BROADCOM®

12Gb/s MegaRAID® Tri-Mode StorCLI

User Guide

Version 1.2

November 30, 2017

MR-TM-StorCLI-UG102

For a comprehensive list of changes to this document, see the Revision History.

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Chapter 1: Supported Controllers and Operating Systems

The StorCLI tool works on MegaRAID®, Software RAID (SWR), and Initiator-Target (IT) controllers.

1.1 Supported Controllers

The StorCLI tool supports the following controllers:

- MegaRAID 12Gb/s SAS RAID controllers
- Initiator-Target 3 (IT3.x) controllers
- Software RAID (SWR) controllers

1.2 Supported Operating Systems

The following table lists the supported operating systems:

Table 1 Supported Operating Systems

Supported Operating Systems	Version/Flavors
Microsoft	**Microsoft Windows Client versions** ■ Windows Client 10 ■ Windows 8.1 ■ Windows 8 **Microsoft Windows Server versions** ■ Windows Server 2016 ■ Windows Server 2012 R2 ■ Windows Server 2012
Linux	**Red Hat** ■ Red Hat Enterprise Linux 7.4 ■ Red Hat Enterprise Linux 7.3 ■ Red Hat Enterprise Linux 7.2 ■ Red Hat Enterprise Linux 7.1 ■ Red Hat Enterprise Linux 7.0 ■ Red Hat Enterprise Linux 6.8 ■ Red Hat Enterprise Linux 6.7 ■ Red Hat Enterprise Linux 6.6 **SUSE** ■ SUSE Linux Enterprise Server 12 SP3 ■ SUSE Linux Enterprise Server 12 SP2 ■ SUSE Linux Enterprise Server 12 SP1 ■ SUSE Linux Enterprise Server 12 ■ SUSE Linux Enterprise Server 11 SP4 ■ SUSE Linux Enterprise Server 11 SP3 ■ SUSE Linux Enterprise Server 11 SP2 **PowerPC** ■ Linux PowerPC for little-endian and big-endian (32 bit and 64 bit)
VMware	■ VMware ESXi 6.5 Update 1 ■ VMware ESXi 6.5 ■ VMware ESXi 6.0 Update 2 ■ VMware ESXi 6.0 Update 1 ■ VMware ESXi 6.0 ■ VMware ESXi 5.5 Update 3 ■ VMware ESXi 5.5 Update 2 ■ VMware ESXi 5.5 Update 1
Citrix XenServer	■ Citrix XenServer 7.2 ■ Citrix XenServer 7 ■ Citrix XenServer 6.5 ■ Citrix XenServer 6.5 SP1
CentOS	■ CentOS-7.4 ■ CentOS-7.2 ■ CentOS-7.1 ■ CentOS-6.8 ■ CentOS-6.7
Fedora	Fedora 24 Workstation

Table 1 Supported Operating Systems (Continued)

Supported Operating Systems	Version/Flavors
FreeBSD	■ FreeBSD 11 ■ FreeBSD 10.3 ■ FreeBSD 10.2
Oracle Enterprise Linux	SPARC
Unified Extensible Firmware Interface	UEFI environment
ARM	Linux and UEFI

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Chapter 2: Installing StorCLI on MegaRAID (MR) Controllers
Installing the StorCLI Tool on Microsoft Windows Operating Systems

Chapter 2: Installing StorCLI on MegaRAID (MR) Controllers

The following topics detail the steps that are required to install the StorCLI tool for MR controllers on various operating systems.

2.1   Installing the StorCLI Tool on Microsoft Windows Operating Systems

The Windows StorCLI binary is provided in a binary format, and no separate installation is required.

1. Copy the binary file from the CD or from the Broadcom website.
2. Place the binary file in the directory from which you want to run the Storage Command Line Interface, and run the tool.

> **NOTE**　　　　The StorCLI tool must be run with the administrator privileges.

Because Windows PowerShell is not fully supported by the StorCLI tool, use either one of the following techniques to run commands in the StorCLI tool in Windows PowerShell:

— Enclose commands in double quotation marks; for example,

```
storcli "/cx show"
```

— Launch the command prompt from within Windows PowerShell to run the StorCLI commands.

2.2   Installing the StorCLI Tool on the UEFI Environment

The UEFI StorCLI binary is provided in a binary format, and no separate installation is required.

1. Copy the binary file from the Broadcom® website or from the CD provided to you on to a USB drive.
2. Using the USB drive, place the binary file in the directory from which you want to run the Storage Command Line Interface, and run the tool.

After the binaries are copied, you can start executing the StorCLI commands.

2.3   Installing the StorCLI Tool on Linux Operating Systems

To install the StorCLI tool on Linux operating systems, perform the following steps:

1. Unzip the StorCLI tool package.
2. To install the StorCLI RPM feature, run the `rpm -ivh <StorCLI-x.xx-x.noarch.rpm>` command.
   By default, the StorCLI tool will be installed in the `/opt/MEGARAID/storcli` location.
3. To upgrade the StorCLI RPM feature, run the `rpm -Uvh <StorCLI-x.xx-x.noarch.rpm>` command.

2.3.1   Uninstalling the StorCLI Tool on Linux Operating Systems

To uninstall the StorCLI tool on Linux operating systems, perform the following steps:

1. Enter the `rpm -e <StorCLI-x.xx-x.noarch>` command.

2.4 Installing the StorCLI Tool on VMware Operating Systems

To install the StorCLI tool on VMware operating systems, run the following from the command line:

```
esxcli software vib install –v=<path-to-vib-package>--no-sig-check
```

Example:

```
esxcli software vib install
–v=/vmfs/volumes/datastore1/StorCliMN/vmware-esx-StorCli-1.01.04.vib
```

NOTE	Broadcom provides three variants of StorCLI tool for VMware to be compatible with ESXi versions and MegaRAID (MR) drivers:
	VMware – This package must be used on `ESXi 4.x` servers.
	VMware-MN – This package must be used on `ESXi 5.x` servers and onwards when the driver used is a legacy MegaRAID SAS Device Driver.
	VMware-NDS – This package must be used with MegaRAID drivers, `lsi_mr3`, which is a native driver.
	The **VMware-NDS** package can be executed with both native and legacy drivers.

2.4.1 Uninstalling the StorCLI Tool on VMware Operating Systems

Perform the following step to uninstall StorCLI on VMware OS:

1. Enter the `esxcli software vib remove –n =<StorCLI package name>` command.

2.5 StorCLI Tool Command Syntax

This section describes the StorCLI command syntax and the valid values for each parameter in the general command syntax.

- In large configurations, running two instances of the StorCLI tool in parallel (at the same time) is not recommended.
- To get the output in JSON format, add `J` at the end of the command syntax. For example:
- storcli /c*x* show *<property1>|<property2>* J
- JSON format output is not supported in the UEFI operating system. The UEFI platform ignores the `J` when it is added at the end of the command syntax.
- Background operations are blocked in the UEFI environment, and these operations are resumed in the operating system environment.
- StorCLI discovers MegaRAID controllers in driver-less UEFI environment only if the firmware is in operational or ready state.
- StorCLI can recover the controllers through the recovery commands. See Section 2.6.16, Recovery Commands (UEFI Only)for more information.
- On ARM-UEFI platforms, StorCLI does not detect the controller if there is no ARM-UEFI driver present.

The StorCLI tool syntax uses the following general format:

```
<[object identifier]> <verb> <[adverb | attributes | properties]> <[key=value]>
```

The StorCLI tool supports the object identifiers listed in the following table.

Table 2 Object Identifiers in the StorCli Command Syntax

Object Identifier	Description
No object identifier specified	If no object identifier exists, the command is a system command.
/cx	This object identifier is for controller x.
/cx/vx	This object identifier is for a virtual drive x on controller x.
/cx/vall	This object identifier is for all virtual drives on controller x.
/cx/ex	This object identifier is for an enclosure x on controller x.
/cx/eall	This object identifier is for all enclosures on controller x.
/cx/fx	This object identifier is for a foreign configuration x on controller x.
/cx/fall	This object identifier is for all foreign configurations on controller x.
/cx/jbodx	This is the object identifier for a JBOD x on controller x
/cx/lnx	This is the object identifier for the lane speed x on controller x
/cx/ex/sx	This object identifier is for the drive is slot x on enclosure x on controller x.
/cx/sx	This object identifier represents the drives that are directly attached to controller x.
/cx/ex/sall	This object identifier is for all the drives on enclosure x on controller x.
/cx/dx	This object identifier is for the drive group x on enclosure x on controller x.
/cx/dall	This object identifier is for the all drive groups on enclosure x on controller x.
/cx/px	This object identifier is for a phy operation x on controller x.
/cx/pall	This object identifier is for all phy operations on controller x.
/cx/bbu	This object identifier is for a BBU x on controller x.
/cx/cv	This object identifier is for a cache vault x on controller x.
/cx/mx	This object identifier is a MUX identifier, cache vault x on controller x.

> **NOTE**   If enclosures are not used to connect physical drives to the controller, you do not specify the enclosure ID in the command.

The StorCLI tool supports the following verbs.

Table 3 Verbs in the StorCli Command Syntax

Verb	Description
add	This verb adds virtual drives, JBODs, and so on to the object identifier.
del	This verb deletes a drive, value, or property of the object identifier.
get	This verb obtains the data from the controller.
set	This verb sets a value of the object identifier.
show	This verb shows the value and properties of the object identifier.
split	This verb enables you to perform a break mirror operation on a drive group.
suspend	This verb suspends a particular operation that is being performed.
pause	This verb pauses an ongoing operation.
resume	This verb resumes paused operation.
compare	This verb compares an input value with a system value.
download	This verb downloads and flashes a file to the target.

Table 3 Verbs in the StorCli Command Syntax (Continued)

Verb	Description
start	This verb starts an operation.
flush	This verb flushes a controller cache or a drive cache.
stop	This verb stops an operation that is in progress. A stopped process cannot be resumed.
import	This verb imports the foreign configuration into the drive.
expand	This verb expands the size of the virtual drive.
insert	This verb replaces the configured drive that is identified as missing, and starts an automatic rebuild.
flasherase	This verb erases the flash memory on the controller.
transform	This verb downgrades the firmware memory on the controller.
restart	This verb restarts the controller without a system reboot.
spinup	This verb spins up the drives connected to the controller.
spindown	This verb spins down an unconfigured drive and prepares it for removal.
shutdown	This verb shuts down the controller.
reset	This verb resets the controller.
erase	This verb erases a particular region on the controller, depending on the argument specified.
secure erase	This verb erases the lock key of a secure drive.

- `<[adverb | attributes | properties]>`

  Specifies what the verb modifies or displays.

- `<[key=value]>`

  Specifies a value, if a value is required by the command.

2.6   StorCLI Commands

StorCLI is a Command Line Utility Tool. StorCLI is not case sensitive. The order in which you specify the command options should be the same as in this document, otherwise, the commands fails.

The version of the StorCLI and the operating system on which StorCLI is being executed are also displayed at the beginning of StorCLI output.

This section describes the commands supported by StorCLI.

2.6.1   System Commands

2.6.1.1   System Show Commands

StorCLI supports the following system `show` commands:

`storcli show`

`storcli show all`

`storcli show ctrlcount`

`storcli show help`

`storcli v`

The detailed description for each command follows.

storcli show

This command shows a summary of controller and controller-associated information for the system. The summary includes the number of controllers, the host name, the operating system information, and the overview of existing configuration.

storcli show all

This command shows the list of controllers and controller-associated information, information about the drives that need attention, and advanced software options.

storcli show ctrlcount

This command shows the number of controllers connected to the system.

storcli show help

This command shows help for all commands at the system level.

storcli v

This command shows the version of the StorCLI. The version of the StorCLI and the operating system on which StorCLI is being executed are also displayed at the beginning of StorCLI output.

2.6.2 Controller Commands

Controller commands provide information and perform actions related to a specified controller. The Storage Command Line Interface Tool supports the controller commands described in this section.

2.6.2.1 Show and Set Controller Properties Commands

Table 4 Controller Commands Quick Reference Table

Commands	Value Range	Description
show <properties>	See Table 5	Shows specific controller properties.
set <properties>	See Table 5	Sets controller properties.
show	all: Shows all properties of the virtual drive. freespace: Shows the freespace in the controller. See Controller Show Commands.	Shows physical drive information.

This section provides command information to show and set controller properties.

> **NOTE** You cannot set multiple properties with a single command.

storcli /cx show <property>

This command shows the current value of the specified property on the specified controller.

General example output:

```
storcli /c0 show
bgirateController = 0
Status = Success
Description = None
Controller Properties:
====================
---------------
Ctrl_Prop Value
```

```
----------------
BGI Rate  45%
----------------
```

You can show the following properties using the `storcli /cx show <property>` command.

`storcli /cx show abortcconerror`

`storcli /cx show activityforlocate`

`storcli /cx show alarm`

`storcli /cx show backplane`

`storcli /cx show batterywarning`

`storcli /cx show bgirate`

`storcli /cx show bootwithpinnedcache`

`storcli /cx show cachebypass`

`storcli /cx show cacheflushint`

`storcli /cx show ccrate`

`storcli /cx show coercion`

`storcli /cx show consistencycheck|cc`

`storcli /cx show copyback`

`storcli /cx show directpdmapping`

`storcli /cx show dimmerswitch|ds`

`storcli /cx show eccbucketleakrate`

`storcli /cx show eccbucketsize`

`storcli /cx show eghs`

`storcli /cx show jbod`

`storcli /cx show loadbalancemode`

`storcli /cx show largeiosupport`

`storcli /cx show maintainpdfailhistory`

`storcli /cx show migraterate`

`storcli /cx show ncq`

`storcli /cx show patrolread|pr`

`storcli /cx show perfmode`

`storcli /cx show pi`

`storcli /cx show prcorrectunconfiguredareas`

`storcli /cx show profile`

`storcli /cx show prrate`

`storcli /cx show personality`

`storcli /cx show rebuildrate`

`storcli /cx show rehostinfo`

```
storcli /cx show restorehotspare

storcli /cx show safeid

storcli /cx show smartpollinterval

storcli /cx show spinupdelay

storcli /cx show spinupdrivecount

storcli /cx show time

storcli /cx show usefdeonlyencrypt

storcli /cx show badblocks

storcli /cx show wbsupport

storcli /cx show DPM

storcli /cx show SGPIOforce

storcli /cx show failpdonsmarterror

Storcli /cx show flushwriteverify
```

storcli /cx set <property> = <value>

General example output:

```
storcli /c0 set
bgirate=40
Controller = 0
Status = Success
Description = None
Controller Properties :
====================
----------------
Ctrl_Prop Value
----------------
BGI Rate  40%
----------------
```

The following commands are examples of the properties that can be set using the `storcli /cx set
<property>=<value>` command:

```
storcli /cx set   abortcconerror=<on|off>

storcli /cx set   termlog[=on|off|offthisboot]

storcli /cx set   activityforlocate=<on|off>

storcli /cx set   alarm=<on|off|silence>

storcli /cx set   batterywarning=<on|off>

storcli /cx set   bgirate=<value>

storcli /cx set   bootwithpinnedcache=<on|off>

storcli /cx set   cachebypass=<on|off>

storcli /cx set   cacheflushinterval=<value>

storcli /cx set   ccrate=<value>

storcli /cx set   coercion=<value>
```

```
storcli /cx set   consistencycheck|cc=[off|seq|conc][delay=value]
[starttime=yyyy/mm/dd hh] [excludevd=x-y,z]
storcli /cx set   copyback=<on|off> type=<smartssd|smarthdd|all>
storcli /cx set   directpdmapping=<on|off>
storcli /cx set   eccbucketleakrate=<value>
storcli /cx set   eccbucketsize=<value>
storcli /cx set   eghs [state=<on|off>][smarter=<on|off>][eug=<on|off>]
storcli /cx set   backplane [mode=<0-3>][expose=<on|off>]
storcli /cx set   dimmerswitch|ds=<on|off type=1|2|4>
storcli /cx set   foreignautoimport=<on|off>
storcli /cx set   jbod=<on|off>
storcli /cx set   loadbalancemode=<value>
storcli /cx set   maintainpdfailhistory=<on|off>
storcli /cx set   migraterate=<value>
storcli /cx set   ncq=<on|off>
storcli /cx set   patrolread|pr {=on mode=<auto|manual>}|{off}
storcli /cxvset   perfmode=<value>
storcli /cx set personality=RAID|HBA|JBOD
storcli /cx set personality behavior=JBOD|None
storcli /cx set personality behavior [sesmgmt=on/off] [securesed=on/off]
[multipath=on/off] [multiinit=on/off]
storcli /cx set   pi [state=<on|off>][import=<on|off>]
storcli /cx set   prcorrectunconfiguredareas=<on|off>
storcli /cx set   profile profileid=<value>
storcli /cx set   prrate=<value>
storcli /cx set   rebuildrate=<value>
storcli /cx set   restorehotspare=<on|off>
storcli /cx set   smartpollinterval=<value>
storcli /cx set   spinupdelay=<value>
storcli /cx set   spinupdrivecount=<value>
storcli /cx set   stoponerror=<on|off>
storcli /cx set   usefdeonlyencrypt=<on|off>
storcli /cx set time=yyyymmdd hh:mm:ss|systemtime
storcli /cx set   usefdeonlyencrypt=<on|off>
storcli /cx set DPM=<on|off>
storcli /cx set   supportssdpatrolread=<on|off>
```

```
storcli /cx set  SGPIOforce=<on|off>

storcli /cx set immediateio=<on|off>

storcli /cx set driveactivityled=<on|off>

storcli /cx set sesmonitoring=[on|off]

storcli /cx set failpdonsmarterror=<on|off>

storcli /cx set flushwriteverify=<on|off>

storcli /cx set largeiosupport=on|off
```

The following table lists and describes the properties for the `show` and `set` commands.

