SGI® InfiniteStorage 6120 RAID Command Line User Interface (CLUI) Command Reference

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SGI InfiniteStorage 6120 RAID CLUI Command Reference

This Command Reference contains the *Command Line User Interface* (CLUI) commands for the *administrator* level access. The applicable controller firmware version is 1.1.00 build 2890.

Commands are listed alphabetically. Description and usage examples are given for each command. The examples given resulted from commands run on an SGI InfiniteStorage 6120.

List of Commands

Definition of Common Terms

This list is maintained to validate the uniqueness of keywords.

Channel (RAID) – is the data path between storage disk and controller.

Channel (APPLICATION) – is the data path to the controller.

Channel-ID – is the object-id of an EnabledClientChannel; there are two channels 0 and 1.

Controller – provides connection of high performance, scalability, and flexibility to the storage enclosures.

Object ID – is a system-generated identifier used to "name" an object within the scope of the system.

Processor – is part of the controller that aids data flow to memory.

Sub-System – consists of one or more RAID Processors.

Shortcuts

PHYSICAL_DISKS	PD
VIRTUAL_DISKS	VD
=	Optional, a space is acceptable
APPLICATION	APP

NOTE: Input is assumed to be DECIMAL. HEX can be used if preceded by '0x'.

APPLICATION CHANNEL

All APPLICATION CHANNEL object commands have a APPLICATION subject and include a CHANNEL=<object-id> object specification.

COMMANDS
Description
APPLICATION SET CHANNEL =<object-id> <attribute-name>=<value> [<attribute-name>=<value>…] `Sets the specified channel name to the associated attributes listed.`
APPLICATION SHOW CHANNEL =<object-id> [ALL_ATTRIBUTES] Displays the physical disks associated with a specified APPLICATION CHANNEL.
APPLICATION SHOW CHANNEL =<object-id> [COUNTERS] Displays all attributes for the specified APPLICATION CHANNEL.

ATTRIBUTES
Description
**MODE=<STANDARD	MAC_OS>** Controls channel-specific behavior such as the way that Fibre Channel Node_Names are assigned.

Usage Guidelines

A wild-card <object-id> (*) may be used in the SHOW command.

Examples

• To display APPLICATION channels using a wild-card <object-id>:

```
RAID[0]$ APPLICATION SHOW CHANNEL *

                        |SPEED|              |            WORLD WIDE NAME (WWN)           |
INDEX|TYPE|STATE| PORT ID | GB/S|CTRL|RP|PORT| MODE |    NODE NAME      |     PORT NAME      |
----------------------------------------------------------------------------------------------
00000  FC   UP   0X010600    4     0   0   0    STD   0X20000001FF0722BE 0X20000001FF0722BE
00001  FC   UP   0X010000    4     0   0   1    STD   0X20000001FF0722BE 0X20010001FF0722BE
00002  FC   UP   0X010100    4     1   0   0    STD   0X20000001FF0722BE 0X20100001FF0722BE
00003  FC   UP   0X010200    4     1   0   1    STD   0X20000001FF0722BE 0X20110001FF0722BE

TOTAL CHANNELS: 4
```

• To display an APPLICATION channel using a specified <object-id>:

```
RAID[0]$ APPLICATION SHOW CHANNEL 0

                        |SPEED|              |            WORLD WIDE NAME (WWN)           |
INDEX|TYPE|STATE| PORT ID | GB/S|CTRL|RP|PORT| MODE |    NODE NAME      |     PORT NAME      |
----------------------------------------------------------------------------------------------
00000  FC   UP   0X010600    4     0   0   0    STD   0X20000001FF0722BE 0X20000001FF0722BE

TOTAL CHANNELS: 1
```

- To display an APPLICATION channel using the ALL parameter：

```
RAID[0]$ APPLICATION SHOW CHANNEL 0 ALL_ATTRIBUTES

OID:                0X081E0000
OID INDEX:          00000
TYPE:               FC
MODE:               STANDARD
LINK STATE:         UP
CURRENT SPEED:      4GB/S
AVAILABLE SPEEDS:   4
CONTROLLER:         0
RP:                 0
PORT:               0
PORT ID:            0X010600
NODE NAME:          0X20000001FF0722BE
PORT NAME:          0X20000001FF0722BE
VENDOR ID:          0X1077
PRODUCT ID:         0X2532
HW VERSION:         0X1006
FW VERSION:         4.06.00

TOTAL CHANNELS: 1
```

APPLICATION STACK

All APPLICATION STACK object commands have a APPLICATION subject and include a STACK=<object-id> object specification.

COMMANDS
Description
APPLICATION SHOW STACK =<object-id> [ALL_ATTRIBUTES] Displays all attributes for the specified APPLICATION STACK.
APPLICATION SHOW STACK =<object-id> [COUNTERS] Displays the counters for the specified APPLICATION STACK.

ATTRIBUTES
Description
NAME="string"
Specified by the user to identify (set the name of) the Application Stack. If there are spaces in the name, the name must be enclosed with quotes ("). To clear a previously entered name, enter an empty string as follows: NAME="".

Usage Guidelines

A wild-card <object-id> (*) may be used in the SHOW command.

Examples

• To display APPLICATION stacks using a wild-card <object-id>:

```
RAID[0]$ APPLICATION SHOW STACK *

                                  | CTRLS | RPS/CTRL| PORTS/RP|
INDEX | STACK NAME               |MAX|CUR| MAX|CUR | MAX|CUR |
------------------------------------------------------------------
00000   STACK_0000                 2   2   1   1     2   2

TOTAL STACKS: 1
```

• To display an APPLICATION stack using a specified <object-id>:

```
RAID[0]$ APPLICATION SHOW STACK 0

                                  | CTRLS | RPS/CTRL| PORTS/RP|
INDEX | STACK NAME               |MAX|CUR| MAX|CUR | MAX|CUR |
------------------------------------------------------------------
00000   STACK_0000                 2   2   1   1     2   2

TOTAL STACKS: 1
```

• To display an APPLICATION stack using the ALL parameter:

```
RAID[0]$ APPLICATION SHOW STACK 0 ALL_ATTRIBUTES

OID:                 0X10010000
OID INDEX:           00000
NAME:                STACK_0000
MAXIMUM CONTROLLERS:  2
CURRENT CONTROLLERS:  2
MAXIMUM RPS /CTRL:    1
CURRENT RPS /CTRL:    1
MAXIMUM PORTS/ RP :   2
CURRENT PORTS/ RP :   2

TOTAL STACKS: 1
```

APPLICATION HOST

All APPLICATION HOST object commands have an APPLICATION subject and include a HOST=<object-id> object specification.

COMMANDS
Description
APPLICATION CREATE HOST [OSTYPE=GENERIC|LINUX|MAC_OS|WINDOWS] Creates a HOST_STACK. In the case of a FCP target Application Stack, the ID string is not used. In the case of the Lustre OSS, the ID String is the name of a block device. The default OSTYPE is GENERIC.
APPLICATION DELETE HOST =<object-id> Deletes the specified HOST.
APPLICATION SET HOST=<object-id> <attribute-name>=<value> [<attribute-name>=<value>…] Sets the specified attribute to the specified Application Host.
APPLICATION SHOW HOST=<object-id> [ALL_ATTRIBUTES] Displays the attributes of a specified APPLICATION HOST.
APPLICATION SHOW HOST=<object-id> [COUNTERS] Displays the COUNTERS associated with the specified APPLICATION HOST.
APPLICATION SHOW HOST=<object-id> [PRESENTATIONS] Displays the PRESENTATIONS associated with the specified APPLICATION HOST.
APPLICATION SHOW HOST=<object-id> [INITIATORS] Displays the INITIATORS associated with the specified APPLICATION HOST.

ATTRIBUTES
Description
None for version 1.1

Usage Guidelines

A wild-card <object-id> (*) may be used in the SHOW command.

