Uniform Command-Line Interface User's Guide

Sun Microsystems, Inc.
www.sun.com

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Contents

Preface

This guide provides information about installing and using the command-line interface, `arrconf`. This command-line interface (CLI) can be used with RAID host bus adapters (HBAs), such as the Sun StorageTek SAS RAID HBAs.

Before You Read This Document

To use the information in this document, you must have installed and configured the HBAs with which you want to use the CLI. For hardware installation and configuration instructions for Sun StorageTek SAS RAID HBAs, see the installation documentation at:

`http://docs.sun.com/app/docs/prod/stortek.raid.hba#hic`

How This Document Is Organized

Chapter 1 describes how to install the command-line interface for your operating system.

Chapter 2 explains how to use the text-based command-line interface.

Using UNIX Commands

This document might not contain information about basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices. Refer to 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

Typeface	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*.

Note – Characters display differently depending on browser settings. If characters do not display correctly, change the character encoding in your browser to Unicode UTF-8.

Related Documentation

The following table lists the documentation for this product. The online documentation is available at:

http://docs.sun.com/app/docs/prod/stortek.raid.hba#hicl

Application	Title	Part Number	Format	Location
Hardware Installation	*Sun StorageTek SAS RAID HBA Installation Guide Eight-Port, Internal HBA*	820-1847-*nn*	PDF HTML	Documentation CD, Online
	Sun StorageTek SAS RAID HBA Installation Guide Eight-Port, External HBA	820-1260-*nn*	PDF HTML	Documentation CD, Online
RAID Management	*Sun StorageTek RAID Manager Software User's Guide*	820-1177-*nn*	PDF HTML	Documentation CD, Online
	Sun StorageTek RAID Manager Software Release Notes	820-2755-*nn*	PDF HTML	Documentation CD, Online

Documentation, Support, and Training

Sun Function	URL
Documentation	http://www.sun.com/documentation/
Support	http://www.sun.com/support/
Training	http://www.sun.com/training/

Third-Party Web Sites

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Uniform Command-Line Interface User's Guide, part number 820-2145-12

CHAPTER 1

Getting Started With the Command-Line Interface

This chapter explains how to get started with the command-line interface (CLI), `arcconf`. The `arcconf` CLI can be used with RAID host bus adapters (HBAs).

This chapter contains the following sections:

Command-Line Interface Functionality

The `arcconf` CLI allows you to do the following:

- Create and delete logical drives.
- Display and modify a limited set of configuration settings.
- Copy configurations from one computer to another.
- Recover from a failed physical device and rebuild an affected logical drive.
- Flash new firmware and BIOS onto the controller.
- Enable the controller to check the removal and connection of any disk drives.
- Automatically update Windows drivers.
- Provide access to the status and event logs of a controller.
- Isolate problems and determine their causes.

Installing the Command-Line Interface

This section contains the following subsections:

About Installing the Command-Line Interface

To install the CLI, obtain the Sun StorageTek RAID Manager CD that is provided in the product ship kit or obtain the latest version of the software at:
`http://support.intel.com/support/go/sunraid.htm`

The CLI is automatically installed in the same directory as the Sun StorageTek RAID Manager software and must remain there.

You can install the CLI on the following operating systems (OS) and technology:

- Windows OS
- Linux OS
- Solaris OS
- VMware technology (ESX Server)

For information about the specific OS and technology product versions that are supported, see the Sun StorageTek SAS RAID HBA installation documentation at: http://docs.sun.com/app/docs/prod/stortek.raid.hba#hicl

▼ To Install on the Windows OS

1. **Start the computer.**
2. **After the Windows OS starts, insert the Sun StorageTek RAID Manager CD.**
3. **When the installation program starts, follow the on-screen instructions to install the CLI.**

▼ To Install on the Linux OS

1. **Start the computer.**
2. **After the Linux OS starts, insert and mount the Sun StorageTek RAID Manager CD.**

```
Red Hat: mount /dev/cdrom /mnt/cdrom
SuSE: mount /dev/cdrom /media/cdrom
```