Table 5 Properties for Show and Set Commands

Property Name	Set Command Range	Description
abortcconerror	on|off	Aborts consistency check when it detects an inconsistency.
activityforlocate	on|off	Enables or disables drive activity; drive activity locates function for systems without SGPIO or SES capabilities.
alarm	on|off|silence	Enables or disables alarm on critical errors. The option `silence` silences the alarm.
batterywarning	on|off	Enables or disables battery warnings.
bgirate	0 to 100	Sets background initialization rate in percentage.
cachebypass	on|off	Enables or disables the cache bypass performance improvement feature.
cacheflushint	0 to 255, default value 4	Sets the cache flush interval in seconds.
ccrate	0 to 100	Sets the consistency check rate in percentage.
coercion	0: No coercion 1: 128 MB 2: 1 GB	Sets the drive capacity in coercion mode.
consistencycheck	See Consistency Check.	See Consistency Check.
copyback	on|off type = smartssd|smarthdd|all	Enables or disables copyback for drive types. The available choices are: smartssd: Copyback enabled for SSD drives. smarthdd: Copyback enabled for HDD drives. all: Copyback enabled for both SSD drives and HDD drives.
directpdmapping	on|off	Enables or disables direct physical drive mapping. When enclosures are used, this feature is disabled; otherwise, it should be enabled.
eccbucketleakrate	0 to 65535	Sets the leak rate of the single-bit bucket in minutes (one entry removed per leak-rate).
eccbucketsize	0 to 255	Sets the size of ECC single-bit-error bucket (logs event when full).
eghs state	on|off	Enables or disables the commissioning of otherwise incompatible global hot spare drives as Emergency Hot Spare (EHSP) drives.
eghs smarter	on|off	Enables or disables the commissioning of Emergency Hot Spare (EHSP) drives for Predictive Failure (PFA) events.
eghs eug	on|off	Enables or disables the commissioning of Unconfigured Good drives as Emergency Hot Spare (EHSP) drives.

Table 5 Properties for Show and Set Commands (Continued)

Property Name	Set Command Range	Description
`backplane mode`	0: Use autodetect logic of backplanes, such as SGPIO and I^{2}C SEP using GPIO pins. 1: Disable autodetect SGPIO. 2: Disable I^{2}C SEP autodetect. 3: Disable both the autodetects.	Configures enclosure detection on a non-SES/expander backplane.
`backplane expose`	`on|off`	Enables or disables device drivers to expose enclosure devices; for example, expanders, SEPs.
`dimmerswitch|ds`	See Dimmer Switch Commands.	See Dimmer Switch Commands.
`foreignautoimport`	`on|off`	Imports a foreign configuration automatically, at boot.
`jbod`	`on|off`	Enables or disables JBOD mode; by default, drives become system drives. This property is not supported by all controllers. **NOTE** If you try to disable the JBOD mode, and if any of the JBODs have an operating system/file system, the StorCLI tool displays a warning message indicating that the JBOD has an operating system or a file system on it and prompts you to use the `force` option to proceed with the disable operation.
`loadbalancemode`	`on|off`	Enables or disables automatic load balancing between SAS phys or ports in a wide port configuration.
`largeiosupport`	`on|off`	Sets the current settings on the controller for large I/O support.
`maintainpdfailhistory`	`on|off`	Maintains the physical drive fail history.
`migraterate`	0 to 100	Sets the data migration rate in percentage.
`patrolread|pr`	See Patrol Read.	See Patrol Read.
`perfmode`	0: Tuned to provide best IOPs, currently applicable to non-FastPath 1: Tuned to provide least latency, currently applicable to non-FastPath	Performance tuning setting for the controller.
`pi`	`on|off`	Enables or disables data protection on the controller.
`pi import`	`on|off`	Enables or disables import data protection drives on the controller.
`prcorrectunconfiguredareas`	`on|off`	Correct media errors during patrol read by writing 0s to unconfigured areas of the disk.
`profile profileid`	`OptimizedDefault`	Sets the profile ID.
`prrate`	0 to 100	Sets the patrol read rate of the virtual drives in percentage.
`rebuildrate`	0 to 100	Sets the rebuild rate of the drive in percentage.
`reconrate`	0 to 100	Sets the reconstruction rate for a drive, as a percentage.
`restorehotspare`	`on|off`	Becomes a hot spare on insertion of a failed drive.
`smartpollinterval`	0 to 65535	Sets the time for polling of SMART errors, in seconds.
`spinupdrivecount`	0 to 255	Sets the number of drives that are spun up at a time.
`spinupdelay`	0 to 255	Sets the spin-up delay between a group of drives or a set of drives, in seconds.
`stoponerror`	`on|off`	Stops the MegaRAID BIOS during POST, if any errors are encountered.
`termlog`	`on | off | offthisboot`	Enables or disables the termlog to be flushed from DDR to ONFI. `offthisboot` – Disables the termlog flushes to ONFI only for this boot. In the next boot, the termlog is enabled.

Table 5 Properties for Show and Set Commands (Continued)

Property Name	Set Command Range	Description
show personality		Displays the current, supported, and requested personalities. It also displays the current behavior and respective behavior parameters.
set personality	■ personality = RAID ■ personality = JBOD	Sets the personality to RAID or JBOD. If you switch personalities, you must reboot the system for the changes to take effect.
set personality behavior	JBOD|NONE	Sets the behavior to JBOD or NONE. This property can be configured by the user.
time	Valid time in *yymmdd hh:mm:ss* format or systemtime	Sets the controller time to your input value or the system time (local time in 24-hour format).
usefdeonlyencrypt	on|off	Enables or disables FDE drive-based encryption.
DPM	on|off	Enables or disables drive performance monitoring.
supportssdpatrolread	on|off	Enables or disables patrol read for SSD drives.
SGPIOforce	on|off	Forces the SGPIO status per port only for four drives; affects high performance computing (HPC) controllers.
immediateio	on|off	Enables or disables immediate I/O transactions.
driveactivityled	on|off	Activate or deactivate the Drive Activity LED.
sesmonitoring	on|off	Enables or disables SES monitoring.
failpdonsmarterror	on|off	Enables or disables the *Fail PD on SMARTer* property.
flushwriteverify	on|off	Enables or disables the Write Verify feature. This feature verifies if the data was written correctly to the cache before flushing the controller cache.

2.6.2.2   Controller Show Commands

StorCLI supports the following show commands:

```
storcli /cx show
```

```
storcli /cx show all [logfile[=filename]]
```

```
storcli /cx show freespace
```

The detailed description for each command follows.

storcli /cx show

This command shows the summary of the controller information. The summary includes basic controller information, foreign configurations, drive groups, virtual drives, physical drives, enclosures, and BBU information.

Input example:

```
storcli /c1 show
```

storcli /cx show all [logfile[=*filename*]]

The cx show all command shows all of the controller information, which includes basic controller information, bus information, controller status, advanced software options, controller policies, controller defaults, controller capabilities, scheduled tasks, miscellaneous properties, foreign configurations, drive groups, virtual drives, physical drives, enclosures, and BBU information.

If you use the logfile option in the command syntax, the logs are written to the specified file. If you do not specify the file name, then the logs are written to the storsas.log file. If you do not use the logfile option in the command syntax, the entire log output is printed to the console.

Ensure that the filename does not contain a blank space.

Input examples:

```
storcli /c0 show all logfile=log.txt

storcli /c0 show all logfile = abc.txt
```

NOTE	The PCI information displayed as part of the `storcli /cx show` and `storcli /cx show all` commands is not applicable for the FreeBSD operating system. Hence, the PCI information fields are displayed as `N/A`.

storcli /cx show freespace

This command shows the usable free space in the controller.

Input example:

```
storcli /c0 show freespace
```

2.6.2.3   Controller Debug Commands

The Storage Command Line Tool supports the following debug commands:

Syntax

```
storcli /cx set debug type = <value> option = <value> level = [<value in hex>]
```

This command enables the firmware debug variables.

Where:

- `/cx` – specifies the controller where x is the index of the controller.
- `type` – takes the value from 0 to 128, mapping each number to a particular debug variable in the firmware.
- `option` – takes the value from 0 to 4, where:
  — 0 - NA
  — 1 – SET
  — 2 – CLEAR
  — 3 – CLEAR ALL
  — 4 – DEBUG DUMP
- `level`- supports multiple levels of debugging in the firmware.

Syntax

```
storcli /cx set debug reset all
```

This command enables the firmware debug logs from the application

Where:

`/cx` – specifies the controller where x is the index of the controller.

NOTE	The `debug type`, the `debug value`, and the `debug level` parameters for the preceding `debug` commands are exclusively used by the Broadcom Technical Support Team to provide technical support. For assistance with these debug commands, contact Broadcom Technical Support representative.

2.6.2.4 Controller Background Task Operation Commands

2.6.2.4.1 Profile Management

On controllers that support profile management, the Storage Command Line Interface Tool supports the following profile management commands:

```
storcli /cx show profile
```

```
storcli /cx set profile profileid=<value>
```

The detailed description for each command follows:

storcli /cx show profile

This command displays the profiles supported by the controller.

Input example:

```
storcli /c0 show profile
```

Example output:

On successful execution of the command, the output will have the following fields:

- Mode

  The mode supported by the current controller profile (HBA, RAID, JBOD).
- Profile ID

  Displays the current profile ID.
- MaxPhyDrv

  Displays the maximum number of physical drives supported.
- MaxLD

  Displays the maximum number of logical drives supported.
- MaxNVMeDev

  Displays the maximum number of NVMe drives supported.
- MaxAHCIDev

  Displays the maximum number of AHCI devices supported.
- isDefault

  Displays if the displayed profile ID is the same as the default profile ID.
- isCurrent

  Displays if the displayed profile ID is the same as the current profile ID

storcli /cx set profile profileid= <value>

This command sets the specified profile ID of the controller. You need to specify the profile ID in decimal format. For the Profile ID to change, a system reboot is required.

Input example:

```
storcli /c0 set profile profileid=11
```

2.6.2.4.2 Rebuild Rate

```
storcli /cx set rebuildrate=<value>
```

```
storcli /cx show rebuildrate
```

The detailed description for each command follows.

storcli /cx set rebuildrate=<value>

This command sets the rebuild task rate of the specified controller. The input value is in percentage.

Input example:

```
storcli /c0 set rebuildrate=30
```

> **NOTE**   A high rebuild rate slows down I/O transaction processing.

storcli /cx show rebuildrate

This command shows the current rebuild task rate of the specified controller in percentage.

Input example:

```
storcli /c1 show rebuildrate
```

2.6.2.4.3 Patrol Read

The Storage Command Line Interface Tool supports the following patrol read commands:

```
storcli /cx resume patrolread

storcli /cx set patrolread ={{on mode=<auto|manual>}|{off}}

storcli /cx set patrolread [starttime=<yyyy/mm/dd hh>] [maxconcurrentpd=<value>]
[includessds=<on|off>] [uncfgareas=<on|off>]

storcli /cx set patrolread  delay=<value>

storcli /cx show patrolread

storcli /cx start patrolread

storcli /cx stop patrolread

storcli /cx pause patrolread
```

> **NOTE**   A patrol read operation is scheduled for all the online physical drives of the controller.

The detailed description for each command follows.

storcli /cx resume patrolread

This command resumes a suspended patrol read operation.

Input example:

```
storcli /c0 resume patrolread
```

storcli /cx set patrolread {=on mode=<auto|manual>}|{off}

This command turns the patrol read scheduling on and sets the mode of the patrol read to automatic or manual.

Input example:

```
storcli /c0 set patrolread=on mode=manual
```

storcli /cx set patrolread [starttime=<yyyy/mm/dd hh>] [maxconcurrentpd=<value>] [includessds=<on|off>] [uncfgareas=on|off]

This command schedules a patrol read operation. You can use the following options for patrol read command operations.

Table 6 Set Patrol Read Input Options

Option	Value Range	Description
starttime	A valid date and hour in 24-hour format	Sets the start time in *yyyy/mm/dd hh* format.
maxconcurrentpd	Valid number of physical drives present	Sets the number of physical drives that can perform patrol read at a single time.
includessds	—	Include SSDs in the patrol read operation.
uncfgareas	—	Include the areas not configured in the patrol read process.

> **NOTE** Controller time is taken as a reference for scheduling a patrol read operation.

Input example:

```
storcli /c0 set patrolread=on starttime=2012/02/21 00
```

storcli /cx set patrolread [delay=<*value*>]

This command delays the scheduled patrol read in hours.

Input example:

```
storcli /c0 set patrolread delay=30
```

storcli /cx show patrolRead

This command shows the current state of the patrol read operation along with other details, such as the **PR Mode**, **PR Execution Delay**, **PR iterations completed**, and **PR on SSD**. This command also shows the start time and the date when the patrol read operation started.

The values shown for the current state of the patrol read operation are **Ready**, **Active**, **Paused**, **Aborted**, **Stopped**, or **Unknown**.

If the state of the patrol read is active, a numeric value is shown along with the state that depicts the number of physical drives that have completed the patrol read operation. As an example, `Active 1` means that the one physical drive has completed the patrol read operation.

Input example:

```
storcli /c0 show patrolread
```

storcli /cx start patrolread

This command starts the patrol read operation. This command starts a patrol read operation immediately.

Input example:

```
storcli /c0 start patrolread
```

storcli /cx stop patrolread

This command stops a running patrol read operation.

Input example:

```
storcli /c0 stop patrolread
```

> **NOTE** You cannot resume a stopped patrol read operation.

storcli /cx pause patrolread

This command pauses a running patrol read operation.

Input example:

```
storcli /c0 pause patrolread
```

> **NOTE**   You can run this command only when a patrol read operation is
> running on the controller.

2.6.2.4.4   Consistency Check

The Storage Command Line Interface Tool supports the following commands to schedule, perform, and view the status of a consistency check (CC) operation:

```
storcli /cx set consistencycheck|cc=[off|seq|conc][delay=value]
starttime=yyyy/mm/dd hh [excludevd=x-y,z]
```

```
storcli /cx show cc
```

```
storcli /cx show ccrate
```

The detailed description for each command follows.

storcli /cx set consistencycheck|cc=[off|seq|conc][delay=_value_] starttime=_yyyy/mm/dd hh_ [excludevd=_x-y,z_]

This command schedules a consistency check (CC) operation. You can use the following options with the consistency check command.

Table 7 Set CC Input Options

Option	Value Range	Description
cc	seq – Sequential mode. conc – Concurrent mode. off – Turns off the consistency check.	Sets CC to either sequential mode or concurrent mode, or turns off the CC. **NOTE** The concurrent mode slows I/O processing.
delay	–1 and any integer value.	Delay a scheduled consistency check. The value is in hours. A value of 0 makes the CC runs continuously with no delay (in a loop). **NOTE** Only scheduled consistency checks can be delayed.
starttime	A valid date and hour in 24-hour format.	Start time of a consistency check is _yyyy/mm/dd hh_ format.
excludevd	The range should be less than the number of virtual drives.	Excludes virtual drives from the consistency checks. To exclude particular virtual drives, you can provide list of virtual drive names (V_x_,V_y_ … format) or the range of virtual drives that you want to exclude from a consistency check (V_x_-V_y_ format). If this option is not specified in the command, no virtual drives are excluded.

