SGI InfiniteStorage 16000 (IS16000) and SGI InfiniteStorage 6120 (IS6120) Command Line User Interface (CLUI) Command Reference

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Document History

Document Revision	Firmware Version	Platform(s)	Release
-001		IS16000 IS6120	March 2011

SGI InfiniteStorage 16000 and InfiniteStorage 6120 CLUI Command Reference

Scope

This Command Reference contains the *Command Line User Interface* (CLUI) commands for the *administrator* level access. Commands are listed alphabetically. Description and usage examples are given for each command.

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 for each controller.

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'.

NOTE: In this version, the following metrics are replaced:
Megabyte (MB) is now Mebibyte (MiB)
Gigabyte (GB) is now Gibibyte (GiB)
Kilobyte (KB) is now Kibibyte (KiB).

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 | SGI> 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.

Changes (1.3.0.4):

- For the APP SET CHANNEL MODE command, **SGI** is now new added mode.
- For AP SHOW CHANNEL command, Port ID is replaced with ID
- If type FC, following is displayed:
  - Port ID
  - Node Name
  - Port Name
- If type IB, following is displayed:
  - Local ID
  - Node GUID
  - Port GUID

Examples

- Changed fields (1.3.0.4) are highlighted:

```
RAID[1]$ AP SHOW CHANNEL

                          |SPEED|                  |          TARGET IDENTIFIER          |
INDEX|TYPE|STATE|   ID    | GB/S|CTRL|RP|PORT| MODE |       NODE       |       PORT       |
-----------------------------------------------------------------------------------------------
00000  FC   UP   0X0000EF   8    0   0   0    STD   0X20000001FF07BDB8 0X20000001FF07BDB8
```

```
RAID[0]$ app set channel 0 mode SGI
CHANNEL 0 OID=0x8000000 set attributes STATUS='Success' (0x0)
***
*** The controller of the affected channel must be restarted before this attribute takes effect
***
Wed Sep 15 18:06:27 2010
```

- 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
RAID[0]$ app set channel 0 mode
Value description for 'MODE':
   MODE
                                    Provide a |-separated list of enumerated values
Available keywords:
   MAC_OS                           Node_Names are unique across channels
   SGI                              Node_Names are unique across channels
   STANDARD                         Node_Names are not unique across channels

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RAID[0]$ app set channel 0 mode SGI
CHANNEL 0 OID=0x8000000 set attributes STATUS='Success' (0x0)
***
*** The controller of the affected channel must be restarted before this attribute takes effect
***
Wed Sep 15 18:06:27 2010
```

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.

ATTRIBUTES Description
none

Usage Guidelines

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

The initiator is automatically created when the APPLICATION IMPORT DISCOVERED_INITIATOR command is used.

Change (1.3.0.4)

- For AP SHOW DISCOVERED INITIATORS ALL command, for TYPE **FC**, following is displayed
    - Port ID
    - Node Name
    - Port Name
- For AP SHOW DISCOVERED INITIATORS ALL command, for Type **IB**, following is displayed
    - Local ID
    - Node GUID
    - Port GUID

Examples

- Changes (1.3.0.4) are highlighted:

```
RAID[1]$ AP SHO DISC ALL

  OID:                  0X30350003
  OID INDEX:            00003
  TYPE:                 FIBRE CHANNEL
  PORT ID:              0X0000E8
  NODE NAME:            0X2000001B3216DFEC
  PORT NAME:            0X2100001B3216DFEC
  CHANNEL MASK:         0X0000000100000001

  OID:                  0X30360004
  OID INDEX:            00004
  TYPE:                 FIBRE CHANNEL
  PORT ID:              0X0000E8
  NODE NAME:            0X2001001B3236DFEC
  PORT NAME:            0X2101001B3236DFEC
  CHANNEL MASK:         0X0000000200000002

TOTAL FC INITIATORS: 2


MON SEP 20 14:33:58 2010
```

- 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 HOST

All APPLICATION HOST object commands have an APPLICATION subject and include a HOST=<object-id> object specification, except for the create command.

COMMANDS Description
APPLICATION CREATE HOST [STACK=<stack-object-id>] [ID="string"] [OSTYPE=CUSTOM|DEFAULT|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>…] OSTYPE=CUSTOM|DEFAULT|GENERIC|LINUX|MAC_OS|WINDOWS] 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
NAME="string"

Usage Guidelines

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

If you use the CUSTOM OSTYPE parameter, you must define it by selecting an additional value.

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
00001   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 INITIATOR

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

COMMANDS Description
APPLICATION BIND INITIATOR=<object-id> HOST=<object-id>
APPLICATION CREATE INITIATOR HOST=<object-id> WWPN=<integer> | GUID=<integer> Creates an APPLICATION INITIATOR for the specified Host. When WWPN is specified, the type is FCP and the UID is the specified WWPN. When GUID is specified, the type is IB and the UID is the specified GUID.
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.
APPLICATION UNBIND INITIATOR=<object-id> HOST=<object-id>

ATTRIBUTES Description
None

Usage Guidelines

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

The initiator is automatically created when the APPLICATION IMPORT DISCOVERED_INITIATOR command is used.

Change (1.3.0.4):

- In AP SHOW INITIATOR command, World Wide name is now replaced with Initiator Identifier.
- In AP SHOW INITIATORS ALL command for Type **FC**, following is displayed
  - Port ID
  - Node Name
  - Port Name
- For Type **IB**, following is displayed
  - Local ID
  - Node GUID
  - Port GUID
- For Type is **unkon**
  - Type is unknown
- If there are any **IB** initiators, system displays
  - Total IB Initiators

- If there are **both** FC and IB initiators, system displays
  - Total FC Initiators,
  - Total IB Initiators
  - Total Initiators
- In AP CREATE INITIATOR command, **GUID** is new parameter for IB.
- In AP CREATE INITIATOR command, **GUID** is displayed as a required keyword for IB initiators.

Examples

- Changes (1.3.0.4) are highlighted:

```
RAID[0]$ app create initiator

Required Parameters Not Specified, choose from:
Mutually Exclusive Required:
   HOST                                 Specify host to assign initiator
   GUID                                 Specify the GUID for Infiniband
   WWPN                                 Specify the port name for Fibre Channel

RAID[1]$ AP SHO INIT


             | HOST  |        INITIATOR IDENTIFIER         |
INDEX | TYPE | INDEX |       NODE       |       PORT       |
-------------------------------------------------------------
00000   FC     00000  0X0000000000000000 0X0000000000000000
00001   FC     00000  0X0000000000000000 0X0000000000000001
00002   FC     00001  0X0000000000000000 0X0000000000000002

TOTAL FC INITIATORS: 3


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 RAID[1]$ AP SHO INIT ALL

  OID:                  0X281C0000
  OID INDEX:            00000
  HOST OID:             0X181B0000
  HOST OID INDEX:       00000
  TYPE:                 FIBRE CHANNEL
  NODE NAME:            0X0000000000000000
  PORT NAME:            0X0000000000000000

  OID:                  0X282B0001
  OID INDEX:            00001
  HOST OID:             0X181B0000
  HOST OID INDEX:       00000
  TYPE:                 FIBRE CHANNEL
  NODE NAME:            0X0000000000000000
  PORT NAME:            0X0000000000000001

  OID:                  0X282F0002
  OID INDEX:            00002
  HOST OID:             0X182E0001
  HOST OID INDEX:       00001
  TYPE:                 FIBRE CHANNEL
  NODE NAME:            0X0000000000000000
  PORT NAME:            0X0000000000000002

TOTAL FC INITIATORS: 3


MON SEP 20 14:37:19 2010
```

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.
READ_ONLY[=TRUE|FALSE] Enables/disables read_only.

Usage Guidelines

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

Change (1.3.0.4):

- In AP SHOW PRESENTATION command, Channel Mask displays controller 0 and controller 1
- In AP SHOW PRESENTATION ALL command, QoS is now displayed before Channel Mask 1.
- In AP SET PRESENTATION command, ENABLE changed to ENABLED CHANNELS for specified keyword or object identifier
- In AP SET PRESENTATION <object-id> command, Enabled_channels is now available keyword instead of enable in v1.2.4.
- In version 1.3.0.4 ENABLED_CHANNELS <keyword or> <object-id> <object-id>
- In version 1.2.4 ENABLE <keyword or> <object-id>
- In AP CREATE PRESENTATION command,
    - ENABLE changed to ENABLED CHANNELS for specified keyword or object identifier
    - In version 1.3.0.4 ENABLED_CHANNELS <keyword or> <object-id> <object-id> changed from version 1.2.4 ENABLE <keyword or> <object-id>

Examples

- Changes (1.3.0.4) are highlighted:

```
RAID[1]$ APP CREAT PRES VD 1 HOST * ENABLED_CHANNELS
VALUE DESCRIPTION FOR 'ENABLED_CHANNELS':
   ENABLED_CHANNELS <KEYWORD OR> <OBJECT-ID> <OBJECT-ID>
                                     PROVIDE A KEYWORD STRING OR A LIST OF OBJECT IDENTIFIER (1,...,N)

MON SEP 20 20:27:01 2010
RAID[0]$ APP CREATE PRE VD 27 HOST ALL ENABLED_CHANNELS 0
SUPPLIED VD HAS EXISTING PRESENTATION TO SUPPLIED HOST
WED SEP 15 16:01:31 2010

RAID[0]$ APP CREATE PRE HOST * VIRTUAL_DISK=20 ENABLED_CHANNELS 0
PRESENTATION 12 OID=0X201A000C CREATION STATUS='SUCCESS' (0X0)
WED SEP 15 18:11:21 2010


RAID[1]$  RAID[1]$ AP SHO PRES

PRES. | HOST                          HOST  |  VD   |     | HOME | READ |  CHANNEL MASK   |
INDEX | NAME                          INDEX | INDEX | LUN | ONLY | ONLY | CTRL 0 | CTRL 1 |
-------------------------------------------------------------------------------------------
00013   VD PRESENTED TO ALL HOSTS      ALL     00031   000   OFF    R/W   FFFFFFFF FFFFFFFF
00014   VD PRESENTED TO ALL HOSTS      ALL     00032   001   OFF    R/W   FFFFFFFF FFFFFFFF



RAID[1]$ AP SHO PRES ALL

  OID:                  0X201F000D
  OID INDEX:            00013
  HOST OID:             0X1800FFFE
  HOST OID INDEX:       ALL
  VD OID:               0X8ADE001F
  VD OID INDEX:         00031
  LUN:                  0
  READ ONLY:            FALSE
  PRESENT HOME ONLY:    FALSE
```

```
      QUALITY OF SERVICE:    0X0000000000000000
      CHANNEL MASK:          0XFFFFFFFFFFFFFFFF
                               C0 P0:ENABLED
                               C0 P1:ENABLED
                               C1 P0:ENABLED
                               C1 P1:ENABLED

RAID[0]$ APP SET PRESENTATION 0  ENABLED_CHANNELS 0 0
PRESENTATION 0 OID=0x20000000 set attributes STATUS='Success' (0x0)
Wed Sep 15 15:44:34 2010


RAID[0]$ APP SET PRESENTATION 0 ?
Available keywords:
   ENABLED_CHANNELS                    Set channel enable state
   LUN                                 Set logical unit number
   HOME_ONLY                           Set to present home only
   READ_ONLY                           Set to enable a read only presentation

Wed Sep 15 15:44:00 2010
```

APPLICATION STACK

All APPLICATION STACK object commands have a APPLICATION subject and include a STACK=<object-id> object specification except for the CREATE command.

COMMANDS Description
APPLICATION BIND STACK =<object-id> IOC=<object-id> .
APPLICATION CREATE STACK-TYPE =LUP | LKM | KVM Corresponds to the ExecutionEnvironment.
APPLICATION DELETE STACK =<object-id> Deletes the specified APPLICATION STACK.
APPLICATION DO STACK =<object-id> COMMAND="string" Corresponds to the ExecutePassthruCommand.
APPLICATION SET STACK =<object-id> <attribute-name>=<value>[<attribute-name>=<value>…] .
APPLICATION SHOW STACK =<object-id> [COUNTERS] Displays the counters for the specified APPLICATION STACK.
APPLICATION SHOW STACK =<object-id> [ALL_ATTRIBUTES] Displays all attributes for the specified APPLICATION STACK.
APPLICATION SHUTDOWN STACK =<object-id> [RESTART] .
APPLICATION UNBIND STACK =<object-id> IOC=<object-id> .

ATTRIBUTES Description
AUTO_RECOVER[=TRUE | FALSE] Specifies the value of AutoRecover.
AUTO_START[=TRUE | FALSE] Specifies the value of AutoStart.
CORES_PENDING=<integer> Specifies the value of CoresPending.
IMAGE_PENDING="string" Specifies the value of ImagePending.
MEMORY_PENDING=<integer> Specifies the value of MemoryCapacityPending.
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="".

PROCESSOR_PENDING=<integer>
Specifies the value of ApPending.

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>:

```
RAR-10000-9 RAID[1]$ APP SHOW STACK * ALL

  OID:                    0X10010000
  OID INDEX:              00000
  NAME:                   STACK_0000
  OS TYPE:                GENERIC
  OS CHARACTERISTICS:     0X0000000000000001
  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


THU NOV 19 17:04:24 2009
RAR-10000-9 RAID[1]$
```

APPLICATION SHOW SUBSYSTEM SUMMARY

Change(1.3.0.4)

- New command.

```
RAID[1]$ app sho sub sum

******************************
*   APP Subsystem Summary    *
******************************


******************************
*         Channel(s)         *
******************************

                         |Speed|                    |          Target Identifier          |
Index|Type|State|   ID   | Gb/s|Ctrl|RP|Port| Mode |       node       |       port       |
-------------------------------------------------------------------------------------------
00000  FC   UP   0x0000ef   8    0   0   0    STD   0x20000001ff07bdb8 0x20000001ff07bdb8
…

Total Channels: 2


******************************
*          Stack(s)          *
******************************

                                      |    Host Mode Attributes    | Ctrls | RPs/Ctrl| Ports/RP|
Index | Stack Name                    | OS Type | Characteristics  |Max|Cur| Max|Cur | Max|Cur |
-------------------------------------------------------------------------------------------------
00000   Stack_0000                      GENERIC  0x0000000000000001  2   2    1   1     2   2

Total Stacks: 1


******************************
*       Presentation(s)      *
******************************

Pres. | Host                          Host  |  VD   |     | Home | Read |  Channel Mask   |
Index | Name                          Index | Index | LUN | Only | Only | Ctrl 0 | Ctrl 1 |
-------------------------------------------------------------------------------------------
00013   VD presented to all hosts     ALL     00031   000   OFF    R/W       ffffffff        ffffffff
…
Total Presentations: 12

******************************
*          Host(s)           *
******************************

                                       | Stack |    Host Mode Attributes    |
Index | Host Name                      | Index | OS Type | Characteristics  |
-----------------------------------------------------------------------------
00000   Host_0000                        00000   DEFAULT  0x0000000000000001
…
Total Hosts: 2

Mon Sep 20 14:43:29 2010
```

RAID ADMINISTRATOR

Change (1.3.0.4):

- For the RAID DELETE ADMINISTRATOR command, **FORCE** is now new optional keyword available this allows administrator deletion without a confirmation question.

Examples

- Changes (1.3.0.4) are highlighted:

```
RAID[1]$ del admin 1

Required Parameters Not Specified, choose from:
Required keywords:
   PASSWORD                  Specify the password of the administrator object to delete

Optional keywords:
   FORCE                     Force administrator deletion without a confirmation question

Mon Sep 20 16:10:57 2010
```

RAID CREATE

Change (1.3.0.4):

- For the RAID CREATE command, **EVENT_LOG_MARKER** is now the new available keyword.

Examples

- Changes (1.3.0.4) are highlighted:

```
RAID[1]$ CREATE
Please choose from:
Available keywords:
   ADMINISTRATOR              Create a raid administrator object
   EVENT_LOG_MARKER           Create a text string to add to the event log
   POOL                       Create a raid pool object
   SPARE_POOL                 Create a raid spare pool object
   VIRTUAL_DISK               Create a raid virtual_disk object

Mon Sep 20 16:13:18 2010
```

RAID CONTROLLER

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

COMMANDS Description
RAID CLEAR CONTROLLER LOCAL UPS_HISTORY Removes the discharge history that is stored in a file on the compact flash and is not accessible to the user account controller.
RAID LOCATE CONTROLLER=<object-id> Illuminates the locate beacon of the controller for LocateDwellTime seconds.
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 SHUTDOWN CONTROLLER=<object-id> Performs a shutdown to the controller specified with a confirmation response required.
RAID SHUTDOWN CONTROLLER=<object-id> [RESTART] [FORCE] Performs a shutdown followed by a restart of the controller specified**.**
RAID UPDATE_FIRMWARE CONTROLLER=<object-id> FILE="<file-specification>" Updates the firmware in the controller.

ATTRIBUTES

All attributes are restricted to manufacturing and field service.

Usage Guidelines

- A wild-card object-id may be used in the SHOW command.
- Default time in the logs will be UTC (Coordinated Universal Time or GMT) time.

Changes (1.3.0.4)

- In version 1.3.0.4, RAID UPDATE_FIRMWARE CON <OBJECT-ID> <FILE or USB>-**USB** is now another medium for firmware upgrade; File or USB are mutually exclusive but required fields.
- In the RAID CLEAR CONTROLLER command, **UPS_HISTORY** is now a required keyword.

- In the RAID SET CONTROLLER command, **INDEX** is a new keyword which changes the controller index for the specified controller.

- In the RAID SHOW CONTROLLERS ALL command,
  - Banner displayed.
  - Source version has now scsi vendor ID string along with source version.
  - ShutDown Status: started|unflushable data|success|unknown
  - Displayed only if controller is shutting down or attempted a shutdown.

Examples

- Changes (1.3.0.4) are highlighted.

```
RAID[1]$ update_firmware controller 0

Required Parameters Not Specified, choose from:
Mutually Exclusive Required:
   FILE                      Specify the file containing the controller firmware
   USB                       Upgrade the controller from the USB

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RAID[1]$ CLEAR CONTROLLER 0

Required Parameters Not Specified, choose from:
Required keywords:
   UPS_HISTORY               Clear the UPS battery history

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RAID[1]$ set con 0 ?
Available keywords:
   INDEX                     Change the controller index for the specified controller
   LOG_DISK_ENABLE           Enable or disable log_disk

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RAID[1]$ sho con all

************************
*     Controller(s)    *
************************

Index:                  0
OID:                    0x38000000
Firmware Version:
  Release:              1.3.0.4
  Source Version:       5313  DDN
  Fully Checked In:     Yes
  Private Build:        No
  Build Type:           Production
  Build Date and Time:  2010-09-18-02:34:UTC
  Builder Username:     root
  Builder Hostname:     co-bs2
  Build for CPU Type:   AMD-64-bit
Hardware Version:       PE01
State:                  RUNNING
Local AP OID:           0x00000000
Memory Size:            0x0
Max Q of S ID:          0x0
Up Time:                21 Hours 37 Minutes 55 Seconds
Last Event Sequence #:  0x1350f
Crash Dump Enabled:     TRUE
Log Disk Enabled:       TRUE
RP Count:               0x1
```

```
Restart Pending:        FALSE
Name:                   B
Controller:             REMOTE       (SECONDARY)
Controller ID:          0x0015b2a1aacc0000
Enclosure OID:          0x50000003 (Index 3)
Universal LAN Address:  0x00000001ff07bdb8
MIR Reason:             None
Shutdown Status:        Started

Total Controllers: 1


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```

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

RAID[1]$ SHOW CONTROLLER *

```
************************
*     CONTROLLER(S)     *
************************

OID: 0X38000000 INDEX: 0000 NAME: A REMOTE PRIMARY
OID: 0X38000001 INDEX: 0001 NAME: B LOCAL SECONDARY

TOTAL CONTROLLERS: 2
```

RAID[0]$ SHOW CONTROLLER * ALL

```
************************
*     CONTROLLER(S)     *
************************

INDEX:                  0
OID:                    0X38000000
FIRMWARE VERSION:
  RELEASE:              1.3.0.3
  SOURCE VERSION:       4817  DDN
  FULLY CHECKED IN:     YES
  PRIVATE BUILD:        NO
  BUILD TYPE:           PRODUCTION
  BUILD DATE AND TIME:  2010-07-29-21:32:UTC
  BUILDER USERNAME:     ROOT
  BUILDER HOSTNAME:     CO-BS2
  BUILD FOR CPU TYPE:   AMD-64-BIT
HARDWARE VERSION:       0000
STATE:                  RUNNING
LOCAL AP OID:           0X00000000
MEMORY SIZE:            0X0
MAX Q OF S ID:          0X0
UP TIME:                2 MINUTES 39 SECONDS
LAST EVENT SEQUENCE #:  0X2E2F
CRASH DUMP ENABLED:     TRUE
LOG DISK ENABLED:       TRUE
RP COUNT:               0X2
RESTART PENDING:        FALSE
NAME:                   A
CONTROLLER:             LOCAL        (SECONDARY)
CONTROLLER ID:          0X0001FF0800A40000
ENCLOSURE OID:          0X50000000 (INDEX 0)
UNIVERSAL LAN ADDRESS:  0X00000001FF0800A4
MIR REASON:             NONE

INDEX:                  1
OID:                    0X38000001
FIRMWARE VERSION:
  RELEASE:              1.3.0.3
  SOURCE VERSION:       4817  DDN
  FULLY CHECKED IN:     YES
  PRIVATE BUILD:        NO
  BUILD TYPE:           PRODUCTION
  BUILD DATE AND TIME:  2010-07-29-21:32:UTC
  BUILDER USERNAME:     ROOT
```

```
  BUILDER HOSTNAME:     CO-BS2
  BUILD FOR CPU TYPE:   AMD-64-BIT
HARDWARE VERSION:       0000
STATE:                  RUNNING
LOCAL AP OID:           0X00000000
MEMORY SIZE:            0X0
MAX Q OF S ID:          0X0
UP TIME:                1 HOUR 45 MINUTES 2 SECONDS
LAST EVENT SEQUENCE #:  0X715A1
CRASH DUMP ENABLED:     TRUE
LOG DISK ENABLED:       TRUE
RP COUNT:               0X2
RESTART PENDING:        FALSE
NAME:                   B
CONTROLLER:             REMOTE       (PRIMARY)
CONTROLLER ID:          0X0001FF0800A10000
ENCLOSURE OID:          0X50000006 (INDEX 6)
UNIVERSAL LAN ADDRESS:  0X00000001FF0800A4
MIR REASON:             NONE

TOTAL CONTROLLERS: 2
```

- 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:       3489
  FULLY CHECKED IN:     YES
  PRIVATE BUILD:        YES
  BUILD TYPE:           PRODUCTION
  BUILD DATE AND TIME:  2009-12-04-10:41:EST
  BUILDER USERNAME:     ROOT
  BUILDER HOSTNAME:     EREO-DEBIAN2
  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:                26 MINUTES 14 SECONDS
LAST EVENT SEQUENCE #:  0X42F3
CRASH DUMP ENABLED:     TRUE
LOG DISK ENABLED:       TRUE
RP COUNT:               0X1
RESTART PENDING:        FALSE
NAME:                   B
CONTROLLER:             LOCAL        (PRIMARY)
CONTROLLER ID:          0X0015B2A10E500000
ENCLOSURE OID:          0X50000000 (INDEX 0)
UNIVERSAL LAN ADDRESS:  0X00000001FF070E50
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 ENCLOSURE

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

COMMANDS Description
RAID LOCATE ENCLOSURE =<object-id> [ALL_OFF|ALL_ON] Send the identify command to the object id and blink the blue identify LED on that object.
RAID SHOW ENCLOSURE =<object-id> [COUNTERS][ALL_ATTRIBUTES [UPDATE_FIRMWARE_PROGRESS] Displays all counters and attributes for the specified RAID CHANNEL.
UPDATE_FIRMWARE ENCLOSURE=<object-id>FILE="<file-specification>" Updates the firmware for the enclosure with the specified firmware located in the file specified.

