SGI InfiniteStorage 16000
Quick Start Guide

This quick start guide provides installation and set up information for getting your SGI InfiniteStorage 16000 system up and running as quickly as possible.

This version of the SGI InfiniteStorage 16000 Quick Start Guide is specific to systems with 60-bay drive enclosures.

Installation Overview

1. Unpack the SGI InfiniteStorage 16000 system.
2. Install the disk modules into the disk enclosures.
3. Connect the cables.
4. Power up the system.
5. Validate the hardware.
6. Configure the network ports via the RS-232 console.
7. Configure the SGI InfiniteStorage 16000.

1. Unpacking the SGI InfiniteStorage 16000

Refer to the rack crate for detailed instructions on removing the system from the shipping crate and positioning the system. Refer to the Rack System Precautions and Safety sections at the end of this guide for additional safe handling information.

The SGI InfiniteStorage 16000 ships with the following:

- For couplet configuration:
  Two (2) controllers
  Two (2) UPS units
  Two (2) InfiniBand QDR QSFP-QSFP cables
  Four (4) Ethernet Cat5E RJ45-RJ45 cables
  Two (2) USB cables
- For singlet configuration:
  One (1) controller
  One (1) UPS unit
  One (1) USB cable
- Five (5) or ten (10) 60-bay disk enclosures
- Disk drives or SSD modules
- Two (2) serial null modem DB9F-DB9F CLI cables
- Two (2) Ethernet Cat5E RJ45-RJ45 GUI cables
- Quick Start Guide

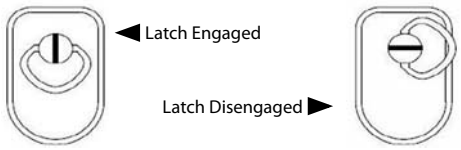
2. Installing Disk Modules

The disk modules are shipped separately from the disk enclosures. To create a more balanced configuration, evenly distribute the disk modules among the disk enclosures. If a mixture of disk technologies, such as SAS and SATA, will be populated into the enclosures, it is best to populate the SAS disks into the front slots and install the SATA disks in the rear slots.

Follow these steps to install a disk module:

1. Slide the enclosure out from the rack by squeezing the tabs on both rack slides. Keep pulling until the enclosure locks and you hear a clicking sound.
2. Disengage both enclosure cover latches (Figure 1) and open the covers.

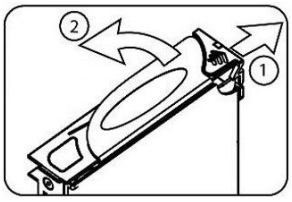
Figure 1. Enclosure Cover Latch



3. On the disk module, slide the latch backward to release the handle (Figure 2).

Figure 2. Release Disk Module Handle

1. Slide Latch Backward
2. Lift Handle



4. Insert the module into a disk bay. Cam the disk module home. The camming foot on the base of the module will engage into the slot in the enclosure.
5. When the module is fully inserted, close the handle. You should hear a click as the latch engages and holds the handle closed.
6. After you have installed all the disk modules in this enclosure, close the enclosure covers.
7. Make sure both cover latches are engaged. Then push the enclosure back into the rack.