Input example:

```
storcli /c0 set CC=on starttime=2012/02/21 00 excludevd v0-v3
```

storcli /cx show cc

This command shows the consistency check schedule properties for a controller.

Input example:

```
storcli /c0 show cc
```

storcli /cx show ccrate

This command checks the status of a consistency check operation. The CC rate appears in percentage.

Input example:

```
storcli /c0 show ccrate
```

> **NOTE**   A high CC rate slows I/O processing.

2.6.2.5 Premium Feature Key Commands

The Storage Command Line Interface Tool supports the following commands for premium feature keys:

```
storcli /cx set advancedsoftwareoptions(aso) key=<value> [preview]
```

```
storcli /cx show aso
```

```
storcli /cx set aso [transfertovault][rehostcomplete][deactivatetrialkey]
```

```
storcli /cx show safeid
```

The detailed description for the command follows.

storcli /cx set advancedsoftwareoptions(aso) key=<value> [preview]

This command activates advanced software options (ASO) for a controller. You can use the following options with the advanced software options command.

Table 8 Set Advanced Software Options Input Options

Option	Value Range	Description
key	40 alpha-numeric characters.	Key to activate ASO on the controller. **NOTE** After they are activated, ASOs cannot be removed from the controller.
deactivatetrialkey	—	Deactivates the trial key applied on the specified controller.
rehostcomplete	—	Enables rehosting on the specified controller.
transfertovault	—	Transfers the ASO key to the vault and disables the ASO.

Input example:

```
storcli /c0 set Aso key=LSI0000
```

storcli /cx show safeid

This command shows the Safe ID of the specified controller.

Input example:

```
storcli /c0 show safeid
```

2.6.2.6 Controller Security Commands

The Storage Command Line Interface Tool supports the following controller security commands:

```
storcli /cx compare securitykey=ssssss
```

```
storcli /cx delete securitykey
```

```
storcli /cx set securitykey keyid=kkkk
```

```
storcli /cx set securitykey=sssss [passphrase=sssss][keyid=sssss]
```

```
storcli /cx set securitykey=sssss  oldsecuritykey=ssss [passphrase=sssss]
```

```
[keyid=sssss]
```

```
storcli /cx [/ex]/sx set security=on
```

The detailed description for each command follows.

storcli /cx show securitykey keyid

This command shows the security key on the controller.

Input example:

```
storcli /c0 show securityKey keyid
```

storcli /cx compare securitykey=ssssss

This command compares and verifies the security key of the controller.

storcli /cx delete securitykey

This command deletes the security key of the controller.

Input example:

```
storcli /c0 delete securitykey
```

storcli /cx set securitykey keyId=kkkk

This command sets the key ID for the controller. The key ID is unique for every controller.

storcli /cx set securitykey=sssss [passphrase=sssss][keyid=sssss]

This command sets the security key for the controller. You can use the following options with the `set security key` command.

Table 9 Set Security Key Input Options

Option	Value Range	Description
passphrase	Should have a combination of numbers, uppercase letters, lowercase letters, and special characters. Minimum of 8 characters and maximum of 32 characters.	String that is linked to the controller and is used in the next bootup to encrypt the lock key. If `passphrase` is not set, the controller generates it by default.
keyid	—	Unique ID set for different controllers to help you specify a passphrase to a specific controller.

Input example:

```
storcli /c0 set securitykey=Lsi@12345 passphrase=Lsi@123456 keyid=1
```

storcli /cx set securitykey=sssss oldsecuritykey=ssss [passphrase=sssss][keyid=sssss]

This command changes the security key for the controller.

Input example:

```
storcli /c0 set securitykey=Lsi@12345 oldsecuritykey=pass123 passphrase=Lsi@123456
keyid=1
```

storcli/cx[/ex]/sx set security=on

This command sets the security on the FD-capable JBOD drive.

Input example

```
storcli /c0/e0/s0 set security=on
```

2.6.2.7   Flashing Controller Firmware Command while the Firmware Is Operational

> **NOTE**   The Flashing Controller Firmware Command while the Firmware Is Operational is not supported in Embedded MegaRAID.

storcli /cx download file=filepath [fwtype=<value>] [nosigchk] [noverchk] [resetnow]

This command flashes the firmware with the ROM file to the specified adapter from the given file location (`filepath` is the absolute file path).

You can use the following options in the table to flash the firmware.

Table 10 Flashing Controller Firmware Input Options

Option	Value Range	Description
`nosigchk`	—	The application flashes the firmware even if the check word on the file does not match the required check word for the controller. **NOTE** You can damage the controller if a corrupted image is flashed using this option.
`noverchk`	—	The application flashes the controller firmware without checking the version of the firmware image.
`fwtype`	0: Application 1: TMMC 2: GG-Enhanced	The firmware type to be downloaded. The application downloads the firmware for the controller. The TMMC downloads the firmware for the TMMC battery only. Default is `0` (application).
`resetnow`	—	Invokes online firmware update on the controller; you do not need to reboot the controller to make the update effective. **NOTE** The `resetnow` option is not supported in the UEFI mode.

Input example:

```
storcli /c1 download file=c:\app.rom fwtype=0
```

2.6.2.8   Flashing Controller Firmware Command while the Firmware Is Non-Operational

> **NOTE**   The Flashing Controller Firmware Command while the Firmware Is
> Non-Operational is not supported in Embedded MegaRAID.

storcli /cx download completeflash fileone=<IT boot loader image> filetwo=<firmware image>

This command downloads the complete flash image on a non-operational or an empty controller by performing host boot. This command takes two files as arguments:

- `fileone` – a valid Itboot loader image with which host boot is performed on the controller.
- `filetwo` – a valid firmware package which is flashed on the controller.

Input example:

```
storcli /c1 download completeflash fileone=<Itbootloaderimage> filetwo=<FW image>
```

2.6.2.9   Erase Command

storcli /cx erase all [excludemfg]

This command erases the complete controller flash region but retains the manufacturing data region.

Input example:

```
storcli /c0 erase all excludemfg
```

2.6.2.10   Controller Cache Command

The following command flushes the controller cache.

storcli /cx flush|flushcache

This command flushes the controller cache.

Input example:

```
storcli /c0 flushcache
```

2.6.2.11   Controller Configuration Commands

The following command works with the controller configuration.

storcli /cx set config file=_file_name_

This command saves the controller configuration and its properties to the specified file.

| NOTE | You cannot load a saved configuration over an existing configuration when there are existing virtual drives. To load a saved configuration, you must first clear the existing configuration on the target controller. |

Input example:

```
storcli /c0 set config file= log.txt
```

storcli /cx get config file=_file_name_

This command obtains the controller configuration and its properties from the specified file.

Input example:

```
storcli /c0 get config file= log.txt
```

2.6.3   Drive Commands

This section describes the drive commands, which provide information and perform actions related to physical drives. The following table describes frequently used virtual drive commands.

Table 11 Physical Drives Commands Quick Reference Table

Commands	Value Range	Description
set	missing: Sets the drive status as missing. good: Sets the drive status to unconfigured good. offline: Sets the drive status to offline. online: Sets the drive status to online.	Sets physical drive properties.
show	all: shows all properties of the physical drive. See Drive Show Commands.	Shows virtual drive information.

2.6.3.1   Drive Show Commands

The Storage Command Line Interface Tool supports the following drive show commands:

```
storcli /cx[/ex]/sx show

storcli /cx[/eall]/sall show

storcli /cx[/ex]/sx|sall show all

storcli /cx/[ex]/sx show smart
```

| NOTE | If enclosures are used to connect physical drives to the controller, specify the enclosure ID in the command. If no enclosures are used, you must specify the controller ID and the slot ID. |

The detailed description for each command follows.

storcli /cx[/ex]/sx show

This command shows the summary of the physical drive for a specified slot in the controller.

Input example:

```
storcli /c0/e0/s4 show
```

storcli /cx[/eall]/sall show

This command shows the summary information for all the enclosures and physical drives connected to the controller.

Input example:

```
storcli /c0/eall/sall show
```

storcli /cx[/ex]/sx|sall show all

This command shows all information of a physical drive for the specified slot in the controller. If you use the `all` option, the command shows information for all slots on the controller. *x* stands for a number, a list of numbers, a range of numbers, or all numbers.

This command also shows the NCQ (Native Command Queuing) status (**Enabled**, **Disabled**, or **N/A**), which is applicable only to SATA drives. If the controller to which the SATA drive is connected supports NCQ and NCQ is enabled on the SATA drive, the status is shown as **Enabled**; otherwise it is shown as **Disabled**. If NCQ is not a supported drive operation on the controller, the status is shown as **N/A**.

Input examples:

```
storcli /c0/e3/s0-3 show all
storcli /c0/e35/sall show all
```

> **NOTE** The `storcli /cx/sx` show all command shows tape drive information.

storcli /cx/[ex]/sx show smart

This command displays the SMART information of a SATA drive.

Input example:

```
storcli /c0/e5/s1 show smart
```

2.6.3.2 Missing Drives Commands

The Storage Command Line Interface Tool supports the following commands to mark and replace missing physical drives with the specified Unconfigured Good drive:

```
storcli /cx[/ex]/sx insert dg=A array=B row=C
storcli /cx[/ex]/sx set missing
storcli /cx[/ex]/sx set offline
storcli /cx/dall
```

The detailed description for each command follows.

storcli /cx[/ex]/sx insert dg=A array=B row=C

This command replaces the configured drive that is identified as missing, and then starts an automatic rebuild.

Input example:

```
storcli /c0/e25/s3 insert dg=0 array=2 row=1
```

storcli /cx[/ex]/sx set missing

This command marks a drive as missing.

Input example:

```
storcli /c0/s4 set missing
```

storcli /cx/dall

This command finds the missing drives.

storcli /cx[/ex]/sx set offline

This command marks the drive in an array as offline.

> **NOTE**   To set a drive that is part of an array as *missing*, first set it as `offline`. After the drive is set to `offline`, you can then set the drive to `missing`.

2.6.3.3   Set Drive State Commands

The Storage Command Line Interface Tool supports the following commands to set the status of physical drives:

```
storcli /cx[/ex]/sx set jbod

storcli /cx[/ex]/sx set good [force]

storcli /cx[/ex]/sx set offline

storcli /cx[/ex]/sx set online

storcli /cx[/ex]/sx set missing

storcli /cx[/ex]/sx set bootdrive=<on|off>
```

The detailed description for each command follows.

storcli /cx[/ex]/sx set jbod

This command sets the drive state to JBOD.

Input example:

```
storcli /c1/e56/s3 set jbod
```

storcli /cx[/ex]/sx set good [force]

This command changes the drive state to unconfigured good.

Input example:

```
storcli /c1/e56/s3 set good
```

> **NOTE**   If the drive has an operating system or a file system on it, the StorCLI tool displays an error message and fails the conversion. If you want to proceed with the conversion, use the `force` option as shown in the following command.

Input example:

```
storcli /c1/e56/s3 set good [force]
```

storcli /cx[/ex]/sx set offline

This command changes the drive state to offline.

Input example:

```
storcli /c1/e56/s3 set offline
```

storcli /cx[/ex]/sx set online

This command changes the drive state to online.

Input example:

```
storcli /c1/e56/s3 set online
```

storcli /cx[/ex]/sx set missing

This command marks a drive as missing.

Input example:

```
storcli /c1/e56/s3 set missing
```

storcli /cx[/ex]/sx set bootdrive=<on|off>

This command sets or unsets a physical drive as a boot drive.

Input example:

```
storcli /c1/e56/s3 set bootdrive=on
```

2.6.3.4 Drive Initialization Commands

When you initialize drives, all the data from the drives is cleared. The Storage Command Line Interface Tool supports the following commands to initialize drives:

```
storcli /cx[/ex]/sx show initialization
storcli /cx[/ex]/sx start initialization
storcli /cx[/ex]/sx stop initialization
```

The detailed description for each command follows.

storcli /cx[/ex]/sx show initialization

This command shows the current progress of the initialization progress in percentage.

The estimated time (in minutes) left to complete the operation is also shown.

Input example:

```
storcli /c0/e31/s4 show initialization
```

storcli /cx[/ex]/sx start initialization

This command starts the initialization process on a drive.

Input example:

```
storcli /c0/e31/s4 start initialization
```

storcli /cx[/ex]/sx stop initialization

This command stops an initialization process running on the specified drive. A stopped initialization process cannot be resumed.

Input example:

```
storcli /c0/e56/s1 stop initialization
```

2.6.3.5 Drive Firmware Download Commands

The Storage Command Line Interface Tool supports the following commands to download the drive firmware.

storcli /cx[/ex]/sx download src=`filepath` [satabridge] [mode= 5|7]

This command flashes the drive firmware with the specified file.

The `satabridge` option lets you download the SATA bridge firmware in online mode.

The `mode` options specify the SCSI write buffer mode. The description follows:

- `5` – The entire drive firmware file is downloaded at once.
- `7` – The drive firmware file is downloaded in chunks of 32 KB.

> **NOTE** The default mode is `7`.

Input examples:

```
storcli /c0/e56/s1 download src=c:\file1.bin
```

```
storcli /c0/e56/s1 download src=c:\file1.bin mode=5
```

storcli /cx[/ex]/sx download src= `<filepath>`[mode= E|F]offline[activatenow] [delay=<value>]

storcli /cx[/ex]/sx download mode=Foffline [delay=<value>]

These commands support the drive firmware download using `Mode E` and `Mode F`. The mode options specify the SCSI WRITE BUFFER mode.

The description follows:

- **Mode E** – Downloads the microcode and allows you to issue this command for multiple devices. You can only use this in an offline mode.
- **Mode F** – Activates the deferred microcode and allows you to issue this command to all devices in a safe manner. You can only use this in an offline mode. You cannot issue this command before issuing the Mode E command. The default delay time is `15` seconds. You can specify any delay time between `1` to `300` seconds.

> **NOTE** You can download as well as activate the drive firmware by executing the `activatenow` command in the same command line. You can also specify the delay time, but the delay time specified by you is applicable only for activation and not for downloading the drive firmware.

Input examples for Mode E:

```
storcli /c0/e0/s0download src=file.rom mode=E offline
```

Download successful.

```
storcli /c0/e0/sall download src=file.rom mode=E offline
```

Downloaded sequentially on the drives.

Input Examples for Mode F:

```
storcli /c0/e0/sall download mode=F offline
```

Activation of the microcode successful

```
storcli /c0/e0/sall download mode=F offline delay=15
```

Activation completed with a 15-second delay.

2.6.3.6 Locate Drives Commands

The Storage Command Line Interface Tool supports the following commands to locate a drive and activate the physical disk activity LED:

```
storcli /cx[/ex]/sx start locate
```

```
storcli /cx[/ex]/sx stop locate
```

The detailed description for each command follows.

storcli /cx[/ex]/sx start locate

This command locates a drive and activates the drive's LED.

Input example:

```
storcli /c0/e56/s1 start locate
```

storcli /cx[/ex]/sx stop locate

This command stops a locate operation and deactivates the drive's LED.

Input example:

```
storcli /c0/e56/s1 stop locate
```

2.6.3.7 Prepare to Remove Drives Commands

The Storage Command Line Interface Tool supports the following commands to prepare the physical drive for removal:

```
storcli /cx[/ex]/sx spindown
storcli /cx[/ex]/sx spinup
```

The detailed description for each command follows.

storcli /cx[/ex]/sx spindown

This command spins down an unconfigured drive and prepares it for removal. The drive state is unaffiliated and it is marked offline.

Input example:

```
storcli /cx/e34/s4 spindown
```

storcli /cx[/ex]/sx spinup

This command spins up a spun-down drive and the drive state is unconfigured good.

Input example:

```
storcli /c0/e34/s4 spinup
```

> **NOTE**   The spinup command works on a physical drive only if the user had previously issued a spindown command on the same physical drive.

2.6.3.8 Drive Security Command

The Storage Command Line Interface Tool supports the following drive security commands:

```
storcli /cx[/ex]/sx show securitykey keyid
```

storcli /cx[/ex]/sx show securitykey keyid

This command shows the security key for secured physical drives.

Input example:

```
storcli /c0/[e252]/s1 show SecurityKey keyid
```

storcli /cx/[ex]/sx set security = on

This command enables security on a JBOD.