ATTRIBUTES Description
none

Usage Guidelines

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

Examples

- To display all enclosures attributes using wild card * :

```
10000-8 RAID[0]$ SHOW ENCLOSURE * ALL
INDEX:                    0
ENCLOSURE:                0X50000000
TYPE:                     CONTROLLER
LOGICAL ID:               0X0015B2A10E500000
VENDOR ID:                DDN
PRODUCT ID:               SFA10000
REVISION:                 CD00
ZONES:                    0
FAULT INDICATOR:          OFF
PREDICTED FAILURE IND:    OFF
LOCATE INDICATOR:         OFF
LOCATION:                 BAY 1
BASEBOARD PART NUMBER:    PSG-M-DATACD51-112
BASEBOARD VERSION:        02
BASEBOARD DATE:           20090526
FIRMWARE VERSION:         1.2.0.0

INDEX:                    1
ENCLOSURE:                0X50000001
TYPE:                     DISK
LOGICAL ID:               0X50001FF106841000
VENDOR ID:                DDN
PRODUCT ID:               SFA10000
REVISION:                 0093
ZONES:                    1
FAULT INDICATOR:          OFF
PREDICTED FAILURE IND:    OFF
LOCATE INDICATOR:         OFF
LOCATION:
MIDPLANE PART NUMBER:     TCA-00302-01-B
```

```
MIDPLANE SERIAL NUMBER: MXSCI0008BRVB1F7
BASEBOARD PART NUMBER:  TCA-00301-01-D
BASEBOARD SERIAL NUMBER:MXE340008CDVA028
FIRMWARE VERSION:       D02.011

INDEX:                  2
ENCLOSURE:              0X50000002
TYPE:                   CONTROLLER
LOGICAL ID:             0X0015B2A121A20000
VENDOR ID:              DDN
PRODUCT ID:             SFA10000
REVISION:               CD00
ZONES:                  0
FAULT INDICATOR:        OFF
PREDICTED FAILURE IND:  OFF
LOCATE INDICATOR:       OFF
LOCATION:               BAY 0
BASEBOARD PART NUMBER:  PSG-M-DATACD51-112
BASEBOARD VERSION:      02
BASEBOARD DATE:         20090526
FIRMWARE VERSION:       1.2.0.0


TOTAL ENCLOSURES: 3


10000-8 RAID[0]$
```

RAID EXPANDER

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

COMMANDS Description
RAID LOCATE EXPANDER =<enclosure-id>, <expander-id> Send the identify command to the object id and blink the blue identify LED on that object.
RAID SHOW EXPANDER =<enclosure-id>, <expander-id>[COUNTERS][ALL_ATTRIBUTES] Displays all counters and attributes for the specified expander. A wild-card <object-id> (*) may be used in the SHOW command.

ATTRIBUTES Description
none

Changes (1.3.0.4)

For RAID SHOW EXPANDERS command,

- Banner is displayed.
- New heading-Location: displays location.

Examples

- Changes are highlighted:

```
RAID[0]$ SHO EXP *

**********************
*     Expander(s)     *
**********************
                    |  Indicators  |
Idx|Encl|Pos|Present|Failure|Locate|Location|SES Status
-------------------------------------------------------
  1    1   1   TRUE    OFF    OFF      IOM 1 OK
Total Expanders: 10

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RAID[0]$ SHO EXP 1 ALL

**********************
*     Expander(s)     *
**********************

Sub Index:              1
Sub OID:                0x78000001
Enclosure Index:        1
Enclosure OID:          0x50000001
Position:               1
SES Status:             OK
Present:                TRUE
Predicted Failure Ind:  OFF
Locate Indicator:       OFF
Location:               IOM 1
Firmware version:       0098

Total Expanders: 1
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```

RAID FAN

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

COMMANDS Description
RAID LOCATE FAN =<enclosure-id>, <fan-id> Send the identify command to the object id and blink the blue identify LED on that object.
RAID SHOW FAN =<enclosure-id>, <fan-id>[COUNTERS][ALL_ATTRIBUTES] Displays all counters and attributes for the specified power supply.

ATTRIBUTES Description
none

Usage Guidelines

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

Changes (1.3.0.4)

For the RAID SHOW FAN command,

- Banner is displayed.
- New heading-Location: displays location.

Examples

- **Changes are highlighted.**

```
RAID[0]$ SHO FAN *

******************
*     Fan(s)     *
******************


                       |Power|       |    Indicators      |
Idx|Encl|Pos| RPM  |Code|State|Present|Fault|Failure|Locate|Location|SES Status
-------------------------------------------------------------------------------
  1    1   1  7870   7    ON    TRUE   OFF    OFF    OFF   PS1 Fan1 OK
  2    1   2  7900   7    ON    TRUE   OFF    OFF    OFF   PS1 Fan2 OK
  3    1   3  7870   7    ON    TRUE   OFF    OFF    OFF   PS2 Fan1 OK
  4    1   4  7840   7    ON    TRUE   OFF    OFF    OFF   PS2 Fan2 OK

Total Cooling Elements: 4


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RAID[1]$ show fan 2 all

******************
*     Fan(s)     *
******************
```

```
Sub Index:              1
Sub OID:                0x68000001
Enclosure Index:        2
Enclosure OID:          0x50000002
Position:               1
SES Status:             OK
Measured Speed (RPM):   8990
Requested Speed Code :  2
Power State:            ON
Present:                TRUE
Fault Indicator:        OFF
Predicted Failure Ind:  OFF
Locate Indicator:       OFF
Location:               PS1 Fan1
Part number:            PWR-00028-02-A
Serial number:          THDEL00002MVF


Total Cooling Elements: 4


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```

RAID HELP

Change:

- **ERASE** and **VERIFY** keywords are now added.
- The RAID ERASE command is a hidden command and no longer displays.

Examples

- Changes (1.3.0.4) are highlighted:

```
RAID[0]$ ?
Select one of the following subjects for additional commands:
   APPLICATION                          Selects the application processor as the subject
   RAID                                 Selects the raid processor as the subject
   UI                                   Selects the user interface as the subject

Additional commands:
   HELP                                 Provides information on how to use the user interface help
   QUIT                                 Exits the Command Line User Interface

Object class options available for default subject RAID:
Available keywords:
   ASSIGN                               Assign raid object
   CLEAR                                Clear raid object states
   CREATE                               Create raid objects
   DELETE                               Delete raid objects
   ERASE                                Erase raid objects
   LOCATE                               Locate raid objects
   MOVE_HOME                            Move raid objects
   PAUSE                                Pause raid objects
   REPLACE                              Replace raid objects
   RESUME                               Resume raid objects
   SET                                  Modify raid object attributes
   SHOW                                 Display raid objects
   SHUTDOWN                             Shutdown raid objects
   SYNCHRONIZE                          Synchronize raid objects
   UPDATE_FIRMWARE                      Update firmware on raid objects
   VERIFY                               Start a Verify background job(s)

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RAID[1]$ ERASE
Please choose from:
Available keywords:

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```

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.
RAID RESUME JOB=<object-id> Resumes the specified RAID JOB that was previously paused..
RAID 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 or REBUILD
RAID SHUTDOWN JOB=<object-id> Kills the specified job.

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.

Changes (1.3.0.4)

- PRIORITY is now a required keyword.
- In the RAID SHOW JOB command, the banner is displayed.
- In the RAID SHOW JOB ALL command, the banner is displayed.
- In the RAID SHOW JOB ALL command,

- Verify is a new command**; TYPE** is VERIFY, VERIFY ONCE, or VERIFY FORCE
- **STATUS** is actual status other than success/failure. The STATUS field is no longer SUCCESS or FAILURE. If it was a failure, it will state the actual failure. The (Sub) field represents the physical disk that a rebuild was happening on.
- **SCRUB** is no longer an option.

Examples

- Changes are highlighted.

```
RAID[1]$ show job

**************************
*     Background Jobs    *
**************************


                                                  |Fraction|
 Idx|Type           |Target   (Sub)    |State      |Complete|Priority|Status                                  |Time
-------------------------------------------------------------------------------------------------------------------
   1 VERIFY ONCE     POOL:1   (NA)      RUNNING        27%      99%                                       NA
   2 VERIFY ONCE     POOL:2   (NA)      RUNNING        26%      99%                                       NA
   3 VERIFY ONCE     POOL:3   (NA)      RUNNING        27%      99%                                       NA


RAID[1]$ show job ALL

**************************
*     Background Jobs    *
**************************

  OID:                0x2e040001 (Index:1    )
  Target:             POOL:0x1aa00001 (Index:1    )
  Sub-Target:         NA
  Type:               VERIFY ONCE
  State:              RUNNING
  Completion Status:  UNKNOWN
  Priority:           99%
  Fraction Complete:  28%
  Time:               NA

RAID[1]$ set job 0

Required Parameters Not Specified, choose from:
Required keywords:
   PRIORITY                  Specify a job integer priority

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```

- To pause a specified RAID JOB.

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

- 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.

```
SFA 10000-9 RAID[1]$ SHOW JOB *

                                                |FRACTION|
IDX| TYPE           | TARGET         | STATE     |COMPLETE| STATUS   | PRIORITY | TIME
-------------------------------------------------------------------------------------
  8  INITIALIZE      POOL:   9        RUNNING       22%                  50%      NA
  0  FULL REBUILD    POOL:   0        RUNNING       38%                  80%      NA
  3  FULL REBUILD    POOL:   3        RUNNING        1%                  80%      NA
  8  FULL REBUILD    POOL:   8        RUNNING        1%                  80%      NA

TOTAL BACKGROUND JOBS: 4

SFA 10000-9 RAID[1]$ SHOW JOB 0 ALL
  OID:                 0X2B030000
  TARGET:              0X183D0000
  TYPE:                REBUILD
  STATE:               RUNNING
  COMPLETION STATUS:   UNKNOWN
  PRIORITY:            80%
  FRACTION COMPLETE:   38%
  TIME:                NA


TOTAL BACKGROUND JOBS: 1
```

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. This command will not work on a reduced or non-redundant pool. It will work on either a normal or degraded pool.
RAID 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.
RAID SHOW PHYSICAL_DISK=<object-id> [COUNTERS <counter_type>] [ALL|HELP] Displays the specified type of counters for the specified PHYSICAL_DISK.

ATTRIBUTES

Value description for <COUNTER TYPE>	
KEYWORDS	**DESCRIPTION**
RATES	IO and Block Rates for the specified object
READ_LATENCY	Read IO Latency for the specified object
READ_SIZE	Read IO Size for the specified object
WRITE_LATENCY	Write IO Latency for the specified object
WRITE_SIZE	Write IO Size for the specified object
ALL	System performance counters for the specified object

Usage Guidelines

NOTE: In version ***SFA OS version 1.2.2,*** the format of the CLUI command changed.

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

The alias PD can be used in place of PHYSICAL_DISK.

Changes (1.3.0.4)

- RAID CLEAR PD <OBJECT-ID> FAILED - **FAILED** is now a required keyword; in version 1.2.4 it was not required keyword.

- In the RAID SET PHYSICAL DISK command, **FAILED** is now required field.

- In the RAID SHOW PD COUNTERS command, the display order for available keywords has changed:
  - Rates is displayed first followed by read_latency, read_size,write_latency, write_size

- In the RAID SHOW PD COUNTERS ALL command, the display order for **COUNTER TYPES** has changed:
  - Rates is displayed first followed by read_latency, read_size,write_latency, write_size
  - The KB is now replaced with KiB and MB with MiB.

- In the RAID SHOW PD 1 HELP command, these are added:
  - ** An '*l' by this state suggests that the disk is seen on the local controller (partial ready). **
  - ** An '*r' by this state suggests that the disk is seen on the remote controller (partial ready). **
- In the RAID SHOW PD <ONJECT-ID> command,
  - The banner is displayed.
  - The STATE will display PRTL L (for state PD_STATE_PARTIAL_READY_THIS) and PRTL R (for state State PD_STATE_PARTIAL_READY_OTHER)
- In the RAID SHOW PD <OBJECT-ID> ALL command, State field has PARTIAL READY (SEEN ON LOCAL) and PARTIAL READY (SEEN ON REMOTE).

Examples

- Changes are highlighted:

```
RAID[1]$ CLEAR PD 2

Required Parameters Not Specified, choose from:
Required keywords:
   FAILED                      Clear physical_disk failed state

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RAID[1]$ set pd 8

Required Parameters Not Specified, choose from:
Required keywords:
   FAILED                      Set a physical_disk to the failed state

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Value description for 'COUNTERS':
   COUNTERS
                                     Provide a |-separated list of enumerated values
Available keywords:
   RATES                             Show IO and Block Rates for the specified object
   READ_LATENCY                      Show Read IO Latency for the specified object
   READ_SIZE                         Show Read IO Size for the specified object
   WRITE_LATENCY                     Show Write IO Latency for the specified object
   WRITE_SIZE                        Show Write IO Size for the specified object
   ALL                               Show system performance counters for the specified object

Wed Sep 15 16:15:29 2010

RAID[0]$ SHOW PD * COUNTERS ALL
Physical Disk Counters:  Elapsed time = 2.144 seconds
  Idx  IOs/sec  KiB/sec   KiB/IO Fwd IO/s Fwd KiB/s| IOs/sec  KiB/sec   KiB/IO Fwd IO/s Fwd KiB/s|
-------------------------------------------------------------------------------------------------
    1       31    16250       520        0        0 |       0        0        0        0        0 |
    2        0        0         0        0        0 |      31    16250      520        0        0 |
    3        0        0         0        0        0 |      31    16250      520        0        0 |
```

```
Physical Disk Read Latency:  Elapsed time = 2.143 seconds
  Idx      Avg    <=4ms    <=8ms   <=16ms   <=32ms   <=64ms  <=128ms  <=256ms  <=512ms     <=1s     <=2s     <=4s      >4s
-------------------------------------------------------------------------------------------------------------------------
    1      101        0        0        0        0        0       66        0        0        0        0        0        0
    2        2       68        0        0        0        0        0        0        0        0        0        0        0
    3        3       55       13        0        0        0        0        0        0        0        0        0        0
    4        3       57       11        0        0        0        0        0        0        0        0        0        0

Physical Disk Write Latency:  Elapsed time = 2.144 seconds
  Idx      Avg    <=4ms    <=8ms   <=16ms   <=32ms   <=64ms  <=128ms  <=256ms  <=512ms     <=1s     <=2s     <=4s      >4s
-------------------------------------------------------------------------------------------------------------------------
    1        0        0        0        0        0        0        0        0        0        0        0        0        0
    2        0        0        0        0        0        0        0        0        0        0        0        0        0
    3        0        0        0        0        0        0        0        0        0        0        0        0        0
    4        0        0        0        0        0        0        0        0        0        0        0        0        0

Physical Disk Read IO Size:  Elapsed time = 2.143 seconds
  Idx   <=4KiB   <=8KiB  <=16KiB  <=32KiB  <=64KiB <=128KiB <=256KiB <=512KiB   <=1MiB   <=2MiB   <=4MiB    >4MiB
----------------------------------------------------------------------------------------------------------------
    1        0        0        0        0        0        0        0        0       67        0        0        0
    2        0        0        0        0        0        0        0        0       66        0        0        0
    3        0        0        0        0        0        0        0        0       66        0        0        0
    4        0        0        0        0        0        0        0        0       66        0        0        0
    5        0        0        0        0        0        0        0        0       67        0        0        0
```

```
RAID[1]$ sho PD 1 HELP

**********************************************************************************************************************************
**                                                                                                                              **
** Encl - The enclosure index of the physical disk                                                                              **
** Slot - The slot index of the physical disk                                                                                   **
** Vendor - The vendor of the physical disk                                                                                     **
** Product ID - The product ID of the physical disk                                                                             **
** Type - The device type of the physical disk                                                                                  **
** Cap - The raw capacity of the physical disk in GB                                                                            **
** RPM - The rotation rate of the physical disk (SSD if rotation rate is non-rotation media)                                    **
** Revision - The current revision of the physical disk firmware                                                                **
** Serial Number - The serial number of the physical disk                                                                       **
** Pool - The index of the pool the physical disk resides in                                                                    **
** Status - The status (health state) of the physical disk (spare implies GOOD)                                                 **
** Idx - The Physical Disk Identifier Index (PDIDI)                                                                             **
** State - This is either the member state while in a pool OR the unassigned state of the physical disk.                        **
**          An '*l' by this state suggests that the disk is seen on the local controller (partial ready).                       **
**          An '*r' by this state suggests that the disk is seen on the remote controller (partial ready).                      **
**          An '*' by this state suggests that the disk is not seen on either controller, but assumed present.                  **
** WWN - The world wide name of the physical disk                                                                               **
**                                                                                                                              **
**********************************************************************************************************************************

Mon Sep 20 16:50:42 2010
```

```
RAID[1]$ sho PD 1

****************************
*      Physical Disk(s)    *
****************************


                                                                                               |Health|
Encl|Slot| Vendor |      Product ID      |Type|Cap GB | RPM|Revision|     Serial Number    |Pool|State |  Idx|State |
WWN         |
-------------------------------------------------------------------------------------------------------------------------
------------------
   1    15 HITACHI  HUS156045VLS600       SAS      419  15K A510     JVV81XKL5604            1  GOOD      1 NORM
5000cca00f0ea8b8

Total Physical Disks:      1
Total Assigned Disks:      1
Total Unassigned Disks:    0
  Total SAS Disks:         1
  Total Member State Normal:   1


Mon Sep 20 16:52:21 2010

RAID[1]$ SHO PD 1 all
```

```
**************************
*     Physical Disk(s)     *
**************************

  Index:            1
  OID:              0x220a0001
  Pool Index:       1
  Pool OID:         0x1aa00001
  Capacity:         400 GB
  Raw Capacity:     419 GB(Base 2)/450 GB(Base 10)
  Block Size:       512
  Enabled Disk Ch:  0xe0  0xdd
  Enclosure Index:  1
  Enclosure OID:    0x50000001
  Disk Slot:        15  (1:15)
  Vendor ID:        HITACHI
  Product ID:       HUS156045VLS600
  Product Revision: A510
  Serial Number:    JVV81XKL5604
  Health State:     GOOD
  Rotation Speed:   15000 RPM
  Device Type:      SAS
  Member State:     NORMAL
  State:            READY
  Spare:            FALSE
  Failed:           FALSE
  UUID:             0x5000cca00f0ea8b8
  Update in Progress:   FALSE


Total Physical Disks:      1
Total Assigned Disks:      1
Total Unassigned Disks:    0
  Total SAS Disks:         1
  Total Member State Normal:   1


Mon Sep 20 16:57:45 2010
```