Examples

· To display APPLICATION hosts using a wild-card <object-id>:

```
RAID[0]$ APPLICATION SHOW HOST *

                                          | STACK |  OPERATING  |
INDEX | HOST NAME                         | INDEX | SYSTEM MODE |
-----------------------------------------------------------------
00000   HOST_0000                           00000    WINDOWS
00001   HOST_0001                           00000    WINDOWS
00002   HOST_0002                           00000    LINUX
00003   HOST_0003                           00000    GENERIC

TOTAL HOSTS: 4
```

- To display an APPLICATION host using a specified <object-id>:

```
 RAID[0]$ APPLICATION SHOW HOST 0

                                        | STACK |  OPERATING  |
INDEX | HOST NAME                       | INDEX | SYSTEM MODE |
-------------------------------------------------------------
00000   HOST_0000                        00000   WINDOWS

TOTAL HOSTS: 1
```

- To display an APPLICATION host using the ALL parameter:

```
RAID[0]$ APPLICATION SHOW HOST 0 ALL_ATTRIBUTES

OID:                   0X18100000
OID INDEX:             00000
STACK OID:             0X10000000
STACK OID INDEX:       00000
NAME:                  HOST_0000
OS TYPE:               WINDOWS

TOTAL HOSTS: 1
```

- To display all the initiators associated with an APPLICATION host:

```
RAID[0]$ APPLICATION SHOW HOST 0 INITIATORS

              | HOST  |        WORLD WIDE NAME (WWN)        |
INDEX | TYPE | INDEX |     NODE NAME     |    PORT NAME     |
-------------------------------------------------------------
00000   FC     00000  0X20000000C9874263 0X10000000C9874263
00000   FC     00000  0X20000000C9874262 0X10000000C9874262

TOTAL FC INITIATORS: 2
```

- To display all the presentations to an APPLICATION host:

```
RAID[0]$ APPLICATION SHOW HOST 0 PRESENTATIONS

PRES. | HOST                    HOST  | VD    |     | HOME | READ |     CHANNEL        |
INDEX | NAME                    INDEX | INDEX | LUN | ONLY | ONLY |      MASK          |
--------------------------------------------------------------------------------------
00006   HOST_0000                00000   00000   009   OFF    R/W   0XFFFFFFFFFFFFFFFF

TOTAL PRESENTATIONS: 1
```

APPLICATION PRESENTATION

All APPLICATION PRESENTATION object commands have a APPLICATION subject and include a PRESENTATION=<object-id> object specification.

COMMANDS Description
APPLICATION CREATE PRESENTATION VIRTUAL_DISK=<object-id> HOST=<object-id> |ALL [,attribute-name>=<name>…] Creates a PRESENTATION to a VIRTUAL DISK for the specified Host.
APPLICATION DELETE PRESENTATION VIRTUAL_DISK=<object-id> HOST=<object-id> [FORCE] Deletes a PRESENTATION to a VIRTUAL DISK for the specified Host. Optional parameter of FORCE deletes without asking questions.
APPLICATION DELETE PRESENTATION=<object-id> [FORCE] Deletes the specified PRESENTATION. Optional parameter of FORCE deletes without asking questions.
APPLICATION DELETE PRESENTATION*[FORCE] Deletes all PRESENTATIONs using wildcard. Optional parameter of FORCE deletes without asking questions.
APPLICATION SET PRESENTATION VIRTUAL_DISK=<object-id> HOST=<object-id> <attribute-name>=<value> [<attribute-name>=<value>…] Sets the specified attribute to the specified value.
APPLICATION SET PRESENTATION=<object-id> <attribute-name>=<value> [<attribute-name>=<value>…] Sets the specified attribute to the specified value.
APPLICATION SHOW PRESENTATION VIRTUAL_DISK=<object-id> HOST=<object-id> =<object-id> [ALL_ATTRIBUTES][COUNTERS] Displays the attributes of a specified value.
APPLICATION SHOW PRESENTATION=<object-id> [COUNTERS] Displays the COUNTERS associated with the specified APPLICATION PRESENTATION.
APPLICATION SHOW PRESENTATION=<object-id> [ALL_ATTRIBUTES] Displays the PRESENTATIONS associated with the specified APPLICATION PRESENTATION.

ATTRIBUTES Description
ENABLE=ALL|NONE|<channel-id> The channel-id is the object-id of an EnabledClientChannel.
LUN=<integer> The integer is a Logical Unit Number (LUN) that will be used to present the associated Virtual Disk to the associated Host. NOTE: Each LUN integer entered for a presentation is cumulative and does not replace the previous entry.
HOME_ONLY[=TRUE|FALSE] Enables/disables the home_only parameter.
LUN=<integer> The integer is a Logical Unit Number (LUN) that will be used to present the associated Virtual Disk to the associated Host. NOTE: Each LUN integer entered for a presentation is cumulative and does not replace the previous entry.

HOME_ONLY[=TRUE|FALSE]

Enables/disables the home_only parameter.

READ_ONLY[=TRUE|FALSE]

Enables/disables read_only.

Usage Guidelines

A wild-card <object-id> (*) may be used in the SHOW command.

Examples

• To display APPLICATION presentations using a wild-card <object-id>:

```
RAID[0]$ APPLICATION SHOW PRESENTATION *

PRES.  | HOST                          HOST  | VD    |     | HOME | READ |    CHANNEL         |
INDEX  | NAME                          INDEX | INDEX | LUN | ONLY | ONLY |     MASK           |
-----------------------------------------------------------------------------------------------
00006    HOST_0000                     00000   00000   009   OFF    R/W    0XFFFFFFFFFFFFFFFF

TOTAL PRESENTATIONS: 1
```

• To display an APPLICATION presentation using a specified <object-id>:

```
RAID[0]$ APPLICATION SHOW PRESENTATION 6

PRES.  | HOST                          HOST  | VD    |     | HOME | READ |    CHANNEL         |
INDEX  | NAME                          INDEX | INDEX | LUN | ONLY | ONLY |     MASK           |
-----------------------------------------------------------------------------------------------
00006    HOST_0000                     00000   00000   009   OFF    R/W    0XFFFFFFFFFFFFFFFF

TOTAL PRESENTATIONS: 1
```

• To display an APPLICATION presentation using the ALL parameter:

```
RAID[0]$ APPLICATION SHOW PRESENTATION 6 ALL_ATTRIBUTES

OID:                   0X20130006
OID INDEX:             00006
HOST OID:              0X18100000
HOST OID INDEX:        00000
VD OID:                0X891D0000
VD OID INDEX:          00000
LUN:                   9
READ ONLY:             FALSE
PRESENT HOME ONLY:     FALSE
CHANNEL MASK:          0XFFFFFFFFFFFFFFFF
QUALITY OF SERVICE:    0X0000000000000000

TOTAL PRESENTATIONS: 1
```

• To temporarily remove presentations from an APPLICATION host without deleting any APPLICATION presentations:

```
RAID[0]$ APPLICATION SET PRESENTATION HOST 0 VD * ENABLE=NONE
ALL VD(S) TO HOST 0 PRESENTATION SET ATTRIBUTES STATUS='SUCCESS' (0X0)
RAID[0]$ APPLICATION SHOW PRESENTATION *

PRES.  | HOST                          HOST  | VD    |     | HOME | READ |    CHANNEL         |
INDEX  | NAME                          INDEX | INDEX | LUN | ONLY | ONLY |     MASK           |
-----------------------------------------------------------------------------------------------
00006    HOST_0000                     00000   00000   009   OFF    R/W    0X0000000000000000

TOTAL PRESENTATIONS: 1
```

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- To re-enable all the presentations to an APPLICATION host:

```
RAID[0]$ APPLICATION SET PRESENTATION HOST 0 VD * ENABLE=ALL
ALL VD(S) TO HOST 0 PRESENTATION SET ATTRIBUTES STATUS='SUCCESS' (0X0)
RAID[0]$ APPLICATION SHOW PRESENTATION *
PRES.  | HOST                          HOST  |  VD   |     | HOME | READ |     CHANNEL        |
INDEX  | NAME                          INDEX | INDEX | LUN | ONLY | ONLY |      MASK         |
-------------------------------------------------------------------------------------------
00006    HOST_0000                     00000   00000   009   OFF    R/W    0XFFFFFFFFFFFFFFFF

TOTAL PRESENTATIONS: 1
```

APPLICATION DISCOVERED INITIATORS

All APPLICATION DISCOVERED INITIATORS object commands have an APPLICATION subject and include a DISCOVERED INITIATORS=<object-id> object specification.

COMMANDS
Description

APPLICATION IMPORT DISCOVERED_INITIATOR=<object-id> HOST=<object-id>
Creates an INITIATOR object that is associated with the specified Host.

APPLICATION SHOW DISCOVERED_INITIATOR=<object-id> [ALL_ATTRIBUTES]
Displays the attributes of a specified APPLICATION DISCOVERED_INITIATORS.

APPLICATION SHOW DISCOVERED_INITIATOR=<object-id> [COUNTERS]
Displays the counters of a specified APPLICATION DISCOVERED_INITIATORS.

Usage Guidelines

A wild-card <object-id> (*) may be used in the SHOW command.

Examples

- To display APPLICATION discovered_initiators using a wild-card <object-id>:

```
RAID[0]$ APPLICATION SHOW DISCOVERED_INITIATOR *

                       |          WORLD WIDE NAME (WWN)        |       |       |
INDEX | TYPE | PORT ID |    NODE NAME     |     PORT NAME      | CTRL 0 | CTRL 1 |
-------------------------------------------------------------------------------
00002   FC    0X010400  0X20000000C9874263 0X10000000C9874263  0  1     0  1
00003   FC    0X010500  0X20000000C9874262 0X10000000C9874262  0  1     0  1

TOTAL FC INITIATORS: 2
```

- To display APPLICATION discovered_initiators using a specified <object-id>:

```
RAID[0]$ APPLICATION SHOW DISCOVERED_INITIATOR 2

                       |          WORLD WIDE NAME (WWN)        |       |       |
INDEX | TYPE | PORT ID |    NODE NAME     |     PORT NAME      | CTRL 0 | CTRL 1 |
-------------------------------------------------------------------------------
00002   FC    0X010400  0X20000000C9874263 0X10000000C9874263  0  1     0  1

TOTAL FC INITIATORS: 1
```

- To display APPLICATION discovered_initiators using the ALL parameter:

```
RAID[0]$ APPLICATION SHOW DISCOVERED_INITIATOR 2 ALL_ATTRIBUTES

OID:                 0X30190002
OID INDEX:           00002
TYPE:                FC
PORT ID:             0X010400
NODE NAME:           0X20000000C9874263
PORT NAME:           0X10000000C9874263
CHANNEL MASK:        0X0000000300000003

TOTAL FC INITIATORS: 1
```

APPLICATION INITIATOR

All APPLICATION INITIATOR object commands have a APPLICATION subject and include a INITIATOR=<object-id> object specification.