Input example:

```
storcli /c0/[e252]/s1 set security = on
```

2.6.3.9 Drive Secure Erase Commands

The Storage Command Line Interface Tool supports the following drive erase commands:

```
storcli /cx[/ex]/sx secureerase [force]

storcli /cx[/ex]/sx show erase

storcli /cx[/ex]/sx start erase [simple|normal|crypto|thorough]
[patternA=<value1>] [patternB=<value2>]

storcli /cx[/ex]/sx stop erase
```

The detailed description for each command follows.

storcli /cx[/ex]/sx secureerase [force]

This command erases the drive's security configuration and securely erases data on a drive. You can use the `force` option as a confirmation to erase the data on the drive and the security information.

Input example:

```
storcli /c0/e25/s1 secureerase
```

NOTE	This command deletes data on the drive and the security configuration and this data is no longer accessible. This command is used for SED drives only.

storcli /cx[/ex]/sx show erase

This command provides the status of erase operation on non-SEDs.

Input example:

```
storcli /c0/e25/s1 show erase
```

storcli /cx[/ex]/sx start erase [simple|normal|thorough|crypto|standard] [patternA=<val1>] [patternB=<val2>]

This command securely erases non-SED drives. The drive is written with erase patterns to make sure that the data is securely erased. You can use the following options with the start erase command:

Table 12 Drive Erase Command Options

Options	Value Range	Description
erase	simple: Single pass, single pattern write normal: Three pass, three pattern write thorough: Nine pass, repeats the normal write 3 times crypto: Performs cryptographic erase for SSD drives.	Secure erase type.
patternA	8-bit value	Erase pattern A to overwrite the data.
patternB	8-bit value	Erase pattern B to overwrite the data.

Input example:

```
storcli /c0/e25/s1 start erase thorough patternA=10010011 patternB=11110000
```

2.6.3.10   Rebuild Drives Commands

The following commands rebuild drives in the Storage Command Line Interface Tool:

```
storcli /cx[/ex]/sx pause rebuild

storcli /cx[/ex]/sx resume rebuild

storcli /cx[/ex]/sx show rebuild

storcli /cx[/ex]/sx start rebuild
```

```
storcli /cx[/ex]/sx stop rebuild
```

> **NOTE** If enclosures are used to connect physical drives to the controller, specify the enclosure ID in the command.

The detailed description for each command follows.

storcli /cx[/ex]/sx pause rebuild

This command pauses an ongoing rebuild process. You can run this command only for a drive that is currently rebuilt.

Input example:

```
storcli /c0/s4 pause rebuild
```

storcli /cx[/ex]/sx resume rebuild

This command resumes a paused rebuild process. You can run this command only when a paused rebuild process for the drive exists.

Input example:

```
storcli /c0/s4 resume rebuild
```

storcli /cx[/ex]/sx show rebuild

This command shows the progress of the rebuild process in percentage.

The estimated time (in minutes) left to complete the operation is also shown.

Input example:

```
storcli /c0/s5 show rebuild
```

storcli /cx[/ex]/sx start rebuild

This command starts a rebuild operation for a drive.

Input example:

```
storcli /c0/s4 start rebuild
```

storcli /cx[/ex]/sx stop rebuild

This command stops a rebuild operation. You can run this command only for a drive that is currently rebuilt.

Input example:

```
storcli /c0/s4 stop rebuild
```

2.6.3.11 Drive Copyback Commands

The Storage Command Line Interface Tool supports the following commands for drive copyback:

```
storcli /cx[/ex]/sx pause copyback
storcli /cx[/ex]/sx resume copyback
storcli /cx[/ex]/sx show copyback
storcli /cx[/ex]/sx start copyback target=eid:sid
storcli /cx[/ex]/sx stop copyback
```

The detailed description for each command follows.

> **NOTE** In the copyback commands, `cx[/ex]/sx` indicates the source drive and `eid:sid` indicates the target drive.

NOTE	When a copyback operation is enabled, the alarm continues to beep even after a rebuild is complete; the alarm stops beeping only when the copyback operation is completed.

storcli /cx[/ex]/sx pause copyback

This command pauses a copyback operation. You can run this command only when a copyback operation is running.

Input example:

```
storcli /c0/e25/s4 pause copyback
```

storcli /cx[/ex]/sx resume copyback

This command resumes a paused copyback operation. You can run this command only when a paused copyback process exists for the drive.

Input example:

```
storcli /c0/e25/s4 resume copyback
```

storcli /cx[/ex]/sx show copyback

This command shows the progress of the copyback operation in percentage.

The estimated time (in minutes) left to complete the operation is also shown.

Input example:

```
storcli /c0/e25/s4 show copyback
```

storcli /cx[/ex]/sx start copyback target=eid:sid

This command starts a copyback operation for a drive.

Input example:

```
storcli /c0/e25/s4 start copyback target=25:8
```

storcli /cx[/ex]/sx stop copyback

This command stops a copyback operation. You can run this command only on drives that have the copyback operation running.

Input example:

```
storcli /c0/e25/s4 stop copyback
```

NOTE	A stopped rebuild process cannot be resumed.

2.6.3.12 Hot Spare Drive Commands

The following commands create and delete hot spare drives:

```
storcli /cx[/ex]/sx add hotsparedrive
{dgs=<n|0,1,2...>}[enclaffinity][nonrevertible]
storcli /cx/[ex]/sx delete hotsparedrive
```

NOTE	If enclosures are connected to the physical drives of the controller, specify the enclosure ID in the command.

The detailed description for each command follows.

storcli /cx[/ex]/sx add hotsparedrive [{dgs=<n|0,1,2...>}] [enclaffinity][nonrevertible]

This command creates a hot spare drive. You can use the following options to create a hot spare drive.

Table 13 Add Hot Spare Drive Input Options

Option	Value Range	Description
dgs	Valid drive group number	Specifies the drive group to which the hot spare drive is dedicated.
enclaffinity	Valid enclosure number	Specifies the enclosure with which the hot spare is associated. If this option is specified, affinity is set; if it is not specified, there is no affinity. **NOTE** Affinity cannot be removed after it is set for a hot spare drive.
nonrevertible	—	Sets the drive as a nonrevertible hot spare.

Input example:

```
storcli /c0/e3/s4,5 add hotsparedrive
```

This command sets the drives /c0/e3/s4,5 as global hot spare.

Input example:

```
storcli /c0/e3/s6,8 add hotsparedrive dgs=0,1
```

This command sets /c0/e3/s6,8 as dedicated hot spare for disk groups 0,1.

storcli /cx/[ex]/sx delete hotsparedrive

This command deletes a hot spare drive.

Input example:

```
storcli /c0/e3/s4,5 delete hotsparedrive
```

2.6.3.13   Drive Performance Monitoring Commands

The Storage Command Line Interface Tool supports the following commands for drive performance monitoring:

```
Storcli /cx show pdfailevents [lastoneday] [lastseqnum=<val>] [file=filename]
```

```
Storcli /cx set pdfaileventoptions detectiontype=val correctiveaction=val
errorrthreshold=val
```

The detailed description for each command follows.

storcli / cx show pdfailevents

This command shows all of the drive predictive failure events.

Input example:

```
storcli /c0 show pdfailevents
```

storcli / cx show pdfaileventslastoneday

This command shows all of the drive predictive failure events that occurred in the last 24 hours.

Input example:

```
storcli /c0 show pdfailevents lastoneday
```

storcli / cx show pdfailevents lastseqnum=xx]

This command shows all of the drive predictive failure events generated from the specified sequence number.

Input example:

```
storcli /c0 show pdfailevents lastseqnum=10
```

Storcli / *cx* **set pdfaileventoptions detectiontype=***val* **correctiveaction=***val* **errorrthreshold=***val*

This command provides the current settings of the `pdfaileventoptions` set on the controller and the various options to change these settings.

Input example 1:

```
storcli /c0 set pdfaileventoptions detectiontype=x
```

Where:

- `00b` – detection disabled
- `01b` – detection enabled, high latency for reads is OK.
- `10b` – detection enabled, aggressive (high latency for reads is not OK).
- `11b` – detection enabled, use NVDATA specified value, see `recoveryTimeLimit` and `writeRetryCount`.

This command sets the detection type for the drive. The valid range is 0 to 3.

> **NOTE** For the changes to take effect, a reboot is required.

Input example 2:

```
storcli /c0 set pdfaileventoptions correctiveaction=x
```

Where:

- `0` – Only log events
- `1` – Log events, take corrective action based on SMARTer.

This command sets the corrective actions to be taken when the media error is detected. The valid value is 0 or 1.

Input example 3:

```
storcli /c0 set pdfaileventoptions errorrthreshold=x
```

Where:

- `00b` = `1` – One error every 8 hours (least tolerant)
- `01b` = `8` – One error every 1 hour.
- `10b` = `32` – One error every 15 minutes.
- `11b` = `90` – One error every 5 minutes (most tolerant of drive with degraded media).

This command sets the error threshold for the controller. The valid range is 0 to 3.

2.6.4 Virtual Drive Commands

The Storage Command Line Interface Tool supports the following virtual drive commands. The following table describes frequently used virtual drive commands.

Table 14 Virtual Drives Commands Quick Reference Table

Commands	Value Range	Description
add	See Table 15, Add RAID Configuration Input Options and Table 16, Add RAID Configuration Input Optionstables.	Creates virtual drives.
delete	cc or cachecade: Deletes CacheCade virtual drives. force: Deletes the virtual drive where operating system is present.	Deletes a virtual drive.
set	See Table 15, Add RAID Configuration Input Options, Table 16, Add RAID Configuration Input Options, and Section 2.6.4.5, Change Virtual Properties Commands.	Sets virtual drive properties.
show	all: Shows all properties of the virtual drive. cc: Shows properties of CacheCade virtual drives. See Section 2.6.4.3, Virtual Drive Show Commands.	Shows virtual drive information.

2.6.4.1   Add Virtual Drives Commands

The Storage Command Line Interface Tool supports the following commands to add virtual drives:

```
storcli /cx add vd raid[0|1|5|6|00|10|50|60][Size=<VD1_Sz>,<VD2_Sz>,..|all]
[name=<VDNAME1>,..] drives=e:s|e:s-x,y;e:s-x,y,z [PDperArray=x][SED]
[pdcache=on|off|default][pi] [DimmerSwitch(ds)=default|automatic(auto)|
none|maximum(max)|MaximumWithoutCaching(maxnocache)]

[wt|wb|awb] [nora|ra] [direct|cached][cachevd] [Strip=<8|16|32|64|128|256|1024>]
[AfterVd=X][EmulationType=0|1|2] [Spares = [e:]s|[e:]s-x|[e:]s-x,y]
[force][ExclusiveAccess][Cbsize=0|1|2 Cbmode=0|1|2|3|4|7]
```

> **NOTE**   The supported strip size can vary from a minimum of 64 KB to 1 MB for MegaRAID controllers and only 64 KB for Integrated MegaRAID controllers.

```
storcli /cx add vd each raid0 [name=<VDNAME1>,..] [drives=e:s|e:s-x|e:s-x,y] [SED]
[pdcache=on|off|default][pi] [DimmerSwitch(ds)=default|automatic(auto)|
none|maximum(max)|MaximumWithoutCaching(maxnocache)] [wt|wb|awb] [nora|ra]
[direct|cached][EmulationType=0|1|2]
[Strip=<8|16|32|64|128|256|1024>][ExclusiveAccess]
```

> **NOTE**   The supported strip size can vary from a minimum of 64 KB to 1 MB for MegaRAID controllers and only 64 KB for Integrated MegaRAID controllers.

```
storcli /cx add VD cachecade|cc raid[0,1] drives = [e:]s|[e:]s-x|[e:]s-x,y [WT|WB]
[assignvds = 0,1,2]
```

This command creates a RAID configuration. You can use the following options to create the RAID volume:

> **NOTE**   * indicates default values in the following commands.

The detailed description for each command follows.

storcli /cx add vd raid[0|1|5|6|00|10|50|60][Size=<VD1_Sz>,<VD2_Sz>,..|*all] [name=<VDNAME1>,..] drives=e:s|e:s-x|e:s-x,y;e:s-x,y,z [PDperArray=x][SED] [pdcache=on|off|*default][pi] [DimmerSwitch(ds)=default|automatic(auto)| *none|maximum(max)|MaximumWithoutCaching(maxnocache)][cachevd][ExclusiveAccess|SharedAccess*]**

[wt|*wb |awb] [nora|*ra] [*direct|cached] [EmulationType=0][Strip=<8|16|32|64|128|256|1024>] [AfterVd=*X*] [Spares = [*e:*]*s*|[*e:*]*s-x*|[*e:*]*s-x,y*] [force]

NOTE		The supported strip size can vary from a minimum of 64 KB to 1 MB for MegaRAID controllers and only 64 KB for Integrated MegaRAID controllers.

Table 15 Add RAID Configuration Input Options

Option	Value Range	Description
raid	[0|1|5|6|00|10|50|60].	Sets the RAID type of the configuration.
size	Maximum size based on the physical drives and RAID level.	Sets the size of each virtual drive. The default value is for the capacity of all referenced disks.
name	15 characters in length.	Specifies the drive name for each virtual drive.
drives	Valid enclosure number and valid slot numbers for the enclosure.	In $e:s \| e:s-x \| e:s-x, y$: ■ e specifies the enclosure ID. ■ s represents the slot in the enclosure. ■ $e:s-x$- is the range convention used to represent slots s to x in the enclosure e (250 characters maximum). NOTE Make sure that the same block size (in a physical drive) is used in each [$e:s$] pair. As an example, if you use 4096 bytes in the $e0:s0$ pair, use 4096 bytes in the $e1:s1$ pair too. Mixing of block sizes between the [$e:s$] pairs is not supported.
pdperarray	1–16.	Specifies the number of physical drives per array. The $default$ value is automatically chosen.
sed	—	Creates security-enabled drives.
pdcache	on|off|default.	Enables or disables PD cache.
pi	—	Enables protection information.
dimmerswitch	default: Logical device uses controller default power-saving policy. automatic (auto): Logical device power savings are managed by firmware. none: No power-saving policy. maximum (max): Logical device uses maximum power savings. MaximumWithoutCaching (maxnocache): Logical device does not cache write to maximize power savings.	Specifies the power-saving policy. Sets to default automatically.
direct|cached	cached: Cached I/O. direct: Direct I/O.	Sets the logical drive cache policy. Direct I/O is the default.
EmulationType	0: Default emulation, which means if there are any 512e drives in the configured ID, then the physical bytes per sector is shown as 512e (4k). If there are no 512e drives the physical bytes per sector will be 512n. 1: Disable, which means even though there are no 512e drives in the configured ID, the physical bytes per sector will be shown 512n. 2: Force, which means even though there are no 512e drives in the configured ID, the physical bytes per sector will be shown as 512e (4k).	

Table 15 Add RAID Configuration Input Options (Continued)

Option	Value Range	Description
`wt|wb|awb`	`wt`: Write through. `wb` – Write back. `awb` : Always Write Back.	Enables write through. Write back is the default.
`nora|ra`	`ra`: Read ahead. `nora`: No read ahead.	Disables read ahead. Enabled is the default.
`cachevd`	—	Enables SSD caching on the created virtual drive.
`strip`	8, 16, 32, 64, 128, 256, 512, 1024. **NOTE** The supported strip size can vary from a minimum of 64 KB to 1 MB for MegaRAID controllers and only 64 KB for Integrated MegaRAID controllers.	Sets the strip size for the RAID configuration.
`aftervd`	Valid virtual drive number.	Creates the VD in the adjacent free slot next to the specified VD.
`spares`	Number of spare physical drives present.	Specifies the physical drives that are to be assigned to a disk group for spares.
`force`	—	Forces a security-capable physical drive to be added to a drive group without security.

Input example:

```
storcli /c0 add vd raid10 size=2gb,3gb,4gb names=tmp1,tmp2,tmp3 drives=252:2-3,5,7
pdperarray=2
```

storcli /cx add vd cc|cachecade raid[0,1,10] drives=[e:]s|[e:]s-x|[e:]s-x,y [[wt|*wb|awb]] [assignvds=0,1,2]

This command creates CacheCade virtual drives and associates existing virtual drives to CacheCade virtual drives. You can use the following options to create the CacheCade virtual drive.

Table 16 Add RAID Configuration Input Options

Option	Value Range	Description
`cachecade`	—	Creates a CacheCade virtual drive.
`raid`	0, 1, 10	Sets the RAID type of the CacheCade virtual drive.
`drives`	Valid enclosure number and valid slot number	See the `drives` row in the previous table for format.
`wt|*wb|awb`	`wt`: Enables write through. `wb`: Enables write back. `awb` Enables always write back.	Enables or disables write cache.
`assignvds`	Valid virtual drive number (0 to 63)	Specifies the list of virtual drives associated with the new CacheCade virtual drives.