3. Connecting the Cables

3.1 Couplet ICL Cabling

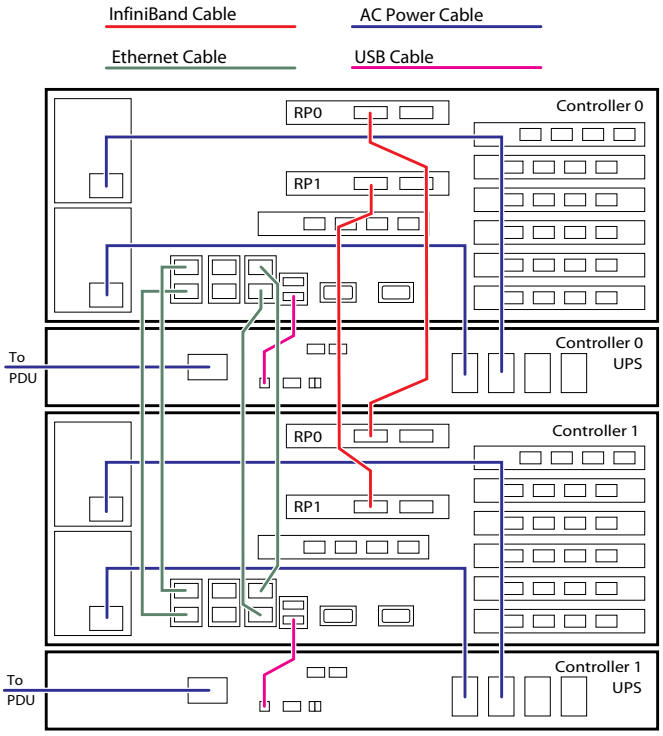
For singlet configuration, skip this section and proceed to the next section.

For couplet configuration, there are two sets of Inter-Controller Link (ICL) connections between the two controllers.

1. Verify that the two QDR InfiniBand cables are connected between the RP0 and RP1 ports on the two controllers as shown in Figure 3.

2. Verify that the four Ethernet cables are connected between the Ethernet ports on the two controllers as shown in Figure 3.

Figure 3. Cable Connections on Controllers and UPSs



3.2 UPS Connections

1. Verify that the two power cables are connected between the controller's power supplies and UPS as shown in Figure 3.

2. Verify that the USB cable is connected between the controller and UPS as shown in Figure 3.

3.3 Disk Enclosure Cabling

The SGI InfiniteStorage 16000 systems are shipped with the cables attached between the disk enclosures and controller's IO channels. The cables are labeled by ports to which they will connect into. Incorrect wiring will result in configuration errors. Verify that the cables are correctly connected to the controller's IO channels.

Use Figure 4 for systems that have five or ten SGI InfiniteStorage 16000 (60-bay) disk enclosures containing *ALL* SAS disks.

Use Figure 5 for systems that have five or ten SGI InfiniteStorage 16000 (60-bay) disk enclosures containing either *ALL* SATA disks or a mixture of SAS and SATA disks.

Figure 4. Connect Enclosures (with all SAS disks) to Controllers

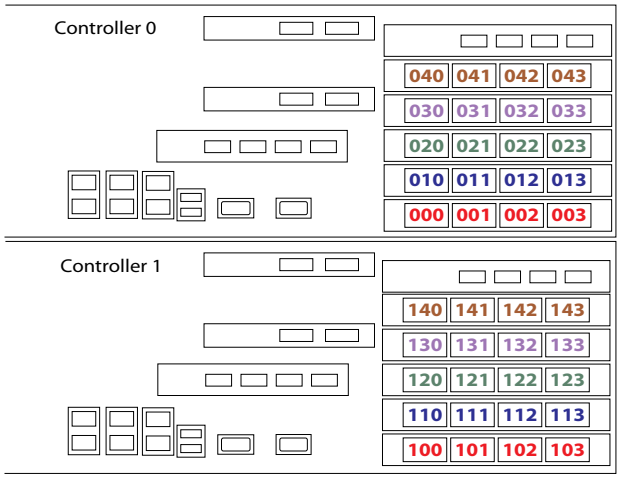
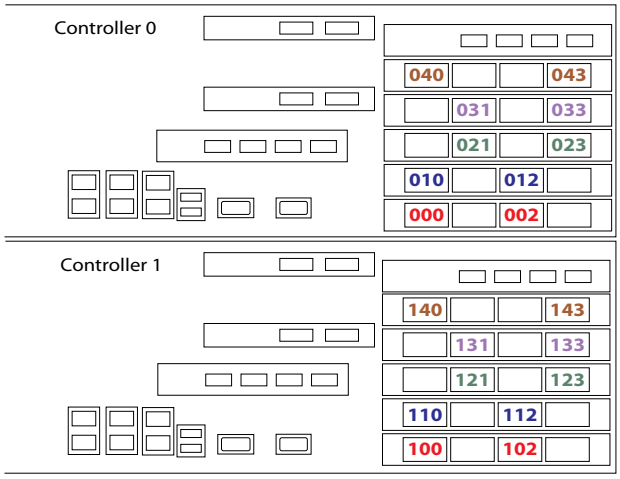