3. **Change to the cdrom directory.**

```
Red Hat: cd /mnt/cdrom/linux/manager
SuSE: cd /media/cdrom/linux/manager
```

4. **Extract the RPM package and install it.**

```
rpm: install ./StorMan*.rpm
```

5. **Unmount the CD:**

```
Red Hat: umount /mnt/cdrom
SuSE: umount /media/cdrom
```

▼ To Install on the Solaris OS

1. **Insert the Sun StorageTek RAID Manager CD.**

   The CD mounts automatically. (If it does not, manually mount the CD using a command similar to the one shown in this step. Refer to your operating system documentation for detailed instructions.)

```
mount -F hsfs -o ro/dev/dsk/c1t0d0s2/mnt
```

2. **Install the Sun StorageTek RAID Manager software.**

```
pkgadd -d/mount-point/solaris/manager/StorMan.pkg
```

3. **Follow the on-screen instructions to complete the installation.**

   Eject or unmount the CD. Refer to your operating system documentation for detailed instructions.

▼ To Install on VMware Technology

1. **Insert and then mount the Sun StorageTek RAID Manager CD.**

```
mount -r /dev/cdrom /mnt/cdrom
```

2. **Change to the cdrom directory.**

```
cd /mnt/cdrom/linux/manager
```

3. **Extract the Linux Sun StorageTek RAID Manager RPM package and install it.**

```
rpm --install ./StorMan*.rpm
```

Note – Ignore the note that says "Application can be started by typing /usr/StorMan/StorMan.sh". The console has no graphical capability.

Starting the Command-Line Interface

▼ To Start `arcconf`

Type the appropriate command for your operating system/technology:

```
Windows: c:\install-directory\arcconf.exe
Linux: /usr/install-directory/arcconf
Solaris: /usr/StorMan/arcconf
VMware: /usr/install-directory/arcconf
```

Replace *install-directory* with the directory where the CLI is installed.

To see a list of available commands, type **arcconf** at the prompt. The CLI command functions are detailed in the next chapter.

CHAPTER 2

Using the Command-Line Interface

This chapter explains how to use the text-based command-line interface that provides the same functions as the Sun StorageTek RAID Manager graphical user interface (GUI) in environments where a GUI is not available.

This chapter provides a description, syntax, and examples for each CLI command. Text that you enter literally is shown in **bold**. Optional parameters are shown enclosed in [square brackets]. Variables for which you must substitute values are shown in *italics*. When you may select between multiple parameters, options are separated by a bar (|).

This chapter contains the following sections:

Understanding the Command-Line Interface

This section contains the following subsections:

About the Command-Line Interface Modes

The command-line interface is used interactively or in batch mode. With interactive mode, enter commands at the prompt. In batch mode, create scripts and run the script in the appropriate shell. For example:

TABLE 2-1 Batch Files and Scripts

Environment	Batch File	Run Script
Windows	`.bat`	`CMD.EXE`
Linux/UNIX	`.sh`	`sh / bash`

In either mode, if the command fails, you immediately see an error message for the command that failed. Other script messages that you may encounter indicate the command completed successfully, or the command was aborted.

To access the online help for a specific command, type **`arcconf`**, then press Enter.

Identifying Return Codes

The return values are as follows:

`0x00: SUCCESS`

`0x01: FAILURE`

The requested command failed

`0x02: ABORT`

The command was aborted because parameters failed validation

`0x03: INVALID_ARGUMENTS`

The arguments are incorrect. (Displays COMMAND help)

`0x04: UNSUPPORTED`

The command is unsupported

`0x06: INVALID_ADAPTER`

The adapter specified does not exist (special case for INVALID_ARGUMENTS)

Using Event Log Files

The command-line interface event log shows the results of a command in the form of the following:

- **Status** – `success/failure/aborted/invalid arguments/unsupported/invalid adapter`
- **Return code** – `0x00/0x01/0x02/0x03/0x04/0x06`

Additionally, when using the `romupdate` or `driverupdate` commands, the event log will display the old and new version of the firmware or driver being updated.