COMMANDS
Description
APPLICATION CREATE INITIATOR HOST=<object-id> WWPN=<integer>   Creates an APPLICATION INITIATOR for the specified Host.
APPLICATION DELETE INITIATOR=<object-id>   Deletes the specified INITIATOR.
APPLICATION SHOW INITIATOR=<object-id>[ALL_ATTRIBUTES][COUNTERS]   Displays the attributes of a specified APPLICATION INITIATOR.

ATTRIBUTES
Description
None

Usage Guidelines

A wild-card <object-id> (*) may be used in the SHOW command.

Examples

- To display APPLICATION INITIATORS using a wild-card <object-id>:

```
 RAID[0]$ APPLICATION SHOW INITIATOR *

            | HOST |       WORLD WIDE NAME (WWN)        |
INDEX | TYPE | INDEX |     NODE NAME     |    PORT NAME  |
-------------------------------------------------------------
00000   FC     00000  0X20000000C9874263 0X10000000C9874263
00000   FC     00000  0X20000000C9874262 0X10000000C9874262

TOTAL FC INITIATORS: 2
```

- To display an APPLICATION INITIATOR using a specified <object-id>:

```
RAID[0]$ APPLICATION SHOW INITIATOR 0

            | HOST |      WORLD WIDE NAME (WWN)         |
INDEX | TYPE | INDEX |    NODE NAME    |     PORT NAME   |
-------------------------------------------------------------
00000   FC     00000  0X20000000C9874263 0X10000000C9874263

TOTAL FC INITIATORS: 1
```

- To display an APPLICATION INITIATORS using the ALL parameter:

```
RAID[0]$ APPLICATION SHOW INITIATOR 0 ALL_ATTRIBUTES

OID:              0X28110000
OID INDEX:        00000
HOST OID:         0X18100000
HOST OID INDEX:   00000
TYPE:             FC
NODE NAME:        0X20000000C9874263
PORT NAME:        0X10000000C9874263

TOTAL FC INITIATORS: 1
```

RAID CONTROLLER

The RAID CONTROLLER object has a RAID subject and includes a CONTROLLER=<object-id> object specification.

COMMANDS
Description
RAID SET CONTROLLER=<object-id> <attribute-name>=<value> [<attribute-name>=<value>…] Sets the specified controller name to the associated attributes listed. This command is restricted to manufacturing and field service.
RAID SHOW CONTROLLER=<object-id>   [ALL_ATTRIBUTES] Displays all attributes of the specified controller.
RAID SHOW CONTROLLER=<object-id> LOG [ASCEND_ORDER|DESCEND_ORDER] [NEWER|OLDER] [START_SEQUENCE][NUMBER] Displays the event log on the RAID CONTROLLER. NUMBER events are displayed starting at the START_SEQUENCE number. NEWER and OLDER control whether events are displayed that are newer or older than the START_SEQUENCE number and ASCEND_ORDER and DESCEND_ORDER control whether those are displayed in ascending or descending sequence number order. By default, the last 100 events are displayed in ascending order.
RAID UPDATE_FIRMWARE CONTROLLER=<object-id> FILE="<file-specification>" Updates the firmware in the controller.
RAID SHUTDOWN CONTROLLER=<object-id> Performs a shutdown to the controller specified with a confirmation response required.
RAID SHUTDOWN CONTROLLER=<object-id> [FORCE] Performs a shutdown to the controller specified.
RAID SHUTDOWN CONTROLLER=<object-id> [RESTART] Performs a shutdown followed by a restart of the controller specified.

ATTRIBUTES

None

Usage Guidelines

A wild-card object-id may be used in the SHOW command.

Default time in the logs will be Coordinated Universal Time (UTC) or GMT.

Examples

- To display a RAID controller using a wild-card <object-id>:

```
RAID[0]$ SHOW CONTROLLER *
OID: 0X38000000 INDEX: 0X0000 NAME: A LOCAL PRIMARY
OID: 0X38000001 INDEX: 0X0001 NAME: B REMOTE SECONDARY
```

- To display a RAID controller using a specified <object-id>:

```
RAID[0]$ SHOW CONTROLLER 0X38000000
OID: 0X38000000 INDEX: 0X0000 NAME: 0 LOCAL PRIMARY
```

- To display a LOCAL RAID controller using ALL parameter:

```
RAID[0]$ SHOW CONTROLLER LOCAL ALL

INDEX:                   0
OID:                     0X38000000
FIRMWARE VERSION:

RELEASE:                 1.2.0.0
SOURCE VERSION:          2858
FULLY CHECKED IN:        YES
PRIVATE BUILD:           YES
BUILD TYPE:              PRODUCTION
BUILD DATE AND TIME:     2009-08-21-16:23:EDT
BUILDER USERNAME:        COMPILER
BUILDER HOSTNAME:        EREO-DEBIAN
BUILD FOR CPU TYPE:      AMD-64-BIT

HARDWARE VERSION:        0X0
STATE:                   RUNNING
LOCAL AP OID:            0X00000000
MEMORY SIZE:             0X0
MAX Q OF S ID:           0X0
UP TIME:                 19 HOURS 50 MINUTES 11 SECONDS
LAST EVENT SEQUENCE #:   0X37A1
CRASH DUMP ENABLED:      TRUE
LOG DISK ENABLED:        TRUE
RP COUNT:                0X1
RESTART PENDING:         FALSE
NAME:                    A
CONTROLLER:              LOCAL (PRIMARY)
CONTROLLER ID:           0X0015B2A121AE0000
UNIVERSAL LAN ADDRESS:   0X00000001FF0721AE
MIR REASON:              NONE


TOTAL CONTROLLERS: 1
```

- To display the event log on the RAID CONTROLLER 0 starting at the START_SEQUENCE number in ascending sequence number order.

```
RAID[0]$ SHOW CONTROLLER LOCAL LOG ASCEND
000001 2009-02-05 12:13:31:3387789  G=0 S=0 T=1 RP=0 VP=63
LOG_JOI_BUILD_INFO1    JOI FW VERSION ON PROCESSOR 0X40 = (1.0.3.1-0).
000002 2009-02-05 12:13:31:3387798  G=0 S=0 T=1 RP=0 VP=63
LOG_JOI_BUILD_INFO2    JOI FW WAS BUILT ON JJDEBIAN       AT
2009-02-05-14:17:MST (PRODUCT).
000003 2009-02-05 12:13:52:8320854  G=3 S=1 T=1 RP=0 VP=1
LOG_LOGDISK_ENABLE_RECEIVED_FROM_STATE    LOG RECEIVED FROM STATE
```

- To display the event log on RAID CONTROLLER 1 starting at the START_SEQUENCE number in descending sequence number order .

```
RAID[0]$ SHOW CONTROLLER REMOTE LOG DESCEND
000024 2009-02-11 05:08:48:7027390  G=0 S=0 T=1 RP=0 VP=1                     LOG_JOI_TIME_SET    JOI TIME
 WAS SET BY AN ADMINISTRATOR AT 2009-2-11 5:8:48; NEARBY LOG ENTRIES MAY APPEAR OUT OF TIME ORDER. OFFSET
= 0X1C987C765CD3B2B.
000023 2009-02-06 04:49:20:5069068  G=3 S=1 T=1 RP=0 VP=1  LOG_LOGDISK_ENABLE_RECEIVED_FROM_STATE    LOG
RECEIVED FROM STATE
000022 2009-02-06 04:49:20:4952631  G=0 S=0 T=1 RP=0 VP=1                     LOG_JOI_TIME_SET    JOI TIME
 WAS SET BY AN ADMINISTRATOR AT 2009-2-6 4:49:20; NEARBY LOG ENTRIES MAY APPEAR OUT OF TIME ORDER. OFFSET
= 0X1C987C7A302483D.
```

- To display the event log on the RAID CONTROLLER 1 starting at the specified START_SEQUENCE number in ascending sequence number order.

```
RAID[0]$ SHOW CONTROLLER REMOTE LOG ASCEND START_SEQUENCE 20
000021 2009-02-06 04:49:20:4731906  G=4 S=2 T=1 RP=0 VP=1                     LOG_ST_MIR_STATE   STATE MIR
     STATE     STATE:000A
000022 2009-02-06 04:49:20:4952631  G=0 S=0 T=1 RP=0 VP=1                     LOG_JOI_TIME_SET    JOI TIME
 WAS SET BY AN ADMINISTRATOR AT 2009-2-6 4:49:20; NEARBY LOG ENTRIES MAY APPEAR OUT OF TIME ORDER. OFFSET
= 0X1C987C7A302483D.
000023 2009-02-06 04:49:20:5069068  G=3 S=1 T=1 RP=0 VP=1  LOG_LOGDISK_ENABLE_RECEIVED_FROM_STATE    LOG
RECEIVED FROM STATE
000024 2009-02-11 05:08:48:7027390  G=0 S=0 T=1 RP=0 VP=1                     LOG_JOI_TIME_SET    JOI TIME
 WAS SET BY AN ADMINISTRATOR AT 2009-2-11 5:8:48; NEARBY LOG ENTRIES MAY APPEAR OUT OF TIME ORDER. OFFSET
= 0X1C987C765CD3B2B.
```

RAID JOB

The RAID JOB object corresponds to the Background Job object. All JOB object commands have a RAID subject and include a JOB=<object-id> object specification. There are two types of jobs: INITIALIZE and REBUILD.