Figure 5. Connect Enclosures (with SATA disks) to Controllers

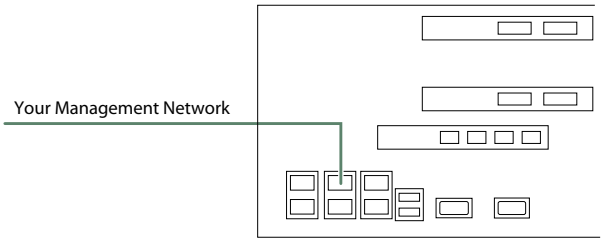
Note: Do NOT connect cables to ports that are not labeled.



3.4 Management Network Connections

You may monitor the system over your Ethernet network. Connect the controller(s) to your network using the Ethernet port as shown in Figure 6.

Figure 6. Ethernet Connection to Your Network

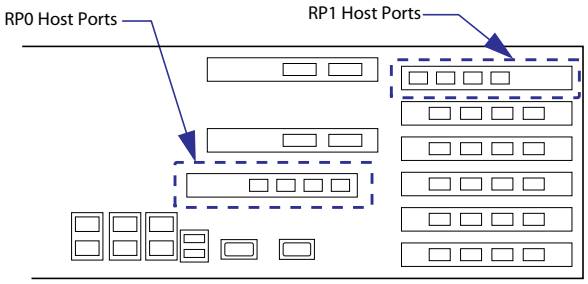


3.5 Host Connections

Connect the controller host ports shown in Figure 7 either directly to your hosts or to a switch that connects your hosts. Depending on your SGI InfiniteStorage 16000 model, these connections may be Fibre Channel or InfiniBand.

Note : Do NOT use the empty connectors in slots P0.1 or P1.0 to connect InfiniBand hosts or switches.

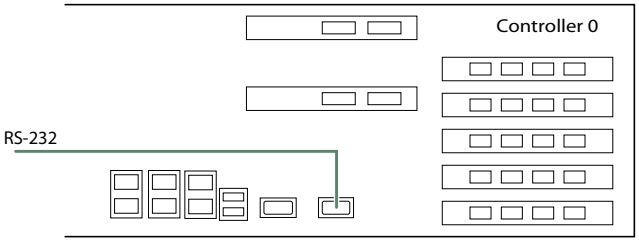
Figure 7. Host Ports on Controllers



3.6 RS-232 Console Connection

Connect a null modem cable between a PC and the RS-232 connector on the back of the controller (Figure 8).

Figure 8. Connect RS-232 Console to Controller

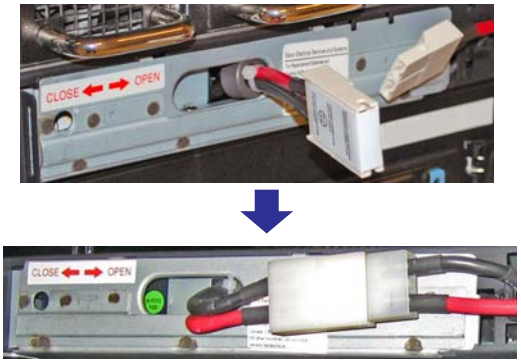


3.7 UPS Battery

The UPS is shipped with the battery disconnected.

1. Remove the front bezel of the UPS.
2. Fasten the two connectors together (Figure 9). ***Note that it is normal if you see a spark and hear a pop sound as you connect the battery.***
3. Replace the front bezel.
4. Repeat the above steps on the second UPS for a couplet configuration.