This feature allows you to save logs documenting all commands. The following is an example of saving a firmware update event log.

```
arcconf romupdate 1 as4805 noprompt eventlog romupdate_1.log
errorlog update_err.log
```

Using Error Log Files

The error log keeps an inventory of all relevant information from an event failure. The error log file also contains return codes (for details see "Identifying Return Codes" on page 8) that will help diagnose why a command failed.

When saving an event log, you can specify the log name and path by using the `eventlog` optional parameter, type *name-of-CLI* **`eventlog`** *path*, then press Enter.

This feature allows you to save logs documenting all event failures. The following is an example of saving a driver update error log.

```
arcconf driverupdate_1 c:\sdrivers noprompt eventlog
driverupdate_1.log errorlog update_err.log
```

arcconf Commands

This section provides information on the arcconf commands. The section contains the following subsections:

arcconf copyback

Description

Enables or disables the copyback feature, which attempts to keep drives in the original slot order after rebuilds.

Syntax

arcconf copyback *controller-number* **on | off**

Options

- *controller-number*

  The controller number

- **on|off**

  Enables or disables the copyback feature.

Examples

```
arcconf copyback 1 on
```

arcconf create

Description

Creates a new logical drive. You must provide the channel and device ID of the physical devices.

On redundant logical drives, `arcconf` performs auto synchronization.

Syntax

arcconf create *controller-number* **logicaldrive** [**stripesize** *size*] [**legs** *number*] [**name** *name*] [**priority low** | **medium** | **high**] [**Method build** | **clear** | **quick**] [**ron** | **roff**] [**wt** | **tb** | **wbb**]] [*size* | **max**] [*RAID-number*] [*channel-number channel-ID-number*] [**noprompt**]

arcconf create *controller-number* **logicaldrive rvolume** *volume* [*logical-drive-number*] [*logical-drive-number*] [**noprompt**]

Options

- *controller-number*

  The controller number

- **logicaldrive**

  A logical drive will be created

- **stripesize** *size*

  Optional parameter to specifying a stripe size. The size can be 16, 32, 64, 128, 256, 512 and 1024 KB. The default is 256 KB.

- **legs** *number*

  Optional parameter to specify the number of legs in the multi-layer array. Value is an integer for RAID 0x. For RAID 50/60—2 - 16 legs, 3 - 16 drives/leg, 48 drives max

- **name** *name*

  Optional parameter to specify the alias name of a logical device that is displayed in the utilities. Value is a string of up to 16 characters.

- **priority low|medium|high**

  Initialization priority for logical drive to be created.

- **method build|clear|quick**

  Initialization method for the logical drive.

- **ron|roff**

  Turn on or off logical drive read cache

- **wt|wb|wbb**

  wt / wb: disable or enable logical drive write cache write-through. wbb: enable logical drive write cache write-back enabled when protected by a battery

- *size*|**max**

  The size of the logical drive in megabytes. Use max to set size to available space.

- *RAID-number*

  RAID level for the new logical drive. 0, 1, 1E, 10, 5, 5EE, 50, 6, 60, and volume are supported.

- *channel-number ID-number*

  The space-delimited channel number and device number pairs for each device to add to the logical drive.

- **rvolume** *volume*

  The RAID level for a RAID volume logical drive.

- *logical-drive-number logical-drive-number*

  Logical drive numbers for two or more logical drives to be concatenated into the RAID volume. At least two must be used.

- **noprompt**

  Used mostly for the purpose of scripting setup, this parameter overrides all user confirmations.

Examples

```
arcconf create 1 logicaldrive STRIPESIZE 64 MAX 0 1 0 1 1 1 2
noprompt
```

arcconf datascrub

Description

Sets the background consistency check modes of the controller.