- 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:     3QQ0FDZ7000009915W3K9
  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[0]$ SHOW PD *

*****************************
*     PHYSICAL DISK(S)      *
*****************************
```

ENCL	SLOT	VENDOR	PRODUCT ID	TYPE	CAP GB	RPM	REVISION	SERIAL NUMBER	POOL	HEALTH STATE	IDX	STATE	WWN
1	1	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ12MDA000099131EAA	8	GOOD	80	NORM	5000C5000A79B9D8
1	2	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ13QDQ00009916ECFB	0	GOOD	3	NORM	5000C5000A7ADCCC
1	3	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ13Q9P00009916BBCU	8	GOOD	77	NORM	5000C5000A7ADA74
1	4	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ142PT000099174M2U	4	GOOD	42	NORM	5000C5000A7B5DC8
1	5	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ142L500009916F87T	3	GOOD	40	NORM	5000C5000A7B60BC
1	6	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ143X500009916F94Q	2	GOOD	21	NORM	5000C5000A7B4864
1	7	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ13Q5Q00009916F9ZT	0	GOOD	7	NORM	5000C5000A7AD7FC
1	8	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ13QDN00009916EDZJ	0	GOOD	1	NORM	5000C5000A7ADCC4
1	9	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ12J35000099143TCZ	4	GOOD	45	NORM	5000C5000A79AD88
1	10	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ143PN000099174MH7	4	GOOD	44	NORM	5000C5000A7B54DC
1	11	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ13JHJ000099173Z28	2	GOOD	27	NORM	5000C5000A7B5E74
1	12	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ145NC00009916F8Q7	6	GOOD	49	NORM	5000C5000A7B46FC
1	13	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ143PQ000099174KPB	1	GOOD	14	NORM	5000C5000A7B6030
1	14	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ144E100009916EAVK	4	GOOD	43	NORM	5000C5000A7B4EE0
1	15	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ142SH000099173XXP	1	GOOD	19	NORM	5000C5000A7B6048
1	16	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ143PH00009916EGP7	2	GOOD	25	NORM	5000C5000A7B5A68
1	17	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ143NS000099174K1S	3	GOOD	33	NORM	5000C5000A7B5694
1	18	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ142KL000099174MCY	1	GOOD	15	NORM	5000C5000A7B6034
1	19	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ142Q500009917ZG6M	1	GOOD	12	NORM	5000C5000A7B6018
1	20	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ13NL1000099174N7Y	0	GOOD	9	NORM	5000C5000A7B5208
1	21	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ142MV000099174N7X	3	GOOD	36	NORM	5000C5000A7B5C98
1	22	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ145E800009916EAN4	2	GOOD	30	NORM	5000C5000A7B4198
1	23	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ145G400009916ECWR	2	GOOD	24	NORM	5000C5000A7B4274
1	24	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ14562000099916F7MN	6	GOOD	48	NORM	5000C5000A7B44FC
1	25	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ142MX000099174FX2	8	GOOD	74	NORM	5000C5000A7B5FE8
1	26	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ143L1000099173XQF	7	SPARE	50	NORM	5000C5000A7B5008
1	27	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ13QA100009916BHB4	0	GOOD	6	NORM	5000C5000A7ADAE4
1	28	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ143S8000099174J4Z	1	GOOD	18	NORM	5000C5000A7B5450
1	29	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ145MW00009916F8TA	3	GOOD	31	NORM	5000C5000A7B4B98
1	30	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ12M1S000099131FGU	8	GOOD	72	NORM	5000C5000A79B194
1	31	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ1256300009916BGYJ	2	GOOD	26	NORM	5000C5000A7B4F78
1	32	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ1458M00009916F7HL	7	SPARE	20	NORM	5000C5000A7B4464
1	33	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ13P8Q00009916F7MT	3	GOOD	34	NORM	5000C5000A7B44A8
1	34	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ11AQV00009913R75E	4	GOOD	41	NORM	5000C5000A7ADE44
1	35	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ13MRX000099174M0H	8	GOOD	79	NORM	5000C5000A7B5DF4
1	36	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ143KW00009917X6UE	5	GOOD	47	NORM	5000C5000A7B4FEC
1	37	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ14BDP00009916F68V	1	GOOD	17	NORM	5000C5000A7B7928
1	38	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ145FG00009916EAF7	1	GOOD	11	NORM	5000C5000A7B4234
1	39	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ1362Q00009916EEHZ	5	GOOD	46	NORM	5000C5000A7B78C0
1	40	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ145DC00009916F8J4	1	GOOD	13	NORM	5000C5000A7B4148
1	41	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ13P4K00009917X63F	0	GOOD	4	NORM	5000C5000A7AE0C8
1	42	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ13Q5X00009916FA02	2	GOOD	29	NORM	5000C5000A7AD800
1	43	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ14214000099174MAM	3	GOOD	35	NORM	5000C5000A7B559C
1	44	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ143SM000099174L37	2	GOOD	28	NORM	5000C5000A7B5480
1	45	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ13PZ000009916BHQ4	3	GOOD	32	NORM	5000C5000A7AD710
1	46	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ13NBW000099174NJ7	1	GOOD	16	NORM	5000C5000A7B534C
1	47	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ137G200009916F2W6	0	GOOD	5	NORM	5000C5000A7ADBDC
1	48	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ144JN000099174MF3	2	GOOD	23	NORM	5000C5000A7B525C
1	49	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ13QBP00009916C6B8	1	GOOD	82	NORM	5000C5000A7ADBC0
1	50	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ13QC800009916EDL2	3	GOOD	37	NORM	5000C5000A7ADC20
1	51	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ14652000099916F8NZ	0	GOOD	10	NORM	5000C5000A7B3F24
1	52	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ13Q4600009916BBHY	3	GOOD	39	NORM	5000C5000A7AD734
1	53	SEAGATE	ST3400755SS	SAS	372	7.2K	0003	3RJ13Q6G00009916EEQ3	8	GOOD	76	NORM	5000C5000A7AD874

```
   1   54  SEAGATE          ST3400755SS  SAS     372 7.2K     0003 3RJ10TVM00009916F9W2    3  GOOD    38 NORM    5000C5000A7ADF24
   1   55  SEAGATE          ST3400755SS  SAS     372 7.2K     0003 3RJ14403000099174G20    2  GOOD    22 NORM    5000C5000A7B4D60
   1   56  SEAGATE          ST3400755SS  SAS     372 7.2K     0003 3RJ1341F00009916EBME    8  GOOD    73 NORM    5000C5000A7AD86C
   1   57  SEAGATE          ST3400755SS  SAS     372 7.2K     0003 3RJ13QB500009916EBKN    8  GOOD    78 NORM    5000C5000A7ADB74
   1   58  SEAGATE          ST3400755SS  SAS     372 7.2K     0003 3RJ13QBF00009916BDQX    0  GOOD    81 NORM    5000C5000A7ADBBC
   1   59  SEAGATE          ST3400755SS  SAS     372 7.2K     0003 3RJ12MA5000099131CZX    0  GOOD     2 NORM    5000C5000A79B7EC
   1   60  SEAGATE          ST3400755SS  SAS     372 7.2K     0003 3RJ11KXG000099131CCR    8  GOOD    75 NORM    5000C5000A79B894

TOTAL PHYSICAL DISKS:      60
TOTAL ASSIGNED DISKS:      60
TOTAL UNASSIGNED DISKS:    0
  TOTAL SAS DISKS:         60
  TOTAL MEMBER STATE NORMAL:   60
```

- To display all attributes of specified PHYSICAL DISK.

```
10000-8 RAID[0]$ SHOW PD 50 ALL
  INDEX:             50
  OID:               0X20820032
  POOL INDEX:        7
  POOL OID:          0X18770007
  CAPACITY:          352 GB
  RAW CAPACITY:      372 GB(BASE 2)/400 GB(BASE 10)
  BLOCK SIZE:        512
  ENABLED DISK CH:   0X20  0X20
  ENCLOSURE INDEX:   1
  ENCLOSURE OID:     0X50000001
  DISK SLOT:         26  (1:26)
  VENDOR ID:         SEAGATE
  PRODUCT ID:        ST3400755SS
  PRODUCT REVISION:  0003
  SERIAL NUMBER:     3RJ143L1000099173XQF
  HEALTH STATE:      GOOD
  ROTATION SPEED:    7200 RPM
  DEVICE TYPE:       SAS
  MEMBER STATE:      NORMAL
  STATE:             READY
  SPARE:             TRUE
  FAILED:            FALSE
  UUID:              0X5000C5000A7B5008

TOTAL PHYSICAL DISKS:      1
TOTAL ASSIGNED DISKS:      1
TOTAL UNASSIGNED DISKS:    0
  TOTAL SAS DISKS:         1
  TOTAL MEMBER STATE NORMAL:   1
```

- To see HELP for physical disks associated counters.

```
SHOW PD * COUNTERS
```

```
10000-8 RAID[0]$ SHOW PD * COUNTERS
VALUE DESCRIPTION FOR 'COUNTERS':
   COUNTERS
                   PROVIDE A |-SEPERATED LIST OF ENUMERATED VALUES
AVAILABLE KEYWORDS:
   RATES           SHOW IO AND BLOCK RATES FOR THE SPECIFIED OBJECT
   READ_LATENCY    SHOW READ IO LATENCY FOR THE SPECIFIED OBJECT
   READ_SIZE       SHOW READ IO SIZE FOR THE SPECIFIED OBJECT
   WRITE_LATENCY   SHOW WRITE IO LATENCTY FOR THE SPECIFIED OBJECT
   WRITE_SIZE      SHOW WRTIE IO SIZE FOR THE SPECIFIED OBJECT
   ALL             SHOW SYSTEM PERFORMANCE COUNTERS FOR THE SPECIFIED OBJECT
```

NOTE: The output of the command(s), **SHOW PD * COUNTERS <TYPE> ALL** is same as the output without keyword ALL that is **SHOW PD * COUNTERS <TYPE>**; **TYPE** can take following values: **READ_LATENCY, WRITE_LATENCY, READ_SIZE, WRITE_SIZE or RATES.** The addition of keyword all is merely for the consistency sake with rest of the CLUI command formats.

- To show counters of all types for all physical disks.

```
SHOW PD * COUNTERS ALL ALL OR SHOW PD * COUNTERS ALL
```

```
XXXXXXX_CON1 RAID[0]$ SHOW PD * COUNTERS ALL ALL
```

PHYSICAL DISK COUNTERS: ELAPSED TIME = 2332.898 SECONDS

Idx	IOs/sec	KiB/sec	KiB/IO	Fwd IO/s	Fwd KiB/s	IOs/sec	KiB/sec	KiB/IO	Fwd IO/s	Fwd KiB/s
337	0	0	0	0	0	0	0	0	0	0
338	0	0	0	0	0	0	0	0	0	0
339	0	0	0	0	0	0	0	0	0	0
340	0	0	0	0	0	0	0	0	0	0
347	0	0	0	0	0	173	22365	128	0	0
349	0	0	0	0	0	173	22366	128	0	0
350	0	0	0	0	0	173	22365	128	0	0
351	0	0	0	0	0	173	22365	128	0	0
352	0	0	0	0	0	173	22364	128	0	0
353	0	0	0	0	0	173	22364	128	0	0
354	0	0	0	0	0	173	22365	128	0	0
355	0	0	0	0	0	173	22361	128	0	0
356	0	0	0	0	0	173	22361	128	0	0
357	0	0	0	0	0	173	22365	128	0	0

PHYSICAL DISK READ LATENCY: ELAPSED TIME = 2332.856 SECONDS

IDX	AVG	<=4MS	<=8MS	<=16MS	<=32MS	<=64MS	<=128MS	<=256MS	<=512MS	<=1S	<=2S	<=4S	>4S
337	0	0	0	0	0	0	0	0	0	0	0	0	0
338	0	0	0	0	0	0	0	0	0	0	0	0	0
339	0	0	0	0	0	0	0	0	0	0	0	0	0
340	0	0	0	0	0	0	0	0	0	0	0	0	0
347	0	402699	1214	1016	41	58	5	0	0	0	0	0	0
349	0	402694	1235	936	31	62	4	0	0	0	0	0	0
350	0	402619	1149	1063	42	63	6	0	0	0	0	0	0
351	0	402669	1152	1026	36	54	5	0	0	0	0	0	0
352	0	402587	1101	1144	35	58	5	0	0	0	0	0	0
353	0	402706	1113	1018	64	60	6	0	0	0	0	0	0
354	0	402706	1206	963	45	57	4	0	0	0	0	0	0
355	0	402677	1198	926	31	57	5	0	0	0	0	0	0
356	0	402674	1183	924	47	65	4	0	0	0	0	0	0
357	0	402944	1129	966	35	62	3	0	0	0	0	0	0

PHYSICAL DISK WRITE LATENCY: ELAPSED TIME = 2332.855 SECONDS

IDX	AVG	<=4MS	<=8MS	<=16MS	<=32MS	<=64MS	<=128MS	<=256MS	<=512MS	<=1S	<=2S	<=4S	>4S
337	0	0	0	0	0	0	0	0	0	0	0	0	0
338	0	0	0	0	0	0	0	0	0	0	0	0	0
339	0	0	0	0	0	0	0	0	0	0	0	0	0
340	0	0	0	0	0	0	0	0	0	0	0	0	0
347	0	0	0	0	0	0	0	0	0	0	0	0	0
349	0	0	0	0	0	0	0	0	0	0	0	0	0
350	0	0	0	0	0	0	0	0	0	0	0	0	0
351	0	0	0	0	0	0	0	0	0	0	0	0	0
352	0	0	0	0	0	0	0	0	0	0	0	0	0
353	0	0	0	0	0	0	0	0	0	0	0	0	0
354	0	0	0	0	0	0	0	0	0	0	0	0	0
355	0	0	0	0	0	0	0	0	0	0	0	0	0
356	0	0	0	0	0	0	0	0	0	0	0	0	0
357	0	0	0	0	0	0	0	0	0	0	0	0	0

PHYSICAL DISK READ IO SIZE: ELAPSED TIME = 2332.894 SECONDS

Idx	<=4KiB	<=8KiB	<=16KiB	<=32KiB	<=64KiB	<=128KiB	<=256KiB	<=512KiB	<=1MiB	<=2MiB	<=4MiB	>4MiB
337	0	0	0	0	0	0	0	0	0	0	0	0
338	0	0	0	0	0	0	0	0	0	0	0	0
339	0	0	0	0	0	0	0	0	0	0	0	0
340	0	0	0	0	0	0	0	0	0	0	0	0
347	0	0	0	0	4280	71	400467	0	0	0	0	0
349	0	0	0	0	4198	4	400544	0	0	0	0	0
350	0	0	0	0	4178	8	400540	0	0	0	0	0
351	0	0	0	0	4187	11	400527	0	0	0	0	0
352	0	0	0	0	4181	8	400522	0	0	0	0	0
353	0	0	0	0	4228	10	400513	0	0	0	0	0
354	0	0	0	0	4240	10	400515	0	0	0	0	0
355	0	0	0	0	4212	6	400460	0	0	0	0	0
356	0	0	0	0	4217	10	400454	0	0	0	0	0
357	0	0	0	0	4459	10	400455	0	0	0	0	0

PHYSICAL DISK WRITE IO SIZE: ELAPSED TIME = 2332.855 SECONDS

Idx	<=4KiB	<=8KiB	<=16KiB	<=32KiB	<=64KiB	<=128KiB	<=256KiB	<=512KiB	<=1MiB	<=2MiB	<=4MiB	>4MiB
337	0	0	0	0	0	0	0	0	0	0	0	0
338	0	0	0	0	0	0	0	0	0	0	0	0
339	0	0	0	0	0	0	0	0	0	0	0	0
340	0	0	0	0	0	0	0	0	0	0	0	0
347	0	0	0	0	0	0	0	0	0	0	0	0
349	0	0	0	0	0	0	0	0	0	0	0	0
350	0	0	0	0	0	0	0	0	0	0	0	0
351	0	0	0	0	0	0	0	0	0	0	0	0

352	0	0	0	0	0	0	0	0	0	0	0	0
353	0	0	0	0	0	0	0	0	0	0	0	0
354	0	0	0	0	0	0	0	0	0	0	0	0
355	0	0	0	0	0	0	0	0	0	0	0	0
356	0	0	0	0	0	0	0	0	0	0	0	0
357	0	0	0	0	0	0	0	0	0	0	0	0

- To show all physical disks and associated counters for read latency

```
SHOW PD * COUNTERS READ_LATENCY ALL OR SHOW PD * COUNTERS READ_LATENCY
10000-8 RAID[0]$ SHOW PD * COUNTERS READ_LATENCY
NO PREVIOUS COUNTERS OF THIS TYPE

10000-8 RAID[0]$ SHOW PD * COUNTERS READ_LATENCY

Physical Disk Read Latency:  Elapsed time = 314562.517 seconds
```

Idx	Avg	<=4ms	<=8ms	<=16ms	<=32ms	<=64ms	<=128ms	<=256ms	<=512ms	<=1s	<=2s	<=4s	>4s
1	31	15591512	5922317	9754340	9951790	7937344	5581279	2262819	304082	16189	0	0	2
2	30	16118226	5874130	9738664	10458859	8424811	5617299	2175332	254373	12110	0	0	599
3	32	16184968	5817478	9444543	9777278	7876203	5736359	2647341	402621	20389	0	0	0
4	31	15501861	5695057	9562826	10646464	8893393	5639465	2413494	314131	11339	0	0	0
5	32	16038049	5795898	9386951	9923919	8092638	5474857	2836231	341282	17996	0	0	0
6	28	16159687	5977650	9869250	10603627	8538449	5466005	1866323	182810	7057	0	0	0
7	30	15816156	5755506	9446592	10251477	8937114	5488195	1936209	259805	9235	0	0	0
8	29	15646688	5770696	9737385	10846915	8995126	5465834	1990362	205745	9947	0	0	0
9	32	15935939	5723235	9440014	9980364	8243319	5719589	2526865	321462	16856	0	0	0
10	32	15938846	5726743	9437335	10172438	8327087	5870562	2796930	326406	14475	0	0	977
11	21	19216044	7120769	11247470	9651450	6025987	3167069	1172729	110019	4062	0	0	0
13	28	21335908	7042430	10702020	9362019	5696571	4523460	3405135	175597	4408	0	0	0
14	25	20409583	6594406	10527406	11070768	8610203	4465153	1638232	245502	17876	0	0	0
15	28	21153147	6649240	10331801	10781713	8453020	5464336	2274916	347773	14993	0	0	0
16	38	20807772	6183829	9492953	10251478	8464380	6319754	4294739	1345279	26016	0	0	0
17	56	20013383	5639933	8323888	8925118	7642342	5752613	6460151	3961370	42323	0	0	0
18	33	20240889	6365921	9887391	10824077	8955422	6970342	3316172	626035	15711	0	0	0
19	30	20604323	6441436	10034441	10573541	8795686	5983844	2673809	375500	13958	0	0	0
20	25	20526713	6763241	10868916	11149058	8266239	4820323	1679887	228048	10717	0	0	0
172	0	0	0	0	0	0	0	0	0	0	0	0	0
173	0	0	0	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0	0	0	0
176	0	0	0	0	0	0	0	0	0	0	0	0	0

- To show all physical disks and associated counters for write latency

