`. When you assign a global spare, the system automatically assigns global spare status to the unassigned drive with the lowest drive ID. This enables the array to use the global spare to rebuild a logical drive automatically without user intervention when a failing drive needs to be replaced.

Examples

The following example configures disk drive ID 5 on channel 2 as a global spare.

```
# sccli c2t0d0 configure global-spare 2.5
```

scan disk

Description

The `scan disk` command scans and makes available a hard drive without having to shut down the array. When a Sun StorEdge 3000 family SCSI array is powered on, the controller scans all physical drives that are connected through drive channels. Unlike Sun StorEdge 3000 FC and SATA arrays, if a Sun StorEdge 3000 family SCSI array has completed initialization and then a physical drive is connected, the controller does not automatically recognize the new drive until the next controller reset. This difference in behavior is due to differences between Fibre Channel and SCSI architectures and protocols.

Note – This command is supported on Sun StorEdge 3000 SCSI arrays only.

Syntax

```
scan disk [disk-list]
```

Arguments

TABLE 3-9 Arguments for `scan disk`

Argument	Description
disk-list	Scans specific disks. Use any of the following formats: *ch.id*, *ch.id*m-*n*. *ch* is physical device channel, *id* is the SCSI ID of the device, and *m* to *n* represents a contiguous range of IDs on the same channel. For example, 2.0, 2.3 or 2.2-5.

Examples

The following example scans disk 2.

```
sccli> scan disk d2.11
```

set disk-array

Description

The `set disk-array` command sets disk array parameters including the background logical drive rebuilding priority and hard drive data verification.

Syntax

```
set disk-array [normal-verify value| rebuild-verify value | init-
verify value] [rebuild-priority value]
```

Arguments

TABLE 3-10 Arguments for `set disk-array`

Argument	Description
`normal-verify {enabled | disabled}`	Specify whether to perform Verify-after-Write during normal I/O requests. This method affects write performance during normal use.
`rebuild-verify {enabled | disabled}`	Specify whether to perform Verify-after-Write during the rebuilding process.
`init-verify {enabled | disabled}`	Specify whether to perform Verify-after-Write while initializing the logical drive.
`rebuild-priority`	Specify the priority of the logical drive rebuild process. Valid values: `low`, `normal`, `improved`, `high`. The higher the priority selected, the greater amount of system resources required. For example, specify `low` to perform the rebuild after other firmware processes complete.

Examples

The following example specifies that data is verified during the rebuilding process and when initializing logical drives.

```
sccli> set disk-array rebuild-verify enabled init-verify enabled
```

set led

Description

The `set led` command changes the drive LED for the specified disk (or slot) from green to amber. For Sun StorEdge 3000 family SCSI JBODs, specify a disk device using a Solaris device name such as `sd31` or `c1t0d0s2`, or specify a slot number. Use the `show led-status` command to show the status of the identified disk drive.

Note – This command does not support Sun StorEdge 3510 FC JBODs or Sun StorEdge 3511 SATA JBODs.

Note – Selecting a slot by disk name is not supported in split-bus enclosure configurations because the enclosure services processor resides on only one of the internal buses and the Sun StorEdge CLI might not be able to determine the slot location of a particular device. In such configurations, use the `show enclosure-status` command and the disk documentation provided with your enclosure to determine the correct slot number instead.

Syntax

To change a specific drive LED in a RAID array from green to amber, use the following parameters.

```
set led disk ch.id {on | off}
```

To change a specific drive LED in a Sun StorEdge 3000 family SCSI JBOD from green to amber, use the following parameters.

```
set led {slot n | disk sdn | disk cXtYdZ} {on | off}
```

Arguments

TABLE 3-11 Arguments for `set led`

Argument	Description
`slot` *n*	Changes the drive LED from green to amber for the specified disk drive slot.
`disk` *sdn*	Changes the drive LED from green to amber for the specified Solaris disk drive slot.
`disk` *cXtYdZ*	Changes the drive LED from green to amber for the specified Solaris disk drive slot.
ch.id	Changes the drive LED from green to amber for the specified drive within a RAID subsystem.
{`on` | `off`}	Specify whether to change the LED from green to amber.

Examples

The following example changes the drive with SCSI address 8 from green to amber in the enclosure associated with the enclosure device `/dev/es/ses0`.

```
sccli> set led disk 0.8 on
 (enclosure sn 005362) led-slot-0: on
```

show clone

Description

The `show clone` command displays the progress of disk cloning.

Syntax

```
show clone
```

Examples

The following example returns information for the disks being cloned on the specified device.

```
sccli> clone d2.5 d0.5
sccli: start clone 2.5 to 0.5
sccli> show clone
 Ch   ID  Status
--------------------
 0    5   2% complete
```

show disk-array

Description

The `show disk-array` command displays the disk array parameters including the logical drive rebuild priority and the hard drive settings for verifying the written data for initializing, rebuilding, and writing normal I/O data.

Syntax

```
show disk-array
```

Examples

The following example returns the disk array parameter information.

```
sccli> show disk-array
 init-verify: disabled
 rebuild-verify: disabled
 normal-verify: disabled
 rebuild-priority: low
```

show disks

Description

The `show disks` command displays information about the disk drives in the array enclosure and any expansion chassis. Information returned includes the following: channel and ID, negotiated speed, associated logical drive, capacity (size), status, vendor information, mirror output, and worldwide node name (WWNN).

Note – Mirror output is valid only for RAID 1 logical drives.

Syntax

```
show disks [disk-list | channel {ch} | free | all] [-b | --buffer-size]
```

Arguments

TABLE 3-12 Arguments for `show disks`

Argument	Description
disk-list	Shows specific disks. Use any of the following formats: *ch.id*, *ch.idm-n*. *ch* is physical device channel, *id* is the SCSI ID of the device, and *m* to *n* represents a contiguous range of IDs on the same channel. For example, 2.0, 2.3, or 2.2-5.
channel ch	Shows all disks on the specified channel.
`all`	Shows all disk drives.
`free`	Shows all unassigned disks.
`-b`, `--buffer-size`	Shows the disk buffer size.

Examples

The following example returns information for disks ID 0, ID 3, and ID 7 on channel 2.

```
# sccli c2t0d0 show disks 2.0,2.3,2.7
```

The following example returns information for disks on channel 2 for disks 3 through 7, and for channel 1 disk 4.

```
# sccli c2t0d0 show disks 2.3-7,1.4
```

The following example shows all disk information.

```
sccli> show disks
Ch     Id      Size    Speed  LD     Status     IDs                          Rev
-------------------------------------------------------------------------------
2(3)   3   33.92GB   200MB  NONE   FRMT       SEAGATE ST336752FSUN36G  0205
                                               S/N 3ET0N0V000007303
                                               WWNN 20000004CFAB138F
                                               Mirror (2.3)
2(3)   6   33.92GB   200MB  ld0    ONLINE     SEAGATE ST336753FSUN36G  0349
                                               S/N 3HX0YEJT00007349
                                               WWNN 2000000C50332BFD
                                               Mirror (2.6)
2(3)   7   33.92GB   200MB  ld0    ONLINE     SEAGATE ST336753FSUN36G  0349
                                               S/N 3HX0Y6J300007349
                                               WWNN 2000000C503335DC
                                               Mirror (2.7)
2(3)   8   33.92GB   200MB  ld0    ONLINE     SEAGATE ST336753FSUN36G  0349
                                               S/N 3HX0YC1Y00007349
                                               WWNN 2000000C503334AE
                                               Mirror (2.8)
2(3)   9   33.92GB   200MB  ld0    ONLINE     SEAGATE ST336753FSUN36G  0349
                                               S/N 3HX0Y7W100007349
                                               WWNN 2000000C50332BBE
                                               Mirror (2.9)
2(3)  10   33.92GB   200MB  NONE   FRMT       SEAGATE ST336753FSUN36G  0349
                                               S/N 3HX0YAQF00007349
                                               WWNN 2000000C50333AB8
                                               Mirror (2.10)
```

Note – All device capacity is displayed in powers of 1024. For details, see "Device Capacity" on page 15.

Returned Values

Returned values include channel number, disk SCSI ID, size, speed (megabytes per second), logical drive assignment, status, drive model ID, firmware revision, serial number, and device node name. If the `-b` option is specified, the drive buffer size and drive serial number are displayed.

Logical drive assignment values include:

- Global – global spare
- None – unassigned

Speed values include:

- Async – SCSI Asynchronous
- SYNC – SCSI Synchronous
- 20MB – SCSI Ultra
- 40MB – SCSI Ultra Wide
- 80MB – SCSI Ultra2
- 160MB – SCSI 160
- 320MB – SCSI Ultra3
- 100MB – FC 1GB/s
- 200MB – FC 2 GB/s

Status values include:

- Online – in good condition
- Global – global spare
- Stand-By – standby for global or local spare
- Initing – initialization in progress
- Rebuild – rebuild in progress
- Adding – adding disk in progress
- In_Clone – drive is in process of cloning another drive
- Forclone – drive is a valid clone of another drive
- Copying – drive is in process of copying from another drive
- New – new disk that has not been configured
- Used – contains RAID meta data
- Bad – failed disk
- Absent – disk does not exist
- Missing – configured disk is missing
- SB-Miss – configured spare drive is missing
- FRMT – drive was part of a logical drive that no longer exists, but the controller still recognizes the logical drive data format contained on it

- None – not assigned
- Good – no operation in progress
- M – media check in progress

show led-status

Description

The `show led-status` command displays the status of the LED adjacent to the specified disk drive slot in the array enclosure or expansion chassis. Returned values include on and off. If the value is `on`, the LED of the specified drive is amber. If the value is `off`, the LED of the specified drive is green if it is working properly.

Note – This command does not support Sun StorEdge 3510 FC JBOD devices or Sun StorEdge 3511 SATA JBOD devices.

Syntax

```
show led-status
```

To display the status of LEDs in LVD RAID enclosures, use the following syntax.

```
show led-status disk ch.id
```

To show the status of LVD JBOD enclosures, use the following syntax.

```
show led-status {slot n | disk sdn | disk cXtYdZ}
```

Arguments

TABLE 3-13 Arguments for `show led-status`

Argument	Description
`slot` *n*	Shows the status for the LED adjacent to the specified disk drive slot. This argument is not accepted for RAID controllers.
`disk` *sdn*	Shows the status for the LED adjacent to the specified Solaris disk drive slot. This argument is not accepted for split-bus configurations.
`disk` *cXtYdZ*	Shows the status for the LED adjacent to the specified Solaris disk drive slot. This argument is not accepted for split-bus configurations.
`ch.id`	Shows the status for the LED adjacent to the specified drive within a RAID array.

Examples

The following example shows the status of the LED adjacent to the disk assigned to drive slot 3 for an expansion chassis.

```
sccli> show led-status slot 3
(enclosure sn 002A4C) led-slot-3: on
```

The following example shows the status of the LED adjacent to the disk assigned to drive slot 2 for the RAID array.

```
sccli> show led-status disk 2.0
 (enclosure sn 002A4C) led-slot-0: off
```

unconfigure global-spare

Description

The `unconfigure global-spare` command unconfigures a global spare disk.

Syntax

```
unconfigure global-spare disk
```

Arguments

TABLE 3-14 Arguments for `unconfigure global-spare`

Argument	Description
disk	Specify the disk to unconfigure. For example, specify the disk with target ID 1 on channel 2 as `2.1`.

Examples

The following example unconfigures disk drive ID 5 on channel 2 as a global spare.

```
# sccli c2t0d0 unconfigure global-spare 2.5
```

CHAPTER 4

Channel Commands

This chapter provides the available host, drive, and redundant controller communication (RCCOM) channel commands with sample code.

Note – To prevent unauthorized access to administrative functions of the RAID controller, the Sun StorEdge CLI requires superuser or system administrator privileges for inband access, and uses the controller password to authorize users of the out-of-band interface.

Note – If no command is entered on the command line, the Sun StorEdge CLI enters an interactive mode, prompting you to enter commands until the `quit` command is entered. All commands operate on the currently selected device.

Channel Commands

The following commands are explained in this section:

`configure channel`

Description

The `configure channel` command configures host, drive, or RCCOM channels and establishes channel IDs on the primary and secondary controller. The most common reason to change a channel setting is to change a host channel to a drive channel to attach expansion units to a RAID array. After a channel configuration change, the RAID controller must be reset.

Caution – All reset commands cause the array to stop responding to I/O requests from the host for a period of time. This might result in data loss unless all I/O activity is suspended by halting all applications that are accessing the array, and unmounting any file systems that are mounted from the array. In redundant-controller configurations, these commands affect all LUNs on both controllers. After running a `reset` command, to stay in prompt mode, run the `select` command to reselect the device.

Note – If a primary ID is not mapped to a channel, and a secondary ID is mapped, "Async" displays in the Speed field when the `show channels` command is run. For details, see "`show channels`" on page 113.

Syntax

```
configure channel channel [{host|drive|RCCOM}] [primary-id target-list] [secondary-id
target-list] [-r | --reset]
```

Arguments

TABLE 4-1 Arguments for `configure channel`

Argument	Description
`channel` *channel*	Specify the physical drive channel. Use the following format: {p}[,..{q}[,….{n}]]. Valid values include 0–5 or 0–7.
[`host	drive	RCCOM`]	Specify whether the channel is used to interface with a host or disk drive, or assigned to RCCOM. If the channel is configured as a host channel, multiple IDs can be applied. However, if the channel is configured as a drive channel, only one ID can be applied.
`primary-id` *target-list*	Specify one or more comma-separated target IDs for the primary controller on the specified channel. Specify `None` if you do not want to configure a primary ID. `primary-id` can be abbreviated `pid`. Valid values: `None` (no ID configured), 0–15 for SCSI devices, and 0–125 for FC and SATA devices.
`secondary-id` *target-list*	Specify one or more comma-separated target IDs for the secondary controller. Specify `None` if you do not want to configure a secondary ID. `secondary-id` can be shortened to `sid`. Valid values: `None` (no ID configured), 0–15 for SCSI devices, and 0–125 for FC and SATA devices.
[`-r	--reset`]	Specify that the controller reset immediately so that the specified changes take effect. By default, the specified changes do not take effect until a `reset controller` command is issued.

Examples

The following example sets the channel mode as host and resets the controller immediately.

```
# sccli c2t0d0 configure channel 0 mode host --reset
```

The following example sets the channel primary ID as 112 and the secondary ID as 114 and 115.

```
# sccli c2t0d0 configure channel 0 primary-id 112 secondary-id 114,115
```

set drive-parameters

Description

The `set drive-parameters` command sets the specified RAID controller parameters that affect the operation of drive channels. For details about configuring a drive channel, see "`configure channel`" on page 106.

Caution – Do not change the `scsi-io-timeout` argument. Setting the timeout to a lower value causes the controller to judge a drive as failed while a drive is still retrying or while a drive is unable to arbitrate the SCSI bus. Setting the timeout to a greater value causes the controller to keep waiting for a drive, and it might cause a host timeout.

Syntax

```
set drive-parameters parameter-name value
```

Arguments

TABLE 4-2 Arguments for `set drive-parameters`

Argument	Description
`scsi-io-timeout`	Specify the time interval for the controller to wait for a disk drive to respond. If the controller attempts to read data from or write data to a drive but the drive does not respond within the SCSI I/O timeout value, the drive is considered a failed drive. Valid values: `500ms`, `1s`, `2s`, `4s`, `6s`, `7s`, `8s`, `10s`, `15s`, `20s`, `30s` (default).
`spin-up {enabled | disabled}`	This parameter is reserved and should be used only by qualified technicians. Specify whether the disk drives are powered up sequentially when the array powers up. When the power supply is unable to provide sufficient current for all physical drives and controllers that are powered on at the same time, spinning-up the physical drives serially requires less current. Valid values: `enabled`, `disabled`.
`disk-access-delay`	Specify the amount of time that the controller waits before it tries to access the physical drives after power-on. The default value is 15 seconds. Valid values: `0s`, `5s`, `10s`, `15s` (default), ...`75s` (increments of 5 between 0–75).

TABLE 4-2 Arguments for `set drive-parameters` *(Continued)*

Argument	Description
`queue-depth`	Specify the maximum queue depth (tag count) that the controller uses when queuing commands for each disk drive. To indicate that the queue depth value can be computed automatically, specify the value 0. The default value is 32. Valid values: `0` (disable), `1, 2, 4, 8, 16, 32, 64, 128`.
`polling-interval`	Specify the interval at which the array controller polls the disk drives. The default value is 0 (disabled), which means if there is no activity on the bus, the controller does not know if a drive has failed or has been removed. Setting an interval enables the program to detect a drive failure when there is no array activity; however, performance is degraded. Valid values: `0` (disable), `500ms, 1s, 2s, 5s, 10s, 30s`.
`enclosure-polling-interval`	Specify the interval at which the array controller polls the SAF-TE or SES environmental services processor in the enclosure. The default value of 0 specifies that polling is disabled. Valid values: `0` (disabled), `50ms, 100ms, 200ms, 500ms, 1s, 2s, 5s, 10s, 20s, 30s, 60s`.
`auto-detect-swap-interval`	Specify the interval between checks to determine if a failed drive has been physically replaced. The default value of 0 specifies that auto-detecting is disabled. Valid values: `0, 5s, 10s, 15s, 30s, 60s`.
`smart`	Specify whether the disk drives perform predictive failure (SMART) analysis. Valid values: `disabled, detect-only, detect-perpetual-clone, detect-clone-replace`. • `Detect-only` predicts symptoms of drive failure, but only writes an error message to the controller event log. • `Detect-perpetual-clone` detects future problems and clones a spare drive so that it is ready when failure does occur. The spare drive stays mirrored to the source drive (the drive whose failure has been predicted) but does not replace it until the source drive fails. • `Detect-clone-replace` detects future problems, clones a spare drive, and immediately uses the cloned drive to replace the source drive whose failure is predicted.
`auto-global-spare {enabled | disabled}`	Specify whether the RAID controller automatically allocates disk drives as global spares. When you enable this option, the system automatically assigns a global spare to the unassigned drive with the lowest drive ID. This enables the array to use the global spare to rebuild a logical drive automatically without user intervention when a failing drive needs to be replaced. Valid values: `enabled`, `disabled`.

Examples

The following example sets the SCSI I/O timeout to 30 seconds.

```
# sccli c2t0d0 set drive-parameters scsi-io-timeout 30s
```

The following example sets the queue depth to 32 (the default value).

```
# sccli c2t0d0 set drive-parameters queue-depth 32
```

The following example sets the interval of drive polling to 10 seconds and disables SMART monitoring.

```
# sccli c2t0d0 set drive-parameters poll-interval 10s smart disabled
```

set host-parameters

Description

The `set host-parameters` command sets the specified host-channel related parameters including the maximum number of LUNs per target address, queue depth, inband management access, and the FC connection mode (FC and SATA devices only). For details about configuring a host channel, see "`configure channel`" on page 106.

Note – If inband management is disabled by the Sun StorEdge CLI, the RAID firmware application, or Sun StorEdge Configuration Service, and a user attempts to use inband management, the message "RAID controller not responding" displays when a Sun StorEdge CLI command is run. If this occurs, use out-of-band management to access the RAID controller with the Sun StorEdge CLI. For details, see "Device Names for Out-of-Band Communication" on page 11.

Syntax

```
set host-parameters [queue-depth value] [max-luns-per-id value] [fibre-connection-mode] [inband-management value]
```

Arguments

TABLE 4-3 Arguments for `set host-parameters`

Argument	Description
`max-luns-per-id`	Specify the maximum number of LUNs that can be assigned to any one host ID (target address). Each time a host channel ID is added, it uses the number of LUNs allocated in this setting. The default setting is 32 LUNs. Valid values: `1, 2, 4, 8, 16, 32`.
`queue-depth`	Specify the maximum number of I/O operations that can be queued simultaneously for a given logical drive. The default value is 1024. Valid values: `0` (auto), `1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024`.
fibre-connection-mode	*FC and SATA devices only.* Specify the connection mode. • `Loop` configures an arbitrated loop, which can be used with Direct Attached Storage (DAS) or Storage Area Network (SAN) configurations. Fibre Channel-Arbitrated Loop (FC-AL) supports only half-duplex communication, but allows up to eight IDs per channel. • `Point-to-point` can be used only with a switched fabric network, also called a Storage Area Network (SAN) configuration. Point-to-Point protocol supports full duplex communication, but only allows one ID per channel. Valid values: `loop`, `point-to-point`.
`inband-management {enabled | disabled}`	Specify whether users can access Sun StorEdge CLI and Sun StorEdge Configuration Service using inband communication over a FC or SCSI channel. If this argument is disabled, out-of-band access must be used. For more information about out-of-band access, see "Device Names for Out-of-Band Communication" on page 11. Valid values: `enabled`, `disabled`.

Examples

The following example sets the maximum I/O number in the controller queue to 16.

```
# sccli c2t0d0 set host-parameters queue-depth 16
```

The following example sets the maximum LUN number of each SCSI ID to 8.

```
# sccli c2t0d0 set host-parameters max-luns-per-id 8
```

set inter-controller-link

Description

Redundant Sun StorEdge 3000 family FC and SATA arrays only. The `set inter-controller-link` command connects or disconnects an individual port on the upper of lower RAID controller in a redundant-controller configuration. For the Sun StorEdge 3510 FC array, the two controllers are effectively disconnected (on that channel) if either one of the two inter-controller links are disconnected because host channels on both Sun StorEdge 3510 FC controllers are controlled by the same port. For the Sun StorEdge 3511 SATA array, the command must be run for each individual channel and slot location because host channels on the primary and secondary controller are controlled by different ports.

Caution – If the controllers are not connected, host applications might not experience transparent failover in the event of a controller failure.

Syntax

```
set inter-controller-link {upper|lower} channel channel {connected|disconnected}
```

Note – `icl` can be substituted for the keywords `inter-controller-link`.

Arguments

TABLE 4-4 Arguments for `set inter-controller-link`

Argument	Description
{`upper` | `lower`}	Specify the location of the array controller slot, upper or lower.
`channel` *ch*	Specify the channel to modify. Valid values: `0, 1, 4, 5`.
{`connected` | `disconnected`}	Specify the desired state for the port bypass circuit. Usually, all inter-controller links on both the upper and lower controllers are connected. For the Sun StorEdge 3510 FC array, disconnecting the upper or lower controller's inter-controller link on any given host channel breaks the internal connection between the two controllers, and between the upper controller and the external connector on the lower controller and vice versa. For the Sun StorEdge 3511 SATA array, you must disconnect the upper and lower host channel to disconnect the inter-controller link. Disconnecting the inter-controller link potentially doubles aggregate bandwidth because the controllers do not have to share bandwidth on each channel; and, it also prevents controller failover from working.

Examples

The following example disconnects the port on lower channel 1.

```
# sccli c2t0d0 set inter-controller-link lower channel 1 disconnected
```

The following example sets the port bypass circuit for channel 5 on the upper controller slot to enabled.

```
# sccli c2t0d0 set icl upper channel 5 connected
```

show channels

Description

The `show channels` command displays information about host, drive, and RCCOM channels including the channel number, channel mode, primary and secondary ID, speed, and connection mode.

Syntax

```
show channels [channel-list]
```

Arguments

TABLE 4-5 Arguments for `show channels`

Argument	Description
channel-list	Specify the channel. The format for channel-list is {n}[,...{m}] or a range format "{n}-{m}" or {n}[,...{p}-{m}]. Valid channel numbers include: 0–7 or 0–5 depending on the hardware. If {m} is greater than the largest channel number, information for all the channels is displayed.

Examples

The following example returns information for channels 0 and 2.

```
# sccli c2t0d0 show channels 0,2
```

The following example returns all channel information for a Sun StorEdge 3510 FC array.

```
sccli> show channels
Ch  Type    Media   Speed   Width  PID / SID
-------------------------------------------
 0  Host    FC(L)   2G      Serial  40 / 41
 1  Host    FC(L)   2G      Serial  43 / 42
 2  DRV+RCC FC(L)   2G      Serial  14 / 15
 3  DRV+RCC FC(L)   2G      Serial  14 / 15
 4  Host    FC(L)   2G      Serial  44 / 45
 5  Host    FC(L)   2G      Serial  47 / 46
 6  Host    LAN     N/A     Serial  NA / NA
```

Returned Values

Returned values include channel number, channel type, media (node), speed, width, primary ID (PID), and secondary ID (SID).

Channel type values include:

- Host
- DRV (Drive)
- RCC (RCCOM)

Media (mode) values include:

- L – loop mode (FC and SATA only)
- P – point-to-point (FC and SATA only)
- SCSI
- FC
- LAN – network channel

Speed values include:

- Async –
  - For SCSI, SCSI Asynchronous
  - For FC or SATA, no link or link down
- SYNC – SCSI Synchronous
- Ultra – SCSI Ultra
- Ultra2 – SCSI Ultra2
- U160 – SCSI U160
- U320 – SCSI U320
- 1G – FC 1 GB/s
- 2G – FC 2 GB/s

Note – Speed values are displayed for the primary controller only. Therefore, if a user maps one LUN to the primary controller, and another LUN to a secondary controller, only the established connection to the primary controller is displayed. As a result, if a primary ID is not mapped to a channel, and a secondary ID is mapped, "Async" displays in the Speed field.

PID (primary ID) / SID (secondary ID) values include:

- SCSI 0-15
- FC and SATA 0-125
- When multiple IDs exist for the primary ID or secondary ID, an asterisk (*) displays in the PID or SID field.

`show drive-parameters`

Description

The `show drive-parameters` command displays the specified RAID controller parameters pertinent to the operation of disk drives and enclosure services connected to drive channels.

Syntax

```
show drive-parameters
```

Examples

The following example shows all drive parameters of the Sun StorEdge 3510 FC array.

```
sccli> show drive-parameters
 spin-up: disabled
 disk-access-delay: 15s
 scsi-io-timeout: 30s
 queue-depth: 32
 polling-interval: disabled
 enclosure-polling-interval: 30s
 auto-detect-swap-interval: disabled
 smart: disabled
 auto-global-spare: disabled
```

Returned Values

The returned values for the `show drive-parameters` command are described in the following table.

TABLE 4-6 Output for `show drive-parameters`

Field	Description
`spin-up {enabled | disabled}`	Specifies whether the disk drive automatically spins up on power up. Valid values: `enabled`, `disabled`.
`disk-access-delay`	The delay in seconds or milliseconds before disk access is granted.
`scsi-io-timeout`	Delay in seconds before disk drive I/O timeout. Valid values: `500ms, 1s, 2s, 4s, 6s, 7s, 8s, 10s, 15s, 20s, 30s` (default).
`queue-depth`	Maximum queue depth that the controller uses when queuing commands for each disk drive. The default value is 32. Valid values: `0` (disabled), `1, 2, 4, 8, 16, 32, 64, 128`.
`polling-interval`	Specifies the interval at which the array controller polls the disk drives. Valid values: `0` (disable), `500ms, 1s, 2s, 5s, 10s, 30s`.