Input example:

```
storcli /c0 add vd raid10 size=2gb,3gb,4gb names=tmp1,tmp2,tmp3 drives=252:2-3, 7
```

2.6.4.2   Delete Virtual Drives Commands

The Storage Command Line Interface Tool supports the following virtual drive delete commands:

```
storcli /cx/vx|vall del
```

```
storcli /cx/vx|vall del cachecade
```

```
storcli /cx/vx|vall del force
```

```
storcli /cx/vx del [cachecade] [discardcache] [force]
```

| **NOTE** | If the virtual drive has user data, you must use the `force` option to delete the virtual drive. |
| | A virtual drive with a valid master boot record (MBR) and a partition table is considered to contain user data. |

If you delete a virtual drive with a valid MBR without erasing the data and then create a new virtual drive using the same set of physical drives and the same RAID level as the deleted virtual drive, the old unerased MBR still exists at block 0 of the new virtual drive, which makes it a virtual drive with valid user data. Therefore, you must provide the `force` option to delete this newly created virtual drive.

The detailed description for each command follows.

storcli /cx/vx|vall del

This command deletes a particular virtual drive or, when the `vall` option is used, all the virtual drives on the controller are deleted.

Input example:

```
storcli /c0/v2 del
```

| **ATTENTION** | This command deletes virtual drives. Data located on these drives will no longer be accessible. |

storcli /cx/vx|vall del cachecade

This command deletes a specific CacheCade virtual drive on a controller or all of the CacheCade configuration for a controller.

Input example:

```
storcli /c0/vall del cachecade
```

| **ATTENTION** | This command deletes virtual drives. Data located on these drives will no longer be accessible. |

storcli /cx/vx|vall del force

This command deletes a virtual drive only after the cache flush is completed. With the `force` option, the command deletes a virtual drive without waiting for the cache flush to complete.

Input example:

```
storcli /c0/v2 del force
```

| **ATTENTION** | This command deletes the virtual drive where the operating system is present. Data located on these drives and the operating system of the drive will no longer be accessible |

storcli /cx/vx del [cachecade] [discardcache] [force]

This command with the `discardCache` option deletes the virtual drive without flushing the cached data.

Input example:

```
storcli /c0/v2 delete discardcache
```

2.6.4.3   Virtual Drive Show Commands

The Storage Command Line Interface Tool supports the following virtual drive show commands:

```
storcli /cx/vx show
```

```
storcli /cx/vx show all [logfile[=filename]]
```

The detailed description for each command follows.

storcli /cx/vx show

This command shows the summary of the virtual drive information.

Input example:

```
storcli /c0/v0 show
```

storcli /cx/vx show all [logfile[=filename]]

The `show all` command shows all of the virtual drive information, which includes the virtual drive information, physical drives used for the virtual drives, and virtual drive properties.

If you use the `logfile` option in the command syntax, the logs are written to the specified file. If you do not specify a file name, then the logs are written to the `storsas.log` file. If you do not use the `logfile` option in the command syntax, the entire log output is printed to the console.

Input example:

```
storcli /c0/v0 show all [logfile[=log.txt]]
```

2.6.4.4   Preserved Cache Commands

If a virtual drive becomes offline or is deleted because of missing physical disks, the controller preserves the dirty cache from the virtual disk. The Storage Command Line Interface Tool supports the following commands for preserved cache:

```
storcli /cx/vx delete preservedCache [force]
storcli /cx show preservedCache
```

The detailed description for each command follows.

storcli /cx/vx delete preservedcache

This command deletes the preserved cache for a particular virtual drive on the controller in missing state. Use the `force` option to delete the preserved cache along with the virtual drive when the virtual drive is in an offline state.

Input example:

```
storcli /c0/v1 delete preservedcache
```

storcli /cx show preservedCache

This command shows the virtual drive that has preserved cache and whether the virtual drive is offline or missing.

Input example:

```
storcli /c0 show preservedCache
```

2.6.4.5   Change Virtual Properties Commands

The Storage Command Line Interface Tool supports the following commands to change virtual drive properties:

```
storcli /cx/vx set accesspolicy=<rw|ro|blocked|rmvblkd>
storcli /cx/vx set iopolicy=<cached|direct>
storcli /cx/vx set name=<namestring>
storcli /cx/vx set pdcache=<on|off|default>
storcli /cx/vx set rdcache=<ra|nora>
storcli /cx/vx|vall set ssdcaching=<on|off>
```

```
storcli /cx/vx|vall set HostAccess=ExclusiveAccess|SharedAccess

storcli /cx/vx set wrcache=<wt|wb|awb>

storcli /cx/vx set emulationType=0|1|2

storcli /cx/vx set ds=Default|Auto|None|Max|MaxNoCache

storcli /cx/vx set autobgi=On|Off

storcli /cx/vx set pi=Off

storcli /cx/vx set bootdrive=<On|Off>

storcli /cx/vx set hidden=On|Off

storcli /cx/vx set cbsize=0|1|2 cbmode=0|1|2|3|4|7
```

The detailed description for each command follows.

storcli /cx/vx set accesspolicy=<rw|ro|blocked|rmvblkd>

This command sets the access policy on a virtual drive to read write, read only, blocked, or rmvblkd (remove or blocked).

Input example:

```
storcli /c0/v0 set accesspolicy=rw
```

storcli /cx/vx set iopolicy=<cached|direct>

This command sets the I/O policy on a virtual drive to cached I/O or direct I/O.

Input example:

```
storcli /c0/v0 set iopolicy=cached
```

storcli /cx/vx set name=<namestring>

This command names a virtual drive. The name is restricted to 15 characters.

Input example:

```
storcli /c1/v0 set name=testdrive123
```

storcli /cx/vx set pdcache=<on|off|default>

This command sets the current disk cache policy on a virtual drive to on, off, or default setting.

Input example:

```
storcli /c0/v0 set pdcache=on
```

storcli /cx/vx set rdcache=<ra|nora>

This command sets the read cache policy on a virtual drive to read ahead or no read ahead.

Input example:

```
storcli /c0/v0 set rdcache=nora
```

storcli /cx/vx|vall set ssdcaching=<on|off>

This command assigns CacheCade virtual drives. If ssdcaching=off, the CacheCade virtual drive is removed.

Input example:

```
storcli /c0/v0 set ssdcaching=on
```

storcli /cx/vx|vall set HostAccess=ExclusiveAccess|SharedAccess

This command sets the host access policy for the virtual drive. When the host access policy is exclusive access, a server has exclusive access to the virtual drive. The virtual drive cannot be shared between servers. If the host policy is shared access, the virtual drive can be shared between servers.

Input example:

```
storcli /c0/v0 set HostAccess=ExclusiveAccess
```

storcli/cx/vx set wrcache=<wt|wb|awb>

This command sets the write cache policy on a virtual drive to write back, write through, or always write back.

Input example:

```
storcli /c0/v0 set wrcache=wt
```

storcli /cx/vx set hidden=on|off

This command hides or unhides a virtual drive. If `hidden=on`, the virtual drive is hidden.

Input example:

```
storcli /c0/v0 set hidden=on
```

storcli /cx/vx set cbsize=0|1|2 cbmode=0|1|2|3|4|7

This command sets the Cache bypass size and the Cache bypass mode on a virtual drive.

The values for the `cbsize` options follow:

- 0 – 64k Cache bypass.
- 1 – 128k Cache bypass.
- 2 – 256k Cache bypass.

The values for the `cbmode` options follow:

- 0 – Enable the intelligent mode Cache bypass.
- 1 – Enable the standard mode Cache bypass.
- 2 – Enable the custom mode Cache bypass 1.
- 3 – Enable the custom mode Cache bypass 2.
- 4 – Enable the custom mode Cache bypass 3.
- 7 – Disable Cache bypass.

> **NOTE** When `cbmode` is set to 7, the user supplied `cbsize` value is ignored.

Input example:

```
storcli /c0/v0 set cbsize=1 cbmode=2
```

2.6.4.6 Virtual Drive Initialization Commands

The Storage Command Line Interface Tool supports the following commands to initialize virtual drives:

```
storcli /cx/vx show init

storcli /cx/vx start init [full][Force]

storcli /cx/vx stop init
```

> **NOTE** If the virtual drive has user data, you must use the `force` option to initialize the virtual drive.

A virtual drive with a valid MBR and partition table is considered to contain user data.

The detailed description for each command follows.

storcli /cx/vx show init

This command shows the initialization progress of a virtual drive in percentage.

The estimated time (in minutes) left to complete the operation is also shown.

Input example:

```
storcli /c0/v2 show init
```

storcli /cx/vx start init [full]

This command starts the initialization of a virtual drive. The default initialization type is fast initialization. If the `full` option is specified, full initialization of the virtual drive starts.

Input example:

```
storcli /cx/vx start init [full]
```

storcli /cx/vx stop init

This command stops the initialization of a virtual drive. A stopped initialization cannot be resumed.

Input example:

```
storcli /c0/v0 stop init
```

2.6.4.7 Virtual Drive Erase Commands

The Storage Command Line Interface Tool supports the following commands to erase virtual drives:

```
storcli /cx/vx erase
storcli /cx/vx show erase
```

The detailed description for each command follows.

storcli /cx/vx erase

This command erases the data on the virtual drive.

Input example:

```
storcli /c0/v0 erase
```

storcli /cx/vx show erase

This command shows the status of the erase operation on the virtual drive.

Input example:

```
storcli /c0/v0 show erase
```

2.6.4.8 Virtual Drive Migration Commands

NOTE	The virtual drive migration commands are not supported in Embedded MegaRAID.

The Storage Command Line Interface Tool supports the following commands for virtual drive migration (reconstruction):

```
storcli /cx/vx show migrate
```

```
storcli /cx/vx start migrate <type=raidx> [option=<add|remove>
drives=[e:]s|[e:]s-x|[e:]s-x,y] [Force]
```

The detailed description for each command follows.

storcli /cx/vx show migrate

This command shows the progress of the virtual drive migrate operation in percentage.

The estimated time (in minutes) left to complete the operation is also shown.

Input example:

```
storcli /c0/v0 show migrate
```

storcli /cx/vx start migrate <type=raidlevel> [option=<add | remove> drives=<e1:s1,e2:s2 ...>]

This command starts the reconstruction on a virtual drive to the specified RAID level by adding or removing drives from the existing virtual drive. You can use the following options with the start migrate command.

Table 17 Virtual Drive Migration Command Options

Options	Value Range	Description
type =RAID level	RAID [0|1|5|6]	The RAID level to which the virtual drive must be migrated.
[option=<add	remove> drives=<e1:s1,e2:s2, …>]	add: Adds drives to the virtual drive and starts reconstruction. remove: Removes drives from the virtual drive and starts reconstruction. drives: The enclosure number and the slot number of the drives to be added to the virtual drive. **NOTE** Make sure that the same block size (in a physical drive) is used in each [e:s] pair. As an example, if you use 4096 bytes in the e0:s0 pair, use 4096 bytes in the e1:s1 pair, too. Mixing of block sizes between the [e:s] pairs is not supported.	Adds or removes drives from the virtual drive.

Virtual drive migration can be done between the following RAID levels.

Table 18 Virtual Drive Migration Table

Initial RAID level	Migrated RAID level
RAID 0	RAID 1
RAID 0	RAID 5
RAID 0	RAID 6
RAID 1	RAID 0
RAID 1	RAID 5
RAID 1	RAID 6
RAID 5	RAID 0
RAID 5	RAID 6
RAID 6	RAID 0
RAID 6	RAID 5

Input example:

In the following example, 252 is the enclosure number and 0, 1, and 2 are the slot numbers.

```
storcli/c0/v0 start migrate type=raid0 option=add drives=252:0,252:1,252:2
```

2.6.4.9   Virtual Drive Consistency Check Commands

The Storage Command Line Interface Tool supports the following commands for virtual drive consistency checks:

```
storcli /cx/vx pause cc
```

```
storcli /cx/vx resume cc
```

```
storcli /cx/vx show cc
```

```
storcli /cx/vx start cc [force]
```

```
storcli /cx/vx stop cc
```

> **NOTE**   If enclosures are used to connect the physical drives to the controller, specify the IDs in the command.

The detailed description for each command follows.

storcli /cx/vx pause cc

This command pauses an ongoing consistency check process. You can resume the consistency check at a later time. You can run this command only on a virtual drive that has a consistency check operation running.

Input example:

```
storcli /c0/v4 pause cc
```

storcli /cx/vx resume cc

This command resumes a suspended consistency check operation. You can run this command on a virtual drive that has a paused consistency check operation.

Input example:

```
storcli /c0/v4 resume cc
```

storcli /cx/vx show cc

This command shows the progress of the consistency check operation in percentage.

The estimated time (in minutes) left to complete the operation is also shown.

Input example:

```
storcli /c0/v5 show cc
```

storcli /cx/vx start cc force

This command starts a consistency check operation for a virtual drive. Typically, a consistency check operation is run on an initialized virtual drive. Use the `force` option to run a consistency check on an uninitialized drive.

Input example:

```
storcli /c0/v4 start cc
```

storcli /cx/vx stop cc

This command stops a consistency check operation. You can run this command only for a virtual drive that has a consistency check operation running.

Input example:

```
storcli /c0/v4 stop cc
```

> **NOTE**   You cannot resume a stopped consistency check process.

2.6.4.10   Background Initialization Commands

The Storage Command Line Interface Tool supports the following commands for background initialization:

```
storcli /cx/vx resume bgi
storcli /cx/vx set autobgi=<on|off>
storcli /cx/vx show autobgi
storcli /cx/vx show bgi
storcli /cx/vx stop bgi
storcli /cx/vx suspend bgi
```

The detailed description for each command follows.

storcli /cx/vx resume bgi

This command resumes a suspended background initialization operation.

Input example:

```
storcli /c0/v0 resume bgi
```

storcli /cx/vx set autobgi=<on|off>

This command sets the auto background initialization setting for a virtual drive to on or off.

Input example:

```
storcli /c0/v0 set autobgi=on
```

storcli /cx/vx show autobgi

This command shows the background initialization setting for a virtual drive.

The estimated time (in minutes) left to complete the operation is also shown.

Input example:

```
storcli /c0/v0 show autobgi
```

storcli /cx/vx show bgi

This command shows the background initialization progress on the specified virtual drive in percentage.

The estimated time (in minutes) left to complete the operation is also shown.

Input example:

```
storcli /c0/v0 show bgi
```

storcli /cx/vx stop bgi

This command stops a background initialization operation. You can run this command only for a virtual drive that is currently initialized.

Input example:

```
storcli /c0/v4 stop bgi
```

storcli /cx/vx pause bgi

This command suspends a background initialization operation. You can run this command only for a virtual drive that is currently initialized.

Input example:

```
storcli /c0/v4 pause bgi
```

2.6.4.11 Virtual Drive Expansion Commands

The Storage Command Line Interface Tool supports the following commands for virtual drive expansion:

```
storcli /cx/vx expand size=<value> [expandarray]
```

```
storcli /cx/vx|vall show expansion
```

The detailed description for each command follows.

storcli /*cx*/*vx* expand size=<*value*> [expandarray]

This command expands the virtual drive within the existing array or if you replace the drives with drives larger than the size of the existing array. Although the value provided by you may be in MB, the value of the expanded size is displayed based on the nearest possible unit. Depending on the input (value) provided by you, `storcli` recognizes the size from the input provided by you and rounds up the size to the nearest percentage of free space remaining on the drive group; hence, the actual expanded size may differ from the size requested by you. If the `expandarray` option is specified, the existing array is expanded. If this option is not specified, the virtual drive is expanded.

storcli /*cx*/*vx* show expansion

This command shows the expansion information on the virtual drive with and without array expansion.

Input example:

```
storcli /c0/v0 show expansion
```

2.6.4.12 Display the Bad Block Table

The Storage Command Line Interface Tool supports the following command to check for bad block entries of virtual drives on the selected controller:

```
storcli /cx/vx show bbmt
```

Input example:

```
storcli /c0/v0 show bbmt
```

2.6.4.13 Clear the LDBBM Table Entires

The Storage Command Line Interface Tool supports the following command to clear the LDBBM table entries:

```
storcli /cx/vx delete bbmt
```

Input example:

```
storcli /c0/v0 delete bbmt
```

2.6.5 JBOD Commands

StorCLI supports the switching behavior within the JBOD personality mode. StorCLI also supports configuration parameters for a personality and allows you to create and configure JBODs. You can create JBODs from all Unconfigured Good drives or specific Unconfigured Good drives. You can also delete these JBODs. You can also choose JBOD as a boot device.