Figure 9. Connect UPS Battery

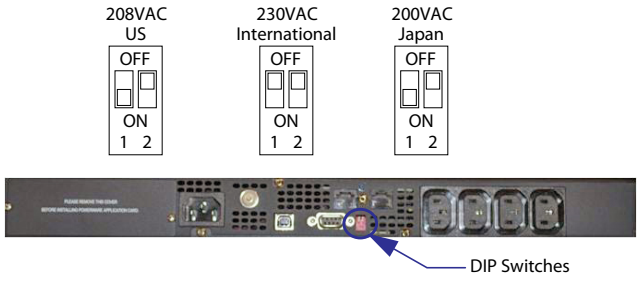


3.8 Power Connections

1. Verify your AC power source by measuring the AC voltage.
2. Refer to the illustrations in Figure 10 and verify that the DIP switches on the back of the UPS(s) are correctly set.

   If the settings are incorrect, please contact your SGI field engineer. Note that changing the voltage of the UPS requires more steps than just changing the DIP switches.

Figure 10. DIP Switch Settings on UPS Rear Panel

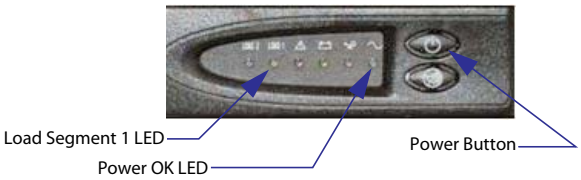


3. Verify that the power switches on all the power distribution units (PDUs) are set to OFF.
4. Connect the PDUs to your AC power source. For maximum redundancy, connect the PDUs to different AC circuits.

4. Powering On the System

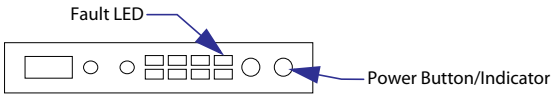
1. Switch on all the PDUs.
2. Switch on the power supply modules on all the disk enclosures.
3. Press and hold the Power button for 2 seconds on the front panel of the UPS to turn on the unit (Figure 11).

Figure 11. UPS Front Panel



4. Verify that the Power OK LED on the UPS turns green and the Load Segment 1 LED turns yellow (Figure 11), indicating a successful power application.
5. Verify that the Power indicator on the controller turns green (Figure 12). If not, press the Power button once.
6. Verify that the Fault LED on the controller is off (Figure 12).

Figure 12. Controller Front Panel LEDs



5. Validating the Hardware

1. On your RS-232 console, load a serial console program (such as HyperTerminal, minicom, and screen) and use the following settings for the serial connection:
   - Bits per second: 115,200
   - Data bits: 8
   - Parity: None
   - Stop bits: 1
   - Flow control: None
2. Once connected, press the <Enter> key to bring up the password prompt. Then enter the password: **user**
3. Enter: **SHOW CONTROLLER ***
   Verify that the controller(s) can be seen.

```
RAID[0]$ show controller *
OID: 0x38000000 Index: 0000 Name: A LOCAL PRIMARY
OID: 0x38000001 Index: 0001 Name: B REMOTE SECONDARY

Total Controllers: 2
```

4. Enter: **SHOW ENCLOSURE ***
   Verify that all the disk enclosures can be seen and contain consistent firmware versions.
5. Enter: **SHOW PHYSICAL_DISK ***
   Verify that all the disks can be seen and are healthy.
6. Enter: **SHOW FAN ***
   Verify that no fan faults are found.
7. Enter: **SHOW POWER ***
   Verify that the “AC Fail” and “DC Fail” states are false.
8. Enter: **SHOW TEMPERATURE ***
   Verify that all temperature sensors do not report over-temperature conditions.
9. Enter: **SHOW UPS ***
   Verify that the UPS battery is healthy. Also take note of the charge level as the battery may take several hours to fully charge.

6. Initial Configuration

The CLUI commands are independent of case. Most of the keywords can be abbreviated and most punctuation is optional.

1. To ensure that you are starting from a fresh/clean install, enter:
   CLEAR SUBSYSTEM CONFIGURATION
   Then enter **YES** twice to confirm deletion of current configuration.

```
RAID[0]$ clear subsystem configuration
Are you sure you want to delete this configuration [No]? yes
Are you sure you want to delete this configuration?
All data will be lost [No]? yes
RAID SUBSYSTEM CONFIGURATION cleared STATUS='Success' (0x0)
```

WARNING! Use of this command will destroy any existing data.