TABLE 4-6 Output for `show drive-parameters` *(Continued)*

Field	Description
`enclosure-polling-interval`	Specifies the interval at which the array controller polls the SAF-TE or SES environmental services processor in the enclosure. Valid values: `0` (disabled), `50ms, 100ms, 200ms, 500ms, 1s, 2s, 5s, 10s, 20s, 30s, 60s`.
`auto-detect-swap-interval`	Interval (in milliseconds) between checks to determine if a failed drive has been physically replaced. The default value of 0 specifies that auto-detecting is disabled. Valid values: `0, 5s, 10s, 15s, 30s, 60s`.
`smart`	Determines whether the disk drives perform predictive failure analysis. Valid values: `disabled`, `detect-only`, `detect-perpetual-clone`, `detect-clone-replace`.
`auto-global-spare {enabled | disabled}`	Specifies whether the RAID controller automatically allocates disk drives as global spares. Valid values: `enabled`, `disabled`.

show host-parameters

Description

The `show host-parameters` command displays the maximum I/O queue depth per LUN, the number of LUNs that can be configured per target ID, the fibre connection mode (point-to-point or loop for FC and SATA only), and inband management access. To view the partitions mapped to specific host channels, use the `show lun-maps` command. For details, see "`show lun-maps`" on page 158.

Syntax

```
show host-parameters
```

Examples

The following example shows the host parameters for a Sun StorEdge 3510 FC array.

```
sccli> show host-parameters
 max-luns-per-id: 32
 queue-depth: 1024
 fibre-connection-mode:loop
 inband-management:  enabled
```

The following example shows the host parameters for a Sun StorEdge 3310 SCSI array.

```
sccli> show host-parameters
 max-luns-per-id: 32
 queue-depth: 1024
 inband-management: enabled
```

show inter-controller-link

Description

Redundant Sun StorEdge 3000 family FC and SATA arrays only. The `show inter-controller-link` command displays the status of the port bypass circuit for the specified channel on the array controller in the upper or lower slot. If specified, the arguments must specify an array controller slot location and a channel specifier. If no arguments are specified, the upper and lower slots of channels 0, 1, 4, and 5 are displayed.

Syntax

```
show inter-controller-link {upper | lower} channel ch
```

Note – `icl` can be substituted for the keywords `inter-controller-link`.

Arguments

TABLE 4-7 Arguments for `show inter-controller-link`

Argument	Description
{`upper` | `lower`}	Specify the upper or lower controller slot in the chassis to which the command is directed.
`channel` *ch*	Specify the channel number of the inter-controller link.

Examples

The following example shows the inter-controller links for channels 0, 1, 4, and 5.

```
# sccli 111.1.111.11 show inter-controller-link
 inter-controller-link upper channel 0: connected
 inter-controller-link lower channel 0: connected
 inter-controller-link upper channel 1: connected
 inter-controller-link lower channel 1: connected
 inter-controller-link upper channel 4: connected
 inter-controller-link lower channel 4: connected
 inter-controller-link upper channel 5: connected
 inter-controller-link lower channel 5: connected
```

CHAPTER 5

Logical Drive, Partition, and Logical Volume Commands

This chapter provides the available Sun StorEdge CLI commands with sample code for logical drives, partitions, and logical volumes. Topics covered in this chapter include:

Note – To prevent unauthorized access to administrative functions of the RAID controller, the Sun StorEdge CLI requires superuser or system administrator privileges for inband access, and uses the controller password to authorize users of the out-of-band interface.

Note – If no device is specified on the command line, and more than one array is connected to the host, a menu of devices is presented with one device file name for each array. If there is only one Sun StorEdge 3000 family array connected to the host, that device is selected automatically.

Note – Logical drive indexes can change whenever a logical drive is deleted, while a logical drive identifier never changes over the life of the logical drive.

Logical Drive Commands

The following commands are explained in this section:

abort create

Description

The `abort create` command stops the creation of a logical drive.

To create a logical drive, use the `create logical-drive` command. For details, see "create logical-drive" on page 131. To view logical drives, use the `show logical-drive` command. For details, see "show logical-drive" on page 142.

Syntax

```
abort create {ld-index | ld-id}
```

Arguments

TABLE 5-1 Arguments for `abort create`

Argument	Description
ld-index	Specify the logical drive index number. For example, `ld3`.
ld-id	Specify the logical drive ID. For example, `71038221`.

Examples

The following example stops the creation of logical drive 8.

```
sccli> abort create ld8
```

abort expand

Description

The `abort expand` command stops the expansion of a logical drive.

To expand a logical drive, use the `expand` command. For details, see "`expand`" on page 135. To view the progress of an expansion, use the `show logical-drives expanding` command. For details, see "`show logical-drives expanding`" on page 144.

Syntax

```
abort expand {ld-index | ld-id}
```

Arguments

TABLE 5-2 Arguments for `abort expand`

Argument	Description
ld-index	Specify the logical drive index number. For example, `ld3`.
ld-id	Specify the logical drive ID. For example, `71038221`.

Examples

The following example stops the expansion of logical drive 8.

```
sccli> abort expand ld8
```

abort media-check

Description

The `abort media-check` command stops a media check on specified disks or all member disks of the specified logical drive.

For more information on the `check media` command, see "`check media`" on page 127.

Note – The front-panel LEDs for the drives being checked will blink until the media check is finished or aborted. For more information about LEDs, refer to the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual* for your array.

Syntax

```
abort media-check {disk-list | ld-index | ld-id}
```

Arguments

TABLE 5-3 Arguments for abort `media-check`

Argument	Description
disk-list	Shows specific disks. Use any of the following formats: *ch.id*, *ch.idm-n*. *ch* is physical device channel and *id* is the SCSI ID of the device and *m* to *n* represents a contiguous range of IDs on the same channel. For example, 2.0, 2.3 or 2.2-5.
ld-index	Specify the logical drive index number. For example, `ld3`.
ld-id	Specify the logical drive ID. For example, `71038221`.

Examples

The following example stops the media check for all member disks of logical drive 5.

```
sccli> abort media-check ld5
```

abort parity-check

Description

The `abort parity-check` command stops the parity check on the specified logical drive.

To check parity, use the `check-parity` command. For details, see "check parity" on page 128. To view the progress of a parity check, use the `show logical-drives parity-check` command. For details, see "show logical-drives parity-check" on page 148.

Syntax

```
abort parity-check {ld-index | ld-id}
```

Arguments

TABLE 5-4 Arguments for `abort parity-check`

Argument	Description
ld-index	Specify the logical drive index number. For example, `ld3`.
ld-id	Specify the logical drive ID. For example, `71038221`.

Examples

The following example stops the parity check on logical drive 0.

```
sccli> abort parity-check ld0
```

abort rebuild

Description

The `abort rebuild` command stops the rebuilding of a logical drive.

To rebuild a logical drive, use the `rebuild` command. For details, see "`rebuild`" on page 137. To view the progress of an expansion, use the `show logical-drives rebuilding` command. For details, see "`show logical-drives rebuilding`" on page 149.

Syntax

```
abort rebuild {ld-index | ld-id}
```

Arguments

TABLE 5-5 Arguments for `abort rebuild`

Argument	Description
ld-index	Specify the logical drive index number. For example, `ld3`.
ld-id	Specify the logical drive ID. For example, `71038221`.

Examples

The following example stops rebuilding logical drive 4.

```
sccli> abort rebuild ld4
```

add disk

Description

The `add disk` command adds one disk or a list of disks to the specified logical drive. The disks must not be members of a logical drive. If you try to add a disk to an unsupported RAID level, an error returns.

Syntax

```
add disk {ld-index | ld-id} {disk-list}
```

Arguments

TABLE 5-6 Arguments for `add disk`

Argument	Description
disk-list	Adds specific disks. Use any of the following formats: *ch.id*, *ch.idm-n*. *ch* is physical device channel, *id* is the SCSI ID of the device, and *m* to *n* represents a contiguous range of IDs on the same channel. For example, 2.0, 2.3 or 2.2-5.
ld-index	Specify the logical drive index number. For example, `ld3`.
ld-id	Specify the logical drive ID. For example, `71038221`.

Examples

The following example adds two disks to logical drive 2.

```
sccli> add disk ld2 d0.0 d0.1
```

check media

Description

The `check media` command sequentially checks each physical drive in a specified logical drive, block by block, for bad blocks. If a bad block is encountered, the controller rebuilds the data from the bad block onto a good block if one is available on the physical drive. If no good blocks are available on the physical drive, the controller designates the physical drive Bad, generates an event message and, if a spare drive is available, begins rebuilding data from the bad physical drive onto the spare.

Use the `show media-check` command to review the progress of a media check. For details, see "`show media-check`" on page 149.

It is useful to run a media scan if a drive has failed, if drive errors are encountered, or when a rebuild is required after replacing a drive. You might want to run a nightly script to execute the `check media` command rather than running the command continuously.

Note – A firmware menu option called Media Scan at Power-Up specifies whether media scan runs automatically following a controller power-cycle, reset, or after logical drive initialization. This setting is disabled by default. For more information, refer to the *Sun StorEdge 3000 Family RAID Firmware User's Guide*.

You can use the `abort media-check` command to stop a media check.

Note – The front-panel LEDs for the drives being checked will blink until the media check is finished or aborted. For more information about LEDs, refer to the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual* for your array.

Syntax

```
check media {ld-index | ld-id} [priority][continuous]
```

Arguments

TABLE 5-7 Arguments for `check media`

Argument	Description
ld-index	Specify the logical drive index number. For example, `ld3`.
ld-id	Specify the logical drive ID. For example, `71038221`.
priority	Specify the priority of the disk check. Valid values: `low`, `normal`, `improved`, `high`. For example, specify `low` to have the media check occur after other firmware processes complete. The higher the priority selected, the greater amount of system resources required to perform the media check. Specify `low` to have the check occur using minimal system resources.
`continuous`	Specify `continuous` to run a media check at all times.

Examples

The following example checks all member disks of logical drive 5.

```
sccli> check media ld5
```

check parity

Description

The `check parity` command checks the integrity of redundant data on fault-tolerant logical drives. A qualified logical drive must be configured as a RAID1, RAID3, or RAID5 array. For RAID 3 and 5 configurations, the parity checking procedure on a logical drive recalculates the parity of data stripes in each of the logical drive's RAID stripe sets and compares it with the stored parity. If a

discrepancy is found, an error is reported and the new correct parity is substituted for the stored parity. For RAID 1 configurations, if an inconsistency is encountered, data is copied from the master disk to the slave disk. If a bad block is encountered when the parity is regenerated, the data is copied from the other disk, master or slave, to the reporting disk drive reallocating the bad block.

Note – You cannot check parity on multiple logical drives simultaneously. If you try to run multiple parity checks at the same time, an error is displayed.

To view the progress of a parity check, use the `show logical-drives parity-check` command. For details, see "`show logical-drives parity-check`" on page 148. To cancel the parity check, use the `abort parity-check` command. For details, see "`abort parity-check`" on page 125.

Syntax

```
check parity {ld-index | ld-id} [check-only] [verbose]
```

Arguments

TABLE 5-8 Arguments for `check parity`

Argument	Description
ld-index	Specify the logical drive index number. For example, `ld3`.
ld-id	Specify the logical drive ID. For example, `71038221`.
`check-only`	Specify `check-only` to indicate that if an inconsistency is found, parity regeneration is not performed.
`verbose`	Specify `verbose` to generate events when an inconsistency is encountered.

Examples

To check parity and view the parity status for logical drive 0, type:

```
sccli> check parity ld0
sccli> show ld parity-check
LD      LD-ID     Status
------------------------
ld0     627D800A  2% complete
```

configure local-spare

Description

The `configure local-spare` command specifies a local spare disk as a dedicated spare disk for the specified logical drive. The disk drive status is set to standby. Local spares can only be assigned to logical drives in RAID1, RAID3, and RAID5 arrays.

Note – You cannot create a logical drive composed of Sun StorEdge 3510 FC drives and Sun StorEdge 3511 SATA drives. If you try to mix drive types in a logical drive, by configuring a local spare with a different drive type, an error is displayed. For more information, refer to the *Sun StorEdge 3000 Family RAID Firmware User's Guide*.

Syntax

```
configure local-spare disk [ld-index | ld-id]
```

Arguments

TABLE 5-9 Arguments for `configure local-spare`

Argument	Description
disk	Specify the disk to configure. For example, specify the disk with target ID 1 on channel 2 as `2.1`.
ld-index	Specify the logical drive index number. For example, `ld3`.
ld-id	Specify the logical drive ID. For example, `71038221`.

Examples

The following example configures disk drive ID 5 on channel 2 as a local spare for the logical drive with index number 2.

```
# sccli c2t0d0 configure local-spare 2.5 ld2
```

The following example configures disk drive ID 5 on channel 2 as a local spare for the logical drive with ID 2C33AAEA.

```
# sccli c2t0d0 configure local-spare 2.5 2C33AAEA
```

create logical-drive

Description

The `create logical-drive` command creates a logical drive with the specified RAID level and disk drives, assigns the logical drive to the primary or secondary RAID controller, assigns the global spare drives, sets the stripe size, sets the maximum disk capacity per drive, sets the cache write policy, and sets the logical drive initialization mode.

Caution – Any time logical drives are created or deleted, the numbering of logical drive indexes might change. After creating or deleting logical drives, issue a `show logical-drive` command to view an updated list of logical drive indexes. Or, use logical drive IDs, which do not change over the lifetime of the logical drive, rather than logical drive indexes. For more information, see "Logical Drive Syntax" on page 13.

Note – You cannot create a logical drive composed of Sun StorEdge 3510 FC drives and Sun StorEdge 3511 SATA drives. If you try to mix drive types in a logical drive, an error is displayed. For more information, refer to the *Sun StorEdge 3000 Family RAID Firmware User's Guide*.

Note – All device capacity is displayed in powers of 1024. For details, see "Device Capacity" on page 15.

Stripe Size

Depending on the optimization mode and RAID level selected, newly created logical drives are configured with the default stripe sizes shown in the following table.

TABLE 5-10 Default Stripe Size Per Optimization Mode (Kbyte)

RAID Level	Sequential I/O	Random I/O
0, 1, 5	128	32
3	16	4

Note – Default stripe sizes optimize performance for most applications.

When you create a logical drive, you can replace the default stripe size with one that better suits your application.

- For sequential optimization, available stripe size choices include 16 Kbyte, 32 Kbyte, 64 Kbyte, 128 Kbyte, and 256 Kbyte.
- For random optimization, available stripe size choices include 4 Kbyte, 8 Kbyte, 16 Kbyte, 32 Kbyte, 64 Kbyte, 128 Kbyte, and 256 Kbyte.

To view the optimization mode, type `show cache-parameters`. For more information about optimization modes, see "`set cache-parameters`" on page 73.

Note – Once data is written to logical drives, the only way to change the stripe size is to back up all data to another location, delete all logical configurations of drives, reconfigure the logical drive with the stripe size, and reboot the array.

Syntax

```
create logical-drive raid-level disk-list [assignment] [global-spare {disk-list}] [stripe-size {size}]
[max-disk-capacity{size}] [write-policy] [mode]
```

Arguments

TABLE 5-11 Arguments for `create logical-drive`

Argument	Description
raid-level	Specify the RAID level to assign to the logical drive. Valid values: `raid0, raid1, raid3, raid5, raid1+, raid3+, raid5+`. The plus (+) sign includes a local spare. The local spare is randomly chosen from the disk-list.
disk-list	Specify a comma-separated list of IDs to use for the RAID set and the local spare, if specified. Use the `show disks free` command to determine which disks are available.
assignment	Specify the controller assignment for the logical drive. If no value is specified, the logical drive is assigned to the primary controller by default. Valid values: `primary`, `secondary`.
`global-spare` {*disk-list*}	Specify a list of drives to use as global spares, for example, d0:1,d0:2-3. When you assign a global spare, the system automatically assigns global spare status to the unassigned drive with the lowest drive ID. This enables the array to use the global spare to rebuild a logical drive automatically without user intervention when a failing drive needs to be replaced.

TABLE 5-11 Arguments for `create logical-drive` *(Continued)*

Argument	Description
`stripe-size`	Specify the stripe block size in a multiple of 4. Valid values: `4k, 8k, 16k, 32k, 64k, 128k, 256k`. Depending on the RAID level and cache optimization setting, some of the values may not be available for your configuration. To view the valid values for a specific RAID level, use the `show stripe-size-list` command. For details, see "`show stripe-size-list`" on page 150. If no stripe size is specified, the default value is used.
`max-disk-capacity` *n*`MB`	Allocates only *n*MB of each drive, instead of the entire drive; the remaining space on the drives can be used to expand the logical drive later. Include a MB or GB suffix with the specified parameter. The default value is the maximum capacity of the logical drive.
`size` *n*`MB`	An alternative to the `max-disk-capacity` keyword that specifies the total usable size of the resulting logical drive. The logical drive can be expanded later until it fills the capacity of all the member drives.
write-policy	Specify the logical drive cache policy. Valid values: `write-back`, `write-through`. If you do not specify a write policy, the logical drive uses the write policy specified for the controller. If the write policy changes for the controller, the write policy automatically changes for the logical drive as well. To set the controller write policy, use the `set cache-parameters` command. For details, see "`set cache-parameters`" on page 73.
mode	Specify the initialization mode. The default value is `online`. Because logical drive initialization can take up to several hours, you can choose to initialize a logical drive online to immediately begin configuring and using the logical drive before initialization is complete. However, because the controller is building the logical drive while performing I/O operations, initializing a logical drive online requires more time than offline initialization. Specify `offline` to manually bring the drive online. If you do not select online initialization, you can configure and use the drive only after initialization is complete. Because the controller is building the logical drive without having to also perform I/O operations, offline initialization requires less time than online initialization. Valid values: `online`, `offline`.

Examples

The following example creates a logical drive as RAID 1 with disks 1 through 4 on channel 2 on the primary controller. Channel 2 ID 0 is assigned as the global spare.

```
# sccli c2t0d0 create logical-drive raid1 2.1-4 primary global-spare 2.0
```

The following example creates a 10-Gbyte RAID 5 volume using six disk drives (disks with IDs 0 to 5 on channel 2), one of which is reserved as a global spare for this logical drive.

```
# sccli c2t0d0 create logical-drive raid5 size 10gb global-spare 2.0-5
```

The following example creates a logical drive as RAID 1 with disks 1, 3, and 4 on channel 2 on the primary controller. Channel 2 ID 0 is assigned as the global spare, and each disk drive uses 1000-Mbyte capacity to build the RAID.

```
# sccli c2t0d0 create logical-drive 1 2.1,2.3,2.4 primary global-spare 2.0 max-
disk-capacity 1000MB
```

delete logical-drive

Description

The `delete logical-drive` command deletes the specified logical drives and disassociates all disks that are assigned to the logical drive.

Caution – Any time logical drives are created or deleted, the numbering of logical drive indexes might change. After creating or deleting logical drives, issue a `show logical-drive` command to view an updated list of logical drive indexes. Or, use logical drive IDs, which do not change over the lifetime of the logical drive, rather than logical drive indexes. For more information, see "Logical Drive Syntax" on page 13.

Note – Before you can delete a logical drive, you must unmap all assigned LUNs. To review LUN maps, see "`show lun-maps`" on page 158.

Syntax

```
delete logical-drive {ld-index | ld-id}
```

Arguments

TABLE 5-12 Arguments for `delete logical-drive`

Argument	Description
ld-index	Specify the logical drive index number. For example, `ld3`.
ld-id	Specify the logical drive ID. For example, `71038221`.

Examples

The following example deletes the logical drive with the logical drive index number 2.

```
# sccli c2t0d0 delete logical-drive ld2
```

The following example deletes the logical drive with the logical drive ID number 3C24554F.

```
# sccli c2t0d0 delete logical-drive 3C24554F
```

expand

Description

The `expand` command expands a logical drive or logical volume by the specified size. The size you specify is added for each available physical drive in the logical drive, and is limited to the maximum available free disk space on the smallest physical drive. The total capacity added is calculated automatically, based on the RAID level. RAID levels 0, 1, 3, and 5 support expansion. For more information on how the expansion size is calculated, refer to the *Sun StorEdge 3000 Family RAID Firmware User's Guide*.

Note – To expand a logical volume, you must first expand the logical drives that make up the logical volume.

Note – To expand a logical drive with a local spare assigned, you must remove the local spare, and then expand the logical drive. Since local spares are dedicated to a specific logical drive, if you expand the logical drive size, the spare drive can no longer accommodate the size of the expanded logical drive.

Note – All device capacity is displayed in powers of 1024. For details, see "Device Capacity" on page 15.

Syntax

```
expand {ld-index | lv-index | ld-id | lv-id} size [online|offline]
```

Arguments

TABLE 5-13 Arguments for `expand`

Argument	Description
lv-index	Specify a comma-separated list of logical volume indexes, for example, `lv0,lv1,lv2`.
ld-index	Specify the logical drive index number. For example, `ld3`.
lv-id	Specify a logical volumes using an eight-digit hexadecimal logical volume ID, for example, `3C24554F`.
ld-id	Specify the logical drive ID. For example, `71038221`.
`size` *n*`MB`	Specify the total usable size per physical drive to be added to the logical drive. The capacity you specify is allocated from each available physical drive and cannot exceed the space available on the smallest drive. Include an MB or GB suffix with the specified parameter.
`online|offline`	Specify the expansion mode. The default value is `online`. Because logical drive expansion can take up to several hours, you can choose to expand a logical drive online to immediately begin configuring and using the logical drive before expansion is complete. However, because the controller is expanding the logical drive while performing I/O operations, expanding a logical drive online requires more time than offline expansion. Specify `offline` to configure and use the drive only after expansion is complete. Because the controller is expanding the logical drive without having to also perform I/O operations, offline expansion requires less time than online expansion. Valid values: `online`, `offline`.

Examples

The following example expands each physical drive in logical drive 5 by 36 Gbyte and brings the logical drive online.

```
sccli> expand ld5 36GB online
```

rebuild

Description

The `rebuild` command rebuilds the specified logical drive. RAID levels 1, 3, and 5 are supported. If you attempt to perform the `rebuild` command on an unsupported RAID level or if no spare drives are available, an error is returned.

In most cases, you do not need to use this command because replaced drives are automatically rebuilt. If a spare is not present when the failure occurs, or for some reason the drive does not rebuild, you can use this command to manually start the rebuild process. Also, if the rebuild process is interrupted by a reset, use this command to restart the rebuilding process.

The time required to rebuild a logical drive is determined by the size of the logical drive, the I/O that is being processed by the controller and the array's rebuild priority setting. To review the rebuild priority, run the `show disk-array` command. For details, see "`show disk-array`" on page 97.

Syntax

```
rebuild [ld-index | ld-id]
```

Arguments

TABLE 5-14 Arguments for `rebuild`

Argument	Description
ld-index	Rebuild a specific logical drive. The index number is generated from the Sun StorEdge CLI. Use the `show logical-drive` command to find the number.
ld-id	Rebuild a specific logical drive. The ID is generated from the Sun StorEdge CLI. Use the `show logical-drive` command to find the number.

Examples

The following example rebuilds logical drive 0.

```
# sccli c2t0d0 rebuild ld0
```

set logical-drive

Description

The `set logical-drive` command sets the write policy and controller assignment for the specified logical drive. Before using this command, you must create a logical drive. For details, see "`create logical-drive`" on page 131.

You can also use this command to reset the status of a previously failed drive. After a logical drive experiences a fatal failure, it will show as `Dead` when you view drive status using the `show logical-drive` command.

When this occurs for non-redundant RAID sets, reset the controller and then reset the drive status to `good`.

When this occurs for redundant RAID sets, reset the controller, reset the drive status to `degraded`, and then rebuild the logical drive.

Note – Before resetting drive status to either `good` or `degraded`, you must reset the controller. After resetting the controller, the drive status will still show as `Dead`. For more information on resetting the controller, refer to "`reset controller`" on page 72.

Note – For information on resetting drive status using the firmware application, refer to the *Sun StorEdge 3000 Family RAID Firmware User's Guide*.

Syntax

```
set logical-drive {ld-index | ld-id} [write-policy] [assignment] status {good
| degraded}
```

Arguments

TABLE 5-15 Arguments for `set logical-drive`

Argument	Description
ld-index	Specify the logical drive index number. For example, `ld3`.
ld-id	Specify the logical drive ID. For example, `71038221`.
write-policy	Set the write policy for the logical drive. Valid values: `write-back`, `write-through`, `default`. If you do not specify a write-policy, or if you specify `default`, the logical drive uses the write-policy specified for the controller. If the write policy changes for the controller, the write policy automatically changes for the logical drive as well. To set the controller write policy, use the `set cache-parameters` command. For details, see "`set cache-parameters`" on page 73.
assignment	Specify the controller assignment for the logical drive. If no value is specified, the logical drive is assigned to the primary controller by default. Valid values include: `primary` and `secondary`.
status	Specify to reset the logical drive status. Valid values include: `degraded` (for failed redundant RAID sets) and `good` (for failed non-redundant RAID sets).

Caution – In a single-controller configuration, if you set the cache policy to `write-back`, data corruption might occur in the event of a controller failure. To avoid the possibility of data corruption, set the write policy for single-controller configurations to `write-through`.

Examples

The following example sets the write policy for logical drive 0 to write-back.

```
sccli> set logical-drive ld0 write-back
```

The following example resets the drive status to good for a failed non-redundant RAID set.

```
sccli> set logical-drive status good
```

show disks logical-drive

Description

The `show disks` command displays information about the disk drives in the specified logical drive. Returned values include: channel number, SCSI ID, size (MB), speed, logical drive index, logical drive ID that the disk is assigned to, status, vendor, and revision.

Caution – Any time logical drives are created or deleted, the numbering of logical drive indexes might change. After creating or deleting logical drives, issue a `show logical-drive` command to view an updated list of logical drive indexes. Or, use logical drive IDs, which do not change over the lifetime of the logical drive, rather than logical drive indexes. For more information, see "Logical Drive Syntax" on page 13.

Syntax

```
show disks [logical-drive {ld-index | ld-id}]
```

Note – `ld` can be substituted for the keyword `logical-drive`.

Arguments

TABLE 5-16 Arguments for `show disks logical-drive`

Argument	Description
ld-index	Show a specific logical drive. The index number is generated from the Sun StorEdge CLI. Values range from 0 to 31. Use the `show logical-drive` command to find the number.
ld-id	Show a specific logical drive. The ID is generated from the Sun StorEdge CLI. Use the `show logical-drive` command to find the number.