The Storage Command Line Interface Tool supports the following JBOD commands:

```
storcli /cx add jbod [drives=ex:sx]
```

```
storcli /cx jbodx del [discardcache] [force]
```

```
storcli /cx jbodx show
```

```
storcli /cx jbodx show init
```

```
storcli /cx jbodx show erase
```

```
storcli /cx jbodx start init[Full][Force]
```

```
storcli /cx jbodx start erase [simple|normal|thorough|standard][patternA=<val>]
[patternB=<val>]
```

```
storcli /cx jbodx stop init
```

```
storcli /cx jbodx stop erase
```

```
storcli /cx jbodx set bootdrive=<on|off>
```

For more information, see also *set personality behavior* under ***UNRESOLVED***.

2.6.5.1   JBOD Commands

The detailed description for each command follow.

storcli /cx add jbod [drives=ex:sx]

This command creates JBODs on all physical drives or on only those physical drives that you specify. If you specify the physical drives, JBODs are created only on those specific drives; otherwise, storCLI creates JBODs on all available unconfigured good drives on the controller.

Input example::

```
storcli /c0/add jbod  [drives=e1:s1]
```

storcli /cx jbodx del [discardcache] [force]

This command with the `discardcache` option deletes the specified JBOD without flushing the cached data.

Input example::

```
storcli /c0/jbod1 del [discardcache] [force]
```

storcli /cx jbodx show

This command displays summary information of the specified JBOD drive.

Input example:

```
storcli /c0 jbod1 show
```

storcli /cx jbodx show init

This command displays the progress of initialization of a JBOD drive in percentage.

Input example:

```
storcli /c0 jbod0 show init
```

storcli /cx jbodx show erase

This command displays the progress of the erase operation of a JBOD drive in percentage.

Input example:

```
storcli /c0 jbod0 show erase
```

storcli /cx jbodx start init [full] [force]

This command starts the initialization operation of a JBOD drive. By default, the initialization type is set to **Fast Initialization**. However, you can also specify the **Full Initialization** option to start full initialization operation of the JBOD drive.

Input example:

```
storcli /c0 jbod0 start init full force
```

storcli /cx jbodx start erase [simple|normal|thorough|standard][patternA=<val>] [patternB=<val>]

This command securely erases non-SED drives with the specified erase patterns. The drive is written with erase patterns to make sure that the data is securely erased. You can use the following options with the `start erase` command.

Table 19 Drive Erase Command Options

Options	Value Range	Description
`erase`	▪ `simple`: Single pass, single pattern write. ▪ `normal`: Three pass, three pattern write. ▪ `thorough`: Nine pass, repeats the normal write 3 times	Secure erase type.
`patternA`	8-bit value	Erase pattern A to overwrite the data.
`patternB`	8-bit value	Erase pattern B to overwrite the data.

Input example:

```
storcli /c0 jbod0 start erase through patternA=10010011 patternB=11110000
```

storcli /cx jbodx stop init

This command stops the initialization operation of a JBOD physical drive. A stopped initialization cannot be resumed.

Input example:

```
storcli /c0 jbod0 stop init
```

storcli /cx jbodx stop erase

This command stops the erase operation of a JBOD physical drive.

Input example:

```
storcli /c0 jbod0 stop erase
```

storcli /cx jbodx set bootdrive=<on|off>

This command sets or unsets a JBOD drive as a boot volume.

Input example:

```
storcli /c0 jbod0 set bootdrive=on
```

2.6.6 Foreign Configuration Commands

The Storage Command Line Interface Tool supports the following commands to view, import, and delete foreign configurations:

```
storcli /cx/fall del|delete [securitykey=sssssssssss]
```

```
storcli /cx/fall import [preview][securitykey=sssssssssss]
```

```
storcli /cx/fall show [all] [securitykey=sssssssssss]
```

NOTE	Provide the security key when importing a locked foreign configuration created in a different machine that is encrypted with a security key.

The detailed description for each command follows.

storcli /cx/fall|del| delete [securitykey=*sssssssssss*]

This command deletes the foreign configuration of a controller. Input the security key if the controller is secured.

Input example:

```
storcli /c0/fall delete
```

storcli /cx/fall import [preview] [securitykey=*sssssssssss*]

This command imports the foreign configurations of a controller. The `preview` option shows a summary of the foreign configuration before importing it.

Input example:

```
storcli /c0/fall import
```

storcli /cx/fall show [all][securitykey=*sssssssssss*]

This command shows the summary of the entire foreign configuration for a particular controller. The `all` option shows all the information of the entire foreign configuration.

> **NOTE** The EID:Slot column is populated for the foreign PDs that are locked.

Input examples:

```
storcli /c0/fall show preview
storcli /c0/fall import preview
storcli /c0/fall show all
```

2.6.7 BIOS-Related Commands

The Storage Command Line Interface Tool supports the following BIOS commands:

```
storcli /cx set bios [state=<on|off>] [Mode=<SOE|PE|IE|SME>] [abs=<on|off>]
[DeviceExposure=<value>]
```

The detailed description for the command follows.

storcli /cx set bios [state=<on|off>] [Mode=<SOE|PE|IE|SME>] [abs=<on|off>] [DeviceExposure=<*value*>]

This command enables or disables the MegaRAID controller's BIOS, sets the BIOS boot mode, and enables the BIOS to select the best logical drive as the boot drive.The mode options abbreviations follow:

- SOE: Stop on Errors.
- PE: Pause on Errors.
- IE: Ignore Errors.
- SME: Safe mode on Errors.

> **NOTE** The legacy BIOS can load a limited number of the PCI device's BIOS.
> Disable the MegaRAID BIOS to avoid issues during POST.

Input example:

```
storcli /c0 set bios[state=on][Mode=SOE][abs=on][deviceexposure=20]
```

2.6.7.1 OPROM BIOS Commands

The Storage Command Line Interface Tool supports the following OPROM BIOS commands:

```
storcli /cx/ex/sx set bootdrive=on|off

storcli /cx/vx set bootdrive=on|off

storcli /cx show bootdrive
```

The detailed description for each command follows.

storcli /cx/ex/sx set bootdrive=on|off

This command sets the specified physical drive as the boot drive. During the next reboot, the BIOS looks for a boot sector in the specified physical drive.

Input example:

```
storcli /c0/e32/s4 set bootdrive=on
```

storcli /cx/vx set bootdrive=on|off

This command sets the specified virtual drive as the boot drive. During the next reboot, the BIOS looks for a boot sector in the specified virtual drive.

Input example:

```
storcli /c0/v0 set bootdrive=on
```

storcli/cx/vx show bootdrive

This command shows the boot drive for the controller. The boot drive can be a physical drive or a virtual drive.

Input example:

```
storcli /c0/v0 show bootdrive
```

2.6.8   Drive Group Commands

This section describes the drive group commands.

2.6.8.1   Drive Group Show Commands

The Storage Command Line Interface Tool supports the following drive group commands:

```
storcli /cx/dall show

storcli /cx/dall show all

storcli /cx/dall show cachecade

storcli /cx/dx show

storcli /cx/dx show all

storcli /cx/dx set security=on

storcli /cx/dx split mirror

storcli /cx/dall show mirror

storcli /cx/dall add mirror src=<val>[force]

storcli /cx/dx set hidden=<on|off>
```

storcli /cx/dall show

This command shows the topology information of all the drive group.

Input example:

```
storcli /c0/dall show
```

storcli /cx/dall show all

This command shows all available configurations in the controller which includes topology information, virtual drive information, physical drive information, free space, and free slot information.

Input example:

```
storcli /c0/dall show all
```

storcli /cx/dall show cachecade

This command shows all CacheCade virtual drive information.

Input example:

```
storcli /c0/dall show cachecade
```

storcli /cx/dx show

This command shows the topology information of the drive group.

Input example:

```
storcli /c0/dx show
```

storcli /cx/dx show all

This command shows the physical drive and the virtual drive information for the drive group.

Input example:

```
storcli /c0/dx show all
```

storcli /cx/dx set security=on

This command enables security on the specified drive group.

Input example:

```
storcli /c0/dx set security=on all
```

storcli /cx/dx split mirror

This command enables you to perform a break mirror operation on a drive group. The break mirror operation enables a RAID 1 configured drive group to be broken into two volumes. You can use one of the volumes in another system and replicate it without making a copy of the virtual drive.

Input example:

```
storcli /c0/dx split mirror
```

storcli /cx/dall show mirror

This command shows information about the mirror associated with the drive group.

Input example:

```
storcli /c0/dall show mirror
```

storcli /cx/dall add mirror src=<*val*>[force]

This command joins the virtual drive with its mirror. The possible values to be used are 0, 1, or 2.

Input example:

```
storcli /c0/dall add mirror src=<1>[force]
```

storcli /cx/dx set hidden=<on|off>

This command hides or unhides a drive group.

Input example:

```
storcli /c0/d0 set hidden=on
```

2.6.9   Dimmer Switch Commands

2.6.9.1   Change Virtual Drive Power Settings Commands

The Storage Command Line Interface Tool supports the following commands to change the Dimmer Switch settings. You can use the following combinations for the Dimmer Switch commands:

```
storcli /cx set ds=off type=1|2|4

storcli /cx set ds=on type=1|2 [properties]

storcli /cx set ds=on type=4 defaultldtype=<value> [properties]

storcli /cx set ds=on [properties]
```

The following table describes the power-saving options.

Table 20 Dimmer Switch Input Options

Option	Value Range	Description
dimmerswitch or ds	on|off	Turns the Dimmer Switch option on.
type	1: Unconfigured 2: Hot spare 4: All of the drives (unconfigured drives and hot spare drives).	Specifies the type of drives that the Dimmer Switch feature is applicable. By default, it is activated for unconfigured drives and hot spare drives.
properties	disableldps: Interval in hours or time in *hh:mm* format spinupdrivecount: Valid enclosure number (0 to 255) SpinUpEncDelay: Valid time in seconds	Sets the interval or time in which the power-saving policy for the logical drive is turned off. Specifies the number of drives in the enclosure that are spun up. Specifies the delay of spin-up groups within an enclosure in seconds.

storcli/cx show DimmerSwitch(ds)

This command shows the current Dimmer Switch setting for the controller.

Input example:

```
storcli/c0 show ds
```

2.6.10   CacheVault Commands

The Storage Command Line Interface Tool supports the following CacheVault commands:

```
storcli /cx/cv show

storcli /cx/cv show all

storcli /cx/cv show status

storcli /cx/cv start learn
```

The detailed description for each command follows.

storcli /cx/cv show

This command shows the summary information for the CacheVault of a controller.

Input example:

```
storcli /c0/cv show
```

storcli /cx/cv show all

This command shows all the information of the CacheVault.

NOTE	This command only works when a CacheVault is connected to the controller; otherwise, an error message appears.

Input example:

```
storcli /c0/cv show all
```

storcli /cx/cv show status

This command shows the battery information, firmware status, and the gas gauge status.

Input example:

```
storcli /c0/cv show status
```

storcli /cx/cv start learn

This command starts the CacheVault learning cycle. The battery learn cycle is immediately started and no other parameters are required for this command.

Input example:

```
storcli /c0/cv start learn
```

2.6.11 Enclosure Commands

The Storage Command Line Interface Tool supports the following enclosure commands:

```
storcli /cx/ex download src=filepath[forceActivate]
```

```
storcli /cx/ex show all
```

```
storcli /cx/ex show status
```

The detailed description for each command follows.

storcli /cx/ex download src=_filepath_ [forceactivate]

This command flashes the firmware with the file specified at the command line. The enclosure performs an error check after the operation. The following option can be used with the enclosure firmware download command.

Table 21 Enclosure Firmware Download Command Options

Option	Value Range	Description
forceactivate	—	Issues a command descriptor block (CDB) with write command with no data with command mode 0x0F (flash download already in progress). **NOTE** This option is used primarily to activate Scotch Valley Enclosures.

NOTE	The firmware file that is used to flash the enclosure can be of any format. The StorCLI utility assumes that you provide a valid firmware image.

Input example:

```
storcli /c0/e0 download src=c:\file2.bin
```

storcli /cx/ex show all

This command shows all enclosure information, which includes general enclosure information, enclosure inquiry data, a count of enclosure elements, and information about the enclosure elements.

Input example:

```
storcli /c0/e0 show all
```

storcli /cx/ex show status

This command shows the enclosure status and the status of all the enclosure elements.

Input example:

```
storcli /c0/e0 show status
```

2.6.12   PHY Commands

The Storage Command Line Interface Tool supports the following phy commands:

```
storcli /cx/px|pall set linkspeed=0(auto)|1.5|3|6|12
```

```
storcli /cx/px|pall show
```

```
storcli /cx/px|pall show all
```

```
storcli /cx/ex show phyerrorcounters
```

```
storcli /cx[/ex]/sx show phyerrorcounters
```

```
storcli /cx[/ex]/sx reset phyerrorcounters
```

The detailed description for each command follows.

storcli /cx/px|pall set linkspeed=0(auto)|1.5|3|6|12

This command sets the PHY link speed. You can set the speed to 1.5Gb/s, 3Gb/s, 6Gb/s, or 12Gb/s. The linkspeed is set to `auto` when you specify `linkspeed = 0`.

Input example:

```
storcli /c0/p0 set linkspeed=1.5
```

storcli /cx/px|pall show

This command shows the basic PHY layer information.

Input example:

```
storcli /c1/p0 show
```

storcli /cx/px|pall show all

This command shows all the PHY layer information.

Input example:

```
storcli /c1/p0 show all
```

storcli /cx/ex show phyerrorcounters

This command shows the enclosure/expander phy error counters.

Input example:

```
storcli /c1/e0 show phyerrorcounters
```

storcli /cx[/ex]/sx show phyerrorcounters

This command shows the drive phy error counters.

Input example:

```
storcli /c1/e0/s0 show phyerrorcounters
```

storcli /cx[/ex]/sx reset phyerrorcounters

This command resets the drive phy error counters.

Input example:

```
storcli /c1/e0/s0 reset phyerrorcounters
```

2.6.13 PCIe Storage Interface Commands

The PCIe Storage Interface is the fundamental interface that connects peripheral devices to the host processor and through a memory controller to the memory architecture in the system. The PCIe interface communicates over one or more lanes that consist of one transmit and one receive serial interface for each lane.

2.6.13.1 Lane Speed Commands

The Storage Command Line Interface Tool supports the following lane speed commands:

```
storcli /cx/lnx show
storcli /cx/lnall show
storcli /cx/lnx set lanespeed=0(disabled)|2.5|5|8|16
```

The detailed description for each command follows.

storcli /cx/lnx show

This command displays the lane information.

Input example:

```
storcli /c1/ln1 show
```

storcli /cx/lnall show

This command displays the summary information on all of the exiting lanes.

Input example:

```
storcli /c1/lnall show
```

storcli /cx/lnx set lanespeed=0 (disabled) | 2.5 |5 | 8 | 16

This command sets the lane speed. You can set the speed as `0(disabled)`, `2.5GT/s`, `5GT/s`, `8GT/s`, or `16GT/s`.

By default, the lane speed in the controller is 8GT/s or the value last saved by you.

Input example:

```
storcli /c1/ln1 set lanespeed=2.5
```

Output Example:

Figure 1 Lane Speed Output

```
LaneInformation :
================


------------------------------------------------------
LaneNo LaneId Enbl Conn Link CurrSpeed Wwid SupSpeed
------------------------------------------------------
 0 65535 Yes   1   0 8GT/s   0   2.5,5,8
 1 65535 Yes   0   0 8GT/s   0   2.5,5,8
 2 65535 Yes   1   0 8GT/s   0   2.5,5,8
 3 65535 Yes   0   0 8GT/s   0   2.5,5,8
 4 65535 Yes   1   1 8GT/s   0   2.5,5,8
 5 65535 Yes   0   1 8GT/s   0   2.5,5,8
 6 65535 Yes   1   1 8GT/s   0   2.5,5,8
 7 65535 Yes   0   1 8GT/s   0   2.5,5,8
------------------------------------------------------
```

2.6.13.2   Link Configuration Commands

The Storage Command Line Interface Tool supports the following Link Configuration commands:

```
storcli /cx/show linkconfig
```

```
storcli /cx/set linkconfig [connname=cx,cy] linkconfig=<val>
```

The detailed description for each command follows.

storcli cx/show linkconfig

This command displays the link configuration information for the current link configuration, pending link configuration, and the available link configuration.