Syntax

arcconf datascrub *controller-number* **on | off | period** *days* **[noprompt]**

Options

- *controller-number*

  The controller number

- **on|off|period** *days*

  on turns the background consistency check on.

  off turns the background consistency check off.

  period *days* the number of days to complete a background consistency check. period automatically turns on the background consistency check days indicates a minimum of 10 days (quick) and a maximum of 365 days (slow)

- **noprompt**

  Used mostly for the purpose of scripting setup, this parameter overrides all user confirmations.

Examples

```
arcconf datascrub 1 period 10
```

arcconf delete

Description

Deletes a logical drive. All data stored on the logical drive will be lost. Spanned drives cannot be deleted with this function.

Syntax

arcconf delete *controller-number* **logicaldrive** *logical-drive-number-to-delete* | **all** *logical-drive-number logical-drive-number* [**noprompt**]

arcconf delete *controller-number* **logicaldrive all** [**noprompt**]

Options

- *controller-number*

  The controller number

- *logical-drive-number-to-delete* | **all**

  The number of the logical drive to be deleted. **all** deletes all logical drives

- *logical-drive-number logical-drive-number*

  Logical drive numbers for two or more logical drives.

- **noprompt**

  Used mostly for the purpose of scripting setup, this parameter overrides all user confirmations.

Examples

```
arcconf delete 1 logicaldrive 1 2 3
arcconf delete 1 logicaldrive all
```

arcconf driverupdate

Description

Updates Windows device drivers. When given a directory name, it will attempt to update a driver to the version found in the given directory.

Note – This command is available only on Windows systems.

Syntax

arcconf driverupdate *directory-path*

Options

- *directory-path*

  The directory path containing the driver that you want to update.

Examples

```
arcconf driverupdate C:\windowsall
```

arcconf getconfig

Description

Lists information about the controllers, logical drives, and physical devices. This information can include (but is not limited to) the following items:

- Controller type
- BIOS, boot block, device driver, and firmware versions
- Logical drive status, RAID level, and size
- Physical device type, device ID, presence of PFA
- Physical device state
- Enclosure information: fan, power supply, and temperature status

Syntax

arcconf getconfig *controller-number* [**ad** | **ld** | **pd** | **al**]

Options

- *controller-number*

  The controller number

- **ad**

  Adapter information only

- **ld**

  Logical drive information only

- **pd**

  Physical device information only

- **al**

  All information

Examples

```
arcconf getconfig 1 ad
```

arcconf getlogs

Description

Obtains controller log information. Provides access to the status and event logs of a controller.

Syntax

arcconf getlogs *controller-number* **device** | **dead** | **event** [**clear** | **tabular**]

Options

- *controller-number*

  The controller number

- **device**

  Retrieve a log of any device errors the controller has encountered

- **dead**

  Retrieve a log that records any occurrences of defunct devices

- **event**

  Retrieve a log of special events that may have occurred (for example, rebuilds, LDMs, and so on)

- **clear**

  Optional, clears the specified controller log

- **tabular**

  Optional, displays logs in a table format

Examples

```
arcconf getlogs 1 device
arcconf getlogs 1 device tabular
```

arcconf getstatus

Description

The `getstatus` function displays the status of any background command that is currently running. Including information about the most recent rebuild, synchronization, logical-drive migration, and compaction/expansion. The information includes the type of operation, status, logical drive number, logical drive size, and percentage of the operation completed.

Note – `getstatus` reports currently active operations for both `arcconf` commands and commands issued from the Sun StorageTek RAID Manager software. It reports verify, clear, initialize, and secure erase operations on physical devices. It only reports active operations. It does not display information if the operation is completed.

Syntax

`arcconf getstatus` *controller-number*

Options

- *controller-number*

  The controller number

Examples

```
arcconf getstatus 1
```

arcconf getversion

Description

Lists version information for all controllers or a specific controller's software components, including information about the BIOS, driver, firmware currently running, and firmware that will run after a reboot.

Note – The firmware version that will run after a reboot is called the "staged" firmware.

Syntax

`arcconf getversion` *controller-number*

Options

- *controller-number*

  The controller number. If no controller number is specified, information for all controllers is retrieved.