Examples

The following example returns all logical drive disks with the logical drive ID of 13843684.

```
sccli> show disks logical-drive 13843684
Ch  Id    Size     Speed  LD    LD-ID    Status   IDs                        Rev
-------------------------------------------------------------------------------
 0   0   33.92GB   160MB  ld0   13843684 ONLINE   SEAGATE ST336607LSUN36G 0307
                                                     S/N 3JA1BJ2P00007338
 0   1   33.92GB   160MB  ld0   13843684 ONLINE   SEAGATE ST336607LSUN36G 0307
                                                     S/N 3JA1C2E600007339
 0   2   33.92GB   160MB  ld0   13843684 ONLINE   SEAGATE ST336607LSUN36G 0307
                                                     S/N 3JA22Z0A00007351
 0   3   33.92GB   160MB  ld0   13843684 ONLINE   SEAGATE ST336607LSUN36G 0307
                                                     S/N 3JA230NL00007351
```

The following example returns all logical drive disks with a logical drive index of 0.

```
sccli> show disks ld ld0
Ch  Id    Size     Speed  LD     LD-ID    Status   IDs                        Rev
-------------------------------------------------------------------------------
 2   6   33.92GB   200MB  ld0    161637C1 ONLINE   SEAGATE ST336753FSUN36G 0349
                                                      S/N 3HX0YEJT00007349
 2   7   33.92GB   200MB  ld0    161637C1 ONLINE   SEAGATE ST336753FSUN36G 0349
                                                      S/N 3HX0Y6J300007349
 2   8   33.92GB   200MB  ld0    161637C1 ONLINE   SEAGATE ST336753FSUN36G 0349
                                                      S/N 3HX0YC1Y00007349
 2   9   33.92GB   200MB  ld0    161637C1 ONLINE   SEAGATE ST336753FSUN36G 0349
                                                      S/N 3HX0Y7W100007349
```

Returned Values

The returned values for the `show disks` command are described in the following section.

Speed values include:

- Async – SCSI Asynchronous
- SYNC – SCSI Synchronous
- 20MB – SCSI Ultra
- 40MB – SCSI Ultra Wide
- 80MB – SCSI Ultra2
- 160MB – SCSI 160
- 320MB – SCSI Ultra3

- 100MB – FC 1 GB/s
- 200MB – FC 2 GB/s

Status values include:

- Online – in good condition
- Global – global spare
- Stand-By – standby for global or local spare
- Initing – initialization in progress
- Rebuild – rebuild in progress
- New – new disk that has not been configured
- Used – contains RAID meta data
- Bad – failed disk
- Absent – disk does not exist
- Missing – configured disk is missing
- SB-Miss – configured spare drive is missing
- None – not assigned
- Good – no operation in progress

show logical-drive

Description

The `show logical-drive` command displays information about specified logical drives. For details on creating logical drives, see "`create logical-drive`" on page 131.

Caution – Any time logical drives are created or deleted, the numbering of logical drive indexes might change. After creating or deleting logical drives, issue a `show logical-drive` command to view an updated list of logical drive indexes. Or, use logical drive IDs, which do not change over the lifetime of the logical drive, rather than logical drive indexes. For more information, see "Logical Drive Syntax" on page 13.

Note – If no write policy is specified for the logical drive, the write policy is set to the global controller setting and "Default" displays in the Write-Policy field. To view the controller write policy, run the `show cache-parameters` command. For more information about the cache policy, see "`set cache-parameters`" on page 73.

Syntax

```
show logical-drive [ld-list]
```

Note – The abbreviation `ld` can be substituted for the keyword `logical-drive`.

Arguments

TABLE 5-17 Arguments for `show logical-drive`

Argument	Description
ld-list	Specify a list of logical drives.

If no options are specified, all logical drives are displayed.

Examples

The following example returns all logical drive information.

```
sccli> show ld
LD    LD-ID        Size  Assigned  Type   Disks Spare  Failed Status
------------------------------------------------------------------------
ld0   161637C1 101.00GB  Primary   RAID5  4     1      0      Good
                         Write-Policy Default          StripeSize 128KB
```

The following example returns all logical drives with logical drive index numbers 0 and 1.

```
sccli> show logical-drive ld0,ld1
LD    LD-ID        Size  Assigned  Type   Disks Spare  Failed Status
------------------------------------------------------------------------
ld0   250FF1DC     30MB  Primary   RAID5  4     2      0      Good
                         Write-Policy Default          StripeSize 128KB
ld1   363F38D9  67.34GB  Primary   RAID3  3     2      0      Good
                         Write-Policy Default          StripeSize  16KB
```

Returned Values

Returned values include LD index, LD ID, size (MB or GB), controller assignment, RAID level, number of disks, number of spares, number of failed disks, status, write policy type, block size (KB), and block status.

Status values include:

- Good – no reported failures
- Good I – online initialization or expansion in progress
- Good E – offline expansion in progress

- Initing – initialization in progress
- Initing I – offline initialization in progress
- Incomplete – two or more drives failed
- Invalid – wrong optimization setting
- Dead – drive in a fatal fail state
- Drv Failed – drive failed
- Drv Absent – drive not detected
- Rebuilding – rebuild in progress
- P – parity check in progress
- E – expand in progress
- I – online initialization in progress
- A – adding disk in progress
- AP – adding disk paused

show logical-drives add-disk

Description

The `show logical-drives add-disk` command displays the status of disks that are being added to a logical drive. Returned values include LD index, LD ID, and progress. For details on the `add disk` command, see "`add disk`" on page 126.

Syntax

```
show logical-drives add-disk
```

Note – The abbreviation `ld` can be substituted for the keyword `logical-drive`.

Examples

The following example returns the completion percentage for the disks that are being added.

```
# sccli c2t0d0 show logical-drives add-disk
```

show logical-drives expanding

Description

The `show logical-drives expanding` command displays the progress of the logical drive expansion. Returned values include LD index, LD ID, and progress. For details on expanding logical drives, see "`expand`" on page 135.

Syntax

```
show logical-drives expanding
```

Note – The abbreviation `ld` can be substituted for the keyword `logical-drive`.

Examples

The following example returns the completion percentage for the logical drive expansion.

```
sccli> show logical-drives expanding
LD      LD-ID     Status
------------------------
ld0     250FF1DC  60% complete (offline)
```

show logical-drives initializing

Description

The `show logical-drives initializing` command displays the progress of the RAID controller initialization. Returned values include LD index, LD ID, and progress.

Syntax

```
show logical-drives initializing
```

Note – The abbreviation `ld` can be substituted for the keyword `logical-drive`.

Examples

The following example returns the completion percentage of the RAID controller for all logical drives.

```
sccli> show ld initializing
LD      LD-ID     Status
------------------------
ld1     59839F65  10% complete (online)
```

show logical-drives logical volume

Description

The `show logical-drives logical-volume` command displays information for all logical drives in a specified logical volume.

Caution – Any time logical volumes are created or deleted, the numbering of logical volume indexes might change. After creating or deleting logical volumes, issue a `show logical-volumes` command to view an updated list of logical volume indexes. Or, use logical volume IDs, which do not change over the lifetime of the logical volume, rather than logical volume indexes. For more information, see "Logical Volume Syntax" on page 14.

Note – If no write policy is specified for the logical drive, the write policy is set to the global controller setting and "Default" displays in the Write-Policy field. To view the controller write policy, run the `show cache-parameters` command. For more information about the cache policy, see "`set cache-parameters`" on page 73.

Syntax

```
show logical-drives logical-volume {lv-index | lv-id}
```

Note – The abbreviation `ld` can be substituted for the keyword `logical-drive`. The abbreviation `lv` can be substituted for the keyword `logical-volume`.

Arguments

TABLE 5-18 Arguments for `show logical-drives logical volume`

Argument	Description
lv-index	Show specific drives in a logical volume. The index number is generated from the Sun StorEdge CLI. Use the `show logical-volumes` command to find the number.
lv-id	Show specific drives in a logical volume. The ID number is generated from the Sun StorEdge CLI. Use the `show logical-volumes` command to find the number

Examples

The following example returns all logical drives with the logical volume ID of 12345678.

```
# sccli c2t0d0 show logical-drives logical-volume 12345678
```

The following example shows all logical drives in the logical volume with the ID of 0.

```
sccli> show ld lv lv0
LD    LD-ID        Size  Assigned  Type   Disks Spare  Failed Status
------------------------------------------------------------------------
ld1   363F38D9  67.34GB  Primary   RAID3  3     2      0      Good
                         Write-Policy Default          StripeSize  16KB
```

Returned Values

Returned values include LD index, LD ID, RAID level, size (GB), status, number of disks, number of spares, and number of failed disks.

Status values include:

- Good – in good condition
- Initing – the logical drive is initializing
- Incomplete – two or more drives failed
- Invalid – wrong optimization setting
- Drv Failed – drive failed
- Drv Absent – drive not detected

show logical-drives parity-check

Description

The `show logical-drives check-parity` command displays the status of a parity check being performed on a logical drive. Returned values include LD index, LD ID, and progress. To cancel the parity check, use the `abort parity-check` command. For details, see "abort parity-check" on page 125.

Syntax

```
show logical-drives parity-check
```

Note – The abbreviation `ld` can be substituted for the keyword `logical-drive`.

Examples

The following example returns the percent complete for the parity check for logical drive 0.

```
sccli> check parity ld0
sccli> show ld parity-check
LD      LD-ID     Status
------------------------
ld0     627D800A  2% complete
```

For details on the `check parity` command, see "check parity" on page 128.

show logical-drives rebuilding

Description

The `show logical-drives rebuilding` command displays the status for all logical drives being rebuilt. Returned values include LD index, LD ID, and progress. To cancel the rebuild, use the `abort rebuild` command. For details, see "abort rebuild" on page 126.

Syntax

```
show logical-drives rebuilding
```

Note – The abbreviation `ld` can be substituted for the keyword `logical-drive`.

Examples

The following example returns the rebuilding process percent complete for the logical drive.

```
# sccli c2t0d0 show logical-drives rebuilding
```

show media-check

Description

The `show media-check` command displays the progress of a media check. To cancel the media check, use the `abort media-check` command. For details, see "abort media-check" on page 124.

Note – The front-panel LEDs for the drives being checked will blink until the media check is finished or aborted. For more information about LEDs, refer to the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual* for your array.

Syntax

```
show media-check
```

Examples

The following example shows the progress of the media check.

```
sccli> show media-check
 Ch   ID   Iteration   Status
------------------------------
 2    6    0           2% complete
 2    7    0           2% complete
 2    8    0           2% complete
 2    9    0           2% complete
```

show stripe-size-list

Description

The `show stripe-size list` command displays the valid stripe block size list for the specified RAID level. To set the stripe size for an individual logical drive, use the `create logical-drive` command. For details, see "create logical-drive" on page 131.

Note – Once data is written to logical drives, the only way to change the stripe size is to back up all data to another location, delete all logical configurations of drives, reconfigure the logical drive with the stripe size, and reboot the array.

Syntax

```
show stripe-size-list raid-level
```

Arguments

TABLE 5-19 Arguments for `show stripe-size-list`

Argument	Description
raid-level	Specify the RAID level to display the corresponding stripe block size. Valid values: `raid0, raid1, raid3, raid5`.

Examples

The following example shows the stripe block list for RAID5.

```
sccli> show stripe-size-list raid5
 raid5-stripe-sizes: 16KB 32KB 64KB 128KB 256KB
 raid5-stripe-size-default: 128KB
```

shutdown logical-drive

Description

The `shutdown logical-drive` command guarantees that all the data is written to the disk drives, so the disk drives can be safely removed from the chassis. Other logical drives in the array are still accessible if only one logical drive is shut down.

Caution – This command is not reversible. To access the logical drive again, the array must be rebooted.

Caution – Any time logical drives are created or deleted, the numbering of logical drive indexes might change. After creating or deleting logical drives, issue a `show logical-drive` command to view an updated list of logical drive indexes. Or, use logical drive IDs, which do not change over the lifetime of the logical drive, rather than logical drive indexes. For more information, see "Logical Drive Syntax" on page 13.

Note – A logical drive that belongs to a logical volume cannot be shut down.

Syntax

```
shutdown logical-drive ld-index | ld-id
```

Note – The abbreviation `ld` can be substituted for the keyword `logical-drive`.

Arguments

TABLE 5-20 Arguments for `shutdown logical-drive`

Argument	Description
ld-index	Specify the logical drive index number. For example, `ld3`.
ld-id	Specify the logical drive ID. For example, `71038221`.

Examples

The following example shuts down the logical drive and then shows the status of that drive.

```
sccli> shutdown logical-drive ld3
WARNING: This is a potentially dangerous operation.
The logical drive will be placed permanently offline.
A controller reset will be required to bring it back online.
Are you sure? yes
sccli: ld3: offlined logical drive
sccli> show logical-drive
LD    LD-ID         Size  Assigned    Type     Disks Spare  Failed Status
------------------------------------------------------------------------
ld0   0043BF50  101.01GB  Primary     RAID0      3     0      0    Good
ld1   025E42E1   33.67GB  Primary     RAID1      2     3      0    Good
ld2   05CC1F19   67.34GB  Primary     NRAID      2     0      0    Good
ld3   52AD5DEB   33.67GB  Primary     NRAID      1     0      0    ShutDown
```

unconfigure local-spare

Description

The `unconfigure local-spare` command removes a local spare disk as a dedicated spare disk for the specified logical drive.

Caution – Any time logical drives are created or deleted, the numbering of logical drive indexes might change. After creating or deleting logical drives, issue a `show logical-drive` command to view an updated list of logical drive indexes. Or, use logical drive IDs, which do not change over the lifetime of the logical drive, rather than logical drive indexes. For more information, see "Logical Drive Syntax" on page 13.

Syntax

```
unconfigure local-spare disk [ld-index | ld-id]
```

Arguments

TABLE 5-21 Arguments for `unconfigure local-spare`

Argument	Description
disk	Specify the disk to unconfigure. For example, specify the disk with target ID 1 on channel 2 as `2.1`.
ld-index	Specify the logical drive index number. For example, `ld3`.
ld-id	Specify the logical drive ID. For example, `71038221`.

Examples

The following example unconfigures disk drive ID 5 on channel 2 as a local spare for the logical drive with index number 2.

```
# sccli c2t0d0 unconfigure local-spare 2.5 ld2
```

The following example unconfigures disk drive ID 5 on channel 2 as a local spare for the logical drive with ID 2C33AAEA.

```
# sccli c2t0d0 unconfigure local-spare 2.5 2C33AAEA
```

Partition Commands

The following commands are explained in this section:

- `configure partition`
- `map partition`
- `show lun-maps`
- `show partitions`
- `unmap partition`

configure partition

Description

The `configure partition` command specifies how much disk space to assign to the partition or deletes a specified partition. When a logical drive or logical volume is created, it is automatically assigned to partition 0.

Syntax

```
configure partition partition [size | delete]
```

Arguments

TABLE 5-22 Arguments for `configure partition`

Argument	Description
partition ID	Specify a combination of LD-ID/LV-ID and partition-number in *XXXXXXXX-PP* format where *XXXXXXXX* represents the Logical Drive/Volume ID, or a combination of LD/LV Index and partition number in ld*{X}*/lv*{X}-PP* format where LD/LV Index is the Logical Drive/Volume Index number. *PP* is a two-digital hexidecimal number that represents the partition number.
size	Specify the partition size in MB, such as `4000MB`. To delete a partition, specify a size of 0. Or, use the `delete` keyword.
`delete`	To delete a partition, specify the `delete` keyword. All partitions in the logical drive or logical volume must be unmapped for this argument to take effect.

Note – All device capacity is displayed in powers of 1024. For details, see "Device Capacity" on page 15.

Note – Changes to a partition cause the next-higher-numbered partition to shrink or grow. Any change in the size of one partition causes the dimensions of the partition next to it to change as well, invalidating whatever data might be stored on both partitions. Before implementing a new partition layout, the layout is displayed and the user is warned that data in the old partitions will be lost. The user is prompted to continue.

Examples

The following example creates a partition for a logical drive with a logical drive index number of 2, partition number of 2, and partition size of 4000 Mbyte, and leaves the remaining capacity for the next partition.

```
# sccli c2t0d0 configure partition ld2-02 4000MB
```

The following example creates a partition for a logical drive with a logical drive ID of 1D2F34AA, partition number of 2, and partition size of 4000 Mbyte, and leaves the remaining capacity for the next partition.

```
# sccli c2t0d0 configure partition 1D2F34AA-02 4000MB
```

This example deletes a partition from logical drive 0.

```
# sccli c2t0d0 configure partition ld0-0 delete
```

map partition

Description

The `map partition` command maps a partition to the specified host channel, target, and LUN on the specified controller. To review host channel assignments, run the `show channels` command. For more information, see "`show channels`" on page 113. To review LUN maps, see "`show lun-maps`" on page 158.

Note – In redundant-controller configurations, the specified channel and target must be valid on the controller to which the specified logical drive or volume is assigned. For example, to map a partition to the primary controller in a FC array, the logical drive or logical volume must be assigned to a primary channel ID.

Note – A maximum of 32 partitions per logical drive can be created. And, a maximum of 64 host WWN entries can be created.

Syntax

To map a partition, use the following syntax:

```
map partition-id channel channel-number target SCSI-id lun lun-number [wwpn | host-id][read-
only | read-write] [include | exclude] [mask] [name]
```

Or, to map a partition, use the following syntax:

```
map partition-id channel.target.lun [wwpn | host-id][read-only | read-write] [include |
exclude] [mask] [name]
```

Arguments

TABLE 5-23 Arguments for `map partition`

Argument	Description
partition ID	Specify a combination of LD-ID/LV-ID and partition-number in *XXXXXXXX-PP* format where *XXXXXXXX* represents the Logical Drive/Volume ID, or a combination of LD/LV Index and partition number in ld{*X*}/lv{*X*}-*PP* format where LD/LV Index is the Logical Drive/Volume Index number. *PP* is a two-digital hexidecimal number that represents the partition number. Valid partition-IDs for a logical drive, for example, are `3C2B1111-01` or `ld2-03`. Valid partition-IDs for a logical volume, for example, are `205FB9AC-01` or `lv2-03`.
`channel` *ch*	Specify a host channel number between 0 and 7.
`target` *target*	Specify a host channel target number between 0 and 126.
`lun` *lun*	Specify a host channel LUN number.
channel.target.lun	Specify the channel, target, and LUN to map. For example, `4.1.2` represents physical channel 4, target ID 1, logical unit number 2.
wwpn	*Sun StorEdge 3000 family FC and SATA devices only.* Specify a worldwide port name (WWPN) to map to the host bus adapter with the specified WWPN. To review the available WWPN values, run the `show port-wwn` command. For details, see "`show port-wwn`" on page 29.
host-id	Specify the host-ID of the corresponding WWPN to map to the host bus adapter. To review the available WWPN values, run the `show port-wwn` command. For details, see "`show port-wwn`" on page 29.

TABLE 5-23 Arguments for `map partition` *(Continued)*

Argument	Description
[read-only | read-write]	*Sun StorEdge 3000 family FC and SATA devices only.* To specify the access mode, which assigns Read-Only or Read/Write privileges, type read-only or read-write.
[include | exclude]	*Sun StorEdge 3000 family FC and SATA devices only.* Specify include to grant LUN access to the host identified by the WWN and WWN Mask. Type exclude to deny the identified host LUN access. If no host has been granted access to the selected LUN (by specifying include), all hosts can access that LUN. Once any host is granted access to a LUN, only hosts with explicit access (with include specified) can access that LUN.
mask	*Sun StorEdge 3000 family FC and SATA devices only.* Specify the WWN Mask. LUN access is granted based on the host identified by WWN and mask.
name	*Sun StorEdge 3000 family FC and SATA devices only.* To set a name for the filter, type the name you want to use

Examples

The following example maps partition 0 of the logical drive with index number 2 to LUN 0 of channel 1 on ID 112 and 113.

```
# sccli c2t0d0 map ld2-00 channel 1 target 112 lun 0
```

The following example maps partition 0 of the logical drive with ID 2D1A2222 to LUN 0 of channel 1 on ID 112.

```
# sccli c2t0d0 map 2D1A2222-00 channel 1 target 112 lun 0
```

The following example maps partition 0 of the logical volume with index number 2 to LUN 0 of channel 1 on ID 112. It sets access permission to read/write, includes the filter so all hosts can access the LUN, and names it “sabre-2.”

```
# sccli c2t0d0 map lv2-00 1.112.0 read-write include sabre-2
```

show lun-maps

Description

The `show lun-maps` command shows all partitions mapped to a specified host channel. Returned values include host channel, target ID, LUN ID, logical volume or logical drive index, partition ID, controller assignment, and worldwide name (WWN) filters for the LUNs.

Sun StorEdge 3000 family FC and SATA arrays only. This command additionally shows mask information, access (`RW` for read/write or `RO` for ready only permission), type (`I` for include or `E` for exclude), and name.

Syntax

```
show lun-maps [channel host-channel-list]
```

Arguments

TABLE 5-24 Arguments for `show lun-maps`

Argument	Description
host-channel-list	Specify the LUN format. Use the format {n}[,…{m}] or a range format "{*n*}-{*m*}" or {*n*}[,…{*p*}-{*m*}]. Valid channel numbers include 0–7 or 0–5 depending on the hardware configuration.

Examples

The following example shows all partitions mapped to host channel 1 and 3.

```
sccli> show lun-maps channel 1-3
Ch Tgt LUN   ld/lv  ID-Partition  Assigned  Filter Map
------------------------------------------------------------
 1   0   0   ld0    64D138EC-00   Primary
 3   1   0   ld1    3C67B2FD-00   Secondary
```

The following example shows all partitions mapped to the host channels in a Sun StorEdge 3510 FC array.

```
sccli> show lun-maps
Ch Tgt LUN   ld/lv   ID-Partition  Assigned  Filter Map
                                  Access Type Mask             Name
-------------------------------------------------------------------------
0  40   0   ld2     3F1561F1-00   Primary   210000E08B101256 {sabre-2}
                                   RW I      FFFFFFFFFFFFFFFF
0  40   0   ld0     20CEAE10-00   Primary   210100E08B301256 {sabre-1}
                                   RW I      FFFFFFFFFFFFFFFF
1  42   0   ld1     15F4EEA7-00   Secondary
1  42   1   ld3     029B14A2-00   Secondary
```

show partitions

Description

The `show partitions` command displays information about all disk partitions, or just those partitions allocated from the specified logical volumes or logical drives. Returned values include logical volume or logical drive index, logical volume or logical drive ID, partition number, offset (GB), and size (GB).

Syntax

```
show partitions [{lv-index | lv-id} | {ld-index | ld-id}]
```

Arguments

TABLE 5-25 Arguments for `show partitions`

Argument	Description
lv-index	Specify a comma-separated list of logical volume indexes, for example, `lv0,lv1,lv2`.
ld-index	Specify the logical drive index number. For example, `ld3`.
lv-id	Specify a logical volumes using an eight-digit hexadecimal logical volume ID, for example, `3C24554F`.
ld-id	Specify the logical drive ID. For example, `71038221`.

Examples

The following example shows the logical drive partition table for the logical drive with the ID 161637C1.

```
sccli> show partitions logical-drive 161637c1
LD/LV    ID-Partition        Size
-----------------------------------
ld0-00   161637C1-00     101.00GB
```

The following example shows the logical volume partition table for the logical volume with index number 0.

```
sccli> show part lv0
LD/LV    ID-Partition      Size
-------------------------------
lv0-00   02CE9894-00     4.00GB
```

unmap partition

Description

The `unmap partition` command unmaps a partition. Use the appropriate syntax depending on the target you want to unmap. To view the current partitions, use the `show partitions` or `show lun-maps` command. For details, see "`show partitions`" on page 159 or "`show lun-maps`" on page 158.

You can unmap a partition currently mapped to the specified channel.target.lun address. If a host worldwide port name (WWPN) or alias (previously defined using `create host-wwn-name`) is specified, the specified host LUN mapping is removed without affecting other host LUN maps on the same host LUN.

Syntax

To unmap a partition using a channel, target, LUN address, use the following syntax.

```
unmap partition channel.target.lun [wwpn | host-wwn-name]
```

You can unmap a specified partition from any LUNs to which its mapped, or if `channel` is specified, from LUNs on the specified channel.

To unmap a partition from a specified partition or channel, use the following syntax.

```
unmap partition partition-id [channel]
```

Arguments

TABLE 5-26 Arguments for `unmap partition`

Argument	Description
partition-id	Specify a combination of LD-ID/LV-ID and partition-number in *XXXXXXXX-PP* format where *XXXXXXXX* represents the Logical Drive/Volume ID, or a combination of LD/LV Index and partition number in ld{*X*}/lv{*X*}-*PP* format where LD/LV Index is the Logical Drive/Volume Index number. *PP* is a two-digital hexidecimal number that represents the partition number. Valid partition IDs for a logical drive, for example, are `3C2B1111-01` or `ld2-03`. Valid partition IDs for a logical volume, for example, are `205FB9AC-01` or `lv2-03`.
channel	Specify a host channel number between 0 and 7 when unmapping a specific partition from only one channel.
channel.target.lun	Specify the channel, target, and LUN to unmap. This must be on the same controller as the logical volume or the logical drive that you are unmapping. Specify a host channel number between 0 and 7 when unmapping a specific partition from only one channel. Specify a host channel SCSI target number between 0 and 126. Since a host channel can have multiple SCSI IDs, the user can map the partition to multiple SCSI IDs of a host channel. Use the SCSI-ID-list format: {p}[,…{q}[,…{n}]]. Specify a host channel LUN number. For example, `4.1.2` represents physical channel 4, target ID 1, logical unit number 2.
wwpn	*Sun StorEdge 3000 family FC and SATA devices only.* Specify a worldwide port name (WWPN) to unmap from the host bus adapter with the specified WWPN. To review the available WWPN values, run the `show port-wwn` command. For details, see "`show port-wwn`" on page 29.
host-wwn-name	*Sun StorEdge 3000 family FC and SATA devices only.* Specify a host name to unmap from the host bus adapter with the specified worldwide name (WWN).

Examples

The following example unmaps the partition assigned to host channel, target ID 0, LUN 3.

```
sccli> show lun-maps
Ch Tgt LUN   ld/lv  ID-Partition  Assigned  Filter Map
------------------------------------------------------------
 1   0   0   ld0    13843684-00   Primary
 1   0   1   ld1    295AB786-00   Primary
 1   0   2   ld2    0A7F8942-00   Primary
 1   0   3   ld2    0A7F8942-00   Primary
sccli> unmap partition 1.0.3
sccli> show lun-maps
Ch Tgt LUN   ld/lv  ID-Partition  Assigned  Filter Map
------------------------------------------------------------
 1   0   0   ld0    13843684-00   Primary
 1   0   1   ld1    295AB786-00   Primary
 1   0   2   ld2    0A7F8942-00   Primary
```

The following example unmaps the partition from partition ID 0A7F8942-00.

```
sccli> unmap partition 0A7F8942-00 1
```

Logical Volume Commands

The following commands are explained in this section:

- `create logical-volume`
- `delete logical-volume`
- `set logical-volume`
- `show logical-volumes`

`create logical-volume`

Description

Note – Logical volumes are unsuited to some modern configurations such as Sun Cluster environments, and do not work in those configurations. Use logical drives instead. For more information about logical drives, see "`create logical-drive`" on page 131.

The `create logical-volume` command creates a logical volume from the specified logical drives on the specified controller. The logical drives used to create the logical volume must not already be mapped to any host channels. Be sure to specify the secondary keyword if the underlying logical drives are mapped to the secondary controller.

Caution – Any time logical volumes are created or deleted, the numbering of logical volume indexes might change. After creating or deleting logical volumes, issue a `show logical-volumes` command to view an updated list of logical volume indexes. Or, use logical volume IDs, which do not change over the lifetime of the logical volume, rather than logical volume indexes. For more information, "Logical Volume Syntax" on page 14.