COMMANDS
Description
RAID PAUSE JOB=<object-id> Pauses the specified RAID JOB.
RESUME JOB=<object-id> Resumes the specified RAID JOB that was previously paused.
SET JOB=<object-id> <attribute-name>=<value> [<attribute-name>=<value>…] Sets a RAID JOB with a specified object ID and assigns it a priority.
RAID SHOW JOB=<object-id> [ALL_ATTRIBUTES] Displays the specified JOB with its associated attributes. Use wildcard (*) to show all jobs in progress. Currently, there are two types of jobs: INITIALIZE and REBUILD.

ATTRIBUTES
Description
PRIORITY=<priority> Specifies the fraction of the system resources that should be devoted to the background job. The higher its value, the faster the background job will run and the more the background job will impact client IO performance. While Priority is a number between 1 and 99, Priority should not be thought of as a percentage or a mathematical fraction of the available resources. For example, two Background Jobs with Priority=50 will not use 100% of the RP Subsystem's resources. And, the RP Subsystem may or may not limit the number of Background Jobs to keep the total of their Priorities below 100. On creation, the value of this attribute is determined by defaults associated with the Pool in which the Target object resides. The priority is an integer in the range between 1 and 99.

Usage Guidelines
A wild-card object-id (*) may be used in the SHOW command.

Examples
- To pause a specified RAID JOB.

```
RAID[0]$ PAUSE JOB 0X28010001
JOB 1 OID=0X28010001 PAUSED WITH STATUS=' SUCCESS' (0X0)

RAID[0]$ SHOW JOB * ALL
  OID:              0X28010001
  TARGET:           0X18370001
  TYPE:             INITIALIZE
  STATUS:           PAUSED
  PRIORITY:         50
  FRACTION COMPLETE:11%
```

- To resume a specified RAID JOB previously paused.

```
RAID[0]$ RESUME JOB 0X28010001
JOB 1 OID=0X28010001 RESUMED WITH STATUS=' SUCCESS' (0X0)

RAID[0]$ SHOW JOB * ALL
  OID:              0X28010001
  TARGET:           0X18370001
  TYPE:             INITIALIZE
  STATUS:           RUNNING
  PRIORITY:         50
  FRACTION COMPLETE:11%
```

- To display RAID JOBs with wild-card <object id> with ALL parameter.

```
RAID[0]$ SHOW JOB * ALL
  OID:              0X28010001
  TARGET:           0X18370001
  TYPE:             INITIALIZE
  STATUS:           RUNNING
  PRIORITY:         50
  FRACTION COMPLETE:11%
```

RAID PHYSICAL_DISK (PD)

All PHYSICAL_DISK object commands have a RAID subject and include a PHYSICAL_DISK=<object-id> object specification.

COMMANDS
Description
RAID ASSIGN PHYSICAL_DISK=<object-id> TO_POOL=<pool_id | spare_pool_id> [SET_SPARE]
Assign the Physical Disk to the specified Pool. If SET_SPARE, Physical_Disk is also the spare. Note that the assign command is used to assign a drive to a spare pool or user to manually spare a drive into a pool that has a spare drive.
RAID CLEAR PHYSICAL_DISK=<object-id> FAILED Forces the specified disk's health to GOOD.
RAID LOCATE PHYSICAL_DISK [FAILED]
Illuminates the LED on drives and that have failed if specified.
RAID SET PHYSICAL_DISK [FAILED]
Forces the specified disk's health to FAILED. If specified disk was a SPARE, then it will no longer be a spare. This command is only used when you are manually sparing a drive into a reduced pool. If issued on a disk that is a member of a pool, the drive will be failed out of that pool.
REPLACE PHYSICAL_DISK=<object-id> NEW_DISK=<object-id>
Designates a replacement Physical Disk as part of the manual disk sparing policy.   Replace does not change the HealthState of the Physical Disk
RAID SHOW PHYSICAL_DISK=<object-id> [ALL_ATTRIBUTES] Displays all attributes of the specified PHYSICAL_DISK.

ATTRIBUTES

None

Usage Guidelines

A wild-card object-id (*) may be used in the SHOW command.

The alias PD can be used in place of PHYSICAL_DISK.

Examples

- To display the unassigned PHYSICAL DISK that have failed:

```
RAID[0]$ SHOW UNASS PD FAILED
OID: 0X20080009 INDEX: 0X0009
```

- To display all information about the unassigned PHYSICAL DISK that have failed:

```
RAID[0]$ SHOW UNASS PD FAILED ALL
 OID:             0X20080009
 POOL OID:        UNASSIGNED
 CAPACITY:        417792 MBS (0X33000000 BLOCKS)
 RAW CAPACITY:    429247 MBS (0X3465F870 BLOCKS)
 BLOCK SIZE:      512
 ENABLED DISK CH: 0X14   0X11
 DISK SLOT:       1:56
 VENDOR ID:       SEAGATE
 PRODUCT ID:      ST3450856SS
 PRODUCT REVISION: 0004
 SERIAL NUMBER:   3QQ0FDZ700009915W3K9
 HEALTH STATE:    FAILED
 ROTATION SPEED:  15000 RPM
 DEVICE TYPE:     SAS
 MEMBER STATE:    UNASSIGNED
 SPARE:           FALSE
```

```
  FAILED:          TRUE
  UUID:            0X5000C50004D2A8C40
```

- Continuing from the above example, to clear and then display all information about the unassigned PHYSICAL DISK:

```
RAID[0]$ CLEAR PD 0X20080009 FAILED
PHYSICAL_DISK 9 OID=0X20080009 CLEAR ATTRIBUTES STATUS='SUCCESS' (0X0)
RAID[0]$ SHOW PD 0X20080009 ALL
  OID:             0X20080009
  POOL OID:        UNASSIGNED
  CAPACITY:        417792 MBS (0X33000000 BLOCKS)
  RAW CAPACITY:    429247 MBS (0X3465F870 BLOCKS)
  BLOCK SIZE:      512

   Enabled Disk Ch:   0x14   0x11

   Disk Slot:         1:56
  VENDOR ID:        SEAGATE
  PRODUCT ID:       ST3450856SS
  PRODUCT REVISION: 0004
  SERIAL NUMBER:    3QQ0FDZ700009915W3K9
  HEALTH STATE:     GOOD
  ROTATION SPEED:   15000 RPM
  DEVICE TYPE:      SAS
  MEMBER STATE:     UNASSIGNED
  SPARE:            FALSE
  FAILED:           FALSE
  UUID:             0X5000C50004D2A8C40
```

Note: In the above example that the Failed field indicates false.

- To locate a specified PHYSICAL DISK.

```
RAID[0]$ LOCATE PD=0X002C
PHYSICAL_DISK 44 OID=0X202C002C LOCATED WITH STATUS=' SUCCESS' (0X0)
```

- To display the PHYSICAL DISK using a wild-card <object id>.

```
RAID[1]$ SHOW PD *
|Member|
Encl|Slot| Vendor |     Product ID      |Type|Cap GB |RPM|Revision|
Serial Number   |Pool|Status| Idx|Status|       WWN       |
---------------------------------------------------------------------------------------------------------
   1   1  SEAGATE         ST3400755SS  SAS     372  7K      0003
3RJ0GA9W00009840YUB6   0  GOOD   292  NORM   5000C50003569208
   1   2  SEAGATE         ST3400755SS  SAS     372  7K      0003
3RJ0GGT500009840XU60   0  GOOD   298  NORM   5000C5000356B1B8
   1   3  SEAGATE         ST3400755SS  SAS     372  7K      0003
3RJ0G6NE00009840VK9J   0  GOOD   296  NORM   5000C5000356C14C
```

RAID POOL

A Storage Pool contains Physical Disks whose extents are parts of RAID sets that in turn are used to realize pools.

Important: SGI does not recommend or support the mixing of SAS and SATA drives within the same Storage Pool.