Input example:

```
storcli /c1/show linkconfig
```

Output example – Current Link Configuration

Figure 2 Current Link Configuration

```
Current Config :
==============


-----------------------------------------------
Conn  ConfigID LinkConfig
-----------------------------------------------

C1,C0      5 0-0:x1,1-1:x1,2-2:x1,3-3:x1
C3,C2      5 8-8:x1,9-9:x1,10-10:x1,11-11:x1
|-----------------------------------------------
```

Output example – Pending Link Configuration

Figure 3 Pending Link Configuration

```
Pending Config :
==============


----------------------------------------
Conn  ConfigID LinkConfig
----------------------------------------

C1,C0      3 0-1:x2,2-3:x2,4-7:x4
C3,C2      3 8-9:x2,10-11:x2,12-15:x4
----------------------------------------
```

Output example – Available Link Configuration

Figure 4 Available Link Configuration

```
Available Config :
================


---------------------------------------
ConfigID LinkConfig
---------------------------------------
    1 0-3:x4,4-7:x4
    2 0-3:x4,4-5:x2,6-7:x2
    3 0-1:x2,2-3:x2,4-7:x4
    4 0-1:x2,2-3:x2,4-5:x2,6-7:x2
    6 4-4:x1,5-5:x1,6-6:x1,7-7:x1
    7 0-1:x2,2-2:x1,3-3:x1
    8 4-5:x2,6-6:x1,7-7:x1
    9 0-0:x1,1-1:x1,2-3:x2
    10 4-4:x1,5-5:x1,6-7:x2
---------------------------------------
```

storcli /cx set linkconfig [connname=cx,cy] linkconfig=<val>

This command helps you configure the links for different ports of a controller.

Input example:

```
storcli /c1/set linkconfig connname=c0,c1 linkconfig=x4
```

2.6.14   Logging Commands

The Storage Command Line Interface Tool supports the following commands to generate and maintain log files:

```
storcli /cx delete events

storcli /cx delete termlog

storcli /cx show events file=<absolute path>

storcli /cx show eventloginfo

storcli /cx show termlog type=config|contents [logfile[=filename]]

storcli /cx show dequeuelog file =<filepath>

Storcli /cx show alilog [logfile[=filename]]
```

The detailed description for each command follows.

storcli /cx delete events

This command deletes all records in the event log.

Input example:

```
storcli /c0 delete events
```

storcli /cx delete termlog

This command clears the TTY (firmware log for issue troubleshooting) logs.

Input example:

```
storcli /c0 delete termlog
```

storcli /cx show events file=<absolute path>

This command prints the system log to a text file and saves the file in the specified location.

Input example:

```
storcli /c0 show events file=C:\Users\brohan\test\eventreports
```

storcli /cx show eventloginfo

This command shows the history of log files generated.

Input example:

```
storcli /c0 show eventloginfo type=config
```

storcli /cx show termlog type=config|contents [logfile[=filename]]

This command shows the firmware logs. The `config` option shows the term log configuration (settings of TTY BBU buffering), the `contents` option shows the term log. The `contents` option is the default.

If you use the `logfile` option in the command syntax, the logs are written to the specified file. If you do not specify a file name, then the logs are written to the `storsas.log` file. If you do not use the `logfile` option in the command syntax, the entire log output is printed to the console.

Input example:

```
storcli /c0 show termlog=contents [logfile[=log.txt]]
```

storcli /cx show dequeuelog =<filepath>

This command shows the debug log from the firmware.

Input example:

```
storcli /c0 show dequeuelog=<c:\test\log.txt>
```

storcli /cxshow alilog [logfile[=filename]]

This command gets the controller property, TTY logs, and events to the specified file.

Input example:

```
storcli /c0 show alilog [logfile[=log.txt]]
```

2.6.15 Automated Physical Drive Caching Commands

The Storage Command Line Interface Tool supports the following automated physical drive caching commands:

```
storcli /cx set autopdcache=<off|r0>[immediate]
storcli /cx show autopdcache
```

The detailed description for each command follows.

storcli /cx set autopdcache=<off|r0>[immediate]

This command lets you set the controller's automated physical drive cache policy to RAID 0. When set to RAID 0, all unconfigured physical drives are configured as a single RAID 0 drive, until the maximum virtual drive limit is reached. The `immediate` option lets this command execute the conversion (to RAID 0) operation only on all the existing

physical drives. Any physical drives newly connected in the future do not get converted to RAID 0. If you omit the `immediate` option in this command, conversion to RAID 0 takes place on newly connected physical drives, too. Automatic conversion to RAID 0 can be turned off by setting the `autopdcache policy` to `off`.

Input example:

```
storcli /c0 set autopdcache=r0 immediate
```

storcli /cx show autopdcache

This command lets you view the automatic physical drive caching property.

Input example:

```
storcli /c0 show autopdcache
```

2.6.16   Recovery Commands (UEFI Only)

Recovery commands perform recovery actions related to a specified controller. Recovery commands are supported on UEFI environment only. The Storage Command Line Interface Tool supports the following recovery commands:

- `storcli /cx download completeflash fileone=<IT boot loader image> filetwo=<firmware image>`
- `storcli /cx erase all [excludemfg]`
  - `erase all [excludemfg]`

The detailed description of each command follows:

storclio /cx download completeflash fileone=<IT boot loader image> filetwo=<firmware image>

This command downloads the complete flash image on a non-operational or an empty controller by performing host boot using the IT boot loader image. This command takes two files as arguments:

- `Fileone` - a valid Itboot loader image with which host boot is performed on the controller.
- `Filetwo` - a valid firmware image which is flashed on the controller.

Syntax:

```
storcli /c1 download completeflash fileone=<Itbootloaderimage> filetwo=<FW image>
```

Where:

`/c` - specifies the controller where `x` is the index of the controller, and `filenames` are the arguments.

Input examples:

```
storcli /c1 download completeflash fileone=vtboot.rom filetwo=nopad.rom
```

NOTE	Unified storCLI can flash only NoPad image. It cannot flash 16 MB/32 MB images.

storcli /cx erase all [excludemfg] file=<itbootloader image>

This command erases the complete flash region, but retains the manufacturing data region.

Syntax:

```
storcli /cx erase all [excludemfg] file=<itbootloader image>
```

Input examples:

```
storcli /c1 erase all excludemfg file=vtboot.rom
```

NOTE   Unified StorCLI supports only `erase all excludemfg` erase option. It does not support the `erase all` option.

2.7 Frequently Used Tasks

2.7.1 Displaying the Version of the Storage Command Line Interface Tool

The following command displays the version of the command line tool:

```
storcli -v
```

2.7.2 Displaying the StorCLI Tool Help

The following command displays the StorCLI tool help:

```
storcli -h
```

Help appears for all the StorCLI tool commands.

2.7.3 Displaying System Summary Information

The following command displays the summary of all the controller information:

```
storcli -show [all]
```

2.7.4 Displaying Free Space in a Controller

The following command displays the free space available in the controller:

```
storcli /cx show freespace
```

2.7.5 Adding Virtual Drives

The following command creates a virtual drive:

```
storcli /cx add vd type=raid[0|1|5|6|10|50|60][Size=<VD1_Sz>,<VD2_Sz>,..|*all]
[name=<VDNAME1>,..] drives=e:s|e:s-x|e:s-x,y [PDperArray=x|auto*]
[SED] [pdcache=on|off|*default][pi] [DimmerSwitch(ds)=default|automatic(auto)|
*none|maximum(max)|MaximumWithoutCaching(maxnocache)] [wt|*wb|awb] [nora|*ra]
[*direct|cached]
[strip=<8|16|32|64|128|256|512|1024] [AfterVd=x] [Spares=[e:]s|[e:]s-x|[e:]s-x,y]
```

NOTE   The supported strip size can vary from a minimum of 64 KB to 1 MB for MegaRAID controllers and only 64 KB for Integrated MegaRAID controllers.

```
[Cbsize = 0|1|2 Cbmode = 0|1|2]
[force]
```

The following inputs can be used when adding virtual drives:

- The controller in which the virtual drives are created.
- The RAID type of the virtual drives.

  The supported RAID types are 0, 1, 5, 6, 10, 50, and 60.
- The size of each virtual drive.
- The drives that create the virtual drives.

  drives = $e:s|e:s-x|e:s-x,y$

  Where:

  — e specifies the enclosure ID.
  — s represents the slot in the enclosure.
  — $e:s-ex$ is the range conventions used to represents slots s to x in the enclosure e.
- The physical drives per array.

  The physical drives per array can be set to a particular value.
- The SED option creates security-enabled drives.
- The PDcache option can be set to on or off.
- The pi option enables protection information.
- The Dimmer Switch is the power save policy. It can be set to default or automatic *, none, maximum(max), or MaximumWithoutCaching(maxnocache).
- The wt option disables write back.
- The nora option disables read ahead.
- The cached option enables the cached memory.
- The strip option sets the strip size.

  It can take the values 8, 16, 32, 64, 128, 256, 512, or 1024.

NOTE	The supported strip size can vary from a minimum of 64 KB to 1 MB for MegaRAID controllers and only 64 KB for Integrated MegaRAID controllers.

- The AfterVdX option creates the virtual drives in the adjacent free slot next to the specified virtual drives.

NOTE	The * indicates default values used in the creation of the virtual drives. If values are not specified, the default values are taken.

Inputm example:

This command creates a RAID volume of RAID 1 type from drives in slots 10 to slot 15 in enclosure 0. The strip size is 64 KB.

2.7.6 Setting the Cache Policy in a Virtual Drive

The following command sets the write cache policy of the virtual drive:

```
storcli /cx/v(x|all) set wrcache=wt|wb|awb
```

The command sets the write cache to write back, write through, or always write back.

2.7.7 Displaying Virtual Drive Information

The following command displays the virtual drive information for all the virtual drives in the controller:

```
storcli /cx/v(x/all) show
```

2.7.8 Deleting Virtual Drives

The following command deletes virtual drives:

```
storcli /cx/v(x|all) del [cc|cachecade]
```

The following inputs are required when deleting a virtual drive:

- The controller on which the virtual drive or virtual drives is present.
- The virtual drives that must be deleted; or you can delete all the virtual drives on the controller using the `vall` option.
- The `cc` or `cachecade` option to confirm that the deleted drive is a CacheCade drive.

2.7.9 Flashing Controller Firmware

The following command is used to flash the controller firmware.

```
storcli /cx download file=filepath [fwtype=<value>] [nosigchk]
[noverchk][resetnow]
```

2.7.10 Recovery Commands (UEFI Only)

Recovery commands perform recovery actions related to a specified controller. Recovery commands are supported on UEFI environment only.

The following commands are used:

```
storcli /cx erase all excludemfg file=<it bootloader image>
```

```
storcli /c1 erase all excludemfg file=vtboot.rom
```

Chapter 3: Supported Commands on Initiator-Target (IT) Controllers

The following chapters deal with the information on StorCLI for Initiator-Target (IT) controllers.

3.1 System Commands

System commands are used to gather information about the controller such as drive topology, number of controllers connected, controller properties, controller-associated information, and so on.

The StorCLI tool supports the following system commands:

```
storcli show
storcli show all
storcli show ctrlcount
storcli show help
storcli v
storcli help
storcli help IT
```

The detailed description for each command follows:

storcli /cx show

This command shows the number of drives connected to a specific controller.

Syntax:

```
storcli /cx show
storcli /call show
```

Where:

- $/cx$ – specifies the controller where x is the index of the controller.
- all – displays information on all the controllers present on the host.

Usage Examples:

```
storcli /c1 show
storcli /call show
```

storcli /cx show all

This command shows the list of controllers and its associated information. It also displays information about the drives that need attention.

Syntax:

```
storcli /cx show all
storcli /call show all
```

Where:

- $/c$ – specifies the controller where x is the index of the controller.
- all – displays information on all the controllers present on the host.

Input examples:

```
storcli /c1 show
storcli /call show all
```

storcli show ctrlcount

This command lists the number of controllers that are connected to the system.

Input examples:

```
storcli show ctrlcount
```

storcli show help

This command shows help for all commands which has the keyword show.

Input example:

```
storcli show help
```

storcli -v

This command shows the version of the StorCLI tool.

Input example:

```
storcli -v
```

storcli help

This command shows help for all commands at the server level.

Input example:

```
storcli help
```

storcli help IT

This command shows help for all the storcli IT commands.

Input example:

```
storcli help IT
```

3.2   SAS Address Commands

SAS address commands are used to gather SAS address information, such as displaying the SAS address of a specific controller. These commands also allow you to specify a new SAS address to the controller.

StorCLI supports the following SAS address commands:

```
storcli /cx show sasadd
storcli /cx set sasadd=<sasaddress>
storcli /cx set sasaddhi=<value> sasaddlow=<value>
```

The detailed description for each command follows:

storcli /cx show sasadd

This command displays the SAS address of the specified controller.

Syntax:

```
storcli /cx show sasadd
```

Where:

/c – specifies the controller where *x* is the index of the controller.

Usage Examples:

```
storcli /c1 show sasadd
```

storcli /cx set sasadd=<value>

Using this command, you can change the existing SAS address on a specific controller with a SAS address of your choice.

> **NOTE**   Ensure that you provide the complete SAS address in a hexadecimal format.

Syntax:

```
storcli /cx set sasadd=xxxxxxxxxxxxxxx
```

Where:

/c – specifies the controller where *x* is the index of the controller.

Usage Examples:

```
storcli /c1 set sasadd=50062b000000000
```

storcli /c1 set sasaddhi=<value> sasaddlow=<value>

Using this command, you can program the SAS Address High and SAS Address Low to the specified controller. Using the set sasaddhi command, you can program the specified controller with the first 28 bits (seven characters) of the SAS address, which are specified at the command line. Using the set sasaddlow, the other 36 bits (nine characters) are programmed to the controller when the controller prompts you to enter the value.

Usage Examples:

```
storcli /c1 set sasaddhi=5062b00 sasaddlow=000000000
```

storcli /cx set sasadd =<sas address> devicename

Using this command, you can program a specific SAS address to a specified controller. Also, you can program the device name for each phy by providing the SAS address as input.

Usage Examples:

```
storcli /c1 set sasadd=50062b000000000
```

storcli /cx set sasadd=<sas address> methodport

Using this command, you can program the SAS address to a specific controller. You can also program each physical phy in the I/O unit with a SAS address.

Usage Examples:

```
storcli /c1 set sasadd=50062b000000000 methodport
```

storcli /cx set sasaddhi=<value> sasaddlow=<value> <methodport>

Using this command, you can program a SAS address to a specific controller. You can also program each physical SAS phy in the I/O unit with a SAS address.

Usage Examples:

```
storcli /cx set sasaddhi=5062b00 sasaddlow = 000000000 methodport
```

3.3   Product Settings and Display Commands

Product settings and display commands are used to gather information about the product, such as assembly value and tracer value of a specific controller.

StorCLI supports the following SAS address commands.

```
storclio /cx show AssemblyNumber

storclio /cx set AssemblyNumber=<assemblynumber>

storclio /cx show TracerNumber

storclio /cx set TracerNumber=<tracernumber>

storclio /cx show vpd

storclio /cx set updatevpd file=<filepath>
```

storclio /cx show AssemblyNumber

This command displays the assembly value of the specified controller.

Syntax:

```
storcli /cx show AssemblyNumber
```

Where:

$/cx$ - specifies the controller where x is the index of the controller.

Input example:

```
storcli /c1 show AssemblyNumber
```

storcli /cx set AssemblyNumber

Using this command, you can program the specified controller with an assembly value. The assembly value can take up to 16 characters, which is programmed directly to the controller. The value is truncated or padded with termination characters, as required.

Syntax:

```
storcli /cx set assemblynumber=<value>
```

Where:

$/c$ – specifies the controller where x is the index of the controller, and $assemblynumber$ is the value of the assembly that you need to specify.

Input example:

```
storcli /c1 set AssemblyNumber=12AB
```

storcli /cx show TracerNumber

This command displays the tracer value of the specified controller.

Syntax:

```
storcli /cx show TracerNumber
```

Where:

$/c$ – specifies the controller where x is the index of the controller.

Input example:

```
storcli /c1 show TracerNumber
```

storcli /cx set TracerNumber=<TracerNumber>

Using this command, you can program the specified controller with a board tracer value. The assembly value can take up to 16 characters. When you enter the 16-character value on the command line, the StorCLI utility programs it to the controller. The board tracer value is truncated or padded with termination characters, as needed.