Syntax

```
create logical-volume ld-list [assignment] [write-policy]
```

Arguments

TABLE 5-27 Arguments for `create logical-volume`

Argument	Description
ld-list	A comma separated list of logical drive indexes, for example, ld0,ld1,ld2, or a list of logical drive identifiers, such as, `71038221`.
assignment	Specify the controller assignment for the logical volume. If no value is specified, the logical volume is assigned to the primary controller by default. Valid values: `primary`, `secondary`.
write-policy	Set the write policy for the logical volume. Valid values: `write-back`, `write-through`. If you do not specify a write policy, the logical volume uses the write policy specified for the controller. If the write policy changes for the controller, the write policy automatically changes for the logical volume as well. To set the controller write policy, use the `set cache-parameters` command. For details, see "`set cache-parameters`" on page 73.

Examples

The following example creates a logical volume using `ld0` and `ld2` and assigns it to the primary controller.

```
# sccli c2t0d0 create logical-volume ld0,ld2 primary
```

The following example creates a logical volume using IDs 2378FDED, 7887DDAB and assigns it to the secondary controller.

```
# sccli c2t0d0 create logical-volume 2378FDED,7887DDAB secondary
```

`delete logical-volume`

Description

The `delete logical-volume` command deletes the specified logical volumes.

Caution – Any time logical volumes are created or deleted, the numbering of logical volume indexes might change. After creating or deleting logical volumes, issue a `show logical-volumes` command to view an updated list of logical volume indexes. Alternatively, use logical volume IDs, which do not change over the lifetime of the logical volume, rather than logical volume indexes. For more information, see "Logical Volume Syntax" on page 14.

Note – Before you can delete a logical volume, you must unmap all assigned LUNs. To review LUN maps, see "show lun-maps" on page 158.

Syntax

```
delete logical-volume {lv-index | lv-id}
```

Arguments

TABLE 5-28 Arguments for `delete logical-volume`

Argument	Description
lv-index	Specify a comma-separated list of logical volume indexes, for example, `lv0,lv1,lv2`.
lv-id	Specify a logical volumes using an eight-digit hexadecimal logical volume ID; for example, `3C24554F`.

Examples

The following example deletes the logical volume with the logical volume index number 2.

```
# sccli c2t0d0 delete logical-volume lv2
```

The following example deletes the logical volume with the logical volume ID number 3C24554F.

```
# sccli c2t0d0 delete logical-volume 3C24554F
```

set logical-volume

Description

The `set logical-volume` command sets the write policy and controller assignment for the specified logical volume. Before using this command, you must create a logical volume. For more details, see "create logical-volume" on page 163.

Note – Logical volumes are unsuited to some modern configurations such as Sun Cluster environments, and do not work in those configurations. Use logical drives instead. For more information about logical drives, see "create logical-drive" on page 131.

Syntax

```
set logical-volume {lv-index | lv-id} [assignment] [write-policy]
```

Arguments

TABLE 5-29 Arguments for `set logical-volume`

Argument	Description
lv-index	Set specific drives in a logical volume. The index number is generated from the Sun StorEdge CLI. Use the `show logical-volumes` command to find the number.
lv-id	Set specific drives in a logical volume. The ID number is generated from the Sun StorEdge CLI. Use the `show logical-volumes` command to find the number.
write-policy	Set the write policy for the logical volume. Valid values: `write-back`, `write-through`, `default`. If you do not specify a write-policy, or if you specify default, the logical volume uses the write-policy specified for the controller. If the write policy changes for the controller, the write policy automatically changes for the logical volume as well. To set the controller write policy, use the `set cache-parameters` command. For details, see "set cache-parameters" on page 73.
assignment	Specify the controller assignment for the logical volume. If no value is specified, the logical volume is assigned to the primary controller by default. Valid values: `primary`, `secondary`.

Examples

The following example sets write policy for logical volume 4 to write-back.

```
set logical-volume lv4 write-back
```

show logical-volumes

Description

The `show logical-volumes` command displays information about all, or a specified list, of logical volumes. Returned values include LV index, LV ID, logical volume count, LD ID list, size (Mbyte or Gbyte), write policy, and assignment information. For details on creating logical volumes, see "`create logical-volume`" on page 163.

Caution – Any time logical volumes are created or deleted, the numbering of logical volume indexes might change. After creating or deleting logical volumes, issue a `show logical-volumes` command to view an updated list of logical volume indexes. Or, use logical volume IDs, which do not change over the lifetime of the logical volume, rather than logical volume indexes. For more information, "Logical Volume Syntax" on page 14.

Note – If no write policy is specified for the logical volume, the write policy is set to the global controller setting and "Default" displays in the Write-Policy field. To view the controller write policy, run the `show cache-parameters` command. For more information about the cache policy, see "`set cache-parameters`" on page 73.

Note – All device capacity is displayed in powers of 1024. For details, see "Device Capacity" on page 15.

Syntax

```
show logical-volumes lv-list
```

Arguments

TABLE 5-30 Arguments for `show logical-volumes`

Argument	Description
lv-list	Specify a list of logical volumes.

If no arguments are specified, all logical volumes are displayed.

Examples

The following example returns all logical volume information.

```
# sccli 206.111.111.111 show logical-volumes
sccli: selected se3000://206.111.111.111:58632 [SUN StorEdge 3510
SN#000002]
LV    LV-ID         Size  Assigned    Write-Policy   LDs
-------------------------------------------------------------
lv0   43DBA866   13.67GB  Primary     Default         2   ld1,ld2
```

The following example returns all logical volumes with logical volume index numbers 0 and 2.

```
# sccli c2t0d0 show logical-volumes lv0,lv2
LV    LV-ID         Size  Assigned    LDs
-----------------------------------------
lv0 02CE9894    4.00GB  Primary     2   ld0,ld1
lv2 02CE9894    4.00GB  Primary     2   ld0,ld1
```

CHAPTER 6

Firmware Show and Download Commands

This chapter provides the firmware, disk drive, SCSI Enclosure Services (SES), SCSI Accessed Fault-Tolerant Enclosure (SAF-TE), programmable logic device (PLD), and serial ATA (SATA) router and path controller `show` and `download` commands. Topics covered in this chapter include:

Note – To prevent unauthorized access to administrative functions of the RAID controller, the Sun StorEdge CLI requires superuser or system administrator privileges for inband access, and uses the controller password to authorize users of the out-of-band interface.

Show Commands

The following commands are explained in this section:

- `show safte-device`
- `show sata-mux`
- `show sata-router`
- `show ses-devices`

show safte-device

Description

Sun StorEdge 3000 family SCSI devices only. The `show safte-device` command displays information returned by the SCSI Accessed Fault-Tolerant Enclosure (SAF-TE) device embedded in SCSI LVD RAID enclosures or JBODs. When this command is issued to an LVD SCSI RAID array with one or more expansion chassis attached, the output includes one line for the RAID chassis and one line for each expansion chassis, since each enclosure contains a separate SAF-TE device.

The output includes the channel and target ID of the SAF-TE device, the serial number of the chassis in which it is installed, the vendor and product IDs (an `A` indicates a RAID device and an `D` indicates an expansion unit or JBOD), SAF-TE firmware revision, and the SAF-TE firmware package revision, which refers to firmware for other microprocesses in the chassis that are managed by the SAF-TE processor.

Syntax

```
show safte-device
```

Examples

The following example shows the SAF-TE device information for a Sun StorEdge 3310 SCSI array.

```
sccli> show safte-device
Ch  Id  Chassis  Vendor  Product ID        Rev   Package
-----------------------------------------------------------
 0  14  002A4C   SUN     StorEdge 3310  A  1170  1170
```

The following example shows the SAF-TE device information for a Sun StorEdge 3120 SCSI array.

```
sccli> show safte-device
 Id  Chassis  Vendor  Product ID        Rev   Package
-------------------------------------------------------
  5  0064CA   SUN     StorEdge 3120  D  1170  1170
```

show sata-mux

Description

The `show sata-mux` command shows the SATA multiplexer (MUX) board information for all drives. Each drive has one MUX board. The information for the MUX board includes the channel number and ID of the drive attached to the MUX board, MUX board serial number, MUX board type (active-passive or active-active), path controller (PC150) firmware revision number, and PC150 boot revision.

Syntax

```
show sata-mux
```

Examples

The following example shows the MUX board information for the drives attached to the specified device. When no serial number has been programmed for the MUX board, `n/a` displays in the MUX-SN column.

```
# sccli 206.111.111.111 show sata-mux
sccli: selected se3000://206.111.111.111:58632 [SUN StorEdge 3511
SN#07EEA0]
24 mux boards found

Ch Id  Mux-SN Mux-Type PC150/Rev PC150/Boot
-----------------------------------------
 2   0 00075D A/A      BB42      0300
 2   1 00075E A/A      BB42      0300
 2   2 00075F A/A      BB42      0300
 2   3 000760 A/A      BB42      0300
 2   4 000761 A/A      BB42      0300
 2   5 000762 A/A      BB42      0300
 2   6 000763 A/A      BB42      0300
 2   7 000764 A/A      BB42      0300
 2   8 000765 A/A      BB42      0300
 2   9 000869 A/A      BB42      0300
 2  10 000767 A/A      BB42      0300
 2  11 000768 A/A      BB42      0300
 2  16 000C9D A/A      BB42      0300
 2  17 000C9E A/A      BB42      0300
 2  18 000C9F A/A      BB42      0300
 2  19 000CA0 A/A      BB42      0300
 2  20 000CA1 A/A      BB42      0300
 2  21 000CA2 A/A      BB42      0300
 2  22 000CA3 A/A      BB42      0300
 2  23 000CA4 A/A      BB42      0300
 2  24 000CA5 A/A      BB42      0300
 2  25 000CA6 A/A      BB42      0300
 2  26 000CA7 A/A      BB42      0300
 2  27 000CA8 A/A      BB42      0300
```

show sata-router

Description

The `show sata-router` command shows all accessible SATA routers behind the RAID controller. The information displayed includes the enclosure ID and enclosure serial number of the chassis that the SATA router resides in, the channel number that the router controls, slot position of the IOM board that the router resides on, router firmware revision number, SATA router boot revision, customer-specified behavior (CSB) parameter structure revision number (a collection of memory resident parameters that define operational behavior of the router), hardware revision number, and the self-test revision number.

Syntax

```
show sata-router
```

Examples

The following example shows the data returned from a redundant configuration. Two routers are assigned to the same chassis in a redundant configuration. (The Encl-SN column displays the same chassis serial number for both routers.)

```
sccli> show sata-router
Encl-ID Encl-SN Ch Slot  Rev      Boot-rev CSB  HW-rev ST-rev
-------------------------------------------------------------
0       07ECC0  2  upper DP0553   0548     0500 11     0552
0       07ECC0  3  lower DP0553   0548     0500 11     0552
```

In the following example, no valid path exists on the lower router, so `n/a` displays to indicate that no data was returned.

```
# sccli  206.6.180.20 show sata-router
sccli: selected se3000://206.1.111.11:58632 [SUN StorEdge 3511
SN#07ECDF]
Encl-ID Encl-SN Ch Slot  Rev      Boot-rev CSB  HW-rev ST-rev
-------------------------------------------------------------
0       07ECDF  2  upper DP0548   0509     0500 00     0552
0       07ECDF  3  lower n/a      n/a      n/a  n/a    n/a
```

show ses-devices

Description

Sun StorEdge 3000 family FC and SATA devices only. The `show ses-devices` command displays a list of SCSI Enclosure Services (SES) devices visible to the selected array controller or JBOD. The output includes the channel and target ID of the SES device, serial number of the chassis in which it is installed, vendor and product IDs, SES firmware revision, programmable logic device (PLD) firmware revision, worldwide node name (WWNN), worldwide port name (WWPN) for the device, and the loop location.

In redundant configurations, SES devices are installed in pairs in a single chassis. Therefore, two devices show the same chassis serial number. It is important to ensure the SES firmware and PLD revisions are consistent for SES devices installed

in the same chassis. Any firmware revision mismatches that might result from replacement of an SES device FRU are flagged with an asterisk ("*"), as well as by a visual indicator on the chassis itself.

Information is shown for the array device's enclosure, as well as any expansion chassis that might be connected to the array. To view information about an SES device in an expansion chassis connected directly to the host instead of an array controller, use the `select` command to specify an SES device in the expansion chassis, and issue a `show inquiry` and `show pld-revision` command to each device.

Returned values include: channel number, SCSI ID, chassis number, vendor, product ID (an `A` indicates a RAID device and a `D` indicates an expansion unit or JBOD), revision, PLD revision, SES WWNN, SES WWPN, and SES topology (loop A, top slot, or loop B bottom slot).

Syntax

```
show ses-devices
```

Examples

The following example shows the SES devices for a Sun StorEdge 3510 FC RAID device.

```
sccli> show ses-devices
Ch  Id Chassis Vendor/Product ID     Rev  PLD  WWNN             WWPN
------------------------------------------------------------------------------
 2  12 003CE3  SUN StorEdge 3510F A  1046 1000 204000C0FF003CE3 214000C0FF003CE3
                                                Topology: loop(a)
 3  12 003CE3  SUN StorEdge 3510F A  1046 1000 204000C0FF003CE3 224000C0FF003CE3
                                                Topology: loop(b)
```

Download Commands

The following commands are explained in this section:

- `download controller-firmware`
- `download disk-firmware`
- `download pld-hardware`
- `download safte-firmware`
- `download sata-path-controller-firmware`
- `download sata-router-firmware`
- `download ses-firmware`

Caution – All download commands are potentially dangerous.

Caution – In redundant-controller configurations, download commands affect all LUNs on both controllers. After running a download command, run the `select` command to reselect the device.

Caution – Stop the Configuration Service agent if it is running.

Note – Although redundant-controller configurations support live firmware upgrades using its failover capability, the failover operation itself might cause warning messages to be displayed on the console or system log. These messages can be ignored.

Note – If the download firmware files are not under the same directory as the Sun StorEdge CLI, you must specify the full path.

`download controller-firmware`

Description

The `download controller-firmware` command downloads firmware to the RAID controller. Before the command is executed, the firmware file is checked to ensure that it is appropriate for the target device. In a dual-controller configuration, the failover capability of the redundant controller pair is used to activate the new

firmware without requiring the array to be shut down in what is known as a *live upgrade* or hot firmware download operation. In a single-controller configuration, the new firmware is activated by resetting the controller.

If the `-r` or `--reset` option is specified, the controllers are always reset instead of performing a live upgrade. This option is faster and is recommended when a live upgrade is not required.

Caution – All reset commands cause the array to stop responding to I/O requests from the host for a period of time. This might result in data loss unless all I/O activity is suspended by halting all applications that are accessing the array, and unmounting any file systems that are mounted from the array. In redundant-controller configurations, these commands affect all LUNs on both controllers.

Syntax

```
download controller-firmware filename [-r | --reset]
```

Arguments

TABLE 6-1 Arguments for `download controller-firmware`

Argument	Description
filename	Specify the firmware file name for the file that you want to download.
[-r | --reset]	Reset the controller after the download completes.

Examples

The following example downloads firmware to the RAID controller.

```
sccli> download controller-firmware SUN411G-3510.bin
sccli: selected se3000://199.249.246.28:58632 [Sun StorEdge 3510 SN#000187]
The controllers will be reset sequentially.
One controller will remain online while the other restarts.
This should not affect normal I/O activity.
Are you sure? yes
```

Note – To monitor the status of the automatic firmware update, use the Sun StorEdge CLI `show redundancy-mode` command. The Sun StorEdge CLI will display the progression of "Failed," "Scanning," "Detected," and "Enabled" states. For details, see "`show redundancy-mode`" on page 84.

download disk-firmware

Caution – Do not use this command with the Solaris operating system. Disk drive firmware is provided through Sun disk firmware patches which include the required download utility. Sun disk firmware patches are separate from the Sun StorEdge 3000 family firmware patches. For details, refer to the Release Notes for your array.

Description

Sun StorEdge 3000 family RAID arrays only. The `download disk-firmware` command downloads disk drive firmware to disk drives connected to the array. The disk model is matched against SCSI inquiry data to determine which drives should be programmed. The disk firmware file is matched to the capacity, family, and drive type of the drive to which you are downloading. For instance, if you attempt to download 73-Gbyte drive Fujitsu firmware to a Seagate drive, the download fails.

Note – The `download disk-firmware` command does not support a live upgrade (a hot download operation). This command shuts down the array controller first, preventing the host from performing I/O for several minutes.

This command only upgrades firmware in drives attached to RAID array controllers. To upgrade disk firmware in drives contained within a standalone expansion chassis (JBOD), use the procedure documented in the README file provided with the firmware.

When using this command:

- All daemons that access the RAID controller must be stopped.
- I/O is interrupted.
- The controller is reset after disks are flashed.

Syntax

```
download disk-firmware filename product-id
```

Arguments

TABLE 6-2 Arguments for `download disk-firmware`

Argument	Description
filename	Specify the firmware file name for the file that you want to download.
product-id	Specify the product ID of the disk inquiry string. For example, type `ST336607FSUN36G` or `ST373453FSUN37G`. If there is a character space in the inquiry string, use quotation marks (“”) where the space occurs. For example, type “`ST336607 SUN36G`“ or `ST373453“”SUN37G`. To determine the disk inquiry string, run the `show disks` command.

Examples

The following example shows the disk product ID on channel 2 ID 6 and then downloads the disk firmware to that drive.

```
sccli> show disks
Ch  Id      Size   Speed  LD     Status   IDs
-------------------------------------------------------------------------
 2   6   33.92GB   200MB  ld0    ONLINE   SEAGATE ST336753FSUN36G 0349
                                             S/N 3HX0YEJT00007349
 2   7   33.92GB   200MB  ld0    ONLINE   SEAGATE ST336753FSUN36G 0349
                                             S/N 3HX0Y6J300007349
 2   8   33.92GB   200MB  ld1    ONLINE   SEAGATE ST336753FSUN36G 0349
                                             S/N 3HX0YC1Y00007349
 2   9   33.92GB   200MB  ld1    ONLINE   SEAGATE ST336753FSUN36G 0349
                                             S/N 3HX0Y7W100007349
 2  10   33.92GB   200MB  GLOBAL STAND-BY SEAGATE ST336753FSUN36G 0349
                                             S/N 3HX0YAQF00007349
sccli> download disk-firmware newfile ST336753FSUN36G
```

The following example downloads the firmware to the disk in the JBOD unit `/dev/rdsk/c6t0d0s2`, which is attached to a RAID controller.

```
# sccli /dev/rdsk/c6t0d0s2 download disk-firmware new_disk_fw
```

download pld-hardware

Description

Fibre Channel and SATA devices only. The `download pld-hardware` command downloads PLD hardware into the SES microprocessor in a Sun StorEdge 3000 family FC RAID or JBOD device. To determine the PLD version on a device, use the `show ses-devices` command. For details, see "`show ses-devices`" on page 173.

Note – The `download pld-hardware` command does not support a live upgrade (a hot download operation). Shut down the array before performing this command. When the download completes, restart the device to activate the new hardware.

Syntax

```
download pld-hardware filename
```

Arguments

TABLE 6-3 Arguments for `download pld-hardware`

Argument	Description
filename	Specify the firmware file name for the file that you want to download.

Examples

The following example downloads the hardware using the SES device in the RAID controller with the IP address 192.168.0.1.

```
# sccli 192.168.0.1 download pld-hardware pld1r10.s3r
```

The following example downloads the hardware using the SES device to a FC JBOD unit.

```
# sccli /dev/es/ses3 download pld-hardware pld1r10.s3r
```

download safte-firmware

Description

Sun StorEdge 3000 family SCSI devices only. The `download safte-firmware` command downloads firmware into the microprocessors for the SCSI Accessed Fault-Tolerant Enclosure (SAF-TE) device within a SCSI RAID controller or JBOD. The firmware file contains code for the various microprocessors that monitor and control the enclosure. The Sun StorEdge CLI detects whether the firmware file is a more recent version. If the version is out of date, the Sun StorEdge CLI will not download the firmware. However, you can use the `-f` or `--force` command to download the firmware unconditionally.

This procedure can be performed live without resetting the controller. However, the updated firmware version number might not correctly display in the firmware Telnet or serial menu interface until the controller is reset.

Syntax

```
download safte-firmware [-f | --force] filename
```

Arguments

TABLE 6-4 Arguments for `download safte-firmware`

Argument	Description
[`-f	--force`]	Specify the firmware is downloaded unconditionally, regardless of the version detected.
filename	Specify the firmware file name for the file that you want to download.

Examples

The following example downloads SAF-TE firmware to the SAF-TE device in the RAID controller.

```
# sccli c2t0d0 download safte-firmware saftefw_3310_1180.bin
```

The following example downloads SAF-TE firmware to the SAF-TE device in the JBOD.

```
# sccli /dev/es/ses2 download safte-firmware saftefw_3310_1180.bin
```

download sata-path-controller-firmware

Description

Sun StorEdge 3000 family SATA devices only. The `download sata-path-controller-firmware` command downloads the path controller microcode that resides on the multiplexer (MUX) boards behind the SATA router. Before downloading the SATA path controller firmware, the Sun StorEdge CLI checks the redundancy of all SATA routers. If the configuration is redundant, then a live upgrade (hot download) is performed.

Caution – All download commands are potentially dangerous.

If the configuration is not redundant, the user cannot perform a live upgrade. Since routers can cause critical damage to the RAID system, in a non-redundant configuration, the controller must be shut down before the download and must be reset after the download. In single-controller and non-redundant configurations, the Sun StorEdge CLI prompts the user to continue. If the user specifies `Y` at the prompt, the Sun StorEdge CLI shuts down the controller, performs the download, and then resets the controller. When the controller shuts down, the host is prevented from performing I/O for several minutes.

Note – To manually check the array redundancy, run a `show sata-router` command. Two routers are assigned to the same chassis in a redundant configuration. (The Encl-SN column displays the same chassis serial number for both routers.) For details on the `show sata-router` command, see "`show sata-router`" on page 172.

Syntax

```
download sata-path-controller-firmware filename
```

Arguments

TABLE 6-5 Arguments for `download sata-path-controller-firmware`

Argument	Description
filename	Specify the firmware file name for the file that you want to download.

Examples

The following example downloads the path controller firmware to all SATA routers.

```
# sccli 192.168.0.1 download sata-path-controller-firmware PC_BB42.dat
```

download sata-router-firmware

Description

Sun StorEdge 3000 family SATA devices only. The `download sata-router-firmware` command downloads SR-1216 router firmware to all SATA routers in the SATA unit including SATA RAID controllers, expansion units, and JBODs. Before downloading the SATA router firmware, the Sun StorEdge CLI checks the redundancy of all SATA routers. If the configuration is redundant, then a live upgrade (hot download) is performed.

Caution – All download commands are potentially dangerous.

If the configuration is not redundant, the user cannot perform a live upgrade. Since routers can cause critical damage to the RAID system, in a non-redundant configuration, the controller must be shut down before the download and must be reset after the download. In single-controller and non-redundant configurations, the Sun StorEdge CLI prompts the user to continue. If the user specifies `Y` at the prompt, the Sun StorEdge CLI shuts down the controller, performs the download, and then resets the controller. When the controller shuts down, the host is prevented from performing I/O for several minutes.

To manually check the array redundancy, run a `show sata-router` command. Two routers are assigned to the same chassis in a redundant configuration. (The Encl-SN column displays the same chassis serial number for both routers.) For details on the `show sata-router` command, see "`show sata-router`" on page 172.

Syntax

```
download sata-router-firmware filename [-r | --reset]
```

Arguments

TABLE 6-6 Arguments for `download sata-router-firmware`

Argument	Description
filename	Specify the firmware file name for the file that you want to download.
[`-r` | `--reset`]	Reset the controller after the download completes.

Examples

The following example downloads SATA firmware to the specified device.

```
# sccli 192.168.0.1 download sata-router-firmware FW-DP0555.dlf
```

download ses-firmware

Description

Sun StorEdge 3000 family FC and SATA devices only. The `download ses-firmware` command downloads firmware to the SCSI Enclosure Services (SES) device in a FC or SATA RAID array or JBOD unit.

Syntax

```
download ses-firmware filename
```

Arguments

TABLE 6-7 Arguments for `download ses-firmware`

Argument	Description
filename	Specify the firmware file name for the file that you want to download.

Examples

The following example downloads SES firmware to the SES device with device name `c2t0d0` in the RAID controller.

```
# sccli c2t0d0 download ses-firmware ses-1103.s3r
```

The following example downloads SES firmware to the SES device in the JBOD `/dev/es/ses4`.

```
# sccli /dev/es/ses4 download ses-firmware sesfw_sunfc_1046.s3r
```

APPENDIX **A**

Summary of Sun StorEdge CLI Options and Commands

This appendix contains:

- A list of the Sun StorEdge CLI options
- A list of Sun StorEdge CLI commands for RAID arrays
- A list of Sun StorEdge CLI commands for JBODs

A list of the Sun StorEdge CLI commands is also available with the `help` or `usage` command within the Sun StorEdge CLI.

TABLE A-1 Optional Parameters Available With Most Commands

Options	Function
`-d, --disk`	LVD JBOD enclosure only. Selects the disk device name that you specify such as `sd31` or `c1t0d0` when a JBOD chassis is selected.
`-h, --help, --usage`	display valid commands
`-l, --list`	display a list of local or remote devices that the Sun StorEdge CLI manages, and exits without processing any commands
`-n, --no`	assumes a `no` response to any yes/no prompts. Use this option to run scripts without prompting the user
`-o, --oob`	access the selected device using out-of-band communication (through its network interface) rather than using SCSI commands
`-v, --version`	display program version information
`-w, --password`	specify the password assigned to the array controller
`-y, --yes`	assumes a `yes` response to any yes/no prompts. Use this option to run scripts without prompting the user

An “X” in a product column in the following table indicates that the Sun StorEdge CLI command works with that product.