2. You may set the system name using the command:
   SET SUBSYSTEM NAME=<name>
   Then enter: **SHOW SUBSYSTEM ALL_ATTRIBUTES**
   to verify the new setting.

```
RAID[0]$ set subsystem name=INFINITESTORAGE 16000
SUBSYSTEM attributes set STATUS='Success' (0x0)

RAID[0]$ show subsystem all
RP Subsystem Name:      16000
UID:                    60000000000000000000000030000000
Subsystem Time:         Thu Jan 28 20:46:58 2010
Locate Dwell Time:      120 seconds
Enabled Licenses:       RAID6 SATASSURE
Fast Timeout:           OFF
Pool Verify Priority:    0 %
```

3. Set the system date and time. Enter:
   SET SUBSYSTEM DATE=<yyyy:mm:dd:hh:mm>
   in the format of Year:Month:Day:Hour:Minute

Then enter: **SHOW SUBSYSTEM ALL_ATTRIBUTES** to verify the new setting.

```
RAID[0]$ set subsystem date 2010:01:28:13:37
SUBSYSTEM attributes set STATUS='Success' (0x0)

RAID[0]$ show subsystem all
RP Subsystem Name:      16000
UID:                    60000000000000000000000030000000
Subsystem Time:         Thu Jan 28 13:37:10 2010
Locate Dwell Time:      120 seconds
Enabled Licenses:       RAID6 SATASSURE
Fast Timeout:           OFF
Pool Verify Priority:   0 %
```

4. Configure network interface settings. Enter:
   UI SET NETWORK LOCAL IP_ADDRESS=<ip address> IP_MASK=<ip mask> IP_GATEWAY=<ip gateway>

   Then enter: **UI SHOW NETWORK *** to verify new settings.

```
RAID[0]$ ui set network local ip_address=192.168.0.10
ip_mask=255.255.255.0 ip_gateway=192.168.0.1
NETWORK_INTERFACE 0 set with STATUS='Success' (0x0)

RAID[0]$ ui show network *
Network device id 0
    address 192.168.0.10
    netmask 255.255.255.0
    gateway 192.168.0.1
```

5. For couplet configuration, switch the serial cable to the RS-232 port on the second controller and repeat the above step to enter a different IP address for the second controller.

At this point, you should be able to use the SGI InfiniteStorage 16000 CLUI and GUI via the network, and you will probably find that more convenient for the rest of the steps.

7. Storage Configuration

Before proceeding to configure the storage settings for the SGI InfiniteStorage 16000, it is necessary to understand the basic organization of the system.

The SGI InfiniteStorage 16000 uses *storage pools* and *virtual disks* to configure the disk storage for use by the host systems. A storage pool (sometimes referred to as a RAID group) is a collection of 2 to 10 physical disks, ideally of the same capacity and type.

Note: For maximum performance, storage pools should always be created using drives with the same characteristics (such as SAS/SATA, capacity, and RPM). SGI does not support mixing SAS and SATA drives in the same storage pool.

A virtual disk (VD) is the storage unit presented to any attached host. virtual disks allocate space in 8GB increments. For example, 16GB of storage space will be allocated when creating a virtual disk of 10GB.

7.1 Create Storage Pools

A storage pool on the SGI InfiniteStorage 16000 has the following attributes:

- RAID Level (RAID)
  Storage pools can be configured to use either a RAID1, RAID5 or RAID6 parity scheme. In RAID1, the capacity of one disk is used for data duplication. In RAID5, the capacity of one disk is reserved for parity, allowing data recovery in the event of a single disk loss in the storage pool. In RAID6, the capacity of two disks is reserved for parity, allowing data recovery if either one or two disks are down in a storage pool. ***For maximum data protection, SGI recommends the use of RAID6***.
- Chunk Size (CHUNK)
  The chunk size (in KB blocks) defines the amount of data written to a single disk before proceeding to the next disk in the storage pool.
- Disk Count (NUMBER)
  A RAID1 storage pool may consists of 2 physical disks. A RAID5 storage pool may consist of 5 or 9 physical disks. A RAID6 storage pool may consist of 6 or 10 physical disks. For maximum performance, select disks with the same characteristics (such as SAS/SATA, capacity, and RPM).