Syntax:

```
storclio /cx set TracerNumber=<tracernumber>
```

Where:

$/cx$ – specifies the controller where x is the index of the controller, and $tracernumber$ is the board tracer value that you specify.

Input example:

```
storclio /c1 set TracerNumber=12AB
```

storcli /cx show vpd

This command displays the contents of the Vital Product Data (VPD) for a specified controller.

Syntax:

```
storcli /cx show vpd
```

Where:

$/c$ – specifies the controller where x is the index of the controller.

Input example:

```
storclio /c1 show vpd
```

storcli /cx set updatevpd file=<filepath>

Using this command, you can program the VPD file for a specified controller. The StorCLI utility parses the data to the file that you specify on command line and programs the parsed data to the appropriate location in the nonvolatile memory. StorCLI verifies the individual field lengths, but it does not verify the parameter value.

Syntax:

```
storcli /cx set updatevpd file=<filepath>
```

Where:

$/c$ - specifies the controller where x is the index of the controller, and $filepath$ is the location of the file on which you want to parse the data.

Input example:

```
storcli /c1 set updatevpd file=c:\vpd\vpd.ini
```

3.4   Upgrade, Downgrade, and Recovery Commands

These commands are used to upgrade, downgrade, and recover the firmware.

StorCLI supports the following upgrade, downgrade, and recovery commands. The `download completeflash` and `erase` commands are applicable only to the UEFI environment.

```
storcli /cx download file=<filepath>
```

```
storcli /cx download bios file=<filepath>

storcli /cx download efibios file=<filepath>

storcli /cx download fcode file=<filepath>

storcli /cx download cpld file=<filepath>

storclio /cx download completeflash fileone=<firmware image> filetwo=<flash image>

storcli /cx erase nvsram

storcli /cx erase fwbackup

storcli /cx erase perconfpage

storcli /cx erase mpb

storlci /cx erase bootservices

storcli /cx erase all

storcli /c0 erase all excludemfg
```

storcli /cx download file=<filepath>

Using this command, you can flash the firmware with the `.rom` file to a specified adapter from the provided file location (file path is the absolute file path).

Syntax:

```
storcli /cx download file=<filepath>
```

Where:

$/c$ – specifies the controller where x is the index of the controller, and $filepath$ specifies the absolute file path.

Input example:

```
storcli /c1 download file=image.fw
```

> **NOTE**   Downgrading the firmware between phases is not supported on Initiator-Target controllers.

3.5   Download Commands

storcli /cx download bios file=<.rom>

Using this command, you can update the BIOS component on all supported controllers.

Syntax:

```
storcli /cx download bios file=<.rom>
```

Where:

$/c$ – specifies the controller, where x is the index of the controller, and `.rom` specifies the file extension on which you are updating the BIOS component.

Input example:

```
storcli /c1 download bios file=mptsas.rom
```

storcli /cx download efibios file=<.rom>

Using this command, you can update the EFI component on all supported controllers.

Syntax:

```
storcli /cx download efibios file=<.rom>
```

Where:

/c – specifies the controller, where *x* is the index of the controller, and *.rom* specifies the file extension on which you are updating the EFI component.

Input example:

```
storcli /c1 download efibios file=mptsas.rom
```

storcli /cx download fcode file=<.rom>

Using this command, you can update the FCODE component on all supported controllers.

Syntax:

```
storcli /cx download fcode file=<.rom>
```

Where:

/c – specifies the controller, where *x* is the index of the controller, and *.rom* specifies the file extension on which you are updating the FCODE component.

Input example:

```
storcli /c1 download fcode file=mptsas.rom
```

storcli /cx download cpld file=<.rom>

Using this command, you can update the cpld component on all supported controllers.

Syntax:

```
storcli /cx download cpld file=<.rom>
```

Where:

/c – specifies the controller, where *x* is the index of the controller, and *.rom* specifies the file extension on which you are updating the cpld component.

Input example:

```
storcli /c1 download cpld file=cpld.rom
```

3.6   UEFI Commands

storcli /cx download completeflash

This command downloads the complete flash image on a nonoperational or an empty controller by performing host boot using the IT boot loader image. This command takes two files as arguments:

- `Fileone` – A valid firmware image with which host boot is performed on the controller.
- `Filetwo` – A valid flash image that is flashed on the controller.

Syntax:

```
storcli /cx download completeflash fileone=<firmware image> filetwo=<flash image>
```

Where:

/c – specifies the controller, where *x* is the index of the controller, and *filenames* are the arguments.

Input example:

```
storcli /c1 download completeflash fileone=Itbootloaderimage filetwo=FW image
```

storcli /cx erase nvsram

Using this command, you can clear or erase the NVSRAM region.

NOTE	Use this command and all other **erase commands** with caution. The **erase commands** can clear or erase any previous configuration present on the controller, and you cannot undo any erase operation.

Syntax:

```
storcli /cx erase nvsram
```

Where:

/c – specifies the controller, where x is the index of the controller.

Input example:

```
storcli /c1 erase nvsram
```

storcli /cx erase fwbackup

Using this command, you can clear or erase the firmware backup region.

Syntax:

```
storcli /cx erase fwbackup
```

Where:

/c – specifies the controller, where x is the index of the controller.

Input example:

```
storcli /c1 erase fwbackup
```

storcli /cx erase perconfpage

Using this command, you can clear or erase the Persistent Configuration page.

Syntax:

```
storcli /cx erase perconfpage
```

Where:

/c – specifies the controller, where x is the index of the controller.

Input example:

```
storcli /c1 erase perconfpage
```

storcli /cx erase mpb

Using this command, you can clear or erase the manufacturing area details.

Syntax:

```
storcli /cx erase mpb
```

Where:

/c – specifies the controller, where x is the index of the controller.

Input example:

```
storcli /c1 erase mpb
```

storcli /cx erase bootservices

Using this command, you can clear or erase the boot services region.

Syntax:

```
storcli /cx erase bootservices
```

Where:

`/c` – specifies the controller, where x is the index of the controller.

Input example:

```
storcli /c0 erase bootservices
```

storcli /cx erase all [excludemfg]

Using this command, you can clear or erase the complete flash region. If you use the `excludemfg` option, this command erases the flash region but retains the manufacturing data region.

Syntax:

```
storcli /cx erase all excludemfg
```

Where:

`/c` – specifies the controller, where x is the index of the controller, and specifying `excludemfg` as an option erases the flash region except the manufacturing data region.

Input example:

```
storcli /c0 erase all excludemfg
```

storcli /cx erase all

Using this command, you can clear or erase the complete flash region.

Syntax:

```
storcli /cx erase all
```

Where:

`/c` – specifies the controller, where x is the index of the controller, and specifying `erase all` erases the flash region.

Input example:

```
storcli /c0 erase all
```

3.7   Drive Commands

Drive commands are used to start and stop locating physical drives.

StorCLI supports the following drive commands:

```
storcli /cx/ex/sx start locate
```

```
storcli /cx/ex/sx stop locate
```

storcli /cx/ex/sx start locate

Using this command, you can turn on the drive LED flash to locate physical drives.

Syntax:

```
storcli /cx/ex/sx start locate
```

Where:

`/c` - specifies the controller where `x` is the index of the controller, `ex` is the enclosure ID of the controller which is optional, and `sx` refers to the drive slot ID of the controller.

Input example:

```
storcli /c1/e10/s12 start locate
```

storcli /cx/ex/sx stop locate

Using this command, you can turn off the drive LED flash to locate physical drives.

Syntax:

```
storcli /cx/ex/sx stop locate
```

Where:

`/c` - specifies the controller where `x` is the index of the controller, `ex` is the enclosure ID of the controller which is optional, and `sx` refers to the drive slot ID of the controller.

Input example:

```
storcli /c1/e128/s12 stop locate
```

3.8 Compare Commands

The Storage Command Line Interface Tool supports the following controller commands:

```
storcli /cx compare bios ver=<version number>
storcli /cx compare firmware ver=<version number>
storcli /cx compare fwprodid ver=<version number>
storcli /cx compare ssid ver=<version number>
storcli /cx/px compare linkspeed=<value>
```

storcli /cx compare bios ver= <version number>

Using this command, you can compare the current BIOS version against a BIOS version provided in the command line. You need to input the BIOS version in the following format:

```
AA.BB.CCC.DD
```

Also, the StorCLI utility checks all four parts of the BIOS version number (`AA.BB.CCC.DD`), and displays the result of the checks through the return codes.

Syntax:

```
storcli /cx compare bios ver=<version number>
```

Where:

`/c` – specifies the controller where `x` is the index of the controller, and `version number` specifies BIOS version number that you want to compare.

Input example:

```
storcli /c1 compare bios ver=6.08.00.00
```

storcli /cx compare firmware ver= <version number>

Using this command, you can compare the current firmware version against a firmware version provided in the command line. You need to input the firmware version in the following format:

```
AA.BB.CC.DD
```

Also, the StorCLI utility checks all four parts of the firmware version number (`AA.BB.CC.DD`), and displays the result of the checks through the return codes.

Syntax:

```
storcli /cx compare firmware ver=<version number>
```

Where:

`/c` – specifies the controller where x is the index of the controller, and `version number` specifies the firmware version number that you want to compare.

Input example:

```
storcli /c1 compare firmware ver=00.07.00.23
```

storcli /cx compare fwprodid ver= <version number>

Using this command, you can compare the current product ID of the current firmware version against the product ID provided in the command line. You need to input the product ID in following hexadecimal format:

```
AA.BB
```

Syntax:

```
storcli /cx compare fwprodid ver=<version number>
```

Where:

`/c` – specifies the controller where x is the index of the controller, and `version number` specifies firmware product ID that you want to compare.

Input example:

```
storcli /c1  compare fwprodid ver=09.33
```

storcli /cx compare ssid ver=<version number>

Using this command, you can test the Subsystem Vendor ID (SSVID) against the Subsystem Device ID (SSDID) to match them to the appropriate PCI information for a selected controller. StorCLI displays in discrepancies, if found, in either the SSVID or the SSDID; else it displays a success message if both the values match the specified controller.

Syntax:

```
storcli /cx compare ssid ver=<version number>
```

Where:

`/c` – specifies the controller where x is the index of the controller, and `version number` specifies the SSID number against which you want to compare the SSVID number.

Input example:

```
storcli /c1 compare ssid ver=1234:4567
```

storcli /cx/px compare linkspeed= <value>

Using this command, you can test the link state of a specific phy on a specific controller against a provided value. The StorCLI utility displays the results through return codes.

Syntax:

```
storcli /cx/px compare linkspeed=<value>
```

Where:

*/c*x – specifies the controller where *x* is the index of the controller, *px* specifies the PHY number, and *value* specifies the link status value that you provide.

The valid link status values for testing the link state are shown in the following table.

Table 22 Valid Link Status Values

Value	Link State
0	Link Down
1	3.0 Gb/s
2	6.0 Gb/s
3	12.0 Gb/s

Input example:

```
storcli /c0/p0 compare linkspeed=2
```

3.9   Get Commands

The Storage Command Line Interface Tool supports the following `Get` commands:

```
storcli cx get bios file=<filepath>

storcli cx get firmware file=<filepath>

storcli cx get fwbackup file=<filepath>

storcli cx get nvdata file=<filepath>

storcli cx get flash file=<filepath>
```

storcli /cx get bios file= <filepath>

Using this command, you can upload the BIOS block to a specified file. If the file already exists, this command overwrites the existing file. This command fails if there is not enough disk space to hold the BIOS block. This command is useful in manufacturing environments to perform a BIOS comparison after an update.

Syntax:

```
storcli /cx get bios file=<filepath>
```

Where:

/c – specifies the controller where *x* is the index of the controller, and *filepath* refers to the location of the BIOS file.

Input example:

```
storcli /c0 get bios file=image.rom
```

storcli /cx get firmware file= <filepath>

Using this command, you can upload the current firmware image to a specified file. If the file already exists, this command overwrites the existing file. This command fails if there is not enough disk space to hold the firmware image. This command is useful in manufacturing environments to perform a comparison after an update.

Syntax:

```
storcli /cx get firmware file=<filepath>
```

Where:

`/c` – specifies the controller where x is the index of the controller, and `filepath` refers to the location of the BIOS file.

Input example:

```
storcli /c0 firmware file=c:\fw\image.rom
```

storcli /cx get fwbackup file= <filepath>

Using this command, you can upload the backup image of the firmware to a file. If the file already exists, this command overwrites the existing file. This command fails if there is not enough disk space to hold the backup image of the firmware. This command is useful in manufacturing environments to perform a firmware image comparison after an update.

Syntax:

```
storcli /cx get fwbackup file=<filepath>
```

Where:

`/c` – specifies the controller where x is the index of the controller, and `filepath` refers to the location of the backup image of the firmware.

Input example:

```
storcli /c0 get fwbackup file=c:\fw\image.rom
```

storcli /cx get nvdata file= <filepath>

Using this command, you can upload the current binary NVDATA image to a file. If the file already exists, this command overwrites the existing file. This command fails if there is not enough disk space to hold the binary NVDATA image. This command is useful in manufacturing environments to perform an NVDATA image comparison after an update.

Syntax:

```
storcli /cx get nvdata file=<filepath>
```

Where:

`/c` – specifies the controller where x is the index of the controller, and `filepath` refers to the location of the current binary NVDATA image of the firmware.

Input example:

```
storcli /c1 get nvdata file=c:\fw\nvdata.fw
```

storcli /cx get flash file= <filepath>

Using this command, you can upload the complete contents of the controller flash to a file specified by you. If the file already exists, this command overwrites the existing file. This command fails if there is not enough disk space to hold the controller flash file.

Syntax:

```
storcli /cx get flash file=<filepath>
```

Where:

`/c` – specifies the controller where x is the index of the controller, and `filepath` refers to the location of the controller flash file.

Input example:

```
storcli /c1 get flash file=c:\fw\flash.rom
```

3.10   Other Commands

The Storage Command Line Interface Tool also supports the following commands:

```
storcli /cx restart
```

```
storcli /cx/pall show
```

storcli /cx restart

Using this command, you can reset a specific controller or reset all controllers connected to the host. This command resets the chip hardware and reinitializes all the chip information. This command also performs the following operations:

- Moves the new firmware image from the backup location to the current location of the firmware.
- Migrates the NVDATA changes.
- Brings up and runs the new firmware.

Syntax:

```
storcli /cx restart
```

Where:

$/c$ – specifies the controller where x is the index of the controller, and all specifies all the controllers connected to the host.

Usage Examples:

```
storcli /c1 restart
```

```
storcli /call restart
```

storcli /cx /pall show

Using this command, you can list the state of all phy links on a specified adapter.

Syntax:

```
storcli /cx/pall show
```

Where:

$/c$ – specifies the controller where x is the index of the controller.

Usage Examples:

```
storcli /c1/pall show
```

Appendix A: SAS Address Assignment Rule

PHY SAS address is calculated by incrementing controller SAS address by 1 based on the number of PHYs.

Suppose you are using 16 or 8 PHY cards and there are four connectors - C3, C2, C1, and C0. Each connector has 4 PHYs and autoport configuration is always enabled. Connector C3 has PHYs 0 to 3, Connector C2 will have PHYs 4 to 7, and Connector C1 will have PHYs 8 to 11 and Connector C0 will have 12 to 15.

- If you are connecting four different target devices and want to plug a cable into connector #1, the SAS address for this port will be 5000000080000008 as the connector's first PHY is # 8.
- Furthermore, when you plug a cable into connector #0, the SAS address for this port will be 5000000080000009.
- Assuming that there is nothing connected to the HBA and you plug a cable into connector #0, then the SAS address assigned to this port will be 5000000080000008.
- Again, assuming that there is nothing connected to the HBA and you plug a cable into connector #3, then the SAS address assigned to this port will be 500000008000000.
- Next, when a cable is plugged into connector #2, the SAS address assigned to this port will be 500000008000001.

This logic is applicable for cards with eight PHYs also.

Controllers have two SAS cores; each core can have a wide port, at the most x8 connection. While connectors C0 and C1 may belong to one core, connectors C2 andC3 may belong to another core.

Revision History

Version 1.2, November 30, 2017

The following document changes were made.

- Updated Section 1.2, Supported Operating Systems.
- Updated Section 2.6.2.1, Show and Set Controller Properties Commands.
- Updated Section 2.6.5, JBOD Commands.

Version 1.1, September 11, 2017

The following document changes were made.

- Updated Section 3.4, Upgrade, Downgrade, and Recovery Commands.
- Updated Section 3.5, Download Commands.

Preliminary, Version 1.0, October 28, 2016

Initial document release.