The RAID POOL object represents a Storage Pool. All RAID POOL object commands have a RAID subject and include a POOL=<object-id> object specification.

COMMANDS Description
RAID CLEAR POOL =<object-id> AUTO_WRITE_LOCK|CRITICAL [FORCE] Clears the specified condition of the pool (either auto_write_lock or critical) which allows the user to re-write that block of data, thus clearing a bad block. Optional parameter of FORCE clears the pool without asking questions.
RAID CREATE POOL [CHUNK_SIZE=<value>] **[ASSIGN_POLICY=([SAS|SATA],15000RPM|10000RPM|7200RPM|5400RPM|0RPM|SSD,[<capacity-raw>GB])]** **[NUMBER=<n>]** or **[PHYSICAL_DISK=<id1>, …, <idn>] [RAID_LEVEL=RAID5|RAID-SH|RAID6]** Create a POOL of a specified CHUNK_SIZE and defines it as either SAS or SATA and a specified physical location and its RAID level. The CHUNK_SIZE value is an integer number of KiB. Omission of a member of the ASSIGN_POLICY n-tuple indicates no constraint in that dimension. Default block size is 512 bytes; default chunk size is 128K. Default Assign_Policy is None.
RAID DELETE POOL=<object-id> [FORCE] Deletes the specified RAID POOL. POOL must be emptied before it is deleted. Note: To empty the pool is to remove all VDS that reside in the pool (not empty physical disks).
RAID LOCATE POOL=<object-id> Illuminates the LED on drives in the pool specified.
RAID SET POOL=<object-id> <attribute-name>=<value> [<attribute-name>=<value>…] Assigns the listed attributes to the specified pool.
RAID SHOW POOL=<object-id> [VIRTUAL_DISKS] [PHYSICAL_DISKS] [ALL_ATTRIBUTES] Displays the specified RAID POOL with its associated VIRTUAL_DISKS, PHYSICAL_DISKS, and attributes.

ATTRIBUTES Description
ASSIGN_POLICY= ([SAS|SATA],15000RPM|10000RPM|7200RPM|5400RPM|0RPM|SSD,[<capacity-raw>GB]) Defines whether or not drives with the same interface (SAS or SATA), spindle speed, or capacity type are placed within the same pool. If there are not enough drives of the the defined type, then the CREATE POOL command will fail with a not-enough-drives message. Once an assignment policy is used to create a pool, that policy also governs how spares are chosen for that pool. Only drives of the specified type will be used for sparing on that pool. If there are no drives of the specified type available in the spare pool, none will be used. Notes: - To change the policy after the fact, use the SET POOL command to change the desired attributes. - The omission of a member of the ASSIGN_POLICY n-tuple indicates no constraint in that dimension.

DISK_TIMEOUT=<timeout>
Specifies the timeout to wait between when a powered Physical Disk becomes inaccessible and when a RebuildFull begins. Default value is 10 minutes. The range of values is zero (0) to 240 minutes. If DISK_TIMEOUT is 0 and the disk disappears to the system, the drive will be failed immediately.
SPARE_POOL=<object-id>
Specifies the Global Spare Pool . Default value is null.
MIRRORED_WRITE_BACK_CACHE[=TRUE|FALSE]
Enables/disables the mirror write back cache coherency per pool.
FULL_STRIPED_WRITE_CACHING[=TRUE|FALSE]
Enables/disables full_striped_write_caching per pool.
READ_AHEAD_CACHING[=TRUE|FALSE]
Enables/disables read_ahead_caching per pool.
NAME="string"
Specified by the user to identify (set the name of) the Spare Pool. If there are spaces in the name, the name must be enclosed with quotes ("). To clear a previously entered name, enter an empty string as follows: NAME="".
RAID_LEVELS_SUPPORTED=RAID-5|RAID-SH|RAID-6
REBUILD_FULL_POLICY=<priority>
Specifies the policy to be used when a Physical Disk that is associated with the Storage Pool is fully rebuilt. It specifies the Priority for the Background Job that will perform the RebuildFull. Default value specifies a Priority of 80%. Priority is an integer with a range of 1 to 99.
REBUILD_PARTIAL_POLICY=<priority>
Specifies the policy to be used when a Physical Disk that is associated with the Storage Pool is partially rebuilt.. It specifies the Priority for the Background Job that will perform the RebuildPartial. Default value specifies a Priority of 90%. Priority is an integer with a range of 1 to 99.
SPARING_POLICY=AUTOMATIC|MANUAL|DISTRIBUTED
Specifies the policy used to repair failed disks within the Storage Pool. Default is AUTOMATIC
WRITE_BACK_CACHING[=TRUE|FALSE]
Enables/disables write_back_caching per pool.
PARITY_CHECK_ON_READ[=TRUE|FALSE]
Enables/disables parity_check_on_read per pool.

Usage Guidelines

Storage Pools must be explicitly created by the user.

Storage Pools should always be created with drives that are of the same interface type.

A wild-card object-id may be used in the SHOW command.

The shortcut VD can be used in place of VIRTUAL_DISK.

CRITICAL STATE: If SATAssure is enabled for RAID5 array and one of the drives returns bad data, the VD would be marked as "CRITICAL" since in RAID5, system is not able to correct data. The CRITICAL STATE would indicate a bad block of data. Use the RAID CLEAR POOL CRITICAL command to clear the condition (and the bad block) and allow the user to re-write the data.

Examples

- To create a POOL with a specified RAID level of RAID6, chunk size of 256 kb and 10 drives.

```
RAID[0]$ CREATE POOL RAID_LEVEL=RAID6 CHUNK=256KB_BLOCKS NUMBER=10
POOL 0 OID=0X18330000 CREATE STATUS=' SUCCESS' (0X0)
      (CAN SHORTEN)
RAID[0]$ CREATE POOL RAID_LEVEL=RAID6 CHUNK=256K NUMBER=10
```

- To create a POOL with a specified RAID level of RAID6, chunk size of 256 kb, 10 drives in the storage pool, and an assignment policy that would only use SAS, 15000RPM, and 136GB disks.

```
RAID[0]$ CREATE POOL RAID_LEVEL=RAID6 CHUNK=256K NUMBER=10 ASSIGN_POLICY=SAS,15000RPM,136GB
POOL 0 OID=0X195A0000 CREATE STATUS=' SUCCESS' (0X0)
```

- To delete a specified POOL (0).

```
RAID[0]$ DELETE POOL=0
ARE YOU SURE YOU WANT TO DELETE POOL 0X0 [YES]?
POOL 0 OID=0X18330000 DELETION STATUS=' SUCCESS' (0X0)

RAID[0]$ SHOW POOL *
NO POOLS SUBSIST
```

- Note: you cannot use wild-card <object-id> to delete any or all POOLs.

```
RAID[0]$ DELETE POOL *
WILDCARD NOT ALLOWED, PLEASE BE SPECIFIC:
VALUE DESCRIPTION FOR 'POOL':
   POOL <OBJECT-ID>
                  PROVIDE AN OBJECT IDENTIFIER
```

- To locate a specified RAID POOL:

```
RAID[0]$ LOCATE POOL 1
POOL 1 OID=0X18370001 LOCATED WITH STATUS=' SUCCESS' (0X0)
```

- To set a RAID SET POOL with a specified object ID and assigns it the specified name.

```
RAID[0]$ SET POOL=1 NAME=POOL-1
POOL 1 OID=0X18370001 ATTRIBUTES SET WITH STATUS=' SUCCESS' (0X0)
RAID[0]$ SHOW POOL *
|                 |Disk|  Global  |Spare |
Idx|Name          |State     |Chunk|Raid| Faults |cap GB|cap GB|VD GB
| Settings  | Jobs |T/O |spare pool|Policy|
-------------------------------------------------------------------------------------------------------------
  1 POOL-1         NORMAL     128   5           3240      0
0   W M R F I        10  UNASSIGNED  AUTO
```

- To display the specified RAID POOL with its associated attributes.

```
RAID[0]$ SHOW POOL * ALL
  OID:                  0X18370001
  TYPE:                 STORAGE
  NAME:                 POOL-1
  CHUNK SIZE:           256KB (0X200 BLOCKS)
  BLOCK SIZE:           0X200
  RAID TYPE:            RAID6
  FREE RAID6 CAPACITY:  0 MBS
  TOTAL CAPACITY:       9420800 MBS
  UUID:                 0X00
  GLOBAL SPARE POOL:    UNASSIGNED
  DISKTIMEOUT(FRT):     10 MINUTES
  INIT POLICY:          NO IO PERMITTED
  INIT PRIORITY:        50%
  FULL REBUILD PRIORITY:       80%
  FRACTIONAL REBUILD PRIORITY:  90%
  SPARING POLICY:       AUTOMATIC
  ASSIGN POLICY:
    DEVICE TYPE:        NA
    ROTATION SPEED:     NA
    RAW CAPACITY:       NA
  SATASSURE:            FALSE
  IO ROUTING:           TRUE
  WBC:                  TRUE
  MWBC:                 FALSE
  INITIALIZING:         FALSE
  REBUILDING:           FALSE
  PAUSED:               FALSE
  AUTOWRITELOCK:        FALSE
  CRITICAL:             FALSE
  CURRENT HOME:         0X0015B2A122A20000  0X00000000
  FUTURE HOME:          0XFFFFFFFFFFFFFFFF  0X00000000
  PREFERRED HOME:       0XFFFFFFFFFFFFFFFF  0X00000000
  BKGDJOB OID:          INACTIVE
  TOTAL PHY DISKS       10
  STATE:                NORMAL
  MEMBER SIZE:          942080 MB
    PID      STATE    UUID
    0X0029   NORM     0X5000CCA216E16C17
    0X002A   NORM     0X5000CCA216F3146F
    0X002B   NORM     0X5000CCA216EF4B6D
    0X002C   NORM     0X5000CCA216F27743
    0X002D   NORM     0X5000CCA216E15A80
    0X002E   NORM     0X5000CCA216F27771
    0X002F   NORM     0X5000CCA216F336E9
    0X0030   NORM     0X5000CCA216E169D4
    0X0031   NORM     0X5000CCA216E159FD
    0X0032   NORM     0X5000CCA216E1A8DF
```