TABLE A-2 Platform support for RAID Array Commands

Command / Page Number	Function	Sun StorEdge 3510 FC Array	Sun StorEdge 3511 SATA Array	Sun StorEdge 3310 SCSI Array	Sun StorEdge 3320 SCSI Array
"abort clone" on page 90	stop the cloning of the specified disk drive	X	X	X	X
"abort create" on page 122	stop the creation of a logical drive	X	X	X	X
"abort expand" on page 123	stop the expansion of a logical drive	X	X	X	X
"abort media-check" on page 124	stop a media check on specified disks or all member disks of the specified logical drive	X	X	X	X
"abort parity-check" on page 125	stop the parity check on the specified logical drive	X	X	X	X
"abort rebuild" on page 126	stop the rebuilding of a logical drive	X	X	X	X
"about" on page 18	display program version and copyright info	X	X	X	X
"add disk" on page 126	add one disk or a list of disks to the specified logical drive	X	X	X	X
"check media" on page 127	check specified disks or all member disks of the specified logical drive	X	X	X	X
"check parity" on page 128	check device parity	X	X	X	X
"clear events" on page 63	clear the event log	X	X	X	X
"clone" on page 91	use a destination disk to copy and replace a drive that is suspected of failing	X	X	X	X
"configure channel" on page 106	configure a host or drive channel	X	X	X	X
"configure global-spare" on page 92	configure a disk as a global spare	X	X	X	X
"configure local-spare" on page 130	configure a disk as a local spare for a specific logical drive	X	X	X	X

TABLE A-2 Platform support for RAID Array Commands *(Continued)*

Command / Page Number	Function	Sun StorEdge 3510 FC Array	Sun StorEdge 3511 SATA Array	Sun StorEdge 3310 SCSI Array	Sun StorEdge 3320 SCSI Array
"configure network-interface" on page 21	set network interface parameters	X	X	X	X
"configure partition" on page 154	configure a logical drive partition of the specified size	X	X	X	X
"create host-wwn-name" on page 23	create a Host-ID/WWN item	X	X		
"create logical-drive" on page 131	create a logical drive	X	X	X	X
"create logical-volume" on page 163	create a logical volume over the specified logical drives	X	X	X	X
"delete host-wwn-name" on page 24	delete a Host-ID/WWN item	X	X		
"delete logical-drive" on page 134	delete a logical drive	X	X	X	X
"delete logical-volume" on page 164	delete one or more logical volumes	X	X	X	X
"download controller-configuration" on page 68	download array controller binary configuration	X	X	X	X
"download controller-firmware" on page 175	download array controller firmware (optionally with hard reset)	X	X	X	X
"download disk-firmware" on page 177	download disk drive firmware to internal drives	X	X	X	X
"download nvram" on page 49	download NVRAM file	X	X	X	X
"download pld-hardware" on page 179	download enclosure PLD hardware	X	X		
"download safte-firmware" on page 180	download enclosure SAF-TE firmware			X	X
"download sata-path-controller-firmware" on page 181	download the path controller microcode that resides on the MUX boards behind the SATA router.		X		

TABLE A-2 Platform support for RAID Array Commands *(Continued)*

Command / Page Number	Function	Sun StorEdge 3510 FC Array	Sun StorEdge 3511 SATA Array	Sun StorEdge 3310 SCSI Array	Sun StorEdge 3320 SCSI Array
"download sata-router-firmware" on page 182	download SR-1216 router firmware to accessible SR-1216 routers behind the RAID controller		X		
"download ses-firmware" on page 183	download enclosure SES firmware	X	X		
"exit" on page 18	exit the Sun StorEdge CLI	X	X	X	X
"expand" on page 135	expand a logical drive by the specified size per available physical drive	X	X	X	X
"fail" on page 70	fail a controller in a redundant controller pair	X	X	X	X
"help" on page 19	display help for commands	X	X	X	X
"map partition" on page 155	map a logical drive or logical volume partition to a host channel/target/LUN	X	X	X	X
"mute" on page 71	silence the enclosure alarm	X	X	X	X
"password" on page 71	specify the array controller password	X	X	X	X
"quit" on page 19	exit the program	X	X	X	X
"rebuild" on page 137	rebuild the specified logical drive	X	X	X	X
"reset controller" on page 72	reset the array controller	X	X	X	X
"reset nvram" on page 50	restore NVRAM to factory defaults	X	X	X	X
"scan disk" on page 93	scans and makes available a hard drive without having to shut down the array			X	X
"select" on page 20	specify a storage device to monitor or configure	X	X	X	X
"set auto-write-through-trigger" on page 32	configure the array to dynamically switch from write-back cache to write-through cache if a specified event occurs	X	X	X	X

TABLE A-2 Platform support for RAID Array Commands *(Continued)*

Command / Page Number	Function	Sun StorEdge 3510 FC Array	Sun StorEdge 3511 SATA Array	Sun StorEdge 3310 SCSI Array	Sun StorEdge 3320 SCSI Array
"set cache-parameters" on page 73	set cache write policy and optimization policy	X	X	X	X
"set controller-date" on page 76	set a controller date and time	X	X	X	X
"set controller-name" on page 77	set the controller name	X	X	X	X
"set controller-password" on page 77	set the controller password	X	X	X	X
"set disk-array" on page 94	set disk array parameters including the background logical drive rebuilding priority and hard drive data verification	X	X	X	X
"set drive-parameters" on page 108	set drive channel parameters	X	X	X	X
"set host-parameters" on page 110	set host channel parameters	X	X	X	X
"set inter-controller-link" on page 112	enable/disable per-channel inter-controller link	X	X		
"set led" on page 95	change the drive LED for the specified disk (or slot) from green to amber	X	X	X	X
"set logical-drive" on page 138	set the write policy for a logical drive	X	X	X	X
"set logical-volume" on page 165	set the write policy for the specified logical volume	X	X	X	X
"set protocol" on page 25	enable or disable the specified network protocol and set the Telnet inactivity timeout value.	X	X	X	X

TABLE A-2 Platform support for RAID Array Commands *(Continued)*

Command / Page Number	Function	Sun StorEdge 3510 FC Array	Sun StorEdge 3511 SATA Array	Sun StorEdge 3310 SCSI Array	Sun StorEdge 3320 SCSI Array
"To remove an existing password, specify a zero-length string with a pair of double-quote characters. For example:" on page 78	set the RS-232 interface baud rate	X	X	X	X
"set unique-identifier" on page 79	set the subsystem's six-digit hexadecimal serial number	X	X	X	X
"show access-mode" on page 33	display the Sun StorEdge CLI access mode	X	X	X	X
"show auto-write-through-trigger" on page 34	display the event trigger status for the controller	X	X	X	X
"show battery-status" on page 35	display battery information including battery type, manufacturing data, in-service date, expiration date, and status	X	X		
"show bypass device" on page 51	display the bypass status of all devices on a specified loop	X	X		
"show bypass RAID" on page 54	display the hardware bypass status of the RAID controllers on Loop A and Loop B	X	X		
"show bypass SFP" on page 55	display the bypass status of all SFPs on a specified loop	X	X		
"show cache-parameters" on page 81	display cache policy	X	X	X	X
"show channels" on page 113	display channel configuration	X	X	X	X
"show clone" on page 97	display the progress of disk cloning	X	x	X	X
"show configuration" on page 57	display the RAID enclosure device's configuration	X	X	X	X

TABLE A-2 Platform support for RAID Array Commands *(Continued)*

Command / Page Number	Function	Sun StorEdge 3510 FC Array	Sun StorEdge 3511 SATA Array	Sun StorEdge 3310 SCSI Array	Sun StorEdge 3320 SCSI Array
"show controller-date" on page 81	display the boot time and date of the RAID controller	X	X	X	X
"show controller-name" on page 82	display controller name	X	X	X	X
"show disk-array" on page 97	display the disk array parameters including the logical drive rebuild priority and the hard drive settings for verifying the written data for initializing, rebuilding, and writing normal I/O data	X	X	X	X
"show disks" on page 98	display information for array disks	X	X	X	X
"show disks logical-drive" on page 140	display information for array disks in a logical drive	X	X	X	X
"show drive-parameters" on page 115	display drive parameters	X	X	X	X
"show enclosure-status" on page 38	display the status for all chassis components including the fan, power supply, temperature sensor, and drive slots	X	X	X	X
"show events" on page 64	display the controller event log	X	X	X	X
"show frus" on page 45	display FRU-ID information	X	X	X	X
"show host-parameters" on page 117	display host I/O parameters	X	X	X	X
"show host-wwn-names" on page 27	display all registered HBA WWNs in the controller for host channels	X	X		
"show inquiry-data" on page 82	display SCSI inquiry data for selected device	X	X	X	X

TABLE A-2 Platform support for RAID Array Commands *(Continued)*

Command / Page Number	Function	Sun StorEdge 3510 FC Array	Sun StorEdge 3511 SATA Array	Sun StorEdge 3310 SCSI Array	Sun StorEdge 3320 SCSI Array
"show inter-controller-link" on page 118	display status of inter-controller link on specified channel	X	X		
"show ip-address" on page 28	display the controller's IP network address	X	X	X	X
"show led-status" on page 101	display the status of the LED adjacent to the specified disk drive slot in the array enclosure or expansion chassis.	X	X	X	X
"show logical-drive" on page 142	display logical drives	X	X	X	X
"show logical-drives add-disk" on page 144	display the status of disks that are being added to a logical drive	X	X	X	X
"show logical-drives expanding" on page 144	display the progress of the logical drive expansion	X	X	X	X
"show logical-drives initializing" on page 145	display the progress of the RAID controller initialization	X	X	X	X
"show logical-drives logical volume" on page 146	display information about for all logical drives in a specified logical volume	X	X	X	X
"show logical-drives parity-check" on page 148	display the parity check progress for a logical drive	X	X	X	X
"show logical-drives rebuilding" on page 149	display the rebuilding progress for all logical drives	X	X	X	X
"show logical-volumes" on page 167	display logical volumes	X	X	X	X
"show loop-map" on page 60	display the FC loop positional map for a given channel	X	X		
"show lun-maps" on page 158	display LUN maps for host channels	X	X	X	X

TABLE A-2 Platform support for RAID Array Commands *(Continued)*

Command / Page Number	Function	Sun StorEdge 3510 FC Array	Sun StorEdge 3511 SATA Array	Sun StorEdge 3310 SCSI Array	Sun StorEdge 3320 SCSI Array
"show media-check" on page 149	display the progress of a media check	X	X	X	X
"show network-parameters" on page 28	display controller network parameters	X	X	X	X
"show partitions" on page 159	display partitions of logical drives	X	X	X	X
"show peripheral-device-status" on page 47	display the status for all environmental sensors for the controller	X	X	X	X
"show port-wwn" on page 29	display host channel FC Port Name WWNs	X	X		
"show protocol" on page 30	display all possible network protocols supported by the controller or particular information of a specified protocol	X	X	X	X
"show redundancy-mode" on page 84	display redundancy status	X	X	X	X
"show redundant-controller" on page 86	display the redundant-controller information	X	X	X	X
"show rs232-configuration" on page 31	display serial port configuration	X	X	X	X
"show safte-device" on page 170	display status of SAF-TE devices			X	X
"show sata-mux" on page 171	display the SATA MUX board information for all drives		X		
"show sata-router" on page 172	display all accessible SATA routers behind the RAID controller		X		
"show ses-devices" on page 173	display status of SES devices, including the PLD revision	X	X		
"show shutdown-status" on page 86	display the controller shutdown status	X	X	X	X

TABLE A-2 Platform support for RAID Array Commands *(Continued)*

Command / Page Number	Function	Sun StorEdge 3510 FC Array	Sun StorEdge 3511 SATA Array	Sun StorEdge 3310 SCSI Array	Sun StorEdge 3320 SCSI Array
"show stripe-size-list" on page 150	display the valid stripe block size list for the specified RAID level	X	X	X	X
"show unique-identifier" on page 87	display subsystem six-digit unique identifier	X	X	X	X
"shutdown controller" on page 88	shut down controller (prepare for power off)	X	X	X	X
"shutdown logical-drive" on page 151	shut down (force offline) a logical drive	X	X	X	X
"unconfigure global-spare" on page 102	unconfigure a global spare drive	X	X	X	X
"unconfigure local-spare" on page 152	unconfigure a local spare drive	X	X	X	X
"unfail" on page 89	restore (deassert) a failed controller	X	X	X	X
"unmap partition" on page 160	unmap a logical drive or logical volume partition from a host channel/target/LUN	X	X	X	X
"upload controller-configuration" on page 89	upload array controller binary configuration	X	X	X	X
"upload nvram" on page 62	upload an NVRAM file	X	X	X	X
"version" on page 20	display program version	X	X	X	X

An “X” in a product column in the following table indicates that the Sun StorEdge CLI command works with that product.

TABLE A-3 JBOD Commands

Command / Page Number	Function	Sun StorEdge 3510 FC JBOD	Sun StorEdge 3310 SCSI JBOD	Sun StorEdge 3320 SCSI JBOD	Sun StorEdge 3120 SCSI JBOD
“about” on page 18	display program version and copyright info	X	X	X	X
“download pld-hardware” on page 179	download PLD hardware into the SES microprocessor in a FC JBOD device	X			
“download safte-firmware” on page 180	download firmware into the microprocessors within a SCSI JBOD		X	X	X
“download ses-firmware” on page 183	download enclosure SES firmware	X			
“exit” on page 18	exit the Sun StorEdge CLI	X	X	X	X
“help” on page 19	display help for commands	X	X	X	X
“quit” on page 19	exit the program	X	X	X	X
“select” on page 20	specify a storage device to monitor or configure	X	X	X	X
“set led” on page 95	specify a name for a disk drive slot in the array enclosure or expansion chassis		X	X	X
“show access-mode” on page 33	display the access mode	X	X	X	X
“show configuration” on page 57	display the device’s configuration	X	X	X	X
“show enclosure-status” on page 38	display the status for all chassis components including the fan, power supply, temperature sensor, and drive slots	X	X	X	X
“show frus” on page 45	display FRU-ID information	X	X	X	X
“show inquiry-data” on page 82	display SCSI inquiry data for selected device	X	X	X	X
“show led-status” on page 101	display the status for the specified disk drive slot in the array enclosure or JBOD		X	X	X

TABLE A-3 JBOD Commands *(Continued)*

Command / Page Number	Function	Sun StorEdge 3510 FC JBOD	Sun StorEdge 3310 SCSI JBOD	Sun StorEdge 3320 SCSI JBOD	Sun StorEdge 3120 SCSI JBOD
"`show safte-device`" on page 170	display status of SAF-TE devices		X	X	X
"`show ses-devices`" on page 173	display status of SES devices including the PLD revision	X			
"`version`" on page 20	display program version	X	X	X	X

APPENDIX **B**

Error and Event Messages

This appendix provides a list of error and status messages for the Sun StorEdge CLI. For a list of controller error messages, many of which are passed through to the Sun StorEdge CLI, refer to the *Sun StorEdge 3000 Family RAID Firmware User's Guide*.

TABLE B-1 lists the Error and Status messages for the Sun StorEdge CLI.

TABLE B-1 Sun StorEdge CLI Error and Status Messages

Error and Status Messages
`Abort checking media failed`
`Abort checking parity failed`
`Abort clone failed`
`Abort creating logical drive failed`
`Abort expanding logical drive failed`
`Abort rebuilding logical drive failed`
`Access device failure`
`Adding disk failed`
`Adding disk only applicable on raid0/raid1/raid3/raid5`
`Another disk or logical drive operation under progress or not applicable operation for current disk or logical drive status`
`Assigned`
`Bad connection to the Primary Agent`
`Bad data returned from controller`
`Bad event data`
`Bad firmware data for download`
`Bad fru id data`

TABLE B-1 Sun StorEdge CLI Error and Status Messages *(Continued)*

Error and Status Messages
Bad logical drive channel number
Bad logical drive id in library database
Bad logical drive index in library database
Bad logical host channel number
Bad logical volume id in library database
Bad logical volume index in library database
Bad parameter specified
Bad parameters specified
Bad physical channel number
Bad ses configuration page
Bad socket error
Bad status returned
Battery board does not exist
Battery board FRU ID not programmed
Battery type too old
Can not configure SIDs on single controller environment
Check media failed
Check parity failed
Check parity only applicable on raid1/raid3/raid5
Clear events failure
Clone failed
Clone only applicable on raid0/raid1/raid3/raid5
Close file failure
Close inband/outband device error
Configuration file format error
Controller access error
Controller busy
Controller firmware download ok, but can not engage firmware without redundant controller
Controller firmware download ok, but engage firmware failed

TABLE B-1 Sun StorEdge CLI Error and Status Messages *(Continued)*

Error and Status Messages
Controller firmware download ok, but engage operation is not allowed
Controller not ready
Controller not shutdown yet as expected
Create host wwn name failed
Data transfer time out
ddb information not programmed
Delete host wwn name failed
Device excluded by redundant path software
Device not supported
Disk drives do not match saved configuration
Drive type unknown
Element not found in ses pages
Element type not found in ses pages
Failed to assign logical drive
Failed to bypass a device
Failed to bypass sfp
Failed to check/set password
Failed to convert logical volume
Failed to create logical drive
Failed to create logical volume
Failed to delete logical volume
Failed to download nvram data
Failed to get battery information
Failed to get cache parameters
Failed to get caching statistics
Failed to get channel data
Failed to get channel statistics
Failed to get controller configuration page
Failed to get controller configuration string page
Failed to get controller module version

TABLE B-1 Sun StorEdge CLI Error and Status Messages *(Continued)*

Error and Status Messages
Failed to get controller network interface
Failed to get controller redundant mode
Failed to get controller statistics
Failed to get ctrl param in upload config command
Failed to get drive statistics
Failed to get fru id in upload config command
Failed to get host statistics
Failed to get ld and lv info in upload config command
Failed to get logical drive partition
Failed to get logical drive status
Failed to get loop map
Failed to get lun map in upload config command
Failed to get offset in enclosure page for specified element type
Failed to get peripheral configuration
Failed to get peripheral device status
Failed to get pld register raw data
Failed to get pld rev
Failed to get redundant controller configuration
Failed to get scsi drv info in upload config command
Failed to get ses page
Failed to get sfp bypass information
Failed to get write-policy
Failed to issue a lip
Failed to map logical volume
Failed to map logical volume filter
Failed to map partition to host channel
Failed to mute controller beep
Failed to parse ses configuration page
Failed to partition logical drive/volume
Failed to partition logical volume

TABLE B-1 Sun StorEdge CLI Error and Status Messages *(Continued)*

Error and Status Messages
Failed to program fru id
Failed to read fru id
Failed to remove logical drive
Failed to remove logical volume
Failed to reset sata router via specified ses target
Failed to reset timeout
Failed to scan fru id
Failed to scan safte
Failed to scan ses target
Failed to send ses page
Failed to set battery all information
Failed to set battery in service date
Failed to set cache parameters
Failed to set channel data
Failed to set controller network interface
Failed to set drive side parameters
Failed to set host side parameters
Failed to set peripheral configuration
Failed to set redundant controller configuration
Failed to set sata serial connector
Failed to set statistics
Failed to set write-policy
Failed to set/reset caching statistics
Failed to set/reset channel statistics
Failed to set/reset controller statistics
Failed to set/reset drive statistics
Failed to set/reset host statistics
Failed to show drive side parameters
Failed to show host side parameters
Failed to show logical volumes

TABLE B-1 Sun StorEdge CLI Error and Status Messages *(Continued)*

Error and Status Messages
Failed to show mapping on host channel
Failed to unbypass a device
Failed to unbypass sfp
Failed to unmap partition from host channel
Failed to upload nvram
Filter map exist
Firmware download failure
Firmware download failure on one or more drives, see status report above for failures
Firmware download failure on some targets
Firmware download not performed
Firmware type and unit type do not match
Get events failure
Get host wwn name list failed
Get network protocol failed
Get raid configuration error
Get raid configuration from file error
Get ses wdt status jbod failed
Get slot status failed
Getting network parameters failure
Host wwn entry existing
Host wwn entry not existing
Host wwn name too long
Illegal operation on mixed type of disk drive or unit
Illegal operation while a logical drive exists
Illegal request
In service date not set in the battery
Initializing
Invalid command
Invalid host wwn
Invalid protocol name

TABLE B-1 Sun StorEdge CLI Error and Status Messages *(Continued)*

Error and Status Messages
Invalid request
Invalid ses enclosure page length
IO chl diagnostic command aborted by user
IO chl diagnostic command bad target parameters
IO chl diagnostic command busy
IO chl diagnostic command completed with errors
IO chl diagnostic command completed with no error
IO chl diagnostic command failed
IO chl diagnostic command in progress
IO chl diagnostic command not ready
IO chl diagnostic command not running
IO chl diagnostic command not valid
IO chl diagnostic command out of resource
IO chl diagnostic command parameter error
IO chl diagnostic command too much ops running
Is member of logical volume
Library database data not valid
Library database update error
Local spare can not be assigned to NRAID or RAID0
Logical drive rebuild failed
Logical drive/volume expand failed
Logical drive/volume expand only applicable on raid0/raid1/raid3/raid5
Logical error of operation on ses
LUN map exist
Maximum error status value
Mixed drive type for a logical drive operation
Mixed drive type in the raid system
Network traffic
No available disk to create logical drive
No controller network interface

TABLE B-1 Sun StorEdge CLI Error and Status Messages *(Continued)*

Error and Status Messages
No disk clone found
No firmware data for download
No logical drive
No logical volume
No mux board found
No path found to inquiry sr-1216
No sr-1216 found
No valid data returned
No valid safte target found
No valid ses target found
No valid target found
Not a device mapped on primary controller
Not a drive channel
Not a host channel
Not a primary controller
Not a qualified channel
Not a spare drive
Not a supported SAFTE target
Not a supported SES target
Not a valid target
Not an existing channel
Not an existing target
Not spare drive
Not valid as spare drive
OK
Only offline creating can be aborted
Only offline expanding can be aborted
Open file failure
Open inband/outband device error
Operation not valid on this logical drive

TABLE B-1 Sun StorEdge CLI Error and Status Messages *(Continued)*

Error and Status Messages
Operation specified not available on the drive type
Out of resource
Partition was not specified
pc-150 firmware download failure
Primary Agent not found
RAID1 requires an even number of disks
Read configuration data error
Rebuild only applicable on raid1/raid3/raid5
Rebuilding
Restore host wwn name list failed
Retrieve
Retrieving
Retrieving controller name failure
Retrieving controller unique id failure
Retrieving ddb information failure
Retrieving pc-150 information failure
Retrieving rs232 configuration failure
Retrieving sr-1216 information failure
Save raid configuration to file error
Scanning fru is done, but at least one fru missing
SCSI device model missing
SCSI drive already exists
SCSI drive not found
SES operation on invalid target
Set controller current time failure
Set logical drive failed
Set logical volume failed
Set network protocol failed
Set ses wdt failed on jbod
Set slot operation failed

TABLE B-1 Sun StorEdge CLI Error and Status Messages *(Continued)*

Error and Status Messages
Setting controller name failure
Setting controller unique id failure
Setting rs232 configuration failure
Show shutdown status failed
Shutdown controller failed
Some frus missing
Specified firmware does not support logical drive or logical volume with more than 32 partitions
Specified firmware does not support more than 8 logical drives
Specified lds must have only a single \n partition (P0), no host LUN mappings, and they must have the same controller \n assignment
SR-1216 firmware download failure
Start of error values
Stripe block size not available
Target device not found
Target device not ready
The capacity of target disk too small
The current firmware does not support check parity on raid1
The current firmware does not support more than 8 logical drives
The current firmware does not support more than 32 partitions in logical drives/volumes
The current firmware does not support this operation on raid1
This operation is only supported on Fibre Channel primary RAID controller devices
Valid host channel, target, and lun were not specified
Verify bypass information failed
Write parameters error
Writing_download_raid_config
Wrong unit type specified for sata related operation

APPENDIX C

Show Configuration Command Output

This appendix includes a list of the items included in the output of the `show configuration` command and the sample XML output of the `show configuration XML` file command. Regardless of the file format, xml, txt, or onscreen, the output content is the same.

Topics in this appendix include:

For details on how to execute the `show configuration` command, see "`show configuration`" on page 57.

Show Configuration Output

The `show configuration` command runs the following commands:

- `show inquiry-data`
- `show unique-identifier`
- `show controller-name`
- `show network-parameters`
- `show host-parameters`
- `show drive-parameters`
- `show redundant-controller`
- `show redundancy-mode`
- `show cache-parameters`
- `show RS232-configuration`
- `show channels`
- `show disks`
- `show logical-drive`
- `show logical-volumes`
- `show partitions`
- `show lun-maps`
- `show protocol`
- `show auto-write-through-trigger`
- `show peripheral-device-status`
- `show SES`
- `show port-WWNs`
- `show inter-controller-link`
- `show battery-status`
- `show SAF-TE`
- `show enclosure-status`
- `show sata-router`
- `show sata-mux`
- `show host-wwns`
- `show FRUs`
- `show access-mode`
- `show controller-date`
- `show disk array`

The XML output produced by `show configuration --xml` includes the following data.