```
SHOW PD * COUNTERS WRITE_LATENCY ALL OR SHOW PD * COUNTERS WRITE_LATENCY


10000-8 RAID[0]$ SHOW PD * COUNTERS WRITE_LATENCY
NO PREVIOUS COUNTERS OF THIS TYPE

10000-8 RAID[0]$ SHOW PD * COUNTERS WRITE_LATENCY

Physical Disk Write Latency:  Elapsed time = 314562.517 seconds
```

Idx	Avg	<=4ms	<=8ms	<=16ms	<=32ms	<=64ms	<=128ms	<=256ms	<=512ms	<=1s	<=2s	<=4s	>4s
1	277	415408	1054628	3013806	4216454	3691752	3824311	2381635	473876	28119	0	0	252
2	280	450401	1048348	2859764	4316028	4020589	3466501	1886578	475681	23873	0	0	252
3	283	497388	1154993	3111570	4265719	3622063	3234794	1883251	643272	36177	0	0	252
4	290	401048	936494	2682865	4033717	3727835	3476459	2546439	719810	22347	0	0	252
5	277	489216	1178958	3177435	4421780	3785518	3311111	1601205	450093	30368	0	0	252
6	278	444194	1036552	2908288	4423637	4095542	3412710	1792095	417934	14255	0	0	252
7	276	475260	1125549	3226548	4606374	3891648	3162428	1421641	508949	23815	0	0	252
8	277	451886	1023007	2900775	4394283	4100063	3526526	1742549	384074	19812	0	0	252
9	282	457872	1038574	3024356	4356571	3761637	3342207	1842712	591798	30052	0	0	252
10	68	446917	1015288	2775736	4128573	3805773	3442888	2240179	663262	29726	0	0	0
11	45	566280	1321067	3468350	5163864	3827536	2372774	1076749	219454	12754	0	0	0
13	270	688594	1566873	3848319	4863189	3286209	2371296	1156203	234357	8086	0	0	252
14	277	621814	1286728	3260551	4575578	3654803	2932436	1379510	342244	53100	0	0	252
15	280	676048	1354049	3255027	4388016	3519180	2897406	1476123	432980	26102	0	0	252
16	294	592143	1195454	2840552	3950200	3352067	3117215	2061321	964436	42269	0	0	252
17	313	557064	1104912	2646636	3689768	3102730	2980019	2055691	1824388	68610	0	0	252
18	296	542522	1069055	2608004	3786847	3344185	3587493	2240838	901971	30976	0	0	252
19	282	582285	1175521	2915138	4267710	3855521	3246402	1531229	423607	32649	0	0	252
20	277	545477	1157416	2977171	4649294	4132191	3061848	1203950	360688	25186	0	0	252

```
  172        0        0        0        0        0        0        0        0        0        0        0        0
  173        0        0        0        0        0        0        0        0        0        0        0        0
  174        0        0        0        0        0        0        0        0        0        0        0        0
  175 16078556        0        0        0        0        0        0        0        0        0        0      252
  176        0        0        0        0        0        0        0        0        0        0        0        0
```

- To show all physical disks and associated counters for disk command size for read requests:

```
SHOW PD * COUNTERS READ_SIZE ALL OR SHOW PD * COUNTERS READ_SIZE

10000-8 RAID[0]$ SHOW PD * COUNTERS READ_SIZE
NO PREVIOUS COUNTERS OF THIS TYPE

10000-8 RAID[0]$ SHOW PD * COUNTERS READ_SIZE

Physical Disk Read IO Size:  Elapsed time = 314562.516 seconds
  Idx   <=4KiB   <=8KiB  <=16KiB  <=32KiB  <=64KiB <=128KiB <=256KiB <=512KiB   <=1MiB   <=2MiB   <=4MiB    >4MiB
-------------------------------------------------------------------------------------------------------------------
    1  5381399  1071662  3784605  3821488  5093152 38169166        0        0        0        0        0        0
    2  5380486  1841976  3783453  3819839  5654371 38193957        0        0        0        0        0        0
    3  5379814  1072179  3784432  3821835  5097148 38751436        0        0        0        0        0        0
    4  5381860  1840492  3782727  3822968  5659067 38190656        0        0        0        0        0        0
    5  5379046  1073827  3786001  3823921  5094203 38750657        0        0        0        0        0        0
    6  5382881  1840092  3782456  3818821  5654933 38191250        0        0        0        0        0        0
    7  5377940  1074866  3783498  3820109  5093834 38749608        0        0        0        0        0        0
    8  5376405  1841340  3784626  3822203  5658715 38185179        0        0        0        0        0        0
    9  5380523  1071683  3787372  3819389  5094638 38753774        0        0        0        0        0        0
   10  5379224  1842860  3788518  3818417  5654530 38128008        0        0        0        0        0        0
   11  7301290  1681231  3886951  3560801  4287895 36996912        0        0        0        0        0        0
   13  7476233  1550945  4008107  3679590  4411391 41121064        0        0        0        0        0        0
   14  7033134  1704270  3841974  3624613  4498496 42876481        0        0        0        0        0        0
   15  7091120  1758546  3950898  3837515  4936155 43896571        0        0        0        0        0        0
   16  7085355  2449679  3938414  3816762  4892084 45003772        0        0        0        0        0        0
   17  7101441  1768640  3969267  3870010  5003082 45048492        0        0        0        0        0        0
   18  7086322  2447185  3939842  3812444  4889509 45026195        0        0        0        0        0        0
   19  7093147  1759114  3948879  3836376  4933430 43925059        0        0        0        0        0        0
   20  7053503  2410161  3863115  3662244  5116258 42207316        0        0        0        0        0        0
  172        0        0        0        0        0        0        0        0        0        0        0        0
  173        0        0        0        0        0        0        0        0        0        0        0        0
  174        0        0        0        0        0        0        0        0        0        0        0        0
  175        0        0        0        0        0        0        0        0        0        0        0        0
  176        0        0        0        0        0        0        0        0        0        0        0        0
```

- To show all physical disks and associated counters for disk command size for write requests:

```
SHOW PD * COUNTERS WRITE_SIZE ALL OR SHOW PD * COUNTERS WRITE_SIZE

10000-8 RAID[0]$ SHOW PD * COUNTERS WRITE_SIZE
NO PREVIOUS COUNTERS OF THIS TYPE

10000-8 RAID[0]$ SHOW PD * COUNTERS WRITE_SIZE

Physical Disk Write IO Size:  Elapsed time = 314562.504 seconds
  Idx   <=4KiB   <=8KiB  <=16KiB  <=32KiB  <=64KiB <=128KiB <=256KiB <=512KiB   <=1MiB   <=2MiB   <=4MiB    >4MiB
-------------------------------------------------------------------------------------------------------------------
    1  2817839   446928  1821156  1734283  2244270 10035278        0        0        0        0        0        0
    2  2816649   546610  1820481  1733805  2345505  9284365        0        0        0        0        0        0
    3  2816799   446776  1819785  1734095  2246909  9384558        0        0        0        0        0        0
    4  2817796   547212  1819393  1734914  2345119  9282459        0        0        0        0        0        0
    5  2817217   447151  1819884  1734282  2245111  9381975        0        0        0        0        0        0
    6  2817720   546728  1819606  1733858  2344545  9282461        0        0        0        0        0        0
    7  2815440   446608  1820944  1735874  2243657  9379464        0        0        0        0        0        0
    8  2814726   547413  1821741  1733999  2344813  9280240        0        0        0        0        0        0
    9  2817097   447334  1821770  1732088  2244331  9382940        0        0        0        0        0        0
   10  2816834   547844  1823515  1733991  2343087  9282900        0        0        0        0        0        0
   11  3639895   397541  1663066  1581327  2070321  8676117        0        0        0        0        0        0
   13  3637665   396570  1660298  1579705  2068721  8679950        0        0        0        0        0        0
   14  3638407   479449  1659750  1580374  2153684  8594972        0        0        0        0        0        0
   15  3639118   397607  1658673  1580564  2070578  8678327        0        0        0        0        0        0
   16  3639339   481796  1660484  1581521  2155972  8596517        0        0        0        0        0        0
   17  3639140   397592  1660938  1581892  2070112  8680144        0        0        0        0        0        0
   18  3639462   480023  1661242  1579245  2152501  8598940        0        0        0        0        0        0
   19  3640604   397160  1659575  1580767  2069690  8681762        0        0        0        0        0        0
   20  3639407   480325  1661548  1581613  2153132  8596697        0        0        0        0        0        0
  172        0        0        0        0        0        0        0        0        0        0        0        0
  173        0        0        0        0        0        0        0        0        0        0        0        0
  174        0        0        0        0        0        0        0        0        0        0        0        0
  175        0        0        0        0        0        0        0        0        0        0        0        0
  176        0        0        0        0        0        0        0        0        0        0        0        0
```

- To show all physical disks and the associated counters for different types of rates such as IOs per second, Kilo bytes per second, Kilo bytes per IO, forwarded IOs per second and forwarded Kilo Bytes per second:

```
SHOW PD * COUNTERS RATES

10000-8 RAID[0]$ SHOW PD * COUNTERS RATES
NO PREVIOUS COUNTERS OF THIS TYPE

10000-8 RAID[0]$ SHOW PD * COUNTERS RATES

Physical Disk Counters:  Elapsed time = 314562.502 seconds
  Idx  IOs/sec  KiB/sec   KiB/IO Fwd IO/s Fwd KiB/s| IOs/sec  KiB/sec   KiB/IO Fwd IO/s Fwd KiB/s|
-------------------------------------------------------------------------------------------------
    1      242    11334      191        0        0 |       0        0        0        0        0 |
    2      245    11324      188        0        0 |       0        0        0        0        0 |
    3      242    11321      191        0        0 |       0        0        0        0        0 |
    4      245    11324      188        0        0 |       0        0        0        0        0 |
    5      242    11320      191        0        0 |       0        0        0        0        0 |
    6      245    11323      188        0        0 |       0        0        0        0        0 |
    7      242    11319      191        0        0 |       0        0        0        0        0 |
    8      245    11323      188        0        0 |       0        0        0        0        0 |
    9      242    11321      191        0        0 |       0        0        0        0        0 |
   10      245    11311      188        0        0 |       0        0        0        0        0 |
   11        0        0        0        0        0 |     240    10648      181        0        0 |
   13        0        0        0        0        0 |     255    11510      184        0        0 |
   14        0        0        0        0        0 |     259    11875      187        0        0 |
   15        0        0        0        0        0 |     265    12168      187        0        0 |
   16        0        0        0        0        0 |     271    12393      187        0        0 |
   17        0        0        0        0        0 |     269    12415      188        0        0 |
   18        0        0        0        0        0 |     271    12397      187        0        0 |
   19        0        0        0        0        0 |     265    12174      187        0        0 |
   20        0        0        0        0        0 |     262    11867      185        0        0 |
  172        0        0        0        0        0 |       0        0        0        0        0 |
  173        0        0        0        0        0 |       0        0        0        0        0 |
  174        0        0        0        0        0 |       0        0        0        0        0 |
  175        0        0        0        0        0 |       0        0        0        0        0 |
  176        0        0        0        0        0 |       0        0        0        0        0 |
```

- To see the HELP associated with each counter type.

```
SHOW PD * COUNTERS <COUNTER_TYPE> HELP

10000-8 RAID[0]$ SHOW PD * COUNTERS READ_LATENCY HELP

Help for Counters is not yet supported.

10000-8 RAID[0]$ SHOW PD * COUNTERS READ_SIZE HELP

Help for Counters is not yet supported.

10000-8 RAID[0]$ SHOW PD * COUNTERS WRITE_LATENCY HELP

Help for Counters is not yet supported.

10000-8 RAID[0]$ SHOW PD * COUNTERS WRITE_SIZE HELP

Help for Counters is not yet supported.

10000-8 RAID[0]$ SHOW PD * COUNTERS RATES HELP

Help for Counters is not yet supported.

10000-8 RAID[0]$ SHOW PD * COUNTERS ALL HELP

Help for Counters is not yet supported.
```

RAID POOL

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

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 ASSIGN POOL =<object-id>NUMBER=<n> [PHYSICAL_DISK=<id1>,…,<idn>] Assigns specified pool to a number and to an actual disk location where n is the number of physical disks to assign.
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. A wild card (*) for <object-id> may be used to clear the condition for all Pools within the subsystem.
RAID CREATE POOL [BLOCK_SIZE=<value>][CHUNK_SIZE=<value>] [ASSIGN_POLICY=([SAS|SATA],15000RPM|10000RPM|7200RPM|5400RPM|0RPM|SSD],[<capacity-raw>GB])][NUMBER=<n> [PHYSICAL_DISK=<id1>, …, <idn>]] Create a POOL of a specified BLOCK_SIZE and CHUNK_SIZE in an integer number of KiB and defines it as either SAS or SATA and a specified physical location. 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. SSD is a synonym for 0 RPM.
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 as listed below.
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 drives should be treated as SAS or SATA. Note that the Omission of a member of the ASSIGN_POLICY n-tuple indicates no constraint in that dimension location of the system.

DISK_TIMEOUT=<timeout>|NONE 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.
ERASE_POLICY=(SECURE|ZERO|NOERASE,<priority> Priority is an integer with a range of 1 to 99.
FULL_STRIPED_WRITE_CACHING[=TRUE|FALSE] Enables/disables full_striped_write_caching per pool.
INITIALIZE_POLICY=(ALLOW_IO|NO_IO,<priority> Priority is an integer with a range of 1 to 99.
MIRRORED_WRITE_BACK_CACHE[=TRUE|FALSE] Enables/disables the mirror write back cache coherency per pool.
NAME="string" This is how you name a pool. 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="".
PARITY_CHECK_ON_READ[=TRUE|FALSE] Enables/disables parity_check_on_read per pool.
RAID_LEVELS_SUPPORTED=RAID-0|RAID-1|RAID-5|RAID-6
READ_AHEAD_CACHING[=TRUE|FALSE] Enables/disables read_ahead_caching per pool.
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.
SCRUB_POLICY=<priority> Priority is an integer with a range of 1 to 99.
SPARE_POOL=<object-id> Specifies the Global Spare Pool . Default value is null.

SPARING_POLICY=AUTOMATIC|MANUAL|DISTRIBUTED Specifies the policy used to repair failed disks within the Storage Pool. Default is AUTOMATIC
VERIFY_POLICY=<priority> Priority is an integer with a range of 1 to 99.
WRITE_BACK_CACHING[=TRUE|FALSE] Enables/disables write_back_caching per pool.

Usage Guidelines

Storage Pools must be explicitly created by the user.

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. A power off condition will also trigger a critical state.

Changes (1.3.0.4):

- For RAID CREATE POOL command,
  - 0RPM is no longer an enumeration option for ASSIGN POLICY
  - SATAssure was added
  - LOGICAL DISK is no longer a parameter option.
- For RAID SHOW POOL command, LOGICAL DISK is no longer an available keyword.
- For RAID VERIFY POOL command, VERIFY is now new command. It takes pool as the parameter.
- For RAID VERIFY POOL FORCE_CONSISTENCY <TRUE> or <FALSE>, the keyword **FORCE** consistency can be used to specify whether or not to force data consistency; thus can cause loss of data.
- For RAID SET POOL command, **FULL_STRIPE_WRITE_CACHING** is no longer available in version 1.3.0.4
- For RAID SET POOL command, **SCRUB_POLICY** is no longer available.
- For RAID SET POOL command, **REACT** is a new keyword which specifies Realtime Adaptive Cache Technology for specified pool
- For RAID SET POOL command, SATASSURE in version 1.3.0.4 is a type enumeration taking any one value:
  - NONE
  - Data_integrity_field
  - or parity.
- In previous version, SATASSURE was a boolean with <TRUE> or <FALSE> ; specify the SATAssure on read policy
- For RAID SET POOL <object-id> VERIFY_POLICY
  - in version 1.3.0.4 is a boolen
  - in version 1.2.4 was Integer,

- Specifies whether or not to background verify the pool. If TRUE or FAlse is not specified, TRUE is assumed.
- For RAID CREATE POOL command, the optional keyword **SATASSURE** is now added. In v1.2.4, it was a Boolean value, now it is an emmumeration with these values:
  - NONE
  - DATAINTEGRITY_FIELD
  - PARITY
- For RAID CREATE POOL ASSIGN command, 0RPM is no longer displayed as keyword.
- For RAID SHOW POOL HELP command, the option **F - Forced Write-Thru** - :
  - The period is removed at the end of the sentence.
  - The pool is not necessarily faulted, but we are in a write thru condition (insufficient battery)
- New Settings:
  - P - SATAssure Parity Enabled **
  - D - SATAssure DIF Enabled
  - V - Pool Verify Enabled
- Jobs:
  - V - Pool Verifying active
- For RAID SHOW POOL 1 ALL command:
  - , banner is displayed.
  - SATAssure is now: DIF / None/ Parity
  - No Full Stripe Write field
  - New label, ReACT: TRUE /FALSE
  - Mirroring is now: DISABLING /ENABLING/TRUE/FALSE
  - Write Back:DISABLING /ENABLING/TRUE/FALSE
  - New label, Job OID replaces BkgdJob OID
  - New label, Job Priority replaces BkgdJob Priority
- For RAID SHOW UNASSIGNED POOL command, banner is displayed.

Examples

- Changes are highlighted:

```
RAID[0]$ create pool assign
Value description for 'ASSIGN_POLICY':
   ASSIGN_POLICY <type> <rate> <capacity>
                                    Provide type/rate keyword and/or capacity integer OR NONE to clear all
Available keywords:
   NONE                             No Assign Policy for this pool
   SAS                              Assign only SAS drives to this pool
   SATA                             Assign only SATA drives to this pool
   5400RPM                          Assign only drives with 5400 RPM rotation rate to this pool
   7200RPM                          Assign only drives with 7200 RPM rotation rate to this pool
   10000RPM                         Assign only drives with 10000 RPM rotation rate to this pool
   15000RPM                         Assign only drives with 15000 RPM rotation rate to this pool
   SSD                              Assign only SSD drives to this pool


RAID[0]$ CREATE POOL SATASSURE ?
Value description for 'SATASSURE':
   SATASSURE
                                    Provide a |-separated list of enumerated values
Available keywords:
   NONE                             Do not enable SATAssure
   DATA_INTEGRITY_FIELD             Enable Intelligent SATAssure with the Data Integrity Field option
   PARITY                           Enable SATAssure with the Parity Check on Read option

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RAID[0]$ CRE POOL ?
Required keywords:
   RAID_LEVEL                       Redundancy level
```

```
Optional keywords:
   ASSIGN_POLICY                       Specify OR Clear the assign policy (type, rotation rate, capacity) in
this pool
   CHUNK_SIZE                          Chunk size in KB blocks
   INITIALIZE_POLICY                   Specify the init policy (io policy, priority).  Priority is an integer
with a range of 1 to 99
   NUMBER                              Number of physical_disks in pool
   PHYSICAL_DISK                       Specific list of physical_disks in pool
   SATASSURE                           Specify the SATAssure on read policy

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RAID[0]$ create pool raid_level raid6 satassure dif
POOL 13 OID=0x1adb000d create STATUS='Success' (0x0)
Wed Sep 15 18:18:02 2010


RAID[0]$ sho pool *

******************
*     Pool(s)     *
******************

                                                |Total |Free  |Max   |                   |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          FAULT         64   6        F     4000   3088   3088 DWM R  IV       V     10  UNASSIGNED  AUTO

Total Storage Pools: 12


Wed Sep 15 18:18:14 2010


RAID[1]$ verify pool ?