Examples

```
arcconf getversion
```

arcconf identify

Description

Identifies a physical or logical device by blinking its LEDs

Syntax

arcconf identify *controller-number* **logicaldrive** *logical-drive-number*

arcconf identify *controller-number* **device** *channel-number ID-number*

Options

- *controller-number*

  The controller number

- **logicaldrive** *logical-drive-number*

  The number of the logical drive to be identified

- **device** *channel-number ID-number*

  The channel and ID number for the device to be identified

Examples

```
arcconf identify 1 device 0 0
arcconf identify 1 all
```

arcconf key

Description

Loads a feature key onto a Sun controller

Syntax

arcconf key *controller-number* **set** *key-number*

Options

- *controller-number*

  The controller number

- **set** *key-number*

  type the key number provided by Sun

Examples

```
arcconf key 1 set ABCD EFGH IJKL MNOP QRST UVWX
```

arcconf modify

Description

Morphs a logical device from one raid level to another (RAID Level Migration). Expands a logical device from original to one with larger capacity (Online Capacity Expansion). Can be used to make mirrored sets.

Syntax

arcconf modify *controller-number* **from** *logical-drive-number* **to** [*stripe-size* | *init-priority* | *legs* | [*size* | **max**] *RAID-number* | *channel-number ID-number*[*channel-number ID-number*]] [**noprompt**]

Options

- *controller#*

  The controller number

- **from**

  The logical drive to be modified

- *logical-drive-number*

  The logical drive number

- **to**

  The modifications

- *stripe-size*

  The stripe size in KB. Options are 16, 32, 64, 128, 256, 512, and 1024. the default is 256 KB.

- *init-priority*

  The priority level of the modification. Options are low, med, and high.

- *legs*

The number of subarrays for a RAID level-50 or RAID level 60 array. Possible values are 2-16 legs and 3-16 drives/leg (to 48 drives maximum).

- *size* | **max**

  Desired size in MB or max to use all available space on the disk

- *RAID-number*

  The RAID level for the logical drive 0, 1, 5, 5EE, or 10.

Note – The channel number and ID number parameters is the list of devices that will contain the target modification object.

- *channel-number*

  The channel number for the device

- *ID-number*

  The device_ID (device number) for the device

Note – Channel and device_ID are repeatable parameters.

- **noprompt**

  Used mostly for the purpose of scripting setup, this parameter overrides all user confirmations.

Examples

```
arcconf modify 1 from 1 to 262144 1 0 0 0 1
```

arcconf rescan

Description

Enables the controller to check for the removal of any disk drives in the ready state and to check for the connection of any new disk drives to the controller. The command returns when the rescan is complete.

Syntax

arcconf rescan *controller-number*

Options

- *controller-number*

  The controller number

Examples

```
arcconf rescan 1
```

arcconf romupdate

Description

Allows new firmware and BIOS to be flashed to the controller. A reboot is required for the new firmware to take effect.

Note – This function is only supported in Windows and Linux. Be sure to copy the *.UFI update files from the CD and not from the BIOS / firmware update diskettes.

Syntax

arcconf romupdate *controller-number basename*

Options

- *controller-number*

  The controller number

- *basename*

  The name of the ROM image basename or the fully qualified name if you have a set of controller ROM images.

Note – All UFI files must be in the same directory prior to invoking `arcconf`. If you are copying UFI files from floppy images, be sure to check all images.

Examples

```
arcconf romupdate 1 AC2200
arcconf romupdate 1 AC220001.UFI
```

arcconf setalarm

Description

Sets the state of the controller audible alarm, if present.

Syntax

arcconf setalarm *controller-number* **on** | **off** | **silence** | **test**

Options

- *controller-number*

  The controller number

- **on**

  Enables the alarm

- **off**

  Disables the alarm

- **silence**

  Quiets the currently sounding alarm

- **test**

  Triggers the alarm

Examples

```
arcconf setalarm 1 test
arcconf setalarm 1 silence
```

arcconf setcache

Description

Changes a logical drive's cache mode.