The Inquiry Data output shows:

- Vendor
- Product
- Model
- Firmware Revision
- ID of NVRAM Defaults
- Boot Record Version
- MAC Address
- IP Address
- Primary Serial Number
- Secondary Serial Number
- Ethernet Address
- Device Type

The Unique Identifier output shows:

- Unique ID

The Controller Name output shows:

- Controller name

The Network Parameters output shows:

- IP Address
- Netmask
- Gateway
- Mode

The Host Parameters output shows:

- LUNs per host
- Queue depth
- Fibre connection
- Inband management

The Drive Parameters output shows:

- SCSI Motor Start-up
- Power-up SCSI Reset
- Disk Access Latency
- SCSI I/O Timeout
- Tag Count Per Drive
- Drive Check Time Period
- Enclosure Polling Period
- Auto-detect Drive Check
- Drive SMART
- Auto Global Spare

The Redundant Controller output shows:

- Controller configuration
- Cache synchronization
- Host channel failover mode
- Local/Remote redundant mode
- Write-through data synchronization
- Secondary RS232 port status
- Communication channel type

The Redundancy output shows:

- Role
- Primary Controller Serial Number
- Redundancy Mode
- Redundant Status
- Secondary Controller Serial Number

The Cache Parameters output shows:

- Write policy mode
- I/O optimization
- Synchronization period

The RS-232 Parameters output shows:

- Port baud rate

The Channel output shows:

- Channel ID
- Channel type
- Media type
- PID
- SID
- Current Clock Speed
- Current Width

The Disks output shows:

- Channel Number
- Target Number
- Status
- Manufacturer
- Model
- Serial Number
- Product Revision
- Capacity
- Size Remaining
- Speed
- LD-ID

The Logical Drive output shows:

- Logical Drive ID Number (eight-digit hex)
- Logical Drive IDX
- Assignment
- Status
- RAID Level
- Number of Drives
- Physical Drives
- Size
- Total Partitions
- Stripe size
- Write-policy mode

The Logical Volume output shows:

- Logical Volume ID Number (eight-digit hex)
- Logical Volume IDX
- Controller assignment
- Size
- Write-policy mode
- Logical drive assignment

The Partitions output shows:

- Logical drive/Logical volume ID
- Partition IDX
- Size

The LUN maps output shows:

- Channel ID
- Target ID
- LUN
- Partition IDX
- Controller assignment
- Filter map

The Protocol output shows:

- Protocol type
- Status
- Port number
- Parameters

The Automatic Write-Through Trigger output shows:

- Controller failure status
- Battery backup status
- UPS AC power loss status
- Power supply status
- Fan failure status
- Temperature exceeded delay status

The Peripheral Device output shows:

- CPU primary temperature sensor
- Board 1 primary temperature sensor
- Board 2 primary temperature sensor
- +3.3V primary value
- +5V primary value
- +12V primary value
- Battery backup primary battery
- CPU secondary temperature sensor
- Board 1 secondary temperature sensor
- Board 2 secondary temperature sensor
- +3.3V secondary value
- +5V secondary value
- +12V secondary value
- Battery backup secondary battery

The SES output shows:

- Channel
- ID
- Chassis Serial Number
- Vendor Product ID
- Revision
- PLD Revision
- WWNN
- WWPN
- Topology

The Port WWN output shows:

- Channel
- Channel ID
- WWPN

The Inter-Controller Link (ICL) output shows:

- Channel Number
- Bypass Status

The Battery Status output shows:

- Name
- Type
- Manufacturing Date
- Placed In-Service Date
- Expiration Date
- Status

The SAF-TE output shows:

- Channel
- ID
- Chassis Serial Number
- Vendor
- Product ID
- Revision
- Package Revision

The Enclosure Status output shows:

- SAF-TE or SES package and revision information
- Fan status
- Power supply status
- Temperature sensor status
- Disk slot status
- EMU status
- SCSI channel type

The SATA router output shows:

- Enclosure ID
- Enclosure serial number
- Channel
- Slot
- Revision
- Boot revision
- CSB revision
- Hardware revision

The SATA MUX output shows:

- Channel
- ID
- MUX serial number
- MUX type
- Path controller (PC150) revision
- Path controller (PC150) boot revision

The Host WWN output shows:

- Host WWN

The FRU information output shows:

- Name
- Description
- Part Number
- Serial Number
- Revision
- Initial Hardware Dash Level
- FRU Shortname
- Manufacturing Date
- Manufacturing Location
- Manufacturer JEDEC ID
- FRU Location
- Chassis Serial Number
- Status

The Access Mode output shows:

- Access mode

The Controller Date output shows:

- Boot time
- Current time
- Time zone

The Disk Array output shows:

- Verify On Initialization
- Verify On Rebuild
- Verify On Normal
- Rebuild Priority

XML DTD for the `show configuration --xml` Command

The `show configuration --xml` command conforms to the following DTD.

```
<?xml version="1.0" ?>

<!-- ************************************************** -->
<!-- Root element, the RAID BaseView                    -->
<!-- ************************************************** -->
<!ELEMENT raidbaseview (raidsystem*)>

<!-- ******************************************************* --
>
<!-- raidsystem element : The entire RAID system, which       -->
<!--   consists of:                                           -->
<!--     name: The RAID System name                           -->
<!--     status: the system status                            -->
<!--     manufacturer:                                        -->
<!--     model: product model                                 -->
<!--     firmware_version: Firmware version                   -->
<!--     bootrecord_version: Boot Record version.             -->
<!--     mac_address: network MAC address.                    -->
<!--     ip: network IP address.                              -->
<!--     netmask: network mask address.                       -->
<!--     gateway: network gateway address.                    -->
<!--                                    (optional)            -->
<!--     primary_sn: Primary Serial Number                    -->
<!--     secondary_sn: Secondary Serial Number                -->
<!--                                    (optional)            -->
<!--     controller_name: Controller Name                     -->
<!--     unique_id: Unique ID of the RAID System.             -->
<!--     id_of_nvram_defaults:                                -->
<!--     total_logical_drives:                                -->
<!--     total_partitions:                                    -->
<!--     total_physical_drives: Total Physical Drivers        -->
<!--     total_ses_devices:                                   -->
<!--     cache_size:                                          -->
<!--     cpu:                                                 -->
<!--     fru: Controller FRU info                             -->
<!--                                    (optional)            -->
<!--     channel: RAID System Channel info.                   -->
<!--     network: network channel info                        -->
```

```
<!--                                        (optional)           -->
<!--     com_port: RAID System COM port info                     -->
<!--     cache_param: Cache parameter                            -->
<!--     array_param: Disk Array parameter                       -->
<!--     drive_param: Disk side parameter                        -->
<!--     host_param: Host side parameter                         -->
<!--     redundant_param: is system in redundant model           -->
<!--     logical_volume Logical Volumes                          -->
<!--                                        (optional)           -->
<!--     logical_drive: Logical Drivers                          -->
<!--                                        (optional)           -->
<!--     ses: the SES device info                                -->
<!--                                        (optional)           -->
<!--    port_wwn: port wwn info             (optional)           -->
<!--    inter_controller_link: controller internal link info     -->
<!--                                        (optional)           -->
<!--     battery_status: Battery status                          -->
<!--                                        (optional)           -->
<!--     config_components Disk and SAFTE device info.           -->
<!--    hostwwns: host wwn info             (optional)           -->
<!-- -->
<!--     boot_time: the controller boot time                     -->
<!--     time_zone: time zone                                    -->
<!--     access_mode: the accesse mode: can be inband or out-of-
band   -->
<!--     controller_date: the controller current time            -->
<!--     enclosure: the enclosure information                    -->
<!--     network_protocol: one network protocol                  -->
<!--     peripheral_device: peripheral device configuration      -->
<!--     peripheral_device_status: peripheral device status      -->
<!--     total_sata_mux: total sata mux number                   -->
<!--     total_sata_routers: total sata router number            -->
<!-- ********************************************************** --
>
<!ELEMENT raidsystem
(name,status,manufacturer,model,firmware_version,

bootrecord_version,mac_address?,ip?,netmask?,gateway?,
```

```
primary_sn,secondary_sn?,controller_name,unique_id?,

id_of_nvram_defaults?,total_logical_drives,total_partitions,

total_physical_drives,total_ses_devices,cache_size,

cpu,fru*,channel+,network*,com_port+,cache_param,

array_param,drive_param,host_param,redundant_param,
                     logical_volume*,logical_drive*,ses*,
                     port_wwns*,inter_controller_link+,
                     battery_status*,config_components,
                     hostwwns*,

boot_time,time_zone,access_mode,controller_date,

enclosure+,network_protocol*,peripheral_device,
                     peripheral_device_status,total_sata_mux,
                     total_sata_routers)>

<!-- ************************************************** -->
<!-- total_sata_routers element:                          -->
<!-- ************************************************** -->
<!ELEMENT total_sata_routers       (#PCDATA)>

<!-- ************************************************** -->
<!-- total_sata_mux element:                            -->
<!-- ************************************************** -->
<!ELEMENT total_sata_mux       (#PCDATA)>

<!-- ************************************************** -->
<!-- controller_date element:                           -->
<!-- ************************************************** -->
<!ELEMENT controller_date      (#PCDATA)>

<!-- ************************************************** -->
<!-- access_mode element:                               -->
<!-- ************************************************** -->
<!ELEMENT access_mode          (#PCDATA)>

<!-- ************************************************** -->
<!-- time_zone element:                                 -->
<!-- ************************************************** -->
<!ELEMENT time_zone            (#PCDATA)>
```

```
<!-- ************************************************** -->
<!-- boot_time element:                                 -->
<!-- ************************************************** -->
<!ELEMENT boot_time            (#PCDATA)>

<!-- ************************************************** -->
<!-- name element:                                      -->
<!-- ************************************************** -->
<!ELEMENT name                 (#PCDATA)>

<!-- ************************************************** -->
<!-- status element:                                    -->
<!--                It may be one of Online, Offline,   -->
<!--                Critical, Degraded                  -->
<!-- ************************************************** -->
<!ELEMENT status                (#PCDATA)>

<!-- ************************************************** -->
<!-- manufacturer element:                              -->
<!-- ************************************************** -->
<!ELEMENT manufacturer          (#PCDATA)>

<!-- ************************************************** -->
<!-- model element:                                     -->
<!-- ************************************************** -->
<!ELEMENT model                 (#PCDATA)>

<!-- ************************************************** -->
<!-- firmware_version element:                          -->
<!--      The RAID system Firmware version              -->
<!--      format is major.minorEnginer                  -->
<!-- ************************************************** -->
<!ELEMENT firmware_version      (#PCDATA)>

<!-- ************************************************** -->
<!-- bootrecord_version element:                        -->
<!--      The RAID system boot record version           -->
<!-- ************************************************** -->
<!ELEMENT bootrecord_version    (#PCDATA)>
```

```
<!-- ************************************************** -->
<!-- primary_sn element:                                -->
<!--      The RAID system primary controller serial number  -->
<!-- ************************************************** -->
<!ELEMENT primary_sn             (#PCDATA)>

<!-- ************************************************** -->
<!-- secondary_sn element:                              -->
<!--      The RAID system secondary controller serial number -->
<!--      It is optional, for some systems may have only    -->
<!--      one controller                                    -->
<!-- ************************************************** -->
<!ELEMENT secondary_sn           (#PCDATA)>

<!-- ************************************************** -->
<!-- controller_name element:                           -->
<!--      The RAID system controller name                   -->
<!-- ************************************************** -->
<!ELEMENT controller_name       (#PCDATA)>

<!-- ************************************************** -->
<!-- unique_id element:                                 -->
<!--      The RAID system Unique ID                         -->
<!-- ************************************************** -->
<!ELEMENT unique_id              (#PCDATA)>

<!-- ************************************************** -->
<!-- id_of_nvram_defaults element:                      -->
<!-- ************************************************** -->
<!ELEMENT id_of_nvram_defaults  (#PCDATA)>

<!-- ************************************************** -->
<!-- total_logical_drives element:                      -->
<!--                The RAID system total logical       -->
<!--                drive number                        -->
<!-- ************************************************** -->
<!ELEMENT total_logical_drives  (#PCDATA)>

<!-- ************************************************** -->
<!-- total_partitions element:                          -->
<!--                The RAID system total partition     -->
<!--                number                              -->
<!-- ************************************************** -->
<!ELEMENT total_partitions     (#PCDATA)>
```

```
<!-- ******************************************************** -->
<!-- total_physical_drives element:                           -->
<!--                The RAID system total physical drives     -->
<!--                number                                    -->
<!-- ******************************************************** -->
<!ELEMENT total_physical_drives     (#PCDATA)>

<!-- ******************************************************** -->
<!-- total_ses_devices element:                               -->
<!--                The RAID system total SAFTE device        -->
<!--                number                                    -->
<!-- ******************************************************** -->
<!ELEMENT total_ses_devices     (#PCDATA)>

<!-- ******************************************************** -->
<!-- cache_size element: The cache size, in binary MB         -->
<!-- ******************************************************** -->
<!ELEMENT cache_size                    (#PCDATA)>

<!-- ******************************************************** -->
<!-- cpu element: The CPU type of the RAID system             -->
<!-- ******************************************************** -->
<!ELEMENT cpu                   (#PCDATA)>

<!-- ******************************************************** -->
<!-- fru element: The FRU info of one part of the RAID system -->
<!--     It includes these elements                           -->
<!--        idx: the index                                    -->
<!--        name: the name of the FRU                         -->
<!--        description:                                      -->
<!--        part_number: the part number                      -->
<!--        serial_number: the serial number                  -->
<!--        revision:                                         -->
<!--        manufacturing_date: Manufacture Date              -->
<!--        manufacturing_location: Manufacture Location      -->
<!--        manufacturer_jedec_id: Vendor JEDEC ID            -->
<!--        fru_location:                                     -->
<!--        chassis_serial_number: sn                         -->
<!-- ******************************************************** -->
<!ELEMENT fru (idx,name,description,part_number,serial_number,

revision,manufacturing_date,manufacturing_location,
                manufacturer_jedec_id,fru_location,
                chassis_serial_number, fru_status)>
```

```
<!-- ************************************************** -->
<!-- fru_status element:                                -->
<!-- ************************************************** -->
<!ELEMENT fru_status                  (#PCDATA)>

<!-- ************************************************** -->
<!-- idx element:                                       -->
<!-- ************************************************** -->
<!ELEMENT idx                   (#PCDATA)>

<!-- ************************************************** -->
<!-- part_number element:                               -->
<!-- ************************************************** -->
<!ELEMENT part_number           (#PCDATA)>

<!-- ************************************************** -->
<!-- revision element:                                  -->
<!-- ************************************************** -->
<!ELEMENT revision             (#PCDATA)>

<!-- ************************************************** -->
<!-- manufacturer_jedec_id element:                     -->
<!-- ************************************************** -->
<!ELEMENT manufacturer_jedec_id  (#PCDATA)>

<!-- ************************************************** -->
<!-- fru_location element:                              -->
<!-- ************************************************** -->
<!ELEMENT fru_location           (#PCDATA)>

<!-- ************************************************** -->
<!-- chassis_serial_number element:                     -->
<!-- ************************************************** -->
<!ELEMENT chassis_serial_number  (#PCDATA)>

<!-- ************************************************** -->
<!-- manufacturing_date element:                        -->
<!-- ************************************************** -->
<!ELEMENT manufacturing_date     (#PCDATA)>

<!-- ************************************************** -->
<!-- manufacturing_location element:                    -->
<!-- ************************************************** -->
<!ELEMENT manufacturing_location (#PCDATA)>
```

```
<!-- ************************************************** -->
<!-- description element:                               -->
<!-- ************************************************** -->
<!ELEMENT description            (#PCDATA)>


<!-- ************************************************** -->
<!-- channel element: The channel info of the RAID system     -->
<!--     It include these elements                              -->
<!--        idx: the index, the physical channel number         -->
<!--        logchl: Logical Channel number                      -->
<!--        mode: Channel model                                 -->
<!--        type: Channel Type                                  -->
<!--        pid: Channel PID                                    -->
<!--        sid: Channel SID                                    -->
<!--        term: Channel Terminal                              -->
<!--        defclk: Channel default clock                       -->
<!--        curclk: Channel current clock                       -->
<!--        defwid: Channel default width                       -->
<!--        curwid: Channel current width                       -->
<!-- ************************************************      -->
<!ELEMENT channel (idx,logchl,mode,type,pid,sid,term,
                   defclk,curclk,defwid,curwid)>

<!-- ************************************************** -->
<!-- logchl element: Logical Channel number             -->
<!-- ************************************************** -->
<!ELEMENT logchl            (#PCDATA)>

<!-- ************************************************** -->
<!-- mode element: The Channel work mode can be "Host"      -->
<!--               "Drive", "RCCOM", "Other"                -->
<!-- ************************************************** -->
<!ELEMENT mode              (#PCDATA)>

<!-- ************************************************** -->
<!-- type element: Channel type can be "SCSI" "PCI" "FC"    -->
<!-- ************************************************** -->
<!ELEMENT type              (#PCDATA)>

<!-- ************************************************** -->
<!-- pid element: PID of this channel                   -->
<!-- ************************************************** -->
<!ELEMENT pid               (#PCDATA)>
```

```
<!-- ******************************************************* -->
<!-- sid element: SID of this channel                        -->
<!-- ******************************************************* -->
<!ELEMENT sid               (#PCDATA)>

<!-- ******************************************************* -->
<!-- defclk element: Default clock                           -->
<!-- ******************************************************* -->
<!ELEMENT defclk            (#PCDATA)>

<!-- ******************************************************* -->
<!-- defwid element: Default width                           -->
<!-- ******************************************************* -->
<!ELEMENT defwid            (#PCDATA)>

<!-- ******************************************************* -->
<!-- term element: This channel have term or not             -->
<!-- ******************************************************* -->
<!ELEMENT term                  (#PCDATA)>

<!-- ******************************************************* -->
<!-- defclk element: Current clock                           -->
<!-- ******************************************************* -->
<!ELEMENT curclk            (#PCDATA)>

<!-- ******************************************************* -->
<!-- defwid element: Current width                           -->
<!-- ******************************************************* -->
<!ELEMENT curwid            (#PCDATA)>


<!-- ******************************************************** -->
<!-- network element: The channel info of the RAID system     -->
<!--     It includes these elements                           -->
<!--        idx:                                              -->
<!--        mac_address:                                      -->
<!--        static_address:                                   -->
<!--        transfer_speed_configurable:                      -->
<!--        current_transfer_speed:                           -->
<!--        supported_transfer_speed:                         -->
<!--        mac_address_configurable:                         -->
<!-- ******************************************************** -->
```

```
<!ELEMENT network (idx,mac_address,static_address,
                   transfer_speed_configurable,

current_transfer_speed,supported_transfer_speed,
                   mac_address_configurable)>

<!-- ************************************************** -->
<!-- mac_address element: Mac address                   -->
<!--                  format is ##:##:##:##:##:##       -->
<!-- ************************************************** -->
<!ELEMENT mac_address             (#PCDATA)>

<!-- ************************************************** -->
<!-- transfer_speed_configurable element:               -->
<!-- ************************************************** -->
<!ELEMENT transfer_speed_configurable            (#PCDATA)>

<!-- ************************************************** -->
<!-- current_transfer_speed element: in MB              -->
<!-- ************************************************** -->
<!ELEMENT current_transfer_speed                 (#PCDATA)>

<!-- ************************************************** -->
<!-- supported_transfer_speed element: in MB            -->
<!-- ************************************************** -->
<!ELEMENT supported_transfer_speed           (#PCDATA)>

<!-- ************************************************** -->
<!-- mac_address_configurable element: Enable, Disable  -->
<!-- ************************************************** -->
<!ELEMENT mac_address_configurable           (#PCDATA)>

<!-- ************************************************** -->
<!-- static_address element:                            -->
<!-- ************************************************** -->
<!ELEMENT static_address  (ip, netmask, gateway)>

<!-- ************************************************** -->
<!-- ip element: IP address                             -->
<!-- ************************************************** -->
<!ELEMENT ip                      (#PCDATA)>

<!-- ************************************************** -->
<!-- netmask element:                                   -->
<!-- ************************************************** -->
<!ELEMENT netmask                 (#PCDATA)>
```

```
<!-- ************************************************** -->
<!-- gateway element:                                   -->
<!-- ************************************************** -->
<!ELEMENT gateway                 (#PCDATA)>


<!-- ************************************************** -->
<!-- com_port element: The RS-232 port info             -->
<!--     It includes these elements                     -->
<!--        idx: the index                              -->
<!--        max_bps:                                    -->
<!--        min_bps:                                    -->
<!--        default_bps:                                -->
<!--        current_bps:                                -->
<!-- ********************************************** -->
<!ELEMENT com_port (idx, max_bps, min_bps, default_bps,
current_bps)>

<!-- ************************************************** -->
<!-- max_bps element: Max baud rate, in BPS           -->
<!-- ************************************************** -->
<!ELEMENT max_bps         (#PCDATA)>

<!-- ************************************************** -->
<!-- min_bps element: Min baud rate, in BPS           -->
<!-- ************************************************** -->
<!ELEMENT min_bps         (#PCDATA)>

<!-- ************************************************** -->
<!-- default_bps element: Default baud rate, in BPS   -->
<!-- ************************************************** -->
<!ELEMENT default_bps      (#PCDATA)>

<!-- ************************************************** -->
<!-- current_bps element: Current baud rate, in BPS   -->
<!-- ************************************************** -->
<!ELEMENT current_bps      (#PCDATA)>
```

```
<!-- ******************************************************** -->
<!-- drive_param element: The Drive side configuration        -->
<!--     It includes these elements                           -->
<!--        scsi_motor_spin_up:                               -->
<!--        power_up_scsi_reset:                              -->
<!--        disk_access_latency:                              -->
<!--        scsi_io_timeout:                                  -->
<!--        tag_count_per_drive:                              -->
<!--        drive_check_period:                               -->
<!--        safte_polling_period:                             -->
<!--        auto_detect_drive_check:                          -->
<!--        drive_smart_mode                                  -->
<!--        auto_global_spare                                 -->
<!-- ************************************************      -->
<!ELEMENT drive_param (scsi_motor_spin_up,power_up_scsi_reset?,
                disk_access_latency,scsi_io_timeout,
                tag_count_per_drive,drive_check_period,
                safte_polling_period,auto_detect_drive_check,
                drive_smart_mode,auto_global_spare)>

<!-- ******************************************************** -->
<!-- scsi_motor_spin_up element : in sec                      -->
<!-- ******************************************************** -->
<!ELEMENT scsi_motor_spin_up            (#PCDATA)>

<!-- ******************************************************** -->
<!-- power_up_scsi_reset element:                             -->
<!-- ******************************************************** -->
<!ELEMENT power_up_scsi_reset              (#PCDATA)>

<!-- ******************************************************** -->
<!-- disk_access_latency element:                             -->
<!-- ******************************************************** -->
<!ELEMENT disk_access_latency              (#PCDATA)>

<!-- ******************************************************** -->
<!-- tag_count_per_drive element:                             -->
<!-- ******************************************************** -->
<!ELEMENT tag_count_per_drive               (#PCDATA)>

<!-- ******************************************************** -->
<!-- safte_polling_period element:                            -->
<!-- ******************************************************** -->
<!ELEMENT safte_polling_period               (#PCDATA)>
```

```
<!-- ******************************************************** -->
<!-- scsi_io_timeout element:                                 -->
<!-- ******************************************************** -->
<!ELEMENT scsi_io_timeout            (#PCDATA)>

<!-- ******************************************************** -->
<!-- drive_check_period element:                              -->
<!-- ******************************************************** -->
<!ELEMENT drive_check_period            (#PCDATA)>

<!-- ******************************************************** -->
<!-- auto_detect_drive_check element:                         -->
<!-- ******************************************************** -->
<!ELEMENT auto_detect_drive_check       (#PCDATA)>

<!-- ******************************************************** -->
<!-- drive_smart_mode element:                                -->
<!-- ******************************************************** -->
<!ELEMENT drive_smart_mode            (#PCDATA)>

<!-- ******************************************************** -->
<!-- auto_global_spare element:                               -->
<!-- ******************************************************** -->
<!ELEMENT auto_global_spare            (#PCDATA)>

<!-- ******************************************************** -->
<!-- cache_param element: The RAID system cache info includes -->
<!--     write_policy : The write policy                      -->
<!--     sync_period                                          -->
<!--     optimization                                         -->
<!-- ******************************************************** -->
<!ELEMENT cache_param (write_policy, sync_period?, optimization)>

<!-- ******************************************************** -->
<!-- optimization element: can be "Enable", "Disable"         -->
<!-- ******************************************************** -->
<!ELEMENT optimization     (#PCDATA)>
```

```
<!-- ******************************************************** -->
<!-- array_param element: The RAID system array info includes -->
<!--              verify_on_init                              -->
<!--              verify_on_rebuild                           -->
<!--              verify_on_normal                            -->
<!--              rebuild_priority                            -->
<!-- ******************************************************** -->
<!ELEMENT array_param (verify_on_init, verify_on_rebuild,
                       verify_on_normal, rebuild_priority)>

<!-- ******************************************************** -->
<!-- verify_on_init element: can be "Enable" "Disable"      -->
<!-- ******************************************************** -->
<!ELEMENT verify_on_init     (#PCDATA)>

<!-- ******************************************************** -->
<!-- verify_on_rebuild element: can be "Enable" "Disable"   -->
<!-- ******************************************************** -->
<!ELEMENT verify_on_rebuild     (#PCDATA)>

<!-- ******************************************************** -->
<!-- verify_on_normal element: can be "Enable" "Disable"    -->
<!-- ******************************************************** -->
<!ELEMENT verify_on_normal     (#PCDATA)>

<!-- ******************************************************** -->
<!-- rebuild_priority element: can be "High" "Improved"     -->
<!--                            "Normal" "Low"               -->
<!-- ******************************************************** -->
<!ELEMENT rebuild_priority     (#PCDATA)>


<!-- ******************************************************** -->
<!-- host_param element: The RAID system host side info, include
-->
<!--              queue_io_count                              -->
<!--              luns_per_host                               -->
<!--              fibre_connection_mode                       -->
<!--              inband_access                               -->
<!-- ******************************************************** -->
<!ELEMENT host_param (queue_io_count,luns_per_host,
                      fibre_connection_mode,inband_access?)>
```

```
<!-- ************************************************** -->
<!-- queue_io_count element:                            -->
<!-- ************************************************** -->
<!ELEMENT queue_io_count     (#PCDATA)>

<!-- ************************************************** -->
<!-- luns_per_host element:                             -->
<!-- ************************************************** -->
<!ELEMENT luns_per_host     (#PCDATA)>

<!-- ************************************************** -->
<!-- fibre_connection_mode element:                     -->
<!-- ************************************************** -->
<!ELEMENT fibre_connection_mode     (#PCDATA)>


<!-- ************************************************** -->
<!-- redundant_param element: The RAID system redundant config ,
include -->
<!--              Primary_sn                            -->
<!--              Redundancy_mode                       -->
<!--              redundant_status                      -->
<!--              secondary_sn                          -->
<!-- ************************************************** -->
<!ELEMENT redundant_param (role,Primary_sn,Redundancy_mode,
                           redundant_status,secondary_sn)>

<!-- ************************************************** -->
<!-- role element:                                      -->
<!-- ************************************************** -->
<!ELEMENT role     (#PCDATA)>

<!-- ************************************************** -->
<!-- Primary_sn element:                                -->
<!-- ************************************************** -->
<!ELEMENT Primary_sn     (#PCDATA)>

<!-- ************************************************** -->
<!-- Redundancy_mode element:                           -->
<!-- ************************************************** -->
<!ELEMENT Redundancy_mode     (#PCDATA)>

<!-- ************************************************** -->
<!-- redundant_status element:                          -->
<!-- ************************************************** -->
<!ELEMENT redundant_status     (#PCDATA)>
```

```
<!-- ******************************************************** -->
<!-- logical_drive element: The Logical Drive info includes   -->
<!--             ld_id                                        -->
<!--             ld_idx                                       -->
<!--             assignment                                   -->
<!--             status                                       -->
<!--             raid_level                                   -->
<!--             number_of_drives                             -->
<!--             physical_drive                               -->
<!--             size                                         -->
<!--             total_partitions                             -->
<!--             partition                                    -->
<!-- ******************************************************** -->
<!ELEMENT logical_drive (ld_id,ld_idx,assignment,status,
                     raid_level,number_of_drives,physical_drive,
                     size,total_partitions?,partition*,
                     write_policy?,block_size?)>

<!-- ******************************************************** -->
<!-- write_policy element:                                    -->
<!-- ******************************************************** -->
<!ELEMENT write_policy     (#PCDATA)>

<!-- ******************************************************** -->
<!-- block_size element:                                      -->
<!-- ******************************************************** -->
<!ELEMENT block_size     (#PCDATA)>

<!-- ******************************************************** -->
<!-- ld_id element:                                           -->
<!-- ******************************************************** -->
<!ELEMENT ld_id     (#PCDATA)>

<!-- ******************************************************** -->
<!-- ld_idx element:                                          -->
<!-- ******************************************************** -->
<!ELEMENT ld_idx     (#PCDATA)>

<!-- ******************************************************** -->
<!-- assignment element:                                      -->
<!-- ******************************************************** -->
<!ELEMENT assignment     (#PCDATA)>
```

```
<!-- ************************************************** -->
<!-- raid_level element: can be RAID0, RAID1, RAID3 ....   -->
<!-- ************************************************** -->
<!ELEMENT raid_level     (#PCDATA)>

<!-- ************************************************** -->
<!-- number_of_drives element:                          -->
<!-- ************************************************** -->
<!ELEMENT number_of_drives     (#PCDATA)>

<!-- ************************************************** -->
<!-- physical_drive element:                            -->
<!-- ************************************************** -->
<!ELEMENT physical_drive     (#PCDATA)>

<!-- ************************************************** -->
<!-- size element: in MB                                -->
<!-- ************************************************** -->
<!ELEMENT size      (#PCDATA)>

<!-- ******************************************************* -->
<!-- ses element: The SES device info includes               -->
<!--             idx: index number                           -->
<!--             ch: channel number                          -->
<!--             id: SCSI ID                                 -->
<!--             chassis                                     -->
<!--             vender_product_id                           -->
<!--             rev                                         -->
<!--             pld                                         -->
<!--             wwnn                                        -->
<!--             wwpn                                        -->
<!--             topology                                    -->
<!-- ******************************************************* -->
<!ELEMENT ses (idx,ch,id,chassis,vender_product_id,
                 rev,pld,wwnn,wwpn,topology)>

<!-- ************************************************** -->
<!-- id element:                                        -->
<!-- ************************************************** -->
<!ELEMENT id      (#PCDATA)>

<!-- ************************************************** -->
<!-- chassis element:                                   -->
<!-- ************************************************** -->
<!ELEMENT chassis      (#PCDATA)>
```

```
<!-- ******************************************************** -->
<!-- vender_product_id element:                               -->
<!-- ******************************************************** -->
<!ELEMENT vender_product_id      (#PCDATA)>

<!-- ******************************************************** -->
<!-- rev element:                                             -->
<!-- ******************************************************** -->
<!ELEMENT rev      (#PCDATA)>

<!-- ******************************************************** -->
<!-- pld element:                                             -->
<!-- ******************************************************** -->
<!ELEMENT pld      (#PCDATA)>

<!-- ******************************************************** -->
<!-- wwnn element:                                            -->
<!-- ******************************************************** -->
<!ELEMENT wwnn      (#PCDATA)>

<!-- ******************************************************** -->
<!-- wwpn element:                                            -->
<!-- ******************************************************** -->
<!ELEMENT wwpn      (#PCDATA)>

<!-- ******************************************************** -->
<!-- topology element:                                        -->
<!-- ******************************************************** -->
<!ELEMENT topology      (#PCDATA)>

<!-- ******************************************************** -->
<!-- port_wwns element:                      include          -->
<!--             port_wwn                                     -->
<!-- ******************************************************** -->
<!ELEMENT port_wwns (port_wwn*)>

<!-- ******************************************************** -->
<!-- port_wwn element: include                                -->
<!--             idx                                          -->
<!--             ch                                           -->
<!--             id                                           -->
<!--             wwnn                                         -->
<!-- ******************************************************** -->
<!ELEMENT port_wwn (idx,ch,id,wwnn)>
```

```
<!-- ******************************************************** -->
<!-- hostwwns element:                      include           -->
<!--             hostwwns                                     -->
<!-- ******************************************************** -->
<!ELEMENT hostwwns (hostwwns*)>

<!-- ******************************************************** -->
<!-- hostwwn element: include                                 -->
<!--             wwn                                          -->
<!--             name                                         -->
<!-- ******************************************************** -->
<!ELEMENT hostwwn (wwn,name)>

<!-- ******************************************************** -->
<!-- wwn element:                                             -->
<!-- ******************************************************** -->
<!ELEMENT wwn (#PCDATA)>


<!-- ******************************************************** -->
<!-- inter_controller_link element: include                   -->
<!--             idx                                          -->
<!--             slot                                         -->
<!--             ch                                           -->
<!--             ch_mode                                      -->
<!--             bypass_status                                -->
<!-- ******************************************************** -->
<!ELEMENT inter_controller_link
(idx,slot,ch,ch_mode,bypass_status)>

<!-- ******************************************************** -->
<!-- slot element:                                            -->
<!-- ******************************************************** -->
<!ELEMENT slot      (#PCDATA)>

<!-- ******************************************************** -->
<!-- ch_mode element:                                         -->
<!-- ******************************************************** -->
<!ELEMENT ch_mode      (#PCDATA)>

<!-- ******************************************************** -->
<!-- bypass_status element:                                   -->
<!-- ******************************************************** -->
<!ELEMENT bypass_status      (#PCDATA)>
```

```
<!-- ******************************************************** -->
<!-- battery_status element: battery status info includes     -->
<!--             name                                         -->
<!--             type                                         -->
<!--             manufacturing_date                           -->
<!--             placed_in_service                            -->
<!-- ******************************************************** -->
<!ELEMENT battery_status
(name,type,manufacturing_date,placed_in_service)>

<!-- ******************************************************** -->
<!-- placed_in_service element:                               -->
<!-- ******************************************************** -->
<!ELEMENT placed_in_service      (#PCDATA)>


<!-- ******************************************************** -->
<!-- partition element: The partition info includes           -->
<!--             idx                                          -->
<!--             effective_size                               -->
<!--             offset                                       -->
<!--             mapping                                      -->
<!-- ******************************************************** -->
<!ELEMENT partition (idx, effective_size, offset, mapping?,
filter_mapping?)>

<!-- ******************************************************** -->
<!-- effective_size element: in MB                            -->
<!-- ******************************************************** -->
<!ELEMENT effective_size     (#PCDATA)>

<!-- ******************************************************** -->
<!-- offset element: in MB                                    -->
<!-- ******************************************************** -->
<!ELEMENT offset     (#PCDATA)>

<!-- ******************************************************** -->
<!-- mapping element:                                         -->
<!-- ******************************************************** -->
<!ELEMENT mapping     (#PCDATA)>

<!-- ******************************************************** -->
<!-- filter_mapping element:                                  -->
<!-- ******************************************************** -->
<!ELEMENT filter_mapping     (#PCDATA)>
```

```
<!-- ******************************************************** -->
<!-- logical_volume element: The Logical Volume info, include -->
<!--             lv_id                                        -->
<!--             lv_idx                                       -->
<!--             assignment                                   -->
<!--             status                                       -->
<!--             size                                         -->
<!--             logical_drive                                -->
<!--             total_partitions                             -->
<!--             partition                                    -->
<!-- ******************************************************** -->
<!ELEMENT logical_volume (lv_id,lv_idx,assignment,status,
                     size,logical_drive,total_partitions,
                     write_policy?,partition+)>

<!-- ******************************************************** -->
<!-- lv_id element:                                           -->
<!-- ******************************************************** -->
<!ELEMENT lv_id     (#PCDATA)>

<!-- ******************************************************** -->
<!-- number_of_logical_drive element: LV include LD number  -->
<!-- ******************************************************** -->
<!ELEMENT number_of_logical_drive     (#PCDATA)>

<!-- ******************************************************** -->
<!-- lv_idx element:                                          -->
<!-- ******************************************************** -->
<!ELEMENT lv_idx     (#PCDATA)>

<!-- ******************************************************** -->
<!-- config_components element:                               -->
<!-- ******************************************************** -->
<!ELEMENT config_components (disk*)>

<!-- ******************************************************** -->
<!-- Disk element:                                            -->
<!-- ******************************************************** -->
<!ELEMENT disk (ch,target,status,manufacturer,model,
                  serial_number, product_revision,capacity,
                  remaining_size,rpm,ld_id,ld_idx,wwnn?,Speed)>
```

```
<!-- ******************************************************* -->
<!-- wwnn element:                                           -->
<!-- ******************************************************* -->
<!ELEMENT wwnn      (#PCDATA)>
<!-- ******************************************************* -->
<!-- ch element:                                         -->
<!-- ******************************************************* -->
<!ELEMENT ch      (#PCDATA)>

<!-- ******************************************************* -->
<!-- target element:                                         -->
<!-- ******************************************************* -->
<!ELEMENT target      (#PCDATA)>

<!-- ******************************************************* -->
<!-- serial_number element:                                    -->
<!-- ******************************************************* -->
<!ELEMENT serial_number      (#PCDATA)>

<!-- ******************************************************* -->
<!-- product_revision element:                                 -->
<!-- ******************************************************* -->
<!ELEMENT product_revision      (#PCDATA)>

<!-- ******************************************************* -->
<!-- capacity element:                                       -->
<!-- ******************************************************* -->
<!ELEMENT capacity      (#PCDATA)>

<!-- ******************************************************* -->
<!-- remaining_size element:                                 -->
<!-- ******************************************************* -->
<!ELEMENT remaining_size      (#PCDATA)>

<!-- ******************************************************* -->
<!-- Speed element:                                          -->
<!-- ******************************************************* -->
<!ELEMENT Speed      (#PCDATA)>

<!-- ******************************************************** -->
<!-- CDROM element:                                           -->
<!-- ******************************************************** -->
<!ELEMENT cdrom (ch, target, manufacturer, model)>
```

```
<!-- ******************************************************* -->
<!-- Tape element:                                           -->
<!-- ******************************************************* -->
<!ELEMENT tape (ch, target, manufacturer, model)>

<!-- ******************************************************* -->
<!-- EMU element:                                           -->
<!-- ******************************************************* -->
<!ELEMENT emu (ch, target, status, manufacturer, model,
               firmware_version, safte_status, fru_number, fru*)>

<!-- ******************************************************* -->
<!-- fru_number element:                                     -->
<!-- ******************************************************* -->
<!ELEMENT fru_number     (#PCDATA)>


<!-- ******************************************************* -->
<!-- safte_status element:                                   -->
<!-- ******************************************************* -->
<!ELEMENT safte_status (idx, power_status_summary,
power_supply_status?,
                fan_status_summary, fan_status?,
temperature_status)>

<!-- ******************************************************* -->
<!-- power_status_summary element:                           -->
<!-- ******************************************************* -->
<!ELEMENT power_status_summary     (#PCDATA)>

<!-- ******************************************************* -->
<!-- fan_status_summary element:                             -->
<!-- ******************************************************* -->
<!ELEMENT fan_status_summary     (#PCDATA)>

<!-- ******************************************************* -->
<!-- temperature_status element:                            -->
<!-- ******************************************************* -->
<!ELEMENT temperature_status     (#PCDATA)>


<!-- ******************************************************* -->
<!-- power_supply_status element:                            -->
<!-- ******************************************************* -->
<!ELEMENT power_supply_status     (idx, status)>
```

```
<!-- ******************************************************** -->
<!-- fan_status element:                                      -->
<!-- ******************************************************** -->
<!ELEMENT fan_status     (idx, status)>


<!-- ******************************************************** -->
<!-- enclosure element: include below elements.               -->
<!--             mgmt_device                                  -->
<!--             component                                    -->
<!-- ******************************************************** -->
<!ELEMENT enclosure (mgmt_device+,component+)>

<!-- ******************************************************** -->
<!-- mgmt_device element:                                     -->
<!-- ******************************************************** -->
<!ELEMENT mgmt_device (idx, name)>

<!-- ******************************************************** -->
<!-- component element:                                       -->
<!-- ******************************************************** -->
<!ELEMENT component (addr|led|temp)*>

<!ATTLIST component
       fru-pn CDATA  #REQUIRED
       fru-sn CDATA  #REQUIRED
       status CDATA  #REQUIRED
       type CDATA  #REQUIRED
       unit CDATA  #REQUIRED
>

<!-- ******************************************************** -->
<!-- config_components element:                               -->
<!-- ******************************************************** -->
<!ELEMENT config_components (disk*)>

<!-- ******************************************************** -->
<!-- device element:                                          -->
<!-- ******************************************************** -->
<!ELEMENT device (name,value,status)>

<!-- ******************************************************** -->
<!-- value element:                                          -->
<!-- ******************************************************** -->
<!ELEMENT value      (#PCDATA)>
```

```
<!-- ******************************************************** -->
<!-- event_trigger_operation_enables element:                 -->
<!-- ******************************************************** -->
<!ELEMENT event_trigger_operation_enables (controller_failure,
                    battery_backup_unit_failure,
                    UPS_AC_power_loss,power_supply_failure,
                    fan_failure)>

<!-- ******************************************************** -->
<!-- network_protocol element:                                -->
<!-- ******************************************************** -->
<!ELEMENT network_protocol (identifier,status,port_number)>

<!-- ******************************************************** -->
<!-- peripheral_device element:                               -->
<!-- ******************************************************** -->
<!ELEMENT peripheral_device (
                    event_trigger_operation_enables,
                    temperature-exceeded-delay)>

<!-- ******************************************************** -->
<!-- peripheral_device_status element:                        -->
<!-- ******************************************************** -->
<!ELEMENT peripheral_device_status (device+)>

<!-- ******************************************************** -->
<!-- sync_period element:                                     -->
<!-- ******************************************************** -->
<!ELEMENT sync_period (#PCDATA)>

<!-- ******************************************************** -->
<!-- controller_failure element: disabled or enabled          -->
<!-- ******************************************************** -->
<!ELEMENT controller_failure (#PCDATA)>

<!-- ******************************************************** -->
<!-- battery_backup_unit_failure element:                     -->
<!-- ******************************************************** -->
<!ELEMENT battery_backup_unit_failure (#PCDATA)>

<!-- ******************************************************** -->
<!-- UPS_AC_power_loss element:                               -->
<!-- ******************************************************** -->
<!ELEMENT UPS_AC_power_loss (#PCDATA)>
```