Keyword 'ALL' does not exist
Available keywords:
   FORCE_CONSISTENCY           Specify whether or not to force consistency (may cause loss of data)

Mon Sep 20 15:05:19 2010

RAID[1]$ set pool 1 satassure
Value description for 'SATASSURE':
   SATASSURE
                               Provide a |-separated list of enumerated values
Available keywords:
   NONE                        Do not enable SATAssure
   DATA_INTEGRITY_FIELD        Enable Intelligent SATAssure with the Data Integrity Field option
   PARITY                      Enable SATAssure with the Parity Check on Read option

Mon Sep 20 15:47:18 2010


RAID[1]$ set pool 1 verify_policy ?
Value description for 'VERIFY_POLICY':
   VERIFY_POLICY <TRUE> or <FALSE>
                             Provide a 'TRUE' or 'FALSE' value string - when not specified, 'TRUE' is assumed

Mon Sep 20 15:46:05 2010


RAID[0]$ create pool ass
Value description for 'ASSIGN_POLICY':
   ASSIGN_POLICY <type> <rate> <capacity>
                                    Provide type/rate keyword and/or capacity integer OR NONE to clear all
Available keywords:
   NONE                             No Assign Policy for this pool
   SAS                              Assign only SAS drives to this pool
   SATA                             Assign only SATA drives to this pool
```

```
   5400RPM                          Assign only drives with 5400 RPM rotation rate to this pool
   7200RPM                          Assign only drives with 7200 RPM rotation rate to this pool
   10000RPM                         Assign only drives with 10000 RPM rotation rate to this pool
   15000RPM                         Assign only drives with 15000 RPM rotation rate to this pool
   SSD                              Assign only SSD drives to this pool

RAID[1]$ sho pool 1 all

******************
*     Pool(s)    *
******************

  Index:                1
  OID:                  0x1aa00001
  Type:                 STORAGE
  Name:                 pool-1
  Chunk Size:           64KB (0x80 blocks)
  Block Size:           512
  RAID Type:            RAID6
  Free Raid6 Capacity:  3088 GB
  Max VD Size:          3088 GB
  Total Capacity:       4000 GB
  UUID:                 60001ff07bdb8000000000351aa00001
  Global Spare Pool:    UNASSIGNED
  DiskTimeout(FRT):     10 minutes
  Init Policy:          ALLOW_IO
  Init Priority:        50%
  Full Rebuild Priority:        80%
  Fractional Rebuild Priority:  90%
  Sparing Policy:       AUTOMATIC
  Verify Policy:        ENABLED
  Assign Policy:
    Device Type:        NA
    Rotation Speed:     NA
    Raw Capacity:       NA
  SATAssure:            DIF
  Cache Settings:
    ReACT:              FALSE
    IO Routing:         TRUE
    Mirroring:          TRUE
    Read Ahead:         TRUE
    Write Back:         TRUE
  Initializing:         FALSE
  Rebuilding:           FALSE
  Paused:               FALSE
  AutoWriteLock:        FALSE
  Critical:             FALSE
  Forced Write-Thru     FALSE
  Current Home:         0x38000000  0x00000000 (REMOTE)
  Future Home:          0xffffffff  0x00000000
  Preferred Home:       0x38000000  0x00000000 (REMOTE)
  Job OID:              0x2e040001
  Job Priority:         99%
  Total Phy Disks       10
  State:                NORMAL
  Member Size:          400 GB
    pID     State     UUID
    0x0058  NORM      0x5000cca00f1a797c
    0x0041  NORM      0x5000cca00f139628
    0x003c  NORM      0x5000cca00f0e6454
    0x0028  NORM      0x5000cca00f140274
    0x0001  NORM      0x5000cca00f0ea8b8
    0x0059  NORM      0x5000cca00f1828d0
    0x0073  NORM      0x5000cca00f114dfc
    0x0009  NORM      0x5000cca00f18aac8
    0x0026  NORM      0x5000cca00f1f0d58
    0x0045  NORM      0x5000cca00f117658

Total Storage Pools: 1

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```

```
RAID[0]$ SHO POOL HELP

*****************************************************************************************************************************************
**                                                                                                                                     **
** Idx - The index of the pool                                                                                                         **
** Name - The name of the pool                                                                                                         **
** State - The current state of the pool. (FLT) indicates that the Faults field should be investigated.                                **
** Chunk - The chunk size (KB) of the pool                                                                                             **
** Raid - The RAID type of the pool                                                                                                    **
** Faults:                                                                                                                             **
**       C - Critical - The pool is in a Critical fault condition (this state can be cleared)                                          **
**       A - Auto Write Locked - The pool is in a AWL condition (this state can be cleared)                                            **
**       F - Forced Write-Thru - The pool is not necessarily faulted, but we are in a write thru condition (insufficient battery)**
**       I - Initialization failed - The pool initialization failed - pool needs to be deleted.                                        **
** Total cap GB - The total capacity (GB) of the pool                                                                                  **
** Free cap GB - The total free capacity (GB) of the pool                                                                              **
** Max VD GB - The maximum VD size (GB) that can be created                                                                            **
** Settings:                                                                                                                           **
**       P - SATAssure Parity Enabled                                                                                                  **
**       D - SATAssure DIF Enabled                                                                                                     **
**       W - Write Back Caching Enabled                                                                                                **
**       M - Mirrored Cache Data Enabled                                                                                               **
**       R - Read Ahead Caching Enabled                                                                                                **
**       Re - Realtime Adaptive Cache Technology Enabled                                                                               **
**       I - IO Routing Enabled (this is not settable)                                                                                 **
**       V - Pool Verify Enabled                                                                                                       **
** Jobs:                                                                                                                               **
**       I - Initializing active                                                                                                       **
**       R - Rebuilding active                                                                                                         **
**       E - Erasing Active (this is not allowed)                                                                                      **
**       V - Pool Verifying active                                                                                                     **
**       P - Current job is paused                                                                                                     **
** Disk T/O - The disk timeout value (in minutes) before a missing drive is removed from the pool                                     **
** Global Spare Pool - The OID (hex) of the spare pool assigned to this pool                                                           **
** Spare Policy - The current spare policy of this pool                                                                                **
**                                                                                                                                     **
*****************************************************************************************************************************************

Wed Sep 15 16:46:41 2010
```

```
RAID[1]$ sho unass

****************************
*      Unassigned Pool     *
****************************


|Total |Failed|Total|
|Cap GB|Cap GB| PDs |
---------------------
     8      0    1

Total Unassigned Pools: 1


Mon Sep 20 16:49:28 2010
```

- 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)
```

- To display attributes of all pools.

```
RAID[1]$ SHOW POOL *

*******************
*      POOL(S)    *
*******************

                                                   |TOTAL |FREE  |MAX   |                    |DISK|   GLOBAL  |SPARE |
IDX|NAME              |STATE      |CHUNK|RAID| FAULTS |CAP GB|CAP GB|VD GB |  SETTINGS  | JOBS |T/O |SPARE POOL|POLICY|
-------------------------------------------------------------------------------------------------------------------------
  0 POOL-0             NORMAL       128    6             5360      0      0  WM  I              10  UNASSIGNED  AUTO
  1 POOL-1             NORMAL       128    6             5360      0      0  WM  I              10  UNASSIGNED  AUTO
  2 POOL-2             NORMAL       128    6             5360      0      0  WM  I              10  UNASSIGNED  AUTO
  3 POOL-3             NORMAL       128    6             5360      0      0  WM  I              10  UNASSIGNED  AUTO
  4 POOL-4             NORMAL       128    6             5360      0      0  WM  I              10  UNASSIGNED  AUTO
  5 POOL-5             NORMAL       128    6             5360      0      0  WM  I              10  UNASSIGNED  AUTO
```

```
  6 POOL-6           NORMAL       128   6              5360      0       0  WM  I              10  UNASSIGNED  AUTO
  7 POOL-7           NORMAL       128   6              5360      0       0  WM  I              10  UNASSIGNED  AUTO
  8 POOL-8           NORMAL       128   6              5360      0       0  WM  I              10  UNASSIGNED  AUTO
  9 POOL-9           NORMAL       128   6              5360      0       0  WM  I              10  UNASSIGNED  AUTO
 10 POOL-10          NORMAL       128   6              5360      0       0  WM  I              10  UNASSIGNED  AUTO
 11 POOL-11          NORMAL       128   6              5360      0       0  WM  I              10  UNASSIGNED  AUTO
 12 POOL-12          NORMAL       128   6              5360      0       0  WM  I              10  UNASSIGNED  AUTO
 13 POOL-13          NORMAL       128   6              5360      0       0  WM  I              10  UNASSIGNED  AUTO
 14 POOL-14          NORMAL       128   6              5360      0       0  WM  I              10  UNASSIGNED  AUTO
 15 POOL-15          NORMAL       128   6              5360      0       0  WM  I              10  UNASSIGNED  AUTO

TOTAL STORAGE POOLS: 16
```

- To display physical disks of all pools.

```
RAID[1]$ SHOW POOL * PDS

****************************
*      PHYSICAL DISK(S)      *
****************************
```

ENCL	SLOT	VENDOR	PRODUCT ID	TYPE	CAP GB	RPM	REVISION	SERIAL NUMBER	POOL	HEALTH STATE	IDX	STATE	WWN
1	8	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2UZUE5606	0	GOOD	14	NORM	5000CCA00F052948
1	15	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3E56E5606	0	GOOD	13	NORM	5000CCA00F063A2C
2	16	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV1993E5606	0	GOOD	12	NORM	5000CCA00F025D08
2	20	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2703E5606	0	GOOD	3	NORM	5000CCA00F040C20
3	7	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2708E5606	0	GOOD	6	NORM	5000CCA00F040C34
3	28	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2SVTE5606	0	GOOD	10	NORM	5000CCA00F05094C
4	9	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV1NH1E5606	0	GOOD	1	NORM	5000CCA00F030514
4	27	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3EETE5606	0	GOOD	26	NORM	5000CCA00F063E54
5	16	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2UR4E5606	0	GOOD	4	NORM	5000CCA00F052514
5	32	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2SZJE5606	0	GOOD	2	NORM	5000CCA00F050B1C
1	6	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2YVAE5606	1	GOOD	23	NORM	5000CCA00F05632C
1	31	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2UU4E5606	1	GOOD	36	NORM	5000CCA00F052688
2	7	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3E94E5606	1	GOOD	9	NORM	5000CCA00F063C14
2	28	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2W5WE5606	1	GOOD	16	NORM	5000CCA00F053B3C
3	5	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV1SYWE5606	1	GOOD	21	NORM	5000CCA00F033950
3	32	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2UXME5606	1	GOOD	11	NORM	5000CCA00F052838
4	24	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3LE4E5606	1	GOOD	32	NORM	5000CCA00F068918
4	25	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3EHXE5606	1	GOOD	30	NORM	5000CCA00F063F5C
5	8	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2UD0E5606	1	GOOD	7	NORM	5000CCA00F05202C
5	25	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3EB1E5606	1	GOOD	5	NORM	5000CCA00F063D00
1	2	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2XXRE5606	2	GOOD	33	NORM	5000CCA00F055550
1	24	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV307XE5606	2	GOOD	44	NORM	5000CCA00F057848
2	26	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV21DLE5606	2	GOOD	49	NORM	5000CCA00F03B814
2	34	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV1NT0E5606	2	GOOD	15	NORM	5000CCA00F03096C
3	8	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2W3WE5606	2	GOOD	18	NORM	5000CCA00F053A44
3	17	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3E7LE5606	2	GOOD	24	NORM	5000CCA00F063B54
4	1	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV1NDGE5606	2	GOOD	51	NORM	5000CCA00F0303D4
4	32	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2Y3YE5606	2	GOOD	37	NORM	5000CCA00F055854
5	1	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3EULE5606	2	GOOD	8	NORM	5000CCA00F06440C
5	19	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV1NHVE5606	2	GOOD	17	NORM	5000CCA00F030578
1	5	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3EL5E5606	3	GOOD	40	NORM	5000CCA00F064074
1	33	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2WALE5606	3	GOOD	45	NORM	5000CCA00F053D84
2	4	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3SM4E5606	3	GOOD	62	NORM	5000CCA00F06D714
2	8	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3E9KE5606	3	GOOD	20	NORM	5000CCA00F063C48
2	22	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV1T0XE5606	3	GOOD	19	NORM	5000CCA00F033A4C
3	18	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2TGTE5606	3	GOOD	25	NORM	5000CCA00F051280
3	23	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2SJYE5606	3	GOOD	22	NORM	5000CCA00F050488
4	2	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV202PE5606	3	GOOD	59	NORM	5000CCA00F03A444
4	19	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV30L4E5606	3	GOOD	41	NORM	5000CCA00F057D3C
5	23	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2SWDE5606	3	GOOD	31	NORM	5000CCA00F050998
1	14	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3N5GE5606	4	GOOD	77	NORM	5000CCA00F06A368
1	20	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV1T1NE5606	4	GOOD	55	NORM	5000CCA00F033AA8
2	1	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV323YE5606	4	GOOD	68	NORM	5000CCA00F059464
2	12	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3EBSE5606	4	GOOD	28	NORM	5000CCA00F063D58
3	9	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2WJME5606	4	GOOD	38	NORM	5000CCA00F054070
3	26	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV319GE5606	4	GOOD	27	NORM	5000CCA00F05880C
3	27	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2YTAE5606	4	GOOD	29	NORM	5000CCA00F056234
4	13	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3243E5606	4	GOOD	78	NORM	5000CCA00F059478
4	20	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV202AE5606	4	GOOD	42	NORM	5000CCA00F03A418
5	14	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV16TSE5606	4	GOOD	46	NORM	5000CCA00F023790
1	7	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV214KE5606	5	GOOD	57	NORM	5000CCA00F03B430
1	28	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2193E5606	5	GOOD	82	NORM	5000CCA00F03B664
2	13	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3E4GE5606	5	GOOD	75	NORM	5000CCA00F0639D0
2	31	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV31X5E5606	5	GOOD	35	NORM	5000CCA00F05911C
3	6	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2ZA0E5606	5	GOOD	39	NORM	5000CCA00F056A48
3	13	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3ET8E5606	5	GOOD	34	NORM	5000CCA00F064368
3	21	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV325ME5606	5	GOOD	48	NORM	5000CCA00F059534
4	14	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3T2UE5606	5	GOOD	80	NORM	5000CCA00F06DE30
4	33	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2Z1VE5606	5	GOOD	43	NORM	5000CCA00F056654
5	17	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2TSEE5606	5	GOOD	47	NORM	5000CCA00F0516B0
1	3	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV36N2E5606	6	GOOD	91	NORM	5000CCA00F05D844
1	23	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3S0VE5606	6	GOOD	74	NORM	5000CCA00F06CE38
2	2	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV36R3E5606	6	GOOD	83	NORM	5000CCA00F05D940
2	33	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3M1UE5606	6	GOOD	108	NORM	5000CCA00F0692A0
3	16	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3RM5E5606	6	GOOD	53	NORM	5000CCA00F06C814
3	20	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV327UE5606	6	GOOD	52	NORM	5000CCA00F059644
3	24	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV36MLE5606	6	GOOD	56	NORM	5000CCA00F05D808
4	28	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3149E5606	6	GOOD	81	NORM	5000CCA00F05858C
4	34	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2WARE5606	6	GOOD	50	NORM	5000CCA00F053D94
5	22	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2XNYE5606	6	GOOD	54	NORM	5000CCA00F05518C
1	26	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3S54E5606	7	GOOD	92	NORM	5000CCA00F06D04C
1	34	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV3E4LE5606	7	GOOD	84	NORM	5000CCA00F0639E0
2	14	HITACHI	HUS156060VLS600	SAS	558	15K	A392	JWV2UZ4E5606	7	GOOD	86	NORM	5000CCA00F0528F4

```
   2   19 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV37NEE5606          7  GOOD   128 NORM    5000CCA00F05E774
   3   10 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV22ANE5606          7  GOOD    63 NORM    5000CCA00F03C628
   3   14 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3SSEE5606          7  GOOD    70 NORM    5000CCA00F06D928
   4    3 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV22M8E5606          7  GOOD   103 NORM    5000CCA00F03CA54
   4    7 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV2546E5606          7  GOOD    71 NORM    5000CCA00F03F014
   5   26 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3T4KE5606          7  GOOD    60 NORM    5000CCA00F06DF08
   5   34 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV1NNUE5606          7  GOOD    58 NORM    5000CCA00F0307E0
   1   10 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV22SBE5606          8  GOOD    85 NORM    5000CCA00F03CC50
   1   27 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV1EXJE5606          8  GOOD    94 NORM    5000CCA00F02A280
   2   15 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV36R4E5606          8  GOOD    87 NORM    5000CCA00F05D944
   2   23 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV2ZUUE5606          8  GOOD   132 NORM    5000CCA00F0571F0
   3    2 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV1TNGE5606          8  GOOD    73 NORM    5000CCA00F0343C4
   3   19 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3E47E5606          8  GOOD    64 NORM    5000CCA00F0639B4
   4    8 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV2ZK0E5606          8  GOOD    88 NORM    5000CCA00F056DAC
   4   17 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV22BBE5606          8  GOOD   117 NORM    5000CCA00F03C680
   5    5 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV2U95E5606          8  GOOD    61 NORM    5000CCA00F051ECC
   5    7 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV2307E5606          8  GOOD    65 NORM    5000CCA00F03D020
   1   25 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3207E5606          9  GOOD   101 NORM    5000CCA00F059298
   1   32 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV1T27E5606          9  GOOD    98 NORM    5000CCA00F033AF0
   2   18 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV2195E5606          9  GOOD    90 NORM    5000CCA00F03B66C
   2   32 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3S3TE5606          9  GOOD   140 NORM    5000CCA00F06CFA4
   3   15 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV2N41E5606          9  GOOD    76 NORM    5000CCA00F04D13C
   3   31 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3EGTE5606          9  GOOD    79 NORM    5000CCA00F063ED0
   4   15 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3S3KE5606          9  GOOD   125 NORM    5000CCA00F06CF88
   4   22 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3E4PE5606          9  GOOD    96 NORM    5000CCA00F0639EC
   5    3 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV22DSE5606          9  GOOD    66 NORM    5000CCA00F03C72C
   5   24 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV26ZNE5606          9  GOOD    67 NORM    5000CCA00F040BE8
   1   17 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV300LE5606         10  GOOD   106 NORM    5000CCA00F0574BC
   1   21 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV33TSE5606         10  GOOD    99 NORM    5000CCA00F05AD7C
   2   10 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3270E5606         10  GOOD   141 NORM    5000CCA00F0595E0
   2   17 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV37X6E5606         10  GOOD    93 NORM    5000CCA00F05EB38
   3    3 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV17UDE5606         10  GOOD   100 NORM    5000CCA00F0246E4
   3   11 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV2JAZE5606         10  GOOD    95 NORM    5000CCA00F049888
   4    5 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV32WAE5606         10  GOOD   127 NORM    5000CCA00F059FB8
   4   23 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3T34E5606         10  GOOD   110 NORM    5000CCA00F06DE58
   5    4 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3SMAE5606         10  GOOD    72 NORM    5000CCA00F06D72C
   5   12 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV2TMRE5606         10  GOOD    69 NORM    5000CCA00F0514E4
   1   18 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV222ZE5606         11  GOOD   107 NORM    5000CCA00F03C270
   1   19 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3SELE5606         11  GOOD   112 NORM    5000CCA00F06D464
   2    6 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV22HGE5606         11  GOOD   116 NORM    5000CCA00F03C87C
   2   21 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3271E5606         11  GOOD   142 NORM    5000CCA00F0595E4
   3    1 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV2M6UE5606         11  GOOD   122 NORM    5000CCA00F04C390
   3   33 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV2YYKE5606         11  GOOD   102 NORM    5000CCA00F0564BC
   4   16 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3S3PE5606         11  GOOD   135 NORM    5000CCA00F06CF98
   4   21 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3SMSE5606         11  GOOD   111 NORM    5000CCA00F06D760
   5    2 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV33NKE5606         11  GOOD    89 NORM    5000CCA00F05AB74
   5   28 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3T30E5606         11  GOOD    97 NORM    5000CCA00F06DE48
   1    4 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV22PUE5606         12  GOOD   126 NORM    5000CCA00F03CB90
   1   11 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3N40E5606         12  GOOD   124 NORM    5000CCA00F06A2B4
   2    5 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV209PE5606         12  GOOD   120 NORM    5000CCA00F03A7A8
   2   24 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV37RVE5606         12  GOOD   149 NORM    5000CCA00F05E8A0
   3   12 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3MJ7E5606         12  GOOD   113 NORM    5000CCA00F06999C
   3   25 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV22EZE5606         12  GOOD   150 NORM    5000CCA00F03C7C4
   4   10 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV217JE5606         12  GOOD   123 NORM    5000CCA00F03B5A0
   4   26 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3011E5606         12  GOOD   136 NORM    5000CCA00F0574F4
   5   20 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV316HE5606         12  GOOD   104 NORM    5000CCA00F05869C
   5   33 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV324AE5606         12  GOOD   105 NORM    5000CCA00F059494
   1    9 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV2YZ2E5606         13  GOOD   131 NORM    5000CCA00F0564FC
   1   13 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV32AZE5606         13  GOOD   133 NORM    5000CCA00F0597CC
   2    9 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV1GM0E5606         13  GOOD   152 NORM    5000CCA00F02ACE8
   2   27 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV30WKE5606         13  GOOD   121 NORM    5000CCA00F0581CC
   3    4 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3T29E5606         13  GOOD   160 NORM    5000CCA00F06DDF0
   3   34 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV1YTUE5606         13  GOOD   145 NORM    5000CCA00F0390F4
   4    6 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV33WLE5606         13  GOOD   151 NORM    5000CCA00F05AEDC
   4   12 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3SJ3E5606         13  GOOD   139 NORM    5000CCA00F06D59C
   5   10 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV33LRE5606         13  GOOD   114 NORM    5000CCA00F05AA90
   5   18 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3E4UE5606         13  GOOD   109 NORM    5000CCA00F0639FC
   1    1 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3M8EE5606         14  GOOD   137 NORM    5000CCA00F0695D4
   1   22 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3S7YE5606         14  GOOD   143 NORM    5000CCA00F06D1A8
   2    3 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV2MYLE5606         14  GOOD   134 NORM    5000CCA00F04CE98
   2   11 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV1KRZE5606         14  GOOD   158 NORM    5000CCA00F02DBE0
   2   25 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV22PVE5606         14  GOOD   129 NORM    5000CCA00F03CB94
   3   22 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV376KE5606         14  GOOD   153 NORM    5000CCA00F05E0BC
   4   11 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV21D1E5606         14  GOOD   147 NORM    5000CCA00F03B7D0
   4   18 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3SAEE5606         14  GOOD   155 NORM    5000CCA00F06D2DC
   5    6 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV203GE5606         14  GOOD   118 NORM    5000CCA00F03A4A4
   5   15 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV326KE5606         14  GOOD   115 NORM    5000CCA00F0595A8
   1   12 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3S1VE5606         15  GOOD   146 NORM    5000CCA00F06CEB4
   1   16 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3T1ME5606         15  GOOD   144 NORM    5000CCA00F06DD9C
   4    4 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3SDJE5606         15  GOOD   157 NORM    5000CCA00F06D3E0
   4   31 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3TJ9E5606         15  GOOD   154 NORM    5000CCA00F06E4B8
   5    9 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3STVE5606         15  GOOD   156 NORM    5000CCA00F06D9D8
   5   11 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV233JE5606         15  GOOD   148 NORM    5000CCA00F03D1B8
   5   13 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3T8AE5606         15  GOOD   159 NORM    5000CCA00F06E0DC
   5   21 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3S9WE5606         15  GOOD   138 NORM    5000CCA00F06D298
   5   27 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV3783E5606         15  GOOD   130 NORM    5000CCA00F05E17C
   5   31 HITACHI  HUS156060VLS600       SAS     558  15K A392     JWV22BEE5606         15  GOOD   119 NORM    5000CCA00F03C688