Syntax

arcconf setcache *controller-number* **logicaldrive** *logical-drive-number* [**ron** | **rof**] [**wt** | **tb** | **wbb**] [**noprompt**]

arcconf setcache *controller-number* **device** *channel-number ID-number* [**ron** | **roff**] [**wt** | **tb** | **wbb**] [**noprompt**]

Options

- *controller-number*

  The controller number

- **logicaldrive** *logical-drive-number*

  The number of the logical drive whose cache will be altered

- **ron|roff**

  Turn on or off logical drive read cache

- **wt|wb|wbb**

  wt / wb: disable or enable logical drive write cache write-through. wbb: enable logical drive write cache write-back enabled when protected by a battery

- **device** *channel-number ID-number*

  The channel number and device number for the device

- **noprompt**

  Used mostly for the purpose of scripting setup, this parameter overrides all user confirmations.

Examples

```
arcconf setcache logicaldrive 1 ron
arcconf setcache device 0 0 wb
```

arcconf setconfig

Description

Resets the controller's configuration. Logical drives are deleted, hard disks are reset to the READY state.

Syntax

arcconf setconfig *controller-number* **default** [**noprompt**]

Options

- *controller-number*

  The controller number

- **default**

  Restores the controller's default configuration

- **noprompt**

  Used mostly for the purpose of scripting setup, this parameter overrides all user confirmations.

Examples

```
arcconf setconfig 1 default
```

arcconf setname

Description

Renames a logical drive.

Syntax

arcconf setname *controller-number* **logicaldrive** *logical-drive-number new-name*

Options

- *controller-number*

  The controller number

- **logicaldrive** *logical-drive-number*

  The number of the logical drive to be renamed

- *new-name*

  The new name of the logical drive

Examples

```
arcconf setname 1 logicaldrive 1 BACKUP_A
```

arcconf setstate

Description

Changes the state of a physical device from its current state to the designated state (hot-spare).

Syntax

arcconf setstate *controller-number* **device** *channel-number ID-number device-number* **hsp** | **rdy** | **ddd logicaldrive** *logical-drive-number [logical-drive-number]*

Options

- *controller-number*

The controller number

- **device** *channel-number ID-number*

  The channel and ID number for the device

- *device-number*

  The device number for the device

- **hsp**

  Create a hot-spare from a ready drive

- **rdy**

  Remove a hot-spare designation

- **ddd**

  Force a drive offline

- **logicaldrive** *logical-drive-number*

  Logical drive number(s) used to create an assigned hot-spare

Examples

```
arcconf setstate 1 device 0 0 hsp logicaldrive 1 2 3
arcconf setstate 1 device 0 0 rdy logicaldrive 2
```

arcconf task

Description

Performs a task on a logical drive.

Syntax

arcconf task start | **stop** *controller-number* **logicaldrive** *logical-drive-number* [**verify_fix** | **verify** | **clear**] [**noprompt**]

arcconf task start | **stop** *controller-number* **device** *channel-number ID-number*[**verify_fix** | **verify** | **clear** | **initialize** | **secureerase**] [**noprompt**]

Options

- *controller-number*

  The controller number

- **logicaldrive** *logical-drive-number*

  The number of the logical drive on which the task is to be performed

- **device** *channel-number ID-number*

  The channel and ID number on which the task is to be performed

- **verify_fix**

  Verifies the disk media and repairs the disk if bad data is found

- **verify**

  Verifies the disk media

- **clear**

  Removes all data from the drive

- **initialize**

  Returns a drive to the READY state (erases the metadata)

- **secureerase**

  Removes all data from the drive in a secure fashion to prevent possible recovery of the erased data

- **noprompt**

  Used mostly for the purpose of scripting setup, this parameter overrides all user confirmations.

Example:

```
arcconf task start 1 logicaldrive 1 verify
arcconf task start 1 device 0 0 initialize
```