- To display a list of the specified RAID POOL with its associated PHYSICAL_DISKS.

```
RAID[0]$ SHOW POOL 1 PHYSICAL_DISKS
OID: 0X20290029 INDEX: 0X0029
OID: 0X202A002A INDEX: 0X002A
OID: 0X202B002B INDEX: 0X002B
OID: 0X202C002C INDEX: 0X002C
OID: 0X202D002D INDEX: 0X002D
OID: 0X202E002E INDEX: 0X002E
OID: 0X202F002F INDEX: 0X002F
OID: 0X20300030 INDEX: 0X0030
OID: 0X20310031 INDEX: 0X0031
OID: 0X20320032 INDEX: 0X0032
```

- To display a list of the specified RAID POOL with its associated VIRTUAL_DISKS.

```
RAID[0]$ SHOW POOL 1 VIRTUAL_DISKS
OID: 0X88390002 INDEX: 0X0002 NAME: 88390002
```

RAID PROCESSOR

All RAID PROCESSOR object commands have a RAID subject and include a PROCESSOR =<object-id> object specification.

COMMANDS
Description
RAID SHOW PROCESSOR =<object-id> [ALL_ATTRIBUTES] Displays all attributes for the specified RAID PROCESSOR.
RAID SHOW PROCESSOR =<object-id> [CHANNELS] Displays the channels for the specified RAID PROCESSOR.

ATTRIBUTES

None.

Usage Guidelines

A wild-card <object-id> (*) may be used in the SHOW command.

Examples

- To display the attributes of a specified RAID PROCESSOR 0:

```
RAID[0]$ SHOW PROCESSOR 0
OID: 0X40000000 INDEX: 0X0000 NAME: 00000000
```

- To display all attributes of the specified RAID PROCESSOR 0:

```
RAID[0]$ SHOW PROCESSOR 0 ALL
OID:                   0X40000000
NAME:                  0
PARENT RP CONTROLLER:  0X38000000
```

RAID SPARE_POOL

A Global Spare Pool contains Physical Disks that can be used as spare disks in one or more Storage Pools.

All RAID SPARE_POOL object commands have a RAID subject and include a SPARE_POOL=<object-id> object specification.

COMMANDS
Description
RAID CREATE SPARE POOL Creates a SPARE_POOL.
RAID DELETE SPARE_POOL=<object-id> [FORCE] Deletes the specified RAID SPARE_POOL.
RAID LOCATE SPARE_POOL=<object-id> Illuminates the LED on the disk in the slot.
RAID SET SPARE_POOL=<object-id> <attribute-name>=<value> [<attribute-name>=<value>…] Assigns the listed attributes to the specified pool.
RAID SHOW SPARE_POOL=<object-id> [ALL_ATTRIBUTES] Displays the attributes of a specified RAID SPARE_POOL.
RAID SHOW SPARE_POOL=<object-id> [PHYSICAL_DISKS] Displays the physical disks associated with the specified RAID SPARE_POOL.

ATTRIBUTES
Description
DISK_TIMEOUT=<timeout> Specifies the timeout to wait between when a powered Physical Disk becomes inaccessible and when a RebuildFull begins. Default value is 10 minutes. The range of values is zero (0) to 240 minutes. If DISK_TIMEOUT is 0 and the disk disappears to the system, the drive will be failed immediately.
SPARE_POOL=<object-id> Specifies the Global Spare Pool . Default value is null.
NAME="string" Specified by the user to identify the Spare Pool. If there are spaces in the name, the name must be enclosed with quotes (").

Usage Guidelines

Global Spare Pools must be explicitly created with management directives. On creation, the value of the DISK_TIMEOUT is set to 10 minutes.

Each Storage Pool has an attribute that designates its Global Spare Pool that must be designated by the user.

Mixing SAS and SATA drives within the same Spare Pool is not recommended. For maximum performance, spare pools should be created using drives with the same characteristics (such as SAS/SATA, capacity, and RPM) that are within the Storage Pool(s) that they will be designated to spare.

A wild-card object-id may be used in the SHOW command.

Examples

- To create a Spare Pool:

```
RAID[0]$ CREATE SPARE
SPARE POOL 8 OID=0X1E910008 CREATE STATUS='SUCCESS' (0X0)
RAID[0]$ SHOW SPARE 8 ALL
 OID:               0X1E910008
 TYPE:              GLOBAL SPARE
 NAME:              1E910008
 BLOCK SIZE:        0X200
 DISKTIMEOUT(FRT):  10 MINUTES
 TOTAL CAPACITY:    0 MBS
 UUID:              0X00
 TOTAL PHY DISKS    0
```

- To set RAID SET SPARE_POOL (8); note the DiskTimeout Value compared with the create spare output:

```
RAID[0]$ SET SPARE 8 DISK=20
SPARE POOL 8 OID=0X1E910008 ATTRIBUTES SET WITH STATUS='SUCCESS' (0X0)
RAID[0]$ SHOW SPARE 8 ALL
  OID:              0X1E910008
  TYPE:             GLOBAL SPARE
  NAME:             1E910008
  BLOCK SIZE:       0X200
  DISKTIMEOUT(FRT): 20 MINUTES
  TOTAL CAPACITY:   0 MBS
  UUID:             0X00
  TOTAL PHY DISKS   0
```

- To assign PD to the spare and then display them:

```
RAID[0]$ ASSIGN PD 0X268F005E TO_POOL 8
PHYSICAL_DISK 94 OID=0X268F005E ASSIGNED  TO POOL 8 OID=0X1E910008
STATUS='SUCCESS' (0X0)
      [COMMENT: NOW ISSUE THE SHOW SPARE_POOL=8 PD]
RAID[0]$ SHOW SPARE 8 PD
OID: 0X268F005E INDEX: 0X005E
RAID[0]$ SHOW SPARE 8 PD ALL
  OID:              0X268F005E
  POOL OID:         0X1E910008
  CAPACITY:         417792 MBS (0X33000000 BLOCKS)
  RAW CAPACITY:     429247 MBS (0X3465F870 BLOCKS)
  BLOCK SIZE:       512
  ENABLED DISK CH:  0X11   0X14
  DISK SLOT:        1:59
  VENDOR ID:        SEAGATE
  PRODUCT ID:       ST3450856SS
  PRODUCT REVISION: 0004
  SERIAL NUMBER:    3QQ069M0000099171WCU
  HEALTH STATE:     GOOD
  ROTATION SPEED:   15000 RPM
  DEVICE TYPE:      SAS
  MEMBER STATE:     NORMAL
  SPARE:            TRUE
  FAILED:           FALSE
  UUID:             0X5000C50004D4D0880
```

RAID SUBSYSTEM

All RAID commands begin with the subject, RAID. All RAID SUBSYSTEM object commands have a RAID subject and include a SUBSYSTEM object specification with no object-id.