Sample `Show Configuration XML`

```
<!-- ******************************************************* -->
<!-- power_supply_failure element:                           -->
<!-- ******************************************************* -->
<!ELEMENT power_supply_failure (#PCDATA)>

<!-- ******************************************************* -->
<!-- fan_failure element:                                    -->
<!-- ******************************************************* -->
<!ELEMENT fan_failure (#PCDATA)>

<!-- ******************************************************* -->
<!-- identifier element:                                     -->
<!-- ******************************************************* -->
<!ELEMENT identifier (#PCDATA)>

<!-- ******************************************************* -->
<!-- port_number element:                                    -->
<!-- ******************************************************* -->
<!ELEMENT port_number (#PCDATA)>

<!-- ******************************************************* -->
<!-- temperature-exceeded-delay element:                  -->
<!-- ******************************************************* -->
<!ELEMENT temperature-exceeded-delay (#PCDATA)>
```

Output

The following pages show a sample of the `show configuration` command output in XML format for the Sun StorEdge 3511 SATA array. The following output is specific to that configuration. Each configuration varies, based on how the array is set up. Regardless of the file format, xml or txt or onscreen, the output content is the same.

```
<raidbaseview>
<raidsystem>
<name>StorEdge 3511 A-A Array SN#0927C0</name>
<status>Online</status>
<manufacturer>SUN</manufacturer>
<model>StorEdge 3511</model>
<firmware_version>421C</firmware_version>
<bootrecord_version>1.31H</bootrecord_version>
<mac_address>00:c0:ff:09:27:c0</mac_address>
<ip>10.1.74.212</ip>
<netmask>255.255.255.0</netmask>
<gateway>10.1.74.1</gateway>
<primary_sn>8027229</primary_sn>
<secondary_sn>8027194</secondary_sn>
<controller_name></controller_name>
<unique_id>0x927C0</unique_id>
<id_of_nvram_defaults>421C 3511 S474T</id_of_nvram_defaults>
<total_logical_drives>3</total_logical_drives>
<total_partitions>3</total_partitions>
<total_physical_drives>23</total_physical_drives>
<total_ses_devices>2</total_ses_devices>
<cache_size>1024MB ECC SDRAM</cache_size>
<cpu>PPC750</cpu>
<fru>
<idx>0</idx>
<name>FC_CHASSIS_BKPLN</name>
<description>SATA,Chassis+Backplane, 2U</description>
<part_number>370-6775</part_number>
<serial_number>07ECE4</serial_number>
<revision>01</revision>
<Initial_Hardware_Dash_Level>01</Initial_Hardware_Dash_Level>
<FRU_Shortname>SATA Backplane</FRU_Shortname>
<manufacturing_date>Thu Mar 18 03:27:55 2004</manufacturing_date>
<manufacturing_location>Milpitas California,
USA</manufacturing_location>
<manufacturer_jedec_id>0x0301</manufacturer_jedec_id>
<fru_location>FC MIDPLANE SLOT</fru_location>
<chassis_serial_number>07ECE4</chassis_serial_number>
<fru_status>OK</fru_status>
</fru>
```

```
<fru>
<idx>1</idx>
<name>FC_JBOD_IOM</name>
<description>I/O JBOD, SATA, 2U</description>
<part_number>370-6774</part_number>
<serial_number>GG0042</serial_number>
<revision>01</revision>
<Initial_Hardware_Dash_Level>01</Initial_Hardware_Dash_Level>
<FRU_Shortname>SATA I/O JBOD</FRU_Shortname>
<manufacturing_date>Sat Jun 26 18:32:29 2004</manufacturing_date>
<manufacturing_location>Milpitas,CA,USA</manufacturing_location>
<manufacturer_jedec_id>0x0301</manufacturer_jedec_id>
<fru_location>UPPER FC JBOD IOM SLOT</fru_location>
<chassis_serial_number>07ECE4</chassis_serial_number>
<fru_status>OK</fru_status>
</fru>
<fru>
<idx>2</idx>
<name>AC_POWER_SUPPLY</name>
<description>SE3310/SE3510 AC PWR SUPPLY w/FAN</description>
<part_number>370-5398</part_number>
<serial_number>114536</serial_number>
<revision>02</revision>
<Initial_Hardware_Dash_Level>02</Initial_Hardware_Dash_Level>
<FRU_Shortname>370-5398-02</FRU_Shortname>
<manufacturing_date>Sat Nov 29 15:00:56 2003</manufacturing_date>
<manufacturing_location>Irvine California,
USA</manufacturing_location>
<manufacturer_jedec_id>0x048F</manufacturer_jedec_id>
<fru_location>RIGHT AC PSU SLOT #1 (RIGHT)</fru_location>
<chassis_serial_number>07ECE4</chassis_serial_number>
<fru_status>OK</fru_status>
</fru>
<fru>
<idx>3</idx>
<name>AC_POWER_SUPPLY</name>
<description>SE3310/SE3510 AC PWR SUPPLY w/FAN</description>
<part_number>370-5398</part_number>
<serial_number>115884</serial_number>
<revision>02</revision>
<Initial_Hardware_Dash_Level>02</Initial_Hardware_Dash_Level>
<FRU_Shortname>370-5398-02</FRU_Shortname>
```

```
<manufacturing_date>Wed Dec 10 06:12:51 2003</manufacturing_date>
<manufacturing_location>Irvine California, USA</manufacturing_location>
<manufacturer_jedec_id>0x048F</manufacturer_jedec_id>
<fru_location>AC PSU SLOT #0 (LEFT)</fru_location>
<chassis_serial_number>07ECE4</chassis_serial_number>
<fru_status>OK</fru_status>
</fru>
<fru>
<idx>4</idx>
<name>FC_JBOD_IOM</name>
<description>I/O JBOD, SATA, 2U</description>
<part_number>370-6774</part_number>
<serial_number>GG0045</serial_number>
<revision>01</revision>
<Initial_Hardware_Dash_Level>01</Initial_Hardware_Dash_Level>
<FRU_Shortname>SATA I/O JBOD</FRU_Shortname>
<manufacturing_date>Mon May 17 15:56:24 2004</manufacturing_date>
<manufacturing_location>Milpitas,CA,USA</manufacturing_location>
<manufacturer_jedec_id>0x0301</manufacturer_jedec_id>
<fru_location>LOWER FC JBOD IOM SLOT</fru_location>
<chassis_serial_number>07ECE4</chassis_serial_number>
<fru_status>OK</fru_status>
</fru>
<channel>
<idx>0</idx>
<logchl>0</logchl>
<mode>Host</mode>
<type>Fiber</type>
<pid>40</pid>
<sid>N/A</sid>
<term>N/A</term>
<defclk>AUTO</defclk>
<curclk>2G</curclk>
<defwid>Serial</defwid>
<curwid>Serial</curwid>
</channel>
<channel>
<idx>1</idx>
<logchl>1</logchl>
<mode>Host</mode>
<type>Fiber</type>
<pid>N/A</pid>
<sid>42</sid>
<term>N/A</term>
```

```
<defclk>AUTO</defclk>
<curclk>N/A</curclk>
<defwid>Serial</defwid>
<curwid>N/A</curwid>
</channel>
<channel>
<idx>2</idx>
<logchl>0</logchl>
<mode>DRV+RCC</mode>
<type>Fiber</type>
<pid>14</pid>
<sid>15</sid>
<term>N/A</term>
<defclk>AUTO</defclk>
<curclk>2G</curclk>
<defwid>Serial</defwid>
<curwid>Serial</curwid>
</channel>
<channel>
<idx>3</idx>
<logchl>1</logchl>
<mode>DRV+RCC</mode>
<type>Fiber</type>
<pid>14</pid>
<sid>15</sid>
<term>N/A</term>
<defclk>AUTO</defclk>
<curclk>2G</curclk>
<defwid>Serial</defwid>
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</channel>
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<type>Fiber</type>
<pid>44</pid>
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<term>N/A</term>
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<sid>46</sid>
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<curwid>N/A</curwid>
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<dynamic_address>
<ip>10.1.74.212</ip>
<netmask>255.255.255.0</netmask>
<gateway>10.1.74.1</gateway>
</dynamic_address>
<dynamic_ip_assignment>Enabled</dynamic_ip_assignment>
<supported_ip_assignment_mechanism>,RARP</supported_ip_assignment_mechanism>
<transfer_speed_configurable>Disabled</transfer_speed_configurable>
<current_transfer_speed>negotiating,100M</current_transfer_speed>
<supported_transfer_speed>10M,100M</supported_transfer_speed>
<mac_address_configurable>Disabled</mac_address_configurable>
</network>
<network_protocol>
<identifier>TELNET</identifier>
<status>enabled</status>
<port_number>23</port_number>
</network_protocol>
<network_protocol>
<identifier>HTTP</identifier>
<status>enabled</status>
<port_number>80</port_number>
</network_protocol>
<network_protocol>
<identifier>HTTPS</identifier>
<status>disabled</status>
<port_number>443</port_number>
</network_protocol>
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<identifier>FTP</identifier>
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<identifier>SSH</identifier>
<status>disabled</status>
<port_number>22</port_number>
</network_protocol>
<network_protocol>
<identifier>PriAgent</identifier>
<status>enabled</status>
<port_number>58632</port_number>
</network_protocol>
<network_protocol>
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<status>disabled</status>
<port_number>161</port_number>
</network_protocol>
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<identifier>DHCP</identifier>
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<port_number>68</port_number>
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<identifier>Ping</identifier>
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<com_port>
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<min_bps>2400bps</min_bps>
<default_bps>38400bps</default_bps>
<current_bps>38400bps</current_bps>
</com_port>
<cache_param>
<write_policy>write back</write_policy>
<sync_period>Disabled</sync_period>
<current_global_write_policy>write back</current_global_write_policy>
<optimization>Sequential I/O</optimization>
</cache_param>
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<event_trigger_operation_enables>
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<battery_backup_unit_failure>enabled</battery_backup_unit_failur
e>
<UPS_AC_power_loss>disabled</UPS_AC_power_loss>
<power_supply_failure>enabled</power_supply_failure>
<fan_failure>enabled</fan_failure>
</event_trigger_operation_enables>
<temperature-exceeded-delay>30min</temperature-exceeded-delay>
</peripheral_device>
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<device>
<name>CPU Temp Sensor(primary)</name>
<value>35.50C</value>
<status>within safety range</status>
</device>
<device>
<name>Board1 Temp Sensor(primary)</name>
<value>41.50C</value>
<status>within safety range</status>
</device>
<device>
<name>Board2 Temp Sensor(primary)</name>
<value>52.00C</value>
<status>within safety range</status>
</device>
<device>
<name>+3.3V Value(primary)</name>
<value>3.432V</value>
<status>within safety range</status>
</device>
<device>
<name>+5V Value(primary)</name>
<value>5.099V</value>
<status>within safety range</status>
</device>
<device>
<name>+12V Value(primary)</name>
<value>12.320V</value>
<status>within safety range</status>
</device>
```

```
<device>
<name>Battery-Backup Battery(primary)</name>
<value>06</value>
<status>N/A</status>
</device>
<device>
<name>CPU Temp Sensor(secondary)</name>
<value>40.00C</value>
<status>within safety range</status>
</device>
<device>
<name>Board1 Temp Sensor(secondary)</name>
<value>48.00C</value>
<status>within safety range</status>
</device>
<device>
<name>Board2 Temp Sensor(secondary)</name>
<value>55.00C</value>
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</device>
<device>
<name>+3.3V Value(secondary)</name>
<value>3.352V</value>
<status>within safety range</status>
</device>
<device>
<name>+5V Value(secondary)</name>
<value>5.072V</value>
<status>within safety range</status>
</device>
<device>
<name>+12V Value(secondary)</name>
<value>12.199V</value>
<status>within safety range</status>
</device>
<device>
<name>Battery-Backup Battery(secondary)</name>
<value>00</value>
<status>N/A</status>
</device>
</peripheral_device_status>
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<verify_on_rebuild>Disabled</verify_on_rebuild>
<verify_on_normal>Disabled</verify_on_normal>
<rebuild_priority>Low</rebuild_priority>
</array_param>
<drive_param>
<scsi_motor_spin_up>Disabled</scsi_motor_spin_up>
<disk_access_latency>15S</disk_access_latency>
<scsi_io_timeout>30s</scsi_io_timeout>
<tag_count_per_drive>32</tag_count_per_drive>
<drive_check_period>30s</drive_check_period>
<safte_polling_period>30s</safte_polling_period>
<auto_detect_drive_check>Disabled</auto_detect_drive_check>
<drive_smart_mode>disabled</drive_smart_mode>
<auto_global_spare>Disabled</auto_global_spare>
</drive_param>
<host_param>
<queue_io_count>1024</queue_io_count>
<luns_per_host>32</luns_per_host>
<fibre_connection_mode>loop</fibre_connection_mode>
<inband_access>enabled</inband_access>
</host_param>
<redundant_param>
<role>Redundant Primary</role>
<Primary_sn>8027229</Primary_sn>
<Redundancy_mode>Active-Active</Redundancy_mode>
<Redundancy_status>Enabled</Redundancy_status>
<redundant_config>Primary controller</redundant_config>
<secondary_sn>8027194</secondary_sn>
</redundant_param>
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<ld_id>7C01DB6C</ld_id>
<ld_idx>0</ld_idx>
<assignment>Primary</assignment>
<status>Good</status>
<raid_level>RAID 5</raid_level>
<write_policy>default</write_policy>
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<physical_drive>3.13 3.14 3.16</physical_drive>
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```

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<assignment>Primary</assignment>
<status>Good</status>
<raid_level>RAID 5</raid_level>
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<physical_drive>3.17 3.18 3.19</physical_drive>
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<total_partitions>1</total_partitions>
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<ld_id>460FDB54</ld_id>
<ld_idx>2</ld_idx>
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<raid_level>RAID 5</raid_level>
<write_policy>default</write_policy>
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<number_of_drives>6</number_of_drives>
<physical_drive>3.20 3.21 3.22 3.9 3.23 3.24</physical_drive>
<size>122.07GB</size>
<total_partitions>1</total_partitions>
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<effective_size>122.07GB<</effective_size>
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<mgmt_device name="ses" idx="1"></mgmt_device>

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"115884"></component>
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"115884"></component>
<component type="fan" unit="2" status="OK" fru-pn="370-5398" fru-sn=
"114536"></component>
<component type="fan" unit="3" status="OK" fru-pn="370-5398" fru-sn=
"114536"></component>
<component type="ps" unit="0" status="OK" fru-pn="370-5398" fru-sn=
"115884"></component>
<component type="ps" unit="1" status="OK" fru-pn="370-5398" fru-sn=
"114536"></component>

<component type="temp" unit="0" status="OK" fru-pn="370-6775" fru-sn="07ECE4">
<temp>27</temp>
</component>
<component type="temp" unit="1" status="OK" fru-pn="370-6775" fru-sn="07ECE4">
<temp>27</temp>
</component>
<component type="temp" unit="2" status="OK" fru-pn="370-6775" fru-sn="07ECE4">
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</component>
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</component>
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<temp>25</temp>
</component>
<component type="temp" unit="5" status="OK" fru-pn="370-6775" fru-sn="07ECE4">
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</component>
<component type="temp" unit="6" status="OK" fru-pn="370-6774" fru-sn="GG0042">
<temp>25</temp>
</component>
<component type="temp" unit="7" status="OK" fru-pn="370-6774" fru-sn="GG0042">
<temp>32</temp>
</component>
<component type="temp" unit="8" status="OK" fru-pn="370-6774" fru-sn="GG0045">
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</component>
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</component>
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</component>
<component type="temp" unit="11" status="OK" fru-pn="370-5398" fru-sn="114536">
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</component>
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</component>
<component type="voltage" unit="2" status="OK" fru-pn="370-5398" fru-sn=
"114536">
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</component>
<component type="voltage" unit="4" status="OK" fru-pn="370-6774" fru-sn=
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</component>
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</component>
<component type="voltage" unit="6" status="OK" fru-pn="370-6774" fru-sn=
"GG0042">
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</component>
<component type="voltage" unit="7" status="OK" fru-pn="370-6774" fru-sn=
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</component>
<component type="voltage" unit="8" status="OK" fru-pn="370-6774" fru-sn=
"GG0042">
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</component>
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"GG0045">
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</component>
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"GG0045">
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"GG0045">
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</component>
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</component>
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</component>
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</component>
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</component>
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</component>
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</component>
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"07ECE4">
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</component>
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"07ECE4">
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</component>
<component type="diskslot" unit="11" status="OK" fru-pn="370-6775" fru-sn=
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<addr>11</addr>
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</component>
</enclosure>
<ses>
<idx>1</idx>
<ch>3</ch>
<id>12</id>
<chassis>07ECE4</chassis>
<vendor_product_id>SUN     StorEdge 3511F D</vendor_product_id>
<rev>0420</rev>
<pld>1100</pld>
<wwnn>205000C0FF07ECE4</wwnn>
<wwpn>225000C0FF07ECE4</wwpn>
<topology>loopb</topology>
</ses>
<port_wwns>
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<ch>1</ch>
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<ch>4</ch>
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```
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<ch>5</ch>
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<idx>7</idx>
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<ch>5</ch>
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</inter_controller_link>
<battery_status>
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<manufacturing_date>N/A</manufacturing_date>
<placed_in_service>N/A</placed_in_service>
<status>N/A</status>
</battery_status>
<battery_status>
<name>Lower Battery</name>
<type>N/A</type>
<manufacturing_date>N/A</manufacturing_date>
<placed_in_service>N/A</placed_in_service>
<status>N/A</status>
</battery_status>
<config_components>
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<ch>3</ch>
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<manufacturer>HITACHI</manufacturer>
<model>HDS7225SASUN250G</model>
<serial_number>VNRJ9HC6CU0TDM</serial_number>
<product_revision>A6DA</product_revision>
<wwnn>22E4000A33FFFF00</wwnn>
<capacity>232.88GB</capacity>
<remaining_size>232.63GB</remaining_size>
<Speed>200M</Speed>
<ld_id>00000000</ld_id>
<ld_idx>N/A</ld_idx>
</disk>
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<disk>
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<model>HDS7225SASUN250G</model>
<serial_number>VNRJ3EC6CPSLMM</serial_number>
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<capacity>232.88GB</capacity>
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<ld_idx>N/A</ld_idx>
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<disk>
<ch>3</ch>
<target>2</target>
<status>USED</status>
<manufacturer>HITACHI</manufacturer>
<model>HDS7225SASUN250G</model>
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<product_revision>A6DA</product_revision>
<wwnn>22E4000A33001C16</wwnn>
<capacity>232.88GB</capacity>
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<Speed>200M</Speed>
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<ld_idx>N/A</ld_idx>
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<capacity>232.88GB</capacity>
<remaining_size>232.63GB</remaining_size>
<Speed>200M</Speed>
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```