TOTAL PHYSICAL DISKS:      160
TOTAL ASSIGNED DISKS:      160
TOTAL UNASSIGNED DISKS:    0
  TOTAL SAS DISKS:         160
  TOTAL MEMBER STATE NORMAL:   160


RAID[1]$ create pool

Required Parameters Not Specified, choose from:
Required keywords:
   RAID_LEVEL                  Redundancy level
```

```
Optional keywords:
   ASSIGN_POLICY              Specify OR Clear the assign policy (type, rotation rate, capacity) in this pool
   CHUNK_SIZE                 Chunk size in KB blocks
   INITIALIZE_POLICY          Specify the init policy (io policy, priority).  Priority is an integer with a
range of 1
                              to 99
   NUMBER                     Number of physical_disks in pool
   PHYSICAL_DISK              Specific list of physical_disks in pool
   SATASSURE                  Specify the SATAssure on read policy

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RAID[1]$ create pool raid_level=raid5 satass
Value description for 'SATASSURE':
   SATASSURE
                              Provide a |-separated list of enumerated values
Available keywords:
   NONE                       Do not enable SATAssure
   DATA_INTEGRITY_FIELD       Enable Intelligent SATAssure with the Data Integrity Field option
   PARITY                     Enable SATAssure with the Parity Check on Read option

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```

- 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 *
OID: 0X18370001 INDEX: 0X0001 NAME: POOL-1
```

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

```
TOTAL STORAGE POOLS: 8


10000-8 RAID[0]$ SHOW POOL 0 ALL
  INDEX:                  0
  OID:                    0X18690000
  TYPE:                   STORAGE
  NAME:                   POOL-0
  CHUNK SIZE:             256KB (0X200 BLOCKS)
  BLOCK SIZE:             512
  RAID TYPE:              RAID6
  FREE RAID6 CAPACITY:    0 GB
  MAX VD SIZE:            0 GB
  TOTAL CAPACITY:         3520 GB
  UUID:                   60001FF070E500000000000D18690000
  GLOBAL SPARE POOL:      0X18770007
  DISKTIMEOUT(FRT):       10 MINUTES
  INIT POLICY:            ALLOW_IO
  INIT PRIORITY:          50%
  FULL REBUILD PRIORITY:          80%
  FRACTIONAL REBUILD PRIORITY:    90%
  SPARING POLICY:         AUTOMATIC
  ASSIGN POLICY:
    DEVICE TYPE:          SAS
    ROTATION SPEED:       NA
```

```
    RAW CAPACITY:       NA
  SATASSURE:            TRUE
  CACHE SETTINGS:
    FULL STRIPE WRITE:  TRUE
    IO ROUTING:         TRUE
    MIRRORING:          TRUE
    READ AHEAD:         TRUE
    WRITE BACK:         TRUE
  INITIALIZING:         FALSE
  REBUILDING:           FALSE
  PAUSED:               FALSE
  AUTOWRITELOCK:        FALSE
  CRITICAL:             FALSE
  CURRENT HOME:         0X38000000  0X00000000 (LOCAL)
  FUTURE HOME:          0XFFFFFFFF  0X00000000
  PREFERRED HOME:       0X38000000  0X00000000 (LOCAL)
  BKGDJOB OID:          INACTIVE
  TOTAL PHY DISKS       10
  STATE:                NORMAL
  MEMBER SIZE:          352 GB
    PID     STATE     UUID
    0X0001  NORM      0X5000C5000A7ADCC4
    0X0002  NORM      0X5000C5000A79B7EC
    0X0003  NORM      0X5000C5000A7ADCCC
    0X0004  NORM      0X5000C5000A7AE0C8
    0X0005  NORM      0X5000C5000A7ADBDC
    0X0006  NORM      0X5000C5000A7ADAE4
    0X0007  NORM      0X5000C5000A7AD7FC
    0X0051  NORM      0X5000C5000A7ADBBC
    0X0009  NORM      0X5000C5000A7B5208
    0X000A  NORM      0X5000C5000A7B3F24


TOTAL STORAGE POOLS: 1
```

- To display the all RAID POOL using wild card *:

```
10000-8 RAID[0]$ SHOW POOL *
```

IDX	NAME	STATE	CHUNK	RAID	FAULTS	TOTAL CAP GB	FREE CAP GB	MAX VD GB	SETTINGS	JOBS	DISK T/O	GLOBAL SPARE POOL	SPARE POLICY
0	POOL-0	NORMAL	256	6		3520	0	0	S W M R F I		10	0X18770007	AUTO
1	POOL-1	NORMAL	128	6		3520	0	0	S W M R F I		10	0X18770007	AUTO
2	POOL-2	NORMAL	64	6		3520	0	0	S W M R F I		10	0X18770007	AUTO
3	POOL-3	NORMAL	32	6		3520	0	0	S W M R F I		10	0X18770007	AUTO
4	POOL-4	NORMAL	256	5		1760	0	0	S W M R F I		10	0X18770007	AUTO
5	POOL-5	NORMAL	NA	1		704	0	0	S W M R F I		10	0X18770007	AUTO
6	POOL-6	NORMAL	NA	1		704	0	0	S W M R F I		10	0X18770007	AUTO
8	POOL-8	NORMAL	32	5		3168	0	0	W M R F I		10	0X18770007	AUTO

RAID POWER_SUPPLY

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

COMMANDS Description
RAID LOCATE POWER_SUPPLY =<enclosure-id>, <power-supply-id> Send the identify command to the power supply and blink the blue identify LED on it.
RAID SHOW POWER_SUPPLY =<enclosure-id>, <power-supply-id>[COUNTERS][ALL_ATTRIBUTES] Displays all counters and attributes for the specified power supply.

ATTRIBUTES Description
none

Usage Guidelines

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

Changes (1.3.0.4)

- For the RAID SHOW POWER SUPPLY command,
  - Banner is displayed.
  - New heading- OT Fail: True|false
  - New heading-OT Warn: true|false
  - New heading-Location: displays location.

- For the RAID SHOW POWER SUPPLY ALL command,
  - Banner is displayed.
  - New label- Over Temp Failure: True|false
  - New label-Over Temp Warning: true|false
  - New heading-Location: displays location.

Examples

- Changes are highlighted

```
RAID[0]$ SHO POWer_supply  *

**************************
*     Power Supply(s)    *
**************************

           |Power|                                          |      Indicators       |
Idx|Encl|Pos|State|Present|AC Fail|DC Fail|OT Fail|OT Warn|OK |Fault|Failure|Locate|Location|SES Status
---------------------------------------------------------------------------------------------------------
  1    1   1   ON    TRUE   FALSE   FALSE   FALSE   FALSE   ON  OFF    OFF    OFF    PSU 1    OK

Total Power Supplies: 4
```

```
RAID[1]$ sho power * all

*************************
*     Power Supply(s)     *
*************************

Sub Index:              1
Sub OID:                0x60000001
Enclosure Index:        1
Enclosure OID:          0x50000001
Position:               1
SES Status:             OK
Power State:            ON
Present:                TRUE
AC Mains Failed:        FALSE
DC Failed:              FALSE
Over Temp Failure:      FALSE
Over Temp Warning:      FALSE
OK Indicator:           ON
Fault Indicator:        OFF
Predicted Failure Ind:  OFF
Locate Indicator:       OFF
Location:               PSU 1
Part number:            PWR-00028-01-A
Serial number:          CATEC0009B5VF001
Firmware version:       B115
```

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.

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:

```
10000-8 RAID[0]$ SHOW PROCESSOR 0 ALL
INDEX:                        0
OID:                          0X40000000
NAME:                         0
PARENT RP CONTROLLER INDEX: 0
PARENT RP CONTROLLER OID:   0X38000000


TOTAL RAID PROCESSORS: 1
```

- To display all attributes of the all RAID PROCESSORS:

```
10000-8 RAID[0]$ SHOW PROCESSOR *
OID: 0X40000000 INDEX: 0000 NAME: 00000000
OID: 0X40000001 INDEX: 0001 NAME: 00000001

TOTAL RAID PROCESSORS: 2
```

RAID SHOW

Changes (1.3.0.4)

- In the RAID SHOW command, **IOC** in 1.3.0.4 is new available keyword
- RAID SHOW IOC is a new command.

Examples

- Changes are highlighted:

```
RAID[1]$ sho
Please choose from:
Available keywords:
   ADMINISTRATOR              Show administrator attributes
   CHANNEL                    Show channel attributes
   CONTROLLER                 Show controller attributes
   ENCLOSURE                  Show enclosure attributes
   EXPANDER                   Show expander attributes
   FAN                        Show fan attributes
   IOC                        Show IOC attributes
   JOB                        Show job attributes
   PHYSICAL_DISK              Show physical disk attributes
   POOL                       Show pool attributes
   POWER_SUPPLY               Show power supply attributes
   PROCESSOR                  Show processor attributes
   SLOT                       Show slot attributes
   SPARE_POOL                 Show spare pool attributes
   SUBSYSTEM                  Show subsystem attributes
   TEMPERATURE                Show temperature attributes
   UNASSIGNED_POOL            Show unassigned pool attributes
   UPS                        Show ups attributes
   VIRTUAL_DISK               Show virtual disk attributes

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RAID[0]$ SHO IOC

******************
*     IOC(s)     *
******************


Idx|Ctlr|RP|IOC| Type  |Vendor|Product|      Slot      |  Part Number   |   HW Version   |   FW Version   |Channels|
-------------------------------------------------------------------------------------------------------------------
  0   1   0  00 SAS HBA  1000   0058              P0.1         SAS1068E              B3      01.30.04.00      2
  1   0   0  00 SAS HBA  1000   0058              P0.1         SAS1068E              B3      01.30.04.00      2

Total IOCs: 2


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RAID[0]$ SHO IOC *

******************
*     IOC(s)     *
******************


Idx|Ctlr|RP|IOC| Type  |Vendor|Product|      Slot      |  Part Number   |   HW Version   |   FW Version   |Channels|
-------------------------------------------------------------------------------------------------------------------
  0   1   0  00 SAS HBA  1000   0058              P0.1         SAS1068E              B3      01.30.04.00      2
  1   0   0  00 SAS HBA  1000   0058              P0.1         SAS1068E              B3      01.30.04.00      2

Total IOCs: 2
```

```
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-------------------------------------------------------------------------------
RAID[0]$ SHO IOC * ?
Available keywords:
   ALL_ATTRIBUTES                    Show all attributes for the specified object
   COUNTERS                          Show counters for the specified object

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-------------------------------------------------------------------------------
RAID[0]$ SHO IOC * ALL

******************
*     IOC(s)     *
******************

Index:                  0
OID:                    0x90000000
Controller Index:       1
Logical Parent:         0
IOC Handle:             0
PCI Bus Number:         8
Type:                   SAS HBA
Vendor ID:              1000
Product ID:             58
Physical Parent:        0
Part Number:            SAS1068E
Hardware Version:       B3
Firmware Version:       01.30.04.00
Slot:                   P0.1
Channel Count:          2
Reset In Progress:      FALSE
Virtualization Support: FALSE
T10 DIF Support:        FALSE

Index:                  1
OID:                    0x90000001
Controller Index:       0
Logical Parent:         0
IOC Handle:             0
PCI Bus Number:         8
Type:                   SAS HBA
Vendor ID:              1000
Product ID:             58
Physical Parent:        0
Part Number:            SAS1068E
Hardware Version:       B3
Firmware Version:       01.30.04.00
Slot:                   P0.1
Channel Count:          2
Reset In Progress:      FALSE
Virtualization Support: FALSE
T10 DIF Support:        FALSE

Total IOCs: 2

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RAID[0]$ SHO IOC * COUNTERS

******************
*     IOC(s)     *
******************

Idx|Ctlr|RP|IOC| Type  |Vendor|Product|      Slot      |  Part Number   |   HW Version   |   FW Version   |Channels|
-------------------------------------------------------------------------------------------------------------------------
Counters for this object are currently not supported
Counters for this object are currently not supported

Total IOCs: 2
```

RAID SLOT

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

COMMANDS Description
RAID SHOW SLOT =<object-id> [ALL_ATTRIBUTES] Displays all attributes for the specified RAID PROCESSOR.
RAID SET SLOT =<enclosure id><object-id>POWER Sets enclosure-object id and the slot object id and specifies power state for the slot (required).

ATTRIBUTES

None.

Usage Guidelines

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

Changes (1.3.0.4)

- **NEW COMMAND**: RAID SET SLOT <enclosure-id> <object-id> POWER.
- **POWER** is required field. It specifies the power state for the specified disk slot.
- In the RAID SHOW SLOTS command,
  - Banner displayed.
  - Type field values:
    - Sas
    - Sata
    - Empty
    - emula

Examples

- Changes are highlighted:

```
RAID[1]$ set slot 0 1

Required Parameters Not Specified, choose from:
Required keywords:
   POWER                      Specify the power state for the specified disk slot

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RAID[1]$ sho slot *

************************
*     Disk Slot(s)     *
************************

            |       Physical Disk          |Power|       |      Indicators        |
Idx|Encl|Pos| Idx|ID                 |Type |State|Present|OK |Fault|Failure|Locate|SES Status
-------------------------------------------------------------------------------------------
  1    1   1   64 0x5000cca00f187c3c SAS     ON    TRUE   ON  OFF    OFF    OFF    OK
```

```
RAID[1]$ sho slot * all

************************
*     Disk Slot(s)     *
************************

Sub Index:              1
Sub OID:                0x58000001
Enclosure Index:        1
Enclosure OID:          0x50000001
Position:               1
SES Status:             OK
Physical Disk Index:    64
Physical Disk OID:      0x22490040
Physical Disk ID:       0x5000cca00f187c3c
Type:                   SAS
Power State:            ON
Present:                TRUE
OK Indicator:           ON
Fault Indicator:        OFF
Predicted Failure Ind:  OFF
Locate Indicator:       OFF
```

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 [BLOCK_SIZE=<value> Creates a SPARE_POOL in the specified block size.
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] [COUNTERS] Displays the attributes of a specified RAID SPARE_POOL.
RAID SHOW SPARE_POOL=<object-id> [PHYSICAL_DISKS] [POOLS] Displays the physical disks associated with the specified RAID SPARE_POOL.

ATTRIBUTES Description
DISK_TIMEOUT=<timeout>|NONE 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.

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

Changes (1.3.0.4)

For RAID SHOW SPARE POOL command, banner is displayed.

Examples

- Change is highlighted:

```
RAID[1]$ SHO SPARE_POOL *

************************
*     SPARE POOL(S)     *
************************


                                  |DISK |TOTAL  |TOTAL|STORAGE  |
IDX|NAME                    |BLOCKS| T/O |CAP GB| PDS |POOL IDX|
-------------------------------------------------------------
 14 SPARE_POOL-14             512    10       0    0

TOTAL SPARE POOLS: 1


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```

- 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
```

- To show all spares using wild card *:

```
RAID[0]$ SHOW SPARE *

                                  |DISK |TOTAL |TOTAL|STORAGE |
IDX|NAME                     |BLOCKS| T/O |CAP GB| PDS |POOL IDX|
-------------------------------------------------------------
  7 SPARE_POOL-7                512    10     704     2       0
                                                              1
                                                              2
                                                              3
                                                              4
                                                              5
                                                              6
                                                              8

TOTAL SPARE POOLS: 1
```

- To show all attributes of specified spare pool:

```
RAID[0]$ SHOW SPARE 7 ALL
  INDEX:                 7
  OID:                   0X18770007
  TYPE:                  GLOBAL SPARE
  NAME:                  SPARE_POOL-7
  BLOCK SIZE:            512
  DISKTIMEOUT(FRT):      10 MINUTES
  TOTAL CAPACITY:        704 GB
  UUID:                  0X0000000000000000
  TOTAL PHY DISKS:       2
  STORAGE POOL LIST:     INDEX: 0  OID:0X18690000
                         1  OID:0X186B0001
                         2  OID:0X186D0002
                         3  OID:0X186F0003
                         4  OID:0X18710004
                         5  OID:0X18730005
                         6  OID:0X18750006
                         8  OID:0X187F0008

TOTAL SPARE POOLS: 1
```

- To show physical disk of specified spare pool:

```
RAID[0]$ SHOW SPARE 7 PD

                                                                                  |HEALTH|
ENCL|SLOT| VENDOR |     PRODUCT ID     |TYPE|CAP GB | RPM|REVISION|    SERIAL NUMBER    |POOL|STATE | IDX|STATE |        WWN        |
-----------------------------------------------------------------------------------------------------------------------------------
   1   26  SEAGATE          ST3400755SS  SAS     372 7.2K      0003 3RJ143L1000099173XQF    7  SPARE   50 NORM   5000C5000A7B5008
   1   32  SEAGATE          ST3400755SS  SAS     372 7.2K      0003 3RJ1458M00009916F7HL    7  SPARE   20 NORM   5000C5000A7B4464

TOTAL PHYSICAL DISKS:       2
TOTAL ASSIGNED DISKS:       2
TOTAL UNASSIGNED DISKS:     0
  TOTAL SAS DISKS:          2
  TOTAL MEMBER STATE NORMAL:    2
```

- To show all attributes of the physical disk of specified spare pool:

```
10000-8 RAID[0]$ SHOW SPARE 7 PD ALL
  INDEX:             50
  OID:               0X20820032
  POOL INDEX:        7
  POOL OID:          0X18770007
  CAPACITY:          352 GB
  RAW CAPACITY:      372 GB(BASE 2)/400 GB(BASE 10)
  BLOCK SIZE:        512
  ENABLED DISK CH:   0X20  0X20
```

```
  ENCLOSURE INDEX:  1
  ENCLOSURE OID:    0X50000001
  DISK SLOT:        26  (1:26)
  VENDOR ID:        SEAGATE
  PRODUCT ID:       ST3400755SS
  PRODUCT REVISION: 0003
  SERIAL NUMBER:    3RJ143L1000099173XQF
  HEALTH STATE:     GOOD
  ROTATION SPEED:   7200 RPM
  DEVICE TYPE:      SAS
  MEMBER STATE:     NORMAL
  STATE:            READY
  SPARE:            TRUE
  FAILED:           FALSE
  UUID:             0X5000C5000A7B5008


  INDEX:            20
  OID:              0X20140014
  POOL INDEX:       7
  POOL OID:         0X18770007
  CAPACITY:         352 GB
  RAW CAPACITY:     372 GB(BASE 2)/400 GB(BASE 10)
  BLOCK SIZE:       512
  ENABLED DISK CH:  0X2  0X2
  ENCLOSURE INDEX:  1
  ENCLOSURE OID:    0X50000001
  DISK SLOT:        32  (1:32)
  VENDOR ID:        SEAGATE
  PRODUCT ID:       ST3400755SS
  PRODUCT REVISION: 0003
  SERIAL NUMBER:    3RJ1458M00009916F7HL
  HEALTH STATE:     GOOD
  ROTATION SPEED:   7200 RPM
  DEVICE TYPE:      SAS
  MEMBER STATE:     NORMAL
  STATE:            READY
  SPARE:            TRUE
  FAILED:           FALSE
  UUID:             0X5000C5000A7B4464


TOTAL PHYSICAL DISKS:      2
TOTAL ASSIGNED DISKS:      2
TOTAL UNASSIGNED DISKS:    0
  TOTAL SAS DISKS:         2
  TOTAL MEMBER STATE NORMAL:   2
```

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.
RAID CLEAR SUBSYSTEM ULA [FORCE] Clears the ULA stored by the Subsystem and reacquires it from a present Controller. The CLUI will ask for confirmation UNLESS the FORCE qualifier is specified.
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 SHOW SUBSYSTEM [ALL_ATTRIBUTES] Displays all attributes of the subsystem.
RAID SHOW SUBSYSTEM [COUNTERS] Displays COUNTERS of the subsystem.
RAID SHUTDOWN SUBSYSTEM [SHUTDOWN] Shuts down the subsystem.
RAID SHUTDOWN SUBSYSTEM [RESTART][FORCE] Performs a shutdown followed by a restart of the system**.**

ATTRIBUTES Description
DATE_AND_TIME=(<year>:<month>:<day>:<hour>:<minute>:<second>) Sets the current date and time of the controllers. Time will be in GMT (Greenwich Mean Time) time zone. Changing time zones is not supported currently.
FAST_TIMEOUT=[TRUE|FALSE] Decreases the amount of time the firmware waits before timing out an I/O request to a disk drive. Default is FALSE (45 seconds). If TRUE, decreases sets time requests out in 20 seconds instead.
LICENSE_KEY=”string” Add a new license key to the RAID subsystem.
LOCATE_DWELL_TIME=<integer> Sets a 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 (“).

NTP=< ip_addr list **>** Enables NTP mode on each controller using the list of NTP addresses as the time servers.A maximum of four (4) IP addresses may be listed.
NTP=NONE Disables NTP mode on both controllers.

Usage Guidelines

Manual Intervention Required (MIR) 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.

Network Time Protocol (NTP) is a means for computers to synchronize their time across a network, usually within a small number of milliseconds over a long period of time.

There are two new CLUI commands:

```
SET SUBSYSTEM NTP=<ip address list, up to 4>
SET SUBSYSTEM NTP=NONE
```

Specifying a list of NTP addresses will start NTP on each controller, using that list of NTP addresses as the time servers. Specifying NONE will turn off NTP mode.

In addition, the controller will display the NTP information in the **SHOW SUBSYSTEM ALL** command.

When not in NTP mode, the behavior is as before: the master controller uses its time to set the time on the other controller (if any). The **SET SUBSYSTEM DATE_AND_TIME** command is used to set the time of both controllers together. Once the time is set, the time on the two controllers can drift apart, because it is not regularly synchronized.

When in NTP mode, there are several behavioral changes:

- The SET SUBSYSTEM DATA_AND_TIME command will fail with a status of "Setting date/time while in NTP mode".
- The controllers will not synchronize time with each other when they start up.
- Once the Clock code has finished calibration (100 seconds), NTP will be started. Both controllers will have the same NTP settings, and so presumably will have synchronized time once NTP sets the time.
- Issuing a new SET SUBSYSTEM NTP command with a new set of IP addresses will stop and restart NTP.
- If NTP finds a time difference of more than 128 msec, it will "jump" the time to the correct time. This will result in a discontinuity in the eventlog, logdisk, syslog, and anyplace else that records a timestamp.
- NTP will always set the controller to UTC. There is no option to set timezones or otherwise change the offset from UTC.

Changes (1.3.0.4)

- For **SHOW SUBSYSTEM** command, **SUMMARY** is added. This command outputs the equivalent of the following:

```
show subsystem
show controller *
show rp
show pd *
show pool *
show pool * pds
show spare_pool *
show spare_pool * pds
show unassigned_pool
show unassigned_pool pds
```

```
show unassigned_pool failed
show vd *
show pool * vd
show job *
show enclosure *
show slot *
show power_supply *
show fan *
show temperature *
show expander *
show ups *
show controller local log num=500
show controller remote log num=500
```

- The output is in a table format on the screen. This command has an ALL option which will put the output into the list format.
- The RAID CLEAR SUBSYSTEM command now has 4 mutually exclusive required table entries. These were not required keywords in 1.2.4. CONFIGURATION FORCE flag option allows clearing of subsystem without asking questions. Keyword FORCE can be optionally provided with Configuration option.
- The RAID CLEAR SUBSYSTEM MIR command now has an optional keyword FORCE to force clear subsystem mir state without asking questions.
- The RAID SET SUBSYSTEM command now has new keywords **NTP** and **VERIFY_PRIORITY.**
- The RAID SET SUBSYSTEM HELP command now displays **Name** before **Offline** and **NTP** keywords.
- The RAID SET SUBSYSTEM VERIFY_PRIORITY <integer> command sets the subsystem verify priority, from 0 to 99.
- The RAID SET SUBSYSTEM NTP <ip_addr list> command sets the NTP attribute.

Examples

- Changes (1.3.0.4) are highlighted:

```
SET SUBSYSTEM NTP=1.2.3.4 1.2.3.5 3.4.5.6 5.6.7.8
SET SUBSYSTEM NTP=1.2.3.4
SET SUBSYSTEM NONE

RAID[1]$ set sub ?
Available keywords:
   DATE_AND_TIME              Set the current date and time of the controllers
   FAST_TIMEOUT               Set the option to utilize fast timeouts for drives
   LICENSE_KEY                Add a new license key to the raid subsystem
   LOCATE_DWELL_TIME          Set the locate dwell time attribute
   NAME                       Set the name attribute
   NTP                        Set the NTP attribute
   OFFLINE                    Take the Subsystem Offline
   VERIFY_PRIORITY            Set the subsystem verify priority, from 0 to 99

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RAID[0]$ sho sub ?
Available keywords:
   ALL_ATTRIBUTES                    Show all attributes for the specified object
   COUNTERS                          Show counters for the specified object
   SUMMARY                           Show a summary of the entire subsystem

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RAID[0]$ SHO SUB SUM

****************************
*     Subsystem Summary    *
****************************
```

```
*********************
*      Subsystem    *
*********************

                                                   |   Locate    |   Fast   |  Verify
Name                  |Time                        | Licenses | Dwell Time | Timeout | Priority | UUID                                    |
----------------------------------------------------------------------------------------------------------------------------------
PANCAKE                Wed Sep 15 16:11:13 2010      R S      120 seconds     OFF         0 %    60001ff07bdb80000000000030000000

*************************
*      Controller(s)    *
*************************

OID: 0x38000000 Index: 0000 Name: B LOCAL SECONDARY


Total Controllers: 2

**************************
*      Raid Processor    *
**************************

OID: 0x40000000 Index: 0000 Name: 00000000

Total Raid Processors: 2
```

```
****************************
*      Physical Disk(s)     *
****************************

                                                                                          |Health|
Encl|Slot| Vendor |     Product ID     |Type|Cap GB | RPM|Revision|    Serial Number    |Pool|State | Idx|State |      WWN      |
--------------------------------------------------------------------------------------------------------------------------------
   1    1 HITACHI  HUS156045VLS600       SAS     419  15K A510     JVVEGEWL5604           0  GOOD    64 NORM
5000cca00f187c3c

Total Physical Disks:      120
Total Assigned Disks:      119
Total Unassigned Disks:    1
  Total SAS Disks:         120
  Total Member State Normal:   119


*******************
*      Pool(s)     *
*******************

                                                    |Total |Free  |Max   |                  |Disk|  Global  |Spare |
Idx|Name            |State      |Chunk|Raid| Faults |cap GB|cap GB|VD GB | Settings   | Jobs  |T/O |spare pool|Policy|
--------------------------------------------------------------------------------------------------------------------
  0 pool-0           FAULT          64    6         F      4000    3088    3088 DWM R  IV       V      10  UNASSIGNED  AUTO

Total Storage Pools: 12

*****************************************
*      Storage Pool Physical Disk(s)     *
*****************************************

                                                                                          |Health|
Encl|Slot| Vendor |     Product ID     |Type|Cap GB | RPM|Revision|    Serial Number    |Pool|State | Idx|State |      WWN      |
--------------------------------------------------------------------------------------------------------------------------------
   1    1 HITACHI  HUS156045VLS600       SAS     419  15K A510     JVVEGEWL5604           0  GOOD    64 NORM   5000cca00f187c3c

Total Physical Disks:      119
Total Assigned Disks:      119
Total Unassigned Disks:    0
  Total SAS Disks:         119
  Total Member State Normal:   119


***************************
*      Unassigned Pool     *
***************************


|Total |Failed|Total|
|Cap GB|Cap GB| PDs |
---------------------
     8      0    1

Total Unassigned Pools: 1


***************************************
*      Unassigned Physical Disk(s)     *
***************************************

                                                                                          |Health|
Encl|Slot| Vendor |     Product ID     |Type|Cap GB | RPM|Revision|    Serial Number    |Pool|State | Idx|State |      WWN      |
--------------------------------------------------------------------------------------------------------------------------------
   1   51 HITACHI  HUS156045VLS600       SAS     419  15K A510     JVVBHWGL5604        UNAS  GOOD   123 READY
5000cca00f14eedc

Total Physical Disks:      1
Total Assigned Disks:      0
Total Unassigned Disks:    1
  Total SAS Disks:         1
```

```
**************************
*     Virtual Disk(s)    *
**************************


                                                                |      Home       |Background|
Idx|Name            | State |Pool|Raid|Cap GB|Settings| Jobs  |Current|Preferred|   Job    |
-------------------------------------------------------------------------------------------
 19 vd-19_0          WR THRU    0  6      104   W M I           1(R) 0   1(R) 0   INACTIVE

Total Virtual Disks: 12


**************************************
*     Storage Pool Virtual Disk(s)     *
**************************************

                                                                |      Home       |Background|
Idx|Name            | State |Pool|Raid|Cap GB|Settings| Jobs  |Current|Preferred|   Job    |
-------------------------------------------------------------------------------------------
 19 vd-19_0          WR THRU    0  6      104   W M I           1(R) 0   1(R) 0   INACTIVE

Total Virtual Disks: 12

**************************
*     Background Jobs    *
**************************

                                        |Fraction|
 Idx|Type          |Target   (Sub)    |State     |Complete|Priority|Status                              |Time
-------------------------------------------------------------------------------------------------------------------------
   0 VERIFY ONCE     POOL:0   (NA)      RUNNING        18%      99%                                    NA
Total Background Jobs: 296

************************
*     Enclosure(s)     *
************************

Idx|Type      |Logical ID        |Vendor ID|Product ID      |Revision|FW Version|Location
-------------------------------------------------------------------------------------------
  0 CONTROLLER 0x0015b2a198b40000       DDN          S2A6620   PE01      1.3.0.4    Bay 0

Total Enclosures: 4

************************
*     Disk Slot(s)     *
************************

            |       Physical Disk         |Power|       |      Indicators        |
Idx|Encl|Pos| Idx|ID                |Type |State|Present|OK |Fault|Failure|Locate|SES Status
-------------------------------------------------------------------------------------------
  1    1   1   64 0x5000cca00f187c3c SAS     ON    TRUE   ON  OFF    OFF    OFF    OK
Total Disk Slots: 120

**************************
*     Power Supply(s)    *
**************************

            |Power|                                          |      Indicators        |
Idx|Encl|Pos|State|Present|AC Fail|DC Fail|OT Fail|OT Warn|OK |Fault|Failure|Locate|Location|SES Status
-------------------------------------------------------------------------------------------------------
  1    1   1   ON    TRUE   FALSE   FALSE   FALSE   FALSE   ON  OFF    OFF    OFF    PSU 1    OK

Total Power Supplies: 4
```

```
******************
*     Fan(s)     *
******************

                       |Power|       |    Indicators      |
Idx|Encl|Pos| RPM |Code|State|Present|Fault|Failure|Locate|Location|SES Status
-------------------------------------------------------------------------------
  1    1   1  7890   7    ON    TRUE   OFF    OFF    OFF   PS1 Fan1 OK

Total Cooling Elements: 8


*********************************
*     Temperature Sensor(s)     *
*********************************

                            |   Over Temp   |  Indicators  |
Idx|Encl|Pos|Temp(C)|Present|Warning|Failure|Failure|Locate|Location|SES Status
-------------------------------------------------------------------------------

Total Temperature Sensors: 20

***********************
*     Expander(s)     *
***********************

                     |  Indicators  |
Idx|Encl|Pos|Present|Failure|Locate|Location|SES Status
-------------------------------------------------------
  1    1   1   TRUE    OFF    OFF      IOM 1 OK
Total Expanders: 20


******************
*     UPS(s)     *
******************


                                                          |     Indicators     |
Idx|Encl|Pos|Present|Charge|Hold Up|Enabled|AC Fail| Health|Fault|Failure|Locate|Location|SES Status
-------------------------------------------------------------------------------------------------
  1    0   1   TRUE   100%   10 min  TRUE   FALSE     OK    OFF    OFF    OFF            OK

Total UPS: 2


************************************************
*     Event Log Information for Controller 0     *
************************************************

078872 2010-09-14 22:17:42:4385944  G=60 S=0 T=1 RP=0 VP=0             LOG_REOPEN_START_SESSION    LOG Open a
new session

************************************************
*     Event Log Information for Controller 1     *
************************************************

074341 2010-09-14 22:17:48:2250871  G=60 S=0 T=1 RP=0 VP=0             LOG_REOPEN_START_SESSION    LOG Open a
new session
Wed Sep 15 16:11:13 2010
```

```
RAID[0]$ CLEAR SUB

Required Parameters Not Specified, choose from:
Mutually Exclusive Required:
   CONFIGURATION                    Clear the existing subsystem configuration
   MIR_STATE                        Clear the subsystem mir state
   UNIVERSAL_LAN_ADDRESS            Clear the Universal LAN Address and re-create it

Mon Sep 20 15:12:59 2010

RAID[0]$ CLEAR SUB MIR ?
Available keywords:
   FORCE                            Force clear subsystem mir state without asking questions
   ID                               Configuration Identifier of the configuration to use

Wed Sep 15 16:27:35 2010

RAID[1]$ raid set sub verify ?
Value description for 'VERIFY_PRIORITY':
   VERIFY_PRIORITY <integer>
                                    Provide an integer value

Mon Sep 20 20:39:26 2010

RAID[1]$ set sub NTP
Parameter range exceeds maximum or does not meet minimum, please choose from:
Value description for 'NTP':
   NTP <ip_addr list>
                            Provide a list of ip addresses in the format xxx.xxx.xxx.xxx

Mon Sep 20 15:52:18 2010
```

- 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[0]$ SHOW SUB ALL
RP SUBSYSTEM NAME:      10000-8
UID:                    60001FF070E500000000000030000000
SUBSYSTEM TIME:         FRI DEC  4 15:51:25 2009
LOCATE DWELL TIME:      120 SECONDS
ENABLED LICENSES:       RAID6 SATASSURE
```

- 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)
```

- To display the subsystem in table format.

```
RAID[1]$ SHOW SUBSYSTEM

********************
*     SUBSYSTEM    *
********************

                                                       LOCATE     FAST      VERIFY
NAME                  |TIME                       | DWELL TIME | TIMEOUT | PRIORITY | UUID                               |
---------------------------------------------------------------------------------------------------------------------------
MRBURNS                FRI AUG  6 13:52:42 2010    120 SECONDS    ON          0 %     60001FF0800A40000000000030000000

FRI AUG  6 13:52:42 2010
```

RAID SYNCHRONIZE

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

COMMANDS Description
RAID SYNCHRONIZE SUBSYSTEM =<CONTROLLER-ID> Synchronize the specified controller.
RAID SYNCHRONIZE SUBSYSTEM LOGS Synchronize the controllers log disk.

ATTRIBUTES Description
None

Changes (1.3.0.4)

- For RAID SYNCHRONIZE SUBSYSTEM LOGS command, the field **LOGS** is now required.

Examples

- Change is highlighted.

```
RAID[1]$ sync sub logs
SUBSYSTEM Logs synchronized with STATUS='Success' (0x0)
Mon Sep 20 15:00:10 2010

RAID SYNCHRONIZE SUBSYSTEM LOGS  logs is now a required field.
```

RAID TEMPERATURE

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

COMMANDS Description
RAID SHOW TEMPERATURE =<enclosure-id>, <temperature-id>[COUNTERS][ALL_ATTRIBUTES] Displays all counters and attributes for the specified.

ATTRIBUTES Description
None

Usage Guidelines

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

Changes (1.3.0.4)

For the RAID SHOW TEMPERATURE command,

- Banner is displayed.
- New heading-Location: displays location.
- None above in 1.2.4

Examples

- Changes are highlighted:

```
RAID[0]$ SHO TEMP *

********************************
*     Temperature Sensor(s)     *
********************************


                           |   Over Temp   |  Indicators  |
Idx|Encl|Pos|Temp(C)|Present|Warning|Failure|Failure|Locate|Location|SES Status
-------------------------------------------------------------------------------
  1    0   1    44     TRUE   FALSE   FALSE    OFF    OFF        SCH OK

Total Temperature Sensors: 14

Wed Sep 15 17:02:55 2010
```

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:

```
10000-8 RAID[0]$ SHOW UNASSIGNED PD

                                                                                          |HEALTH|
ENCL|SLOT| VENDOR |      PRODUCT ID      |TYPE|CAP GB | RPM|REVISION|     SERIAL NUMBER     |POOL|STATE | IDX|STATE |         WWN        |
---------------------------------------------------------------------------------------------------------------------------------------
   1   40  SEAGATE          ST3400755SS  SAS     372 7.2K     0003 3RJ145DC00009916F8J4 UNAS  GOOD    13 READY  5000C5000A7B4148

TOTAL PHYSICAL DISKS:      1
TOTAL ASSIGNED DISKS:      0
TOTAL UNASSIGNED DISKS:    1
  TOTAL SAS DISKS:         1
```

- To display all unassigned pools:

```
RAID[0]$ SHOW UNASSIGNED -ALL
  INDEX:             65535
  OID:               0X1800FFFF
  TYPE:              UNASSIGNED
  CAPACITY:          8 GB
  FAILED CAPACITY:   0 GB
  TOTAL PHY DISKS    1

TOTAL UNASSIGNED POOLS: 1
```

RAID UPS

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

COMMANDS Description
RAID LOCATE UPS =<enclosure-id>, <ups-id> Send the identify command to the UPS and blink the blue identify LED on it.
RAID SHOW UPS =<enclosure-id>, <ups-id>[COUNTERS][ALL_ATTRIBUTES] Displays all counters and attributes for the specified UPS.

ATTRIBUTES Description
None

Usage Guidelines

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

Changes (1.3.0.4)

In the RAID SHOW UPS command,

- the banner is displayed.
- New heading-Location: displays location.

Examples

- Changes are highlighted.

```
RAID[0]$ SHO UPS

******************
*     UPS(s)     *
******************


                                                        |     Indicators     |
Idx|Encl|Pos|Present|Charge|Hold Up|Enabled|AC Fail| Health|Fault|Failure|Locate|Location|SES Status
-------------------------------------------------------------------------------------------------
  1    0   1   TRUE   100%   10 min  TRUE   FALSE     OK    OFF    OFF     OFF            OK

Total UPS: 2


Wed Sep 15 17:05:20 2010
```

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>|MAXIMUM POOL =<object-id> RAID_LEVEL=RAID0|RAID1|RAID5|RAID5H|RAID6 [BLOCK_SIZE=<integer>] Creates a RAID VIRTUAL_DISK with the specified capacity at the specified RAID level. CAPACITY is an integer number in multiples of 8 GB. Therefore, a CAPACITY=28 results in a VD that is 32 GB in size. When Maximum pool is specified, a RAID VIRTUAL_DISK is created with all available storage within the POOL. The BLOCK_SIZE value is an integer number of bytes.
RAID DELETE VIRTUAL_DISK =<object-id> [SECURE|ZERO|NOERASE] [FORCE] Deletes the specified VIRTUAL_DISK.
RAID SET VIRTUAL_DISK=<object-id> <attribute-name>=<value> [<attribute-name>=<value>…] Assigns the listed attributes to the specified VIRTUAL_DISK.
RAID SHOW VIRTUAL_DISK =<object-id> [ALL_ATTRIBUTES] Displays all attributes of the specified RAID VIRTUAL_DISK.
RAID SHOW VIRTUAL_DISK =<object-id> [COUNTERS =<COUNTER_TYPE>][ALL_ATTRIBUTES|HELP]

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 (“).
COUNTERS .Displays the counters of the specified type identified by keywords: READ_LATENCY Show Read IO Latency for the specified object WRITE_LATENCY Show Write IO Latency for the specified object READ_SIZE Show Read IO Size for the specified object WRITE_SIZE Show Write IO Size for the specified object RATES Show IO and Block Rates for the specified object ALL Show system performance counters for the specified object .

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.

The actual capacity of the VD created may be larger than the size specified.

Changes (1.3.0.4)

- In RAID SET VD NAME command, **NAME** is now a required field, used to describe the Virtual disk Name.

- For RAID SHOW VD COUNTERS command, the display order for available keywords has changed:
  - Rates is displayed first followed by read_latency, read_size,write_latency, write_size, all

- For RAID SHOW VD COUNTERS ALL command, the display order for COUNTER TYPES has changed:
  - Rates is displayed first followed by read_latency, read_size,write_latency, write_size
  - The KB is now replaced with KiB and MB with MiB.

- For the RAID CREATE VD command, RAID_LEVEL which was enumeration in 1.2.4 is no longer displayed.
- For the RAID SHOW VD ALL command,
  - Banner displayed.
  - WriteBack Cache (WBC):TRUE | FALSE | ENABLING | DISABLING
  - MIRRORED:TRUE | FALSE | ENABLING | DISABLING
  - New Label: Job OID replaces old label BkgdJob

Examples

- Changes are highlighted:

```
RAID[1]$ create vd

Required Parameters Not Specified, choose from:
Required keywords:
   CAPACITY                  Requested capacity (in multiples of 8 GBs) of virtual_disk
   POOL                      Specify the pool

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RAID[1]$ RAID SHOW VD COUNTERS
Value description for 'COUNTERS':
   COUNTERS
                             Provide a |-separated list of enumerated values
Available keywords:
   RATES                     Show IO and Block Rates for the specified object
   READ_LATENCY              Show Read IO Latency for the specified object
   READ_SIZE                 Show Read IO Size for the specified object
   WRITE_LATENCY             Show Write IO Latency for the specified object
   WRITE_SIZE                Show Write IO Size for the specified object
   ALL                       Show system performance counters for the specified object