COMMANDS Description
RAID CLEAR SUBSYSTEM MIR_STATE [UID=<value>] Resolves the MIR (Manual Intervention Required) state of the subsystem. The MIR state represents a condition with the Controller that requires the user to provide a solution before proceeding with normal controller operations. This is to guard against the controller firmware from executing operations that may not necessarily be the desired operation of the user. These conditions will most likely be seen in a new system installation environment. For example, when a system is booted and the backend physical disks have never been installed behind the Controllers, the controller firmware has never had a chance to write out configuration metadata. The Controller recognizes that there is no valid metadata and requires the user to acknowledge proceeding or not. The MIR conditions are: MIR_JIS_DISCOVERY_IN_PROG, MIR_OTHER_JIS_DISCOVERY_IN_PROG, MIR_NO_BACKEND_DRIVES, MIR_NO_CONFIG, MIR_NO_QUORUM, MIR_NOT_LAST_CONTROLLER, MIR_MULTIPLE_JIS, MIR_DUAL_NO_AGREE, MIR_CONFIG_MISMATCH, MIR_NO_LOAD_CONFIG. Refer to the SGI InfiniteStorage 6120 RAID User's Guide (007-5533-00x) for more information.
RAID CLEAR SUBSYSTEM CONFIGURATION Clears the current configuration of the subsystem.
RAID SET SUBSYSTEM <attribute-name>=<value> [<attribute-name>=<value>…] Assigns the listed attributes to the specified subsystem.
RAID SET SUBSYSTEM DATE_AND_TIME=(<year>:<month>:<day>:<hour>:<minute>:<second>) Sets the current date and time of the controllers.
RAID SHOW SUBSYSTEM [ALL_ATTRIBUTES] Displays all attributes of the subsystem.
RAID SHUTDOWN SUBSYSTEM Shuts down the subsystem.
RAID SHUTDOWN SUBSYSTEM [RESTART] Performs a shutdown followed by a restart of the system**.**

ATTRIBUTES Description
DATE_AND_TIME= (<year>:<month>:<day>:<hours> :< minutes>) Sets the current date and time of the controllers. Time will be in Greenwich Mean Time (GMT) time zone. Changing time zones is not supported currently.
DUAL Sets the dual attribute.

LICENSE_KEY="string"
Sets and activates feature license(s) on the controller units, using a license key that is generated on the SGI licensing site.

Notes: This command must be run on the primary controller to complete the license activation process and enable usage of optional software features like RAID 6 and SATAssure.

License key generation requires that you have your feature license number, JBOD enclosure serial number and controller id information.

Key generation is finalized on the following link:
`http://www.sgi.com/support/licensing/special.html`

LOCATE_DWELL_TIME=<integer>
This is the time in seconds that locate beacons within the RAID Subsystem remain on until they are automatically turned off. Default value is 120 seconds. Valid values are between 0 and 65535 seconds.

NAME="string"
Specified by the user to identify the subsystem. If there are spaces in the name, the name must be enclosed with quotes (").

`Examples`

- To resolve the MIR (Manual Intervention Required) state:

```
RAID[0]$ CLEAR SUBSYSTEM MIR
RAID SUBSYSTEM MIR_STATE CLEARED STATUS=' SUCCESS' (0X0)
```

- To change the locate dwell time from 130 to 30 seconds.

```
RAID[0]$ SET SUBSYSTEM LOCATE_DWELL_TIME=30
SUBSYSTEM ATTRIBUTES SET STATUS=' SUCCESS' (0X0)
```

- To set the current date and time of the controllers.

```
RAID[0]$ SET SUBSYSTEM DATE_AND_TIME=2009:02:11:11:38:00
SUBSYSTEM ATTRIBUTES SET STATUS=' SUCCESS' (0X0)
```

- To display all attributes of the subsystem.

```
RAID[1]$ SHOW SUBSYSTEM ALL_ATTRIBUTES
RP SUBSYSTEM NAME:
UID:                 60001FF07221A0000000000000030000000
SUBSYSTEM TIME:      MON AUG 17 1:42:43 2009
LOCATE DWELL TIME:   121 SECONDS
ENABLED LICENSES:    RAID6 SATASSURE
MIRROR SYNCH:        NA
```

- Shuts down the subsystem (RAID firmware) but not the underlying Linux file system:

```
RAID[0]$ SHUTDOWN SUBSYSTEM
RAID SUBSYSTEM SHUTTING DOWN WITH STATUS=' SUCCESS' (0X0)
```

RAID UNASSIGNED_POOL

NOTE: There is only one Unassigned Disk Pool and it cannot be created or deleted.

The Unassigned Disk Pool contains both newly discovered Physical Disks and those that have:

- NOT been assigned to another Pool and

- FAILED and/or have been automatically replaced per sparing policy.

All RAID UNASSIGNED_POOL object commands have a RAID subject and include an UNASSIGNED_POOL object specification with no object-id.

COMMANDS
Description
RAID SHOW UNASSIGNED_POOL [FAILED] Displays any UNASSIGNED_PHYSICAL_DISKS and those that have failed
RAID LOCATE UNASSIGNED_POOL [FAILED] Illuminates the LED on drives that are unassigned and that have failed if specified.
RAID SHOW UNASSIGNED_POOL [ALL_ATTRIBUTES] Displays all attributes of the UNASSIGNED_POOL.
RAID SHOW UNASSIGNED_POOL [PHYSICAL_DISKS] Displays a list of the currently unassigned physical disks.

ATTRIBUTES

None

Usage Guidelines

A wild-card object-id (*) may be used in the SHOW command.

Example

- To display all unassigned physical disks:

```
RAID[0]$ SHOW UNASSIGNED -ALL
  OID:             0X1800FFFF
  TYPE:            UNASSIGNED
  CAPACITY:        51257344 MBS
  FAILED CAPACITY: 0 MBS
  TOTAL PHY DISKS  87
```

RAID VIRTUAL_DISK (VD)

The RAID VIRTUAL_DISK object represents a partition of a pool, where VD is an alias for VIRTUAL_DISK. All VIRTUAL_DISK object commands have a RAID subject and include a VIRTUAL_DISK=<object-id> object specification.

COMMANDS
Description
RAID CREATE VIRTUAL_DISK CAPACITY=<INTEGER> POOL=<object-id> Creates a RAID VIRTUAL_DISK with the specified capacity. CAPACITY is an integer number in multiples of 8 GB. Therefore, a CAPACITY=28 results in a VD that is 32 GB in size.
RAID CREATE VIRTUAL_DISK CAPACITY=MAXIMUM POOL =<object-id> Creates a RAID VIRTUAL_DISK with all available storage within the POOL with a specified object ID and at a specified RAID level.
RAID DELETE VIRTUAL_DISK =<object-id> [FORCE] Deletes the specified VIRTUAL_DISK.
RAID SHOW VIRTUAL_DISK =<object-id> [ALL_ATTRIBUTES] Displays all attributes of the specified RAID VIRTUAL_DISK.
RAID SET VIRTUAL_DISK=<object-id> <attribute-name>=<value> [<attribute-name>=<value>…] Assigns the listed attributes to the specified VIRTUAL_DISK.

ATTRIBUTES
Description
NAME="string" Specified by the user to identify the VD. If there are spaces in the name, the name must be enclosed with quotes (").

Usage Guidelines

A wild-card object-id may be used in the SHOW command.

The alias VD can be used in place of VIRTUAL_DISK.

Examples

- To create a RAID VIRTUAL_DISK with all available storage within the POOL with a specified object ID:

```
RAID[0]$ CREATE VIRTUAL_DISK POOL=0 CAPACITY=MAX
VIRTUAL_DISK 0 OID=0X88350000 CREATION STATUS=' SUCCESS' (0X0)
```

- To delete a specified RAID VIRTUAL_DISK:

```
RAID[0]$ DELETE VD=0
ARE YOU SURE YOU WANT TO DELETE VIRTUAL_DISK 0X0 [YES]?
VIRTUAL_DISK 0 OID=0X88350000 DELETION STATUS=' SUCCESS' (0X0)
RAID[0]$ SHOW VD *
NO VIRTUAL_DISKS SUBSIST
```

- To display a list of the specified RAID VIRTUAL_DISK (2) using the ALL parameter:

```
RAID[0]$ SHOW VD=2 ALL
  OID:               0X88390002
  NAME:              88390002
  POOL OID:          0X18370001
  CAPACITY:          7503872 MBS
  OFFSET:            0X0
  STATE:             READY
  RAIDLEVEL:         RAID6
  IO ROUTING:        TRUE
  WBC:               TRUE
  MWBC:              FALSE
  INITIALIZING:      FALSE
  PAUSED:            FALSE
  AUTOWRITELOCK:     FALSE
  CRITICAL:          FALSE
  PRESENT HOME ONLY:FALSE
  CURRENT HOME:      0X0015B2A122A20000   0X00000000
  FUTURE HOME:       0XFFFFFFFFFFFFFFFF   0X00000000
  PREFERRED HOME:    0XFFFFFFFFFFFFFFFF   0X00000000
  BKGDJOB OID:       INACTIVE
  UUID:              6000000000000000000000000288390002
```

- To set a RAID CHANNEL with a specified object ID (2) and assign it the specified name (vd2):

```
RAID[0]$ SET VD=2 NAME=VD2
VIRTUAL_DISK 2 OID=0X88390002 SET ATTRIBUTES STATUS=' SUCCESS' (0X0)
RAID$ SHOW VD=2 ALL
  OID:               0X88390002
  NAME:              VD2
  POOL OID:          0X18370001
  CAPACITY:          7503872 MBS
  OFFSET:            0X0
  STATE:             READY
  RAIDLEVEL:         RAID6
  IO ROUTING:        TRUE
  WBC:               TRUE
  MWBC:              FALSE
  INITIALIZING:      FALSE
  PAUSED:            FALSE
  AUTOWRITELOCK:     FALSE
  CRITICAL:          FALSE
  PRESENT HOME ONLY:FALSE
  CURRENT HOME:      0X0015B2A122A20000   0X00000000
  FUTURE HOME:       0XFFFFFFFFFFFFFFFF   0X00000000
  PREFERRED HOME:    0XFFFFFFFFFFFFFFFF   0X00000000
  BKGDJOB OID:       INACTIVE
  UUID:              6000000000000000000000000288390002
```

UI CLI

All UI commands begin with the subject UI. All UI CLI object commands have a UI subject and include a CLI object specification with no <object-id>.