To create a storage pool, use the **CREATE POOL** command.

1. At the CLUI prompt, enter:
   CREATE POOL RAID=[raid1|raid5|raid6] CHUNK=[32|64|128|256] NUMBER=[2|5|6|9|10] ASSIGN_POLICY=[sas|sata] PHYSICAL_DISK=<disk id>

   You may either explicitly select the disks for the storage pool by using "**PHYSICAL_DISK=**" or specify the number of disks in the storage pool by using "**NUMBER**" in which case the next available disks will be selected. If you specify the "**ASSIGN_POLICY**" and "**NUMBER**" parameters together, only the selected type of disks will be used and you will not need to enter the individual disk name.

   A message is displayed to indicate whether the storage pool creation was successful.

   Examples:

```
RAID[0]$ create pool raid=raid6 chunk=128 number=10
assign=sata

RAID[0]$ create pool raid=raid5 chunk=64 number=5
pd=0x6c, 0x6d, 0x6e, 0x6f, 0x70

RAID[0]$ create pool raid=raid5 chunk=32 number=5
```

2. Use the **CREATE POOL** command to add more storage pools as needed.

3. You may assign a name to a storage pool using the command:
   SET POOL=<pool-id> NAME=<pool name>

4. To view the list of configured storage pools, enter:
   SHOW POOL *
   To display the detailed information of a storage pool, enter:
   SHOW POOL=<pool-id> ALL_ATTRIBUTES

```
RAID$ show pool=0 all
  Index:                0
  OID:                  0x19e50000
  Type:                 STORAGE
  Name:                 pool-0
  Chunk Size:           128KB (0x100 blocks)
  Block Size:           512
  RAID Type:            RAID5
  Free Raid5 Capacity:  0 GB
  Max VD Size:          0 GB
  Total Capacity:       600 GB
  UUID:                 60000000000000000000000180d0000
  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:        DISABLED
  Assign Policy:
    Device Type:        SATA
    Rotation Speed:     NA
    Raw Capacity:       NA
  SATAssure:            None
  Cache Settings:
    Full Stripe Write:  TRUE
    IO Routing:         TRUE
    Mirroring:          TRUE
    Read Ahead:         TRUE
    Write Back:         FALSE
  Initializing:         TRUE
  Rebuilding:           FALSE
  Paused:               FALSE
  AutoWriteLock:        FALSE
  Critical:             FALSE
  Forced Write-Thru     FALSE
  Current Home:         0x38000000 0x00000000 (LOCAL)
  Future Home:          0xffffffff  0x00000000
  Preferred Home:       0x38000000 0x00000000 (LOCAL)
  BkgdJob OID:          0x28000003
  BkgdJob Priority:     50%
  Total Phy Disks       5
  State:                NORMAL
  Member Size:          120 GB
    pID     State     UUID
    0x0001  NORM      0x5000cca215c56e47
    0x0002  NORM      0x5000cca215c56456
    0x0003  NORM      0x5000cca215c54c71
    0x0004  NORM      0x5000cca215c5675c
    0x0005  NORM      0x5000cca215c56e55
```

7.2 Create Virtual Disks

A virtual disk can be created to use all or a part of the capacity of a storage pool.

To create a virtual disk, use the **CREATE VIRTUAL_DISK** command.

1. At the CLUI prompt, enter:
   CREATE VIRTUAL_DISK POOL=<pool-id> CAPACITY=<capacity>
   where <pool-id> is the storage pool to be used by this virtual disk; <capacity> is the capacity of the virtual disk in GB or type **"**max**"** to use all available capacity.

   A message is displayed to indicate whether the virtual disk creation was successful.