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RAID[1]$ RAID SHOW VD COUNTERS all
Virtual Disk Counters:  Elapsed time = 1.375 seconds
  Idx  IOs/sec  KiB/sec   KiB/IO Fwd IO/s Fwd KiB/s| IOs/sec  KiB/sec   KiB/IO Fwd IO/s Fwd KiB/s|
-------------------------------------------------------------------------------------------------
   31       0       0       0       0       0 |       0       0       0       0       0 |
   32       0       0       0       0       0 |       0       0       0       0       0 |


Virtual Disk Read Latency:  Elapsed time = 1.376 seconds
  Idx      Avg   <=16ms   <=32ms   <=64ms  <=128ms  <=256ms  <=512ms     <=1s     <=2s     <=4s     <=8s    <=16s     >16s
-------------------------------------------------------------------------------------------------------------------------
   31       0       0       0       0       0       0       0       0       0       0       0       0       0
   32       0       0       0       0       0       0       0       0       0       0       0       0       0


Virtual Disk Write Latency:  Elapsed time = 1.376 seconds
  Idx      Avg   <=16ms   <=32ms   <=64ms  <=128ms  <=256ms  <=512ms     <=1s     <=2s     <=4s     <=8s    <=16s     >16s
-------------------------------------------------------------------------------------------------------------------------
   31       0       0       0       0       0       0       0       0       0       0       0       0       0
   32       0       0       0       0       0       0       0       0       0       0       0       0       0
```

```
Virtual Disk Read IO Size:  Elapsed time = 1.379 seconds
  Idx   <=4KiB   <=8KiB  <=16KiB  <=32KiB  <=64KiB  <=128KiB <=256KiB <=512KiB  <=1MiB   <=2MiB   <=4MiB    >4MiB
-------------------------------------------------------------------------------------------------------------------
   31        0        0        0        0        0        0        0        0        0        0        0        0
   32        0        0        0        0        0        0        0        0        0        0        0        0


Virtual Disk Write IO Size:  Elapsed time = 1.380 seconds
  Idx   <=4KiB   <=8KiB  <=16KiB  <=32KiB  <=64KiB  <=128KiB <=256KiB <=512KiB  <=1MiB   <=2MiB   <=4MiB    >4MiB
-------------------------------------------------------------------------------------------------------------------
   31        0        0        0        0        0        0        0        0        0        0        0        0


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RAID[1]$ set vd 2

Required Parameters Not Specified, choose from:
Required keywords:
   NAME                         Specify the virtual_disk name

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RAID[1]$ sho vd * all
  Index:              42
  OID:                0x8ae9002a
  Name:               vd-42_13
  Pool Index:         13
  Pool OID:           0x1adb000d
  Capacity:           104 GB
  Offset:             0x0
  State:              READY
  Raid Level:         RAID6
  IO ROUTING:         TRUE
  WBC:                TRUE
  MIRRORED:           TRUE
  Initializing:       FALSE
  Paused:             FALSE
  AutoWriteLock:      FALSE
  Critical:           FALSE
  Forced Write-thru:FALSE
  Current Home:       0x38000001  0x00000000 (LOCAL)
  Future Home:        0xffffffff  0x00000000
  Preferred Home:     0x38000001  0x00000000 (LOCAL)
   Job OID:            INACTIVE
  UUID:               60001ff07bdb80000000005f8ae9002a
```

- 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 (0) using the ALL parameter:

```
RAID[0]$ SHOW VD 0 ALL
  INDEX:              0
  OID:                0X88780000
  NAME:               VD-0_0
  POOL INDEX:         0
```

```
  POOL OID:          0X18690000
  CAPACITY:          2808 GB
  OFFSET:            0X0
  STATE:             READY
  RAIDLEVEL:         RAID6
  IO ROUTING:        TRUE
  WBC:               TRUE
  MIRRORED:          TRUE
  INITIALIZING:      FALSE
  PAUSED:            FALSE
  AUTOWRITELOCK:     FALSE
  CRITICAL:          FALSE
  CURRENT HOME:      0X38000000  0X00000000 (LOCAL)
  FUTURE HOME:       0XFFFFFFFF  0X00000000
  PREFERRED HOME:    0X38000000  0X00000000 (LOCAL)
   BKGDJOB OID:       INACTIVE
  UUID:              60001FF070E500000000000D88780000

TOTAL VIRTUAL DISKS: 1
```

- To display a list of RAID VIRTUAL_DISK wild card *:

```
RAID[0]$ SHOW VD *

                                                                      |      HOME        |BACKGROUND|
IDX|NAME             | STATE |POOL|RAID|CAP GB|SETTINGS|  JOBS  |CURRENT|PREFERRED|   JOB    |
------------------------------------------------------------------------------------------------
  0 VD-0_0            READY     0   6    2808    W M I            0(L) 0   0(L) 0   INACTIVE
  1 VD-1_1            READY     1   6    2808    W M I            1(R) 0   1(R) 0   INACTIVE
  2 VD-2_2            READY     2   6    2808    W M I            0(L) 0   0(L) 0   INACTIVE
  3 VD-3_3            READY     3   6    2808    W M I            1(R) 0   1(R) 0   INACTIVE
  4 VD-4_4            READY     4   5    1400    W M I            0(L) 0   0(L) 0   INACTIVE
  5 VD-5_5            READY     5   1     344    W M I            1(R) 0   1(R) 0   INACTIVE
  6 VD-6_6            READY     6   1     344    W M I            0(L) 0   0(L) 0   INACTIVE
  7 VD-7_8            READY     8   5    2808    W M I            1(R) 0   1(R) 0   INACTIVE

TOTAL VIRTUAL DISKS: 8
```

- To set a RAID CHANNEL with a specified object ID (0) and assign it the specified name (LINUX VD0) and to show all associated information for this virtual disk using ALL parameter:

```
10000-8 RAID[0]$ SET VD 0 NAME="LINUX VD0"
VIRTUAL_DISK 0 OID=0X88780000 SET ATTRIBUTES STATUS='SUCCESS' (0X0)
10000-8 RAID[0]$ SHOW VD 0 ALL
  INDEX:             0
  OID:               0X88780000
  NAME:              LINUX VD0
  POOL INDEX:        0
  POOL OID:          0X18690000
  CAPACITY:          2808 GB
  OFFSET:            0X0
  STATE:             READY
  RAIDLEVEL:         RAID6
  IO ROUTING:        TRUE
  WBC:               TRUE
  MIRRORED:          TRUE
  INITIALIZING:      FALSE
  PAUSED:            FALSE
  AUTOWRITELOCK:     FALSE
  CRITICAL:          FALSE
  CURRENT HOME:      0X38000000  0X00000000 (LOCAL)
  FUTURE HOME:       0XFFFFFFFF  0X00000000
  PREFERRED HOME:    0X38000000  0X00000000 (LOCAL)
   BKGDJOB OID:       INACTIVE
  UUID:              60001FF070E500000000000D88780000

TOTAL VIRTUAL DISKS: 1

  UUID:              600000000000000000000000288390002
```

- To see the HELP for virtual disk associated counters.

```
SHOW VD * COUNTERS
```

```
10000-8 RAID[0]$ SHOW VD * COUNTERS

VALUE DESCRIPTION FOR 'COUNTERS':
   COUNTERS
                    PROVIDE A |-SEPERATED LIST OF ENUMERATED VALUES
AVAILABLE KEYWORDS:
   READ_LATENCY     SHOW READ IO LATENCY FOR THE SPECIFIED OBJECT
   WRITE_LATENCY    SHOW WRITE IO LATENCTY FOR THE SPECIFIED OBJECT
   READ_SIZE        SHOW READ IO SIZE FOR THE SPECIFIED OBJECT
   WRITE_SIZE       SHOW WRTIE IO SIZE FOR THE SPECIFIED OBJECT
   RATES            SHOW IO AND BLOCK RATES FOR THE SPECIFIED OBJECT
   ALL              SHOW SYSTEM PERFORMANCE COUNTERS FOR THE SPECIFIED OBJECT
```

NOTE: The output of the command(s), **SHOW VD * COUNTERS <COUNTER_TYPE> ALL** is same as the output without keyword ALL that is **SHOW VD * COUNTERS <COUNTER_TYPE>**; **TYPE** can take anyone of the following values: **READ_LATENCY, WRITE_LATENCY, READ_SIZE, WRITE_SIZE or RATES.** The addition of keyword all is merely for the consistency sake with rest of the CLUI command formats.

- To show all virtual disks and the associated counters for read latency:

```
SHOW VD * COUNTERS READ_LATENCY ALL OR SHOW VD * COUNTERS READ_LATENCY


10000-8 RAID[0]$ SHOW VD * COUNTERS READ_LATENCY
NO PREVIOUS COUNTERS OF THIS TYPE

10000-8 RAID[0]$ SHOW VD * COUNTERS READ_LATENCY
VIRTUAL DISK READ LATENCY:  ELAPSED TIME = 314574.310 SECONDS
  IDX      AVG    <=16MS    <=32MS    <=64MS   <=128MS   <=256MS   <=512MS      <=1S      <=2S      <=4S      <=8S     <=16S     >16S
-------------------------------------------------------------------------------------------------------------------------------------
    0        9 895358296 40864045 30600711 22590156  7498462  2872900   852527    47853       155        65         0         0
    1        9 929211488 28797080 18468209 19146529  9686281  3469078  1626541    74657       153         0         0         0
```

- To show all virtual disks and the associated counters for write latency:

```
SHOW VD * COUNTERS WRITE_LATENCY ALL OR SHOW VD * COUNTERS WRITE_LATENCY

10000-8 RAID[0]$ SHOW VD * COUNTERS WRITE_LATENCY
NO PREVIOUS COUNTERS OF THIS TYPE

10000-8 RAID[0]$ SHOW VD * COUNTERS WRITE_LATENCY
VIRTUAL DISK WRITE LATENCY:  ELAPSED TIME = 153470.928 SECONDS
  IDX      AVG     <=16MS     <=32MS     <=64MS   <=128MS   <=256MS   <=512MS      <=1S      <=2S      <=4S      <=8S     <=16S     >16S
-------------------------------------------------------------------------------------------------------------------------------------
    0      490        760       6248      36125    442652   2284669   3964058   2376991   1028296     27042         4         0         0
    1      526       3784      15128      59731    536729   2171976   3220951   1985386   1335817     52453         2         0         0
```

- To show all virtual disks and the associated counters for IO command sizes for read requests:

```
SHOW VD * COUNTERS READ_SIZE ALL OR SHOW VD * COUNTERS READ_SIZE

10000-8 RAID[0]$ SHOW VD * COUNTERS READ_SIZE
NO PREVIOUS COUNTERS OF THIS TYPE

10000-8 RAID[0]$ SHOW VD * COUNTERS READ_SIZE
VIRTUAL DISK READ IO SIZE:  ELAPSED TIME = 314574.312 SECONDS
  Idx    <=4KiB    <=8KiB   <=16KiB   <=32KiB   <=64KiB  <=128KiB  <=256KiB  <=512KiB    <=1MiB    <=2MiB    <=4MiB     >4MiB
-------------------------------------------------------------------------------------------------------------------------------
    0 546722492         0 210519938 105451014  56262579  40015746  22925929  12263594   6522210         0         0         0
    1 557933399         0 189448028  95940743  70441312  48716308  29096759  14106546   4789169         0         0         0
```

- To show all virtual disks and the associated counters for IO command sizes for write requests:

```
SHOW VD * COUNTERS WRITE_SIZE ALL OR SHOW VD * COUNTERS WRITE_SIZE

10000-8 RAID[0]$ SHOW VD * COUNTERS WRITE_SIZE
NO PREVIOUS COUNTERS OF THIS TYPE


10000-8 RAID[0]$ SHOW VD * COUNTERS WRITE_SIZE
VIRTUAL DISK WRITE IO SIZE:  ELAPSED TIME = 314574.312 SECONDS
  Idx    <=4KiB    <=8KiB   <=16KiB   <=32KiB   <=64KiB  <=128KiB  <=256KiB  <=512KiB    <=1MiB    <=2MiB    <=4MiB     >4MiB
```

```
-------------------------------------------------------------------------------------------------------------
    0  8827809        0  7722852  6052753  3898208  4061361  3296406  2969142  1038518        0        0        0
    1 11590893        0  7084410  5634166  3768785  3510918  2810456  3010300   920999        0        0        0
```

- To show all virtual disks and the associated counters for different types of rates such as IOs per second, Kilo bytes per second, Kilo bytes per IO, forwarded IOs per second and forwarded Kilo Bytes per second:

SHOW VD * COUNTERS RATES ALL OR SHOW VD * COUNTERS RATES

```
10000-8 RAID[0]$ SHOW VD * COUNTERS RATES
NO PREVIOUS COUNTERS OF THIS TYPE

10000-8 RAID[0]$ SHOW VD * COUNTERS RATES
VIRTUAL DISK COUNTERS:  ELAPSED TIME = 314574.312 SECONDS
  Idx  IOs/sec  KiB/sec   KiB/IO Fwd IO/s Fwd KiB/s| IOs/sec  KiB/sec   KiB/IO Fwd IO/s Fwd KiB/s|
-------------------------------------------------------------------------------------------------
    0     2737    83313      124        0        0 |     563    38857      282      590    38857 |
    1      533    37605      288      554    37605 |    2800    90210      131        0        0 |
```

- To show all virtual disks and all the associated counters for all the counter types supported:

SHOW VD * COUNTERS ALL ALL OR SHOW VD * COUNTERS ALL

```
10000-8 RAID[0]$ SHOW VD * COUNTERS ALL

NO PREVIOUS COUNTERS OF THIS TYPE

NO PREVIOUS COUNTERS OF THIS TYPE

NO PREVIOUS COUNTERS OF THIS TYPE

NO PREVIOUS COUNTERS OF THIS TYPE

NO PREVIOUS COUNTERS OF THIS TYPE

10000-8 RAID[0]$ SHOW VD * COUNTERS ALL

VIRTUAL DISK COUNTERS:  ELAPSED TIME = 314574.312 SECONDS
  Idx  IOs/sec  KiB/sec   KiB/IO Fwd IO/s Fwd KiB/s| IOs/sec  KiB/sec   KiB/IO Fwd IO/s Fwd KiB/s|
-------------------------------------------------------------------------------------------------
    0     2737    83313      124        0        0 |     563    38857      282      590    38857 |
    1      533    37605      288      554    37605 |    2800    90210      131        0        0 |


VIRTUAL DISK READ LATENCY:  ELAPSED TIME = 314574.310 SECONDS
  IDX      AVG    <=16MS    <=32MS    <=64MS   <=128MS   <=256MS   <=512MS     <=1S     <=2S     <=4S     <=8S     <=16S     >16S
-------------------------------------------------------------------------------------------------------------------------------
    0        9 895358296 40864045 30600711 22590156  7498462  2872900   852527    47853      155       65        0        0
    1        9 929211488 28797080 18468209 19146529  9686281  3469078  1626541    74657      153        0        0        0


VIRTUAL DISK WRITE LATENCY:  ELAPSED TIME = 153470.928 SECONDS
  IDX      AVG     <=16MS     <=32MS     <=64MS   <=128MS   <=256MS   <=512MS     <=1S     <=2S     <=4S     <=8S     <=16S     >16S
-------------------------------------------------------------------------------------------------------------------------------
    0      490        760       6248      36125   442652  2284669  3964058  2376991  1028296    27042        4        0        0
    1      526       3784      15128      59731   536729  2171976  3220951  1985386  1335817    52453        2        0        0


VIRTUAL DISK READ IO SIZE:  ELAPSED TIME = 314574.312 SECONDS
  Idx    <=4KiB    <=8KiB   <=16KiB   <=32KiB   <=64KiB  <=128KiB  <=256KiB  <=512KiB    <=1MiB    <=2MiB    <=4MiB     >4MiB
-------------------------------------------------------------------------------------------------------------------------
    0 546722492         0 210519938 105451014 56262579 40015746 22925929 12263594  6522210         0         0         0
    1 557933399         0 189448028  95940743 70441312 48716308 29096759 14106546  4789169         0         0         0


VIRTUAL DISK WRITE IO SIZE:  ELAPSED TIME = 314574.312 SECONDS
  Idx    <=4KiB    <=8KiB   <=16KiB   <=32KiB   <=64KiB  <=128KiB  <=256KiB  <=512KiB    <=1MiB    <=2MiB    <=4MiB     >4MiB
-------------------------------------------------------------------------------------------------------------------------
    0  8827809         0  7722852  6052753  3898208  4061361  3296406  2969142  1038518         0         0         0
    1 11590893         0  7084410  5634166  3768785  3510918  2810456  3010300   920999         0         0         0
```

- To see the HELP associated with counter type.

SHOW VD * COUNTERS <COUNTER_TYPE> HELP

10000-8 RAID[0]$ SHOW VD * COUNTERS READ_LATENCY HELP

Help for Counters is not yet supported.

10000-8 RAID[0]$ SHOW VD * COUNTERS READ_SIZE HELP

Help for Counters is not yet supported.

10000-8 RAID[0]$ SHOW VD * COUNTERS WRITE_LATENCY HELP

Help for Counters is not yet supported.

10000-8 RAID[0]$ SHOW VD * COUNTERS WRITE_SIZE HELP

Help for Counters is not yet supported.

10000-8 RAID[0]$ SHOW VD * COUNTERS RATES HELP

Help for Counters is not yet supported.

10000-8 RAID[0]$ SHOW VD * COUNTERS ALL HELP

Help for Counters is not yet supported.

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=APPLICATION Sets the default command subject to APPLICATION for the session. 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 SET CLI –TIMESTAMP=[TRUE] When TRUE, each command prompt includes a timestamp.
UI SET CLI –TIMESTAMP=[FALSE] Default. When FALSE, command prompts do not include timestamps return successful completion silently.
UI SHOW CLI=* SHOW all instances of the CLUI Server. Indicate which CLUI Server is this instance.
UI SHOW [-ALL_ATTRIBUTES] [-COUNTERS] Displays the mode, the default subject, OID, and the CLI version of this instance of the CLUI Server.

ATTRIBUTES Description
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.

```
SFA 10000-9 RAID[1]$ 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
    CLI TIMESTAMP MODE : OFF
```

UI 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][COUNTERS] Displays attributes, such as IP ADDRESS, for the specified Network Interfaces, plus the interface's MAC address, speed, and link state.
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

<**object-id**> **zero** is always the controller that is the one to which the UI client is connected and <**object-id**> **one** is always the other controller.

The keywords LOCAL and REMOTE may be used in place of the UI Controller's <object-id>.

Ideally, it should be possible to set the network interface attributes from either controller; however, it is acceptable to limit this ability to the LOCAL controller.

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
```

UI 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

There is only one logical EMAIL_AGENT for the subsystem. While each controller has an EMAIL_AGENT, the two are ideally managed as a single, logical SNMP_AGENT in that all of their settable attribute values are shared.

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.

Examples

- To set email address:

```
SFA 10000-9 RAID[1]$ UI SET EMAIL IP_ADDRESS=10.255.128.38 IP_PORT=30 FROM="10000@DDN.COM"
TO="10000_USER@DDN.COM" SUBJECT="DDN SFA10000-9-2:EVENT NOTIFICATION"
EMAIL AGENT SET WITH STATUS='SUCCESS' (0X0)
```

- To show all email address attributes:

```
SFA 10000-9 RAID[1]$ UI SHOW EMAIL ALL
E-MAIL AGENT ATTRIBUTES
  IP_ADDRESS=10.255.128.38
  IP_PORT=30
  FROM=10000@DDN.COM
  TO=10000_USER@DDN.COM
  SUBJECT=DDN SFA10000-9-2:EVENT NOTIFICATION
```

UI SNMP_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_AGENT [ALL_ATTRIBUTES][COUNTERS] Displays attributes, such as IP ADDRESS, for the specified SNMP_AGENTS.
UI SET SNMP_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

There is one logical SNMP_AGENT for the subsystem.

While each controller has an SNMP_AGENT, the two are managed as a single, logical SNMP_AGNET in that all of their settable attribute values are shared.

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 senor, fans, power supplies, pools, and physical disks as well as a variety of real-time critical and error events.

Examples

- To set snmp ip address:

```
SFA 10000-9 RAID[1]$ UI SET SNMP IP_ADDRESS=101.243.23.10 COMMUNITY="DDN 10000"
SNMP AGENT SET WITH STATUS='SUCCESS' (0X0)
```

- To show all SNMP trap agent attributes:

```
SFA 10000-9 RAID[1]$ UI SHOW SNMP ALL
SNMP TRAP AGENT ATTRIBUTES

  IP_ADDRESS=101.243.23.10
  COMMUNITY=DDN 10000

SFA 10000-9 RAID[1]$
```