COMMANDS Description
UI SET CLI DEFAULT_SUBJECT=RAID Sets the default command subject to RAID for the session. This is the DEFAULT setting. The default command subject is pre-pended to each command and echoed in the command prompt.
UI SET CLI DEFAULT_SUBJECT=UI Sets the default command subject to UI for the session. The default command subject is pre-pended to each command and echoed in the command prompt.
UI SET CLI DEFAULT_SUBJECT=NONE Clears the CLI default command subject for the session.
UI SET CLI –PROVIDE_FEEDBACK=[TRUE] Default. When TRUE, each command provides feedback, even upon successful completion.
UI SET CLI –PROVIDE_FEEDBACK=[FALSE] When FALSE, commands return successful completion silently.
UI SHOW CLI= SHOW all instances of the CLUI Server. Indicate which CLUI Server is this instance.

ATTRIBUTES

None

Usage Guidelines

By default, the CLI default command subject is set to RAID, so that the user is saved from having to enter the keyword RAID on every RAID command. The CLI shall return an error if the user attempts to set the default command subject to an invalid subject.

The user may override the CLI default command subject on one command by specifying the full command. However, if the command does not have a valid subject then the error message may report an unrecognized verb keyword.

Examples

* To set the default command subject to RAID from UI for the session:

```
RAID[0]$ UI SET CLI DEFAULT_SUBJECT=RAID
CLI DEFAULT SUBJECT HAS BEEN SET TO RAID WITH STATUS=' SUCCESS' (0X0)
UI$ SET CLI DEFAULT_SUBJECT=RAID
```

* To set the default command subject to UI for the session:

```
RAID[0]$ UI SET CLI DEFAULT_SUBJECT=UI
CLI DEFAULT SUBJECT HAS BEEN SET TO UI WITH STATUS=' SUCCESS' (0X0)
UI$ SET CLI DEFAULT_SUBJECT=RAID
CLI DEFAULT SUBJECT HAS BEEN SET TO RAID WITH STATUS=' SUCCESS' (0X0)
```

* To clear the CLUI default command subject for the session:

```
RAID[0]$ UI SET CLI DEFAULT_SUBJECT=NONE
CLI DEFAULT SUBJECT HAS BEEN SET TO NONE WITH STATUS=' SUCCESS' (0X0)
```

- To receive feedback, even upon successful completion of command:

```
RAID[0]$ UI SET CLI PROVIDE_FEEDBACK=TRUE
CLI FEEDBACK MODE HAS BEEN SET TO ON WITH STATUS=' SUCCESS' (0X0)
```

- To silence feedback:

```
RAID[0]$ UI CLI SET PROVIDE_FEEDBACK=FALSE
RAID[0]$ UI CLI SET VERB_OBJECT
RAID[0]$ SHOW POOL *
OID: 0X18370001 INDEX: 0X0001 NAME: POOL-1
RAID[0]$ UI SET CLI PROVIDE_FEEDBACK=TRUE
CLI FEEDBACK MODE HAS BEEN SET TO ON WITH STATUS=' SUCCESS' (0X0)
RAID[0]$ UI SET CLI OBJECT_VERB
CLI COMMAND LINE STRUCTURE HAS BEEN SET TO OBJECT-VERB WITH STATUS=' SUCCESS' (0X0)
```

- To display the mode, the default subject, OID, and the CLI version of this instance of the CLUI Server.

```
RAID[0]$ UI SHOW CLI ALL
          CLI VERSION : 0.9
   CLI STRUCTURE MODE : VERB-OBJECT
   CLI DEFAULT SUBJECT : RAID
CLI MINIMUM MATCH MODE : OFF
 CLI FEEDBACK SENTENCE : ON
```

UI CONTROLLER NETWORK_INTERFACE

All UI commands begin with the subject, UI. All UI CLI object commands have a UI subject and include a CLI object specification with no <object-id>.

COMMANDS Description
UI SHOW NETWORK_INTERFACE=(<controller-id>,<network-id>) [ALL_ATTRIBUTES] Displays attributes, such as IP ADDRESS, for the specified Network Interfaces.
UI SET NETWORK_INTERFACE= (<controller-id>, <network-id>) <attribute-name>=<value> [<attribute-name>=<value>…] Sets the network-interface to a specified controller-id and a network id and assigns values to the listed attributes, for example, IP_ADDRESS.
UI TEST NETWORK_INTERFACE=(<controller-id>,<network-id>) PING=(<ip-address>) Pings the specified ip-address from the specified NETWORK_INTERFACE.

ATTRIBUTES Description
IP_ADDRESS=<ip-address> Refers to the IP Address of the system in the format aaa.bbb.ccc.ddd
IP_GATEWAY=<ip-address> Refers to the current gateway in the network routing table as applied to the internet address in the format aaa.bbb.ccc.ddd
IP_MASK=<ip-mask> The netmask address of the system in the format aaa.bbb.ccc.ddd

Usage Guidelines

Wild-card object-IDs may be used in the SHOW command.

The UI CONTROLLER may have one or more NETWORK_INTERFACEs.

The UI CONTROLLER NETWORK_INTERFACE commands support the configuration and testing of these NETWORK_INTERFACEs.

Examples

- To display a list of the Network Interfaces with their associated controller IDs and object ID values.

```
RAID[0]$ UI SHOW NETWORK_INTERFACE *
NETWORK DEVICE ID 0
    ADDRESS 10.32.31.218
    NETMASK 255.255.240.0
    GATEWAY 10.32.16.2
```

- To set the network-interface to a specified controller-id and a network id and assigns values to the listed attributes:

```
RAID[0]$ UI SET NETWORK_INTERFACE 0 0 IP_ADDRESS=192.168.0.10 IP_MASK=255.255.255.0  IP_GATEWAY=192.168.01
NETWORK DEVICE ID 0
    ADDRESS 192.168.0.10
    NETMASK 255.255.255.0
    GATEWAY 192.168.0.1
```

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UI CONTROLLER EMAIL_AGENT

All UI commands begin with the subject, UI. All UI CLI object commands have a UI subject and include a CLI object specification with no <object-id>.

COMMANDS
Description
UI SHOW EMAIL_AGENT [ALL_ATTRIBUTES][COUNTERS]
Displays attributes, such as IP ADDRESS, for the specified EMAIL_AGENTS.
UI SET EMAIL_AGENT <attribute-name>=<value> [<attribute-name>=<value>…]
Sets the email agent and assigns values to the listed attributes, for example, IP_ADDRESS.

ATTRIBUTES
Description
IP_ADDRESS=<ip-address>
Refers to the IP Address of the system in the format aaa.bbb.ccc.ddd
IP_PORT=<ip-port-number>
Refers to the current gateway in the network routing table as applied to the internet address in the format aaa.bbb.ccc.ddd
FROM="string"
Specified by the user to be included on the "From" line of the email notification messages sent by the agent. Note: There needs to be an @ sign or it will not be accepted.
SUBJECT="string"
Specified by the user to be included on the "Subject" line of the email notification messages sent by the agent.
TO="string"
Specified by the user to be included on the "To" line of the email notification messages sent by the agent.

Usage Guidelines

Wild-card object-IDs may be used in the SHOW command.

Automatic emails will be sent as notification of a selected group of warning and error events that have occurred on the controller.

UI CONTROLLER SNMP_TRAP_AGENT

All UI commands begin with the subject, UI. All UI CLI object commands have a UI subject and include a CLI object specification with no <object-id>.

COMMANDS
Description
UI SHOW SNMP_TRAP_AGENT [ALL_ATTRIBUTES][COUNTERS]
Displays attributes, such as IP ADDRESS, for the specified SNMP trap agents.
UI SET SNMP_TRAP_AGENT <attribute-name>=<value> [<attribute-name>=<value>…]
Sets the email agent and assigns values to the listed attributes, for example, IP_ADDRESS.

ATTRIBUTES
Description
COMMUNITY="string"
Specified by the user to be included on the "From" line of the email notification messages sent by the agent..
IP_ADDRESS=<ip-address>
Specifies the IP Address of the SNMP trap destination to be used by the subsystem in the format aaa.bbb.ccc.ddd This is sometimes called the trap host or the network management system.

Usage Guidelines

Wild-card object-IDs may be used in the SHOW command.

The Simple Network Management Protocol (SNMP) monitors network attached devices for conditions that warrant administrative attention. In Version 1.1, SNMP traps have been implemented to monitor critical and warning events. A management information base (MIB) has also been created to be used to provide inquiry objects and events to the user's monitoring application. The provided SNMP traps expose management data on the managed system in the areas of temperature sensor, fans, power supplies, pools, and physical disks as well as a variety of real-time critical and error events.