   Examples:
   ```
   RAID[0]$ create virtual_disk pool=0 capacity=max
   VIRTUAL_DISK 0 OID=0x880f0000 creation STATUS='Success' (0x0)

   RAID[0]$ create vd pool=1 capacity=12
   VIRTUAL_DISK 1 OID=0x88870001 creation STATUS='Success' (0x0)
   ```

2. Use the **CREATE VIRTUAL_DISK** command to add more virtual disks as needed.

3. You may assign a name to a virtual disk :
   SET VIRTUAL_DISK=<vd-id> NAME=<vd name>

4. To view the list of configured virtual disks, enter:
   SHOW VIRTUAL_DISK *
   To display the detailed information of a virtual disk, enter:
   SHOW VIRTUAL_DISK=<vd-id> ALL_ATTRIBUTES

```
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      472   W M I        0(L) 0   0(L) 0  INACTIVE

RAID[0]$ show vd=0 all
  Index:              0
  OID:                0x880f0000
  Name:               vd-0_0
  Pool Index:         0
  Pool OID:           0x180d0000
    .
    .
    .
    .
  Current Home:       0x38000000  0x00000000 (LOCAL)
  Future Home:        0xffffffff  0x00000000
  Preferred Home:     0x38000000  0x00000000 (LOCAL)
  BkgdJob OID:        INACTIVE
  UUID:               60000000000000000000000000880f0000
```

7.3 Create and Assign Spare Pools

The SGI InfiniteStorage 16000 supports the concept of *spare pool*. A spare pool contains physical disks that can be used as spare disks in one or more storage pools.

In the event of a disk failure, a disk that is assigned to a spare pool is automatically swapped into the storage pool to replace the failed disk. A rebuild then occurs immediately, reducing the possibility of data loss due to additional disk failures.

Spare pools can be shared by storage pools or dedicated to a particular storage pool in which case the spare disks will only be used by the designated storage pool.

Note : For maximum performance, create spare pools using drives with the same characteristics as the drives within the storage pool(s) (such as SAS/SATA, capacity, and RPM).

Follow these steps to create a Spare Pool:

1. At the CLUI prompt, enter: **CREATE SPARE_POOL**

   A message is displayed to indicate whether the new spare pool creation was successful.

   ```
   RAID$ create spare_pool
   SPARE POOL 6 OID=0x19bc0006 create STATUS='Success' (0x0)
   ```

2. Assign physical disk(s) to the spare pool. Enter:
   ASSIGN PHYSICAL_DISK=<disk-id> TO_POOL=<pool-id>
   where <disk-id> is the index name of the disk to be added and <pool-id> is the index name of the spare pool.

   ```
   RAID$ assign physical_disk=648 to_pool=6
   PHYSICAL_DISK 648 OID=0x22b10288 assigned to POOL 6
   OID=0x19bc0006 STATUS=' Success' (0x0)
   ```

To display the list of available disks, enter:
SHOW UNASSIGNED_POOL PHYSICAL_DISK

3. Use the **CREATE SPARE_POOL** and **ASSIGN PHYSICAL_DISK** commands to add more spare pools as needed.

4. You may assign a name to a spare pool using the command:
SET SPARE=<spare pool-id> NAME=<name>

5. To view the list of configured spare pools, enter:
SHOW SPARE_POOL *
To display the detailed information of a spare pool, enter:
SHOW SPARE_POOL=<pool-id> ALL_ATTRIBUTES
To display the list of disks in a spare pool, enter:
SHOW SPARE_POOL=<pool-id> PHYSICAL_DISKS

```
RAID$ show spare_pool *
                        |Disk|Total |Total|Storage|
Idx|Name             |Blocks|T/O|Cap GB| PDs |Pool Idx|
-------------------------------------------------------
  6 spare_pool-1       512   10    120    1

Total Spare Pools: 1

RAID$ show spare_pool=6 all_attributes
  Index:                6
  OID:                  0x19bc0006
  Type:                 GLOBAL SPARE
  Name:                 spare_pool-1
  Block Size:           512
  DiskTimeout(FRT):     10 minutes
  Total Capacity:       120 GB
  UUID:                 0x0000000000000000
  Total Phy Disks       1
  Storage Pool List:

Total Spare Pools: 1