```
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<serial_number>VNRJ3EC6CHGG8M</serial_number>
<product_revision>A6DA</product_revision>
<wwnn>22E4000A33FFFF04</wwnn>
<capacity>232.88GB</capacity>
<remaining_size>232.63GB</remaining_size>
<Speed>200M</Speed>
<ld_id>00000000</ld_id>
<ld_idx>N/A</ld_idx>
</disk>
<disk>
<ch>3</ch>
<target>5</target>
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<manufacturer>HITACHI</manufacturer>
<model>HDS7225SBSUN250G</model>
<serial_number>VDB41BT4C5SY7C</serial_number>
<product_revision>A81A</product_revision>
<wwnn>22E4000A33000AD4</wwnn>
<capacity>232.88GB</capacity>
<remaining_size>232.63GB</remaining_size>
<Speed>200M</Speed>
<ld_id>00000000</ld_id>
<ld_idx>N/A</ld_idx>
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<disk>
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<target>6</target>
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<ld_idx>N/A</ld_idx>
</disk>
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<product_revision>A6DA</product_revision>
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<Speed>200M</Speed>
<ld_id>00000000</ld_id>
<ld_idx>N/A</ld_idx>
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<model>HDS7250SASUN500G</model>
<serial_number>KRVN63ZAGM6VND</serial_number>
<product_revision>A20A</product_revision>
<wwnn>22E4000A3300D7FB</wwnn>
<capacity>465.76GB</capacity>
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<ld_id>460FDB54</ld_id>
<ld_idx>2</ld_idx>
</disk>
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<product_revision>A6DA</product_revision>
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<Speed>200M</Speed>
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<ch>3</ch>
<target>13</target>
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<model>HDS7250SASUN500G</model>
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<ld_idx>0</ld_idx>
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<disk>
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<ld_idx>0</ld_idx>
</disk>
<disk>
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<target>17</target>
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<model>HDS7250SASUN500G</model>
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</disk>
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<target>19</target>
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<model>HDS7250SASUN500G</model>
<serial_number>KRVN63ZAGM8N3D</serial_number>
<product_revision>A20A</product_revision>
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</disk>
<disk>
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<serial_number>KRVN63ZAGM3XTD</serial_number>
<product_revision>A20A</product_revision>
<wwnn>22E4000A3300D7FF</wwnn>
<capacity>465.76GB</capacity>
<remaining_size>465.51GB</remaining_size>
<Speed>200M</Speed>
<ld_id>460FDB54</ld_id>
<ld_idx>2</ld_idx>
</disk>
```

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<disk>
<ch>3</ch>
<target>21</target>
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<manufacturer>HITACHI</manufacturer>
<model>HDS7250SASUN500G</model>
<serial_number>KRVN63ZAGM3VND</serial_number>
<product_revision>A20A</product_revision>
<wwnn>22E4000A3300D7FD</wwnn>
<capacity>465.76GB</capacity>
<remaining_size>465.51GB</remaining_size>
<Speed>200M</Speed>
<ld_id>460FDB54</ld_id>
<ld_idx>2</ld_idx>
</disk>
<disk>
<ch>3</ch>
<target>22</target>
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<manufacturer>HITACHI</manufacturer>
<model>HDS7250SASUN500G</model>
<serial_number>KRVN63ZAGM72UD</serial_number>
<product_revision>A20A</product_revision>
<wwnn>22E4000A3300D7F7</wwnn>
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<Speed>200M</Speed>
<ld_id>460FDB54</ld_id>
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<disk>
<ch>3</ch>
<target>23</target>
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<manufacturer>HITACHI</manufacturer>
<model>HDS7250SASUN500G</model>
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</disk>
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<disk>
<ch>3</ch>
<target>24</target>
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<model>HDS7250SASUN500G</model>
<serial_number>KRVN63ZAGM8DGD</serial_number>
<product_revision>A20A</product_revision>
<wwnn>22E4000A3300D7F6</wwnn>
<capacity>465.76GB</capacity>
<remaining_size>465.51GB</remaining_size>
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<ld_idx>2</ld_idx>
</disk>
</config_components>
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</hostwwns>
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boot_rev="0548" csb="0500" hw_rev="11" st_rev="0552"></sata_router>
<sata_router encl_id="0" encl_sn="07ECE4" ch="3" slot="lower" rev="DP0579  "
boot_rev="0548" csb="0500" hw_rev="11" st_rev="0552"></sata_router>
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<sata_mux ch="3" id="0" mux_sn="n/a" mux_type="A/A" pc150_rev="BB0D"
pc150_boot="0300"></sata_mux>
<sata_mux ch="3" id="1" mux_sn="n/a" mux_type="A/A" pc150_rev="BB42"
pc150_boot="0300"></sata_mux>
<sata_mux ch="3" id="2" mux_sn="001C16" mux_type="A/A" pc150_rev="BB42"
pc150_boot="0300"></sata_mux>
<sata_mux ch="3" id="3" mux_sn="0014EB" mux_type="A/A" pc150_rev="BB42"
pc150_boot="0300"></sata_mux>
<sata_mux ch="3" id="4" mux_sn="n/a" mux_type="A/A" pc150_rev="BB42"
pc150_boot="0300"></sata_mux>
<sata_mux ch="3" id="5" mux_sn="000AD4" mux_type="A/A" pc150_rev="BB42"
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<sata_mux ch="3" id="6" mux_sn="n/a" mux_type="A/A" pc150_rev="BB42"
pc150_boot="0300"></sata_mux>
<sata_mux ch="3" id="7" mux_sn="001E0A" mux_type="A/A" pc150_rev="BB42"
pc150_boot="0300"></sata_mux>
<sata_mux ch="3" id="8" mux_sn="n/a" mux_type="A/A" pc150_rev="BB42"
pc150_boot="0300"></sata_mux>
<sata_mux ch="3" id="9" mux_sn="00D7FB" mux_type="A/A" pc150_rev="BB42"
pc150_boot="0300"></sata_mux>
<sata_mux ch="3" id="10" mux_sn="n/a" mux_type="A/A" pc150_rev="BB45"
pc150_boot="0300"></sata_mux>
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<sata_mux ch="3" id="11" mux_sn="002E60" mux_type="A/A" pc150_rev="BB42"
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<sata_mux ch="3" id="13" mux_sn="00D7F9" mux_type="A/A" pc150_rev="BB42"
pc150_boot="0300"></sata_mux>
<sata_mux ch="3" id="14" mux_sn="00D7FE" mux_type="A/A" pc150_rev="BB42"
pc150_boot="0300"></sata_mux>
<sata_mux ch="3" id="16" mux_sn="00D7FC" mux_type="A/A" pc150_rev="BB42"
pc150_boot="0300"></sata_mux>
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pc150_boot="0300"></sata_mux>
<sata_mux ch="3" id="18" mux_sn="00D800" mux_type="A/A" pc150_rev="BB42"
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pc150_boot="0300"></sata_mux>
<sata_mux ch="3" id="20" mux_sn="00D7FF" mux_type="A/A" pc150_rev="BB42"
pc150_boot="0300"></sata_mux>
<sata_mux ch="3" id="21" mux_sn="00D7FD" mux_type="A/A" pc150_rev="BB42"
pc150_boot="0300"></sata_mux>
<sata_mux ch="3" id="22" mux_sn="00D7F7" mux_type="A/A" pc150_rev="BB42"
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<sata_mux ch="3" id="23" mux_sn="00D7F8" mux_type="A/A" pc150_rev="BB42"
pc150_boot="0300"></sata_mux>
<sata_mux ch="3" id="24" mux_sn="00D7F6" mux_type="A/A" pc150_rev="BB42"
pc150_boot="0300"></sata_mux>
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<controller_date>Wed Feb 28 21:50:41 2007</controller_date>
<boot_time>Wed Feb 28 21:22:31 2007</boot_time>
<time_zone>GMT -05:15</time_zone>
<drive_side_statistics>
<device_statistics>
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<id>0</id>
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<reset>0</reset>
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<SyncLoss>0</SyncLoss>
<SignalLoss>0</SignalLoss>
<PrimitiveSequence>0</PrimitiveSequence>
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<InvalidCRC>0</InvalidCRC>
</device_statistics>
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<InvalidCRC>0</InvalidCRC>
</device_statistics>
<device_statistics>
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<id>2</id>
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<reset>0</reset>
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<SyncLoss>0</SyncLoss>
<SignalLoss>0</SignalLoss>
<PrimitiveSequence>0</PrimitiveSequence>
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<reset>0</reset>
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<SyncLoss>0</SyncLoss>
<SignalLoss>0</SignalLoss>
<PrimitiveSequence>0</PrimitiveSequence>
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<reset>0</reset>
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</device_statistics>
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<SyncLoss>0</SyncLoss>
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<id>9</id>
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<channel>3</channel>
<id>17</id>
<type>SDISK</type>
<reset>0</reset>
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<InvalidCRC>0</InvalidCRC>
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<id>18</id>
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<channel>3</channel>
<id>19</id>
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<channel>3</channel>
<id>20</id>
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<SyncLoss>0</SyncLoss>
<SignalLoss>0</SignalLoss>
<PrimitiveSequence>0</PrimitiveSequence>
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<reset>0</reset>
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<SyncLoss>0</SyncLoss>
<SignalLoss>0</SignalLoss>
<PrimitiveSequence>0</PrimitiveSequence>
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<InvalidCRC>0</InvalidCRC>
</device_statistics>
<device_statistics>
<channel>3</channel>
<id>22</id>
<type>SDISK</type>
<reset>0</reset>
<LinkFail>0</LinkFail>
<SyncLoss>0</SyncLoss>
<SignalLoss>0</SignalLoss>
<PrimitiveSequence>0</PrimitiveSequence>
<InvalidTransWords>0</InvalidTransWords>
<InvalidCRC>0</InvalidCRC>
</device_statistics>
<device_statistics>
<channel>3</channel>
<id>23</id>
<type>SDISK</type>
<reset>0</reset>
<LinkFail>0</LinkFail>
<SyncLoss>0</SyncLoss>
<SignalLoss>0</SignalLoss>
<PrimitiveSequence>0</PrimitiveSequence>
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<InvalidCRC>0</InvalidCRC>
</device_statistics>
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<channel>3</channel>
<id>14</id>
<type>RAID</type>
<reset>2</reset>
<LinkFail>0</LinkFail>
<SyncLoss>65562</SyncLoss>
<SignalLoss>65600</SignalLoss>
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</device_statistics>
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<id>15</id>
<type>RAID</type>
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<SyncLoss>0</SyncLoss>
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<PrimitiveSequence>0</PrimitiveSequence>
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</device_statistics>
</drive_side_statistics>
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<sata_device_statistics>
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</sata_device_statistics>
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<channel>3</channel>
<id>1</id>
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<channel>3</channel>
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Glossary

The glossary lists acronyms and defines RAID terms found through the documentation. It also includes definitions of the operational states for disk drives and logical drives.

active-active controllers A pair of components, such as storage controllers in a failure-tolerant RAID array, that share a task or set of tasks when both are functioning normally. When one component of the pair fails, the other takes the entire load. Dual active controllers are connected to the same set of devices and provide a combination of higher I/O performance and greater failure tolerance than a single controller.

ANSI American National Standards Institute.

ARP Address Resolution Protocol.

automatic rebuild A process in which data is automatically reconstructed after a drive failure and written to a standby (spare) drive. An automatic rebuild also occurs when a new drive is installed manually in place of a failed drive. If the rebuild process is interrupted by a reset, use the Manual Rebuild command from the firmware application to restart the rebuilding process.

block striping *See* striping.

block striping with dedicated parity (RAID 3) This technique breaks data into logical blocks, the size of a disk block, and then stripes these blocks across several drives. One drive is dedicated to parity. In the event that a disk fails, the original data can be reconstructed using the parity information and the information on the remaining drives.

caching Allows data to be stored in a predesignated area of a disk or RAM (random access memory). Caching is used to speed up the operation of RAID arrays, disk drives, computers and servers, or other peripheral devices.

capacity The total number of physical drives available for data storage in a RAID array (logical drive). For example, if the capacity is N-1 and the total number of disk drives in a logical drives is six 36-Mbyte drives, the disk space available for storage is equal to five disk drives (5 x 36-Mbyte or 180 Mbyte).

CH Channel.

channel Any path used for the transfer of data and control information between storage devices and a storage controller or I/O adapter. Also refers to one SCSI bus on a disk array controller. Each disk array controller provides at least one channel.

CISPR International Special Committee on Radio Interference.

DHCP Dynamic Host Configuration Protocol.

disk mirroring *See* mirroring (RAID1).

EMC Electromagnetic compatibility.

EMU Event monitoring unit.

Fabric Fibre Channel network built around one or more switches.

Fabric switch A Fabric switch functions as a routing engine that actively directs data transfer from source to destination and arbitrates every connection. Bandwidth per node via a Fabric switch remains constant when more nodes are added, and a node on a switch port uses a data path of up to 100 Mbyte/sec to send or receive data.

failover A mode of operation for failure-tolerant arrays in which a component has failed and its function has been assumed by a redundant component.

fault tolerance The capacity to cope with internal hardware problems without interrupting the array's data availability, often by using backup systems brought online when a failure is detected. Many arrays provide fault tolerance by using RAID architecture to give protection against loss of data when a single disk drive fails. Using RAID 1 (mirroring), RAID 3 or RAID 5 (striping with parity), or RAID 1+0 (mirroring and striping) techniques, the array controller can reconstruct data from a failed drive and write it to a standby or replacement drive.

fault-tolerant logical drive A logical drive that provides protection of data in the event of a single drive failure by employing RAID 1, 1+0, 3, or 5.

FC-AL (Fibre Channel-Arbitrated Loop) FC-AL is implemented as either a loop or a Fabric. A loop can contain up to 126 nodes, accessible through only one or two servers.

Fibre Channel A cost-effective gigabit communications link deployed across a wide range of hardware.

Fibre Channel HBAs Fibre channel adapters of a host computer, server, or workstation.

Fibre hubs An Arbitrated Loop Hub is a wiring concentrator. “Arbitrated” means that all nodes communicating over this Fibre loop are sharing a 100 Mbyte/sec segment. Whenever more devices are added to a single segment, the bandwidth available to each node is further divided. A loop configuration allows different devices in the loop to be configured in a token ring style. With a Fibre hub, a Fibre loop can be rearranged in a star-like configuration because the hub itself contains port bypass circuitry that forms an internal loop. Bypass circuits can automatically reconfigure the loop once a device is removed or added without disrupting the physical connection to other devices.

FRU Field-replaceable unit.

Gbyte Gigabyte.

GBIC (Gigabit Interface Converter) A hot-swappable input/output device that plugs into a Gigabit Ethernet port or Fibre Channel.

global spare A spare drive that is available to all logical drives in an array. Spare drives can be part of automatic logical drive rebuild.

group A group is a data object that enables multiple servers to be contained under a single category. Groups are similar in concept to domains, and enable you to organize servers.

HBA Host bus adapter.

hot spare A drive in a RAID 1 or RAID 5 configuration that contains no data and acts as a standby in case another drive fails.

hot-swappable The ability of a field-replaceable unit (FRU) to be removed and replaced while the RAID array remains powered on and operational.

ID Identifier number.

IEC International Electrotechnical Commission.

initialization The process of writing a specific pattern to all data blocks on all drives in a logical drive. This process overwrites and destroys existing data on the disks and the logical drive. Initialization is required to make the entire logical drive consistent at the onset. Initialization ensures that any parity checks performed in the future are executed correctly.

JBOD (Just a Bunch of Disks) A storage device that consist of drives with no controllers.

LAN Local area network.

LD Logical drive.

logical drive A section of disk storage space, also referred to as a LUN, that is presented to the host operating system as a single physical drive. A logical drive might be located on one or more physical drives. Each controller can manage one to eight logical drives.

LUN (logical unit number) The major and minor device numbers make up the logical unit numbering sequence for a particular device connected to a computer.

LUN mapping The ability to change the virtual LUN as presented to the server from storage. This enables such benefits as the ability of a server to boot from the SAN without requiring of a local disk drive. Each server requires LUN 0 to boot.

LUN masking The characteristic that enables an administrator to dynamically map an HBA to a specified LUN. This provides an individual server or multiple servers access to an individual drive or to multiple drives, and prohibits unwanted server access to the same drives.

LVD A low-noise, low-power, and low-amplitude signaling technology that enables data communication between a supported server and storage devices. LVD signaling uses two wires to drive one signal over copper wire and requires a cable that is no longer than 25 meters (82 feet).

management port The 10/100BASE-T Ethernet port that is used to configure a RAID array.

Mbyte Megabyte.

media scan A background process that continuously checks physical drives for bad blocks or other media errors.

mirroring (RAID 1) Data written to one disk drive is simultaneously written to another disk drive. If one disk fails, the other disk can be used to run the array and reconstruct the failed disk. The primary advantage of disk mirroring is 100 percent data redundancy. Since the disk is mirrored, it does not matter if one of the disks fails. Both disks contain the same data at all times and either can act as the operational disk.

Disk mirroring provides 100 percent redundancy but is expensive because each drive in the array is duplicated.

multiple-block striping with distributed parity A RAID technique (RAID 5) that offers redundancy with the parity information distributed across all disks in the logical drive. Data and its parity are never stored on the same disk. In the event that a disk fails, the original data can be reconstructed using the parity information and the information on the remaining disks.

NDMP Network Data Management Protocol.

NVRAM (non-volatile random access memory) A memory unit equipped with a battery so that the data stays intact even after main power is switched off.

N port A Fibre Channel port in a point-to-point or Fabric connection.

OBP OpenBoot™ PROM (OBP). When you first start Solaris, it shows an OK prompt, which is the OBP. It is a command-line interface.

out-of-band Refers to the connections and devices that are not in the data path.

parity check A process whereby the integrity of the redundant data on fault-tolerant logical drives (RAID 1, 3, and 5) is checked. For RAID 3 and 5 configurations, the parity checking procedure on a logical drive recalculates the parity of data stripes in each of the logical drive's RAID stripe sets and compares it with the stored parity. If a discrepancy is found, an error is reported and the new correct parity is substituted for the stored parity. For RAID 1 configurations, if an inconsistency is encountered, data is copied from the master disk to the slave disk. If a bad block is encountered when the parity is regenerated, the data is copied from the other disk, master or slave, to the reporting disk drive reallocating the bad block.

partner group A pair of interconnected controller units. Expansion units interconnected to the pair of controller units can also be part of the partner group.

PID Primary controller identifier number

PLA Programmable Logic Array. Offers flexible features for more complex designs.

PLD Programmable logic device. A generic term for an integrated circuit that can be programmed in a laboratory to perform complex functions.

RAID (redundant array of independent disks) An arrangement of two or more disk drives combined into a single virtual drive to provide more disk storage space, better performance and reliability, and redundant backup of data. Various combinations of these features are described by defined RAID levels. Arrays can support RAID 0, 1, 1+0, 3, and 5.

RAID Level Various techniques using combinations of mirroring, striping, duplexing, and parity to implement a RAID array are called RAID levels. Each technique uses a distinct algorithm to offer a mix of performance, reliability and cost.

RARP Reverse Address Resolution Protocol.

RAS Reliability, Availability, and Serviceability. These headings refer to a variety of features and initiatives all designed to maximize equipment uptime and mean time between failures, minimize downtime and the length of time necessary to repair failures, and eliminate or decrease single points of failure in favor of redundancy.

read policy A storage device parameter that determines whether the storage device holds data in cache before storing it to disk. The ability to hold data in cache while it is being written to disk can increase storage device speed during sequential reads.

rebuild The process of reconstructing the data that was on a disk before it failed. Rebuilding can be done only in arrays with data redundancy, such as RAID levels 1, 1+0, 3, and 5.

rebuild priority Rebuild priority enables the RAID controller to serve other I/O requests while rebuilding the logical drives. Priority ranges from low, which uses the controller's minimum resources to rebuild, to high, which uses the controller's maximum resources to complete the rebuilding process.

SAN (storage area networking) A high-speed, open-standard, scalable network of storage devices and servers providing accelerated data access.

SCSI (Small Computer Systems Interface) An industry standard for connecting disk and tape devices to a workstation.

SES An interface to SCSI Enclosure Services devices. These devices sense and monitor physical conditions within an enclosure, and enable access to the status reporting and configuration features of the enclosure (such as indicator LEDs on the enclosure).

SID Secondary controller identifier number.

SMART (Self-Monitoring Analysis and Reporting Technology) The industry-standard reliability prediction indicator for both the IDE/ATA and SCSI hard disk drives. Hard disk drives with SMART offer early warning of some hard disk failures so critical data can be protected.

SMTP (Simple Mail Transfer Protocol) A protocol for sending email messages between servers and from mail clients to mail servers. The messages can then be retrieved with an email client using either POP or IMAP.

SNMP (Simple Network Management Protocol) A set of protocols for managing complex networks. SNMP works by sending messages, called protocol data units (PDUs), to different parts of a network. SNMP-compliant devices, called agents, store data about themselves in Management Information Bases (MIBs) and return this data to the SNMP requesters.

spanning Making use of the firmware's striping capability to stripe data across two otherwise independent RAID logical drives. The two spanned logical drives are presented to the operating system as one logical drive.

standby drive A drive that is marked as a spare to support automatic data rebuilding after a physical drive associated with a logical drive fails. For a standby drive to take the place of another drive, it must be at least equal in size to the failed drive and all of the logical drives dependent on the failed disk must be redundant—RAID 1, 1+0, 3, and 5.

state The current operational status of a disk drive, a logical drive, or controller. The RAID array stores the states of drives, logical drives, and the controller in its nonvolatile memory. This information is retained across power interruptions.

stripe size This is the amount of data in kilobytes that is striped across each physical drive in a logical drive. Generally, large stripe sizes are more effective for arrays with sequential reads.

striping The storing of sequential blocks of incoming data on all the different physical drives in a logical drive.

This method of writing data increases the disk array throughput because multiple drives are working simultaneously, retrieving and storing. RAID 0, 1+0, 3, and 5 and all use striping.

terminator A part used to end a SCSI bus. Terminators prevent energy from reflecting back into a cable plant by absorbing the radio frequency signals.

UPS Uninterruptible Power Supply.

volume Also called a logical unit number or LUN, a volume is one or more drives that can be grouped into a unit for data storage.

write-back cache A cache-writing strategy in which the array controller receives the data to be written to disk, stores it in the memory buffer, and immediately sends the host operating system a signal that the write operation is complete, without waiting until the data is actually written to the disk drive. Within a short time, the controller, when not busy, writes the data to the disk drive.

write policy A cache-writing strategy used to control write operations. The write policy options are CIFS write-back and write-through cache.

write-through cache A cache-writing strategy in which the array controller writes the data to the disk drive before signaling the host operating system that the process is complete. Write-through cache has lower write operation and throughput performance than write-back cache, but it is the safer strategy, with minimum risk of data loss on power failure.

WWN (worldwide name) A globally unique, hard-coded and embedded number assigned by the manufacturer and registered under IEEE that is used to identify hardware.

Index

Q

R

S

T

U

V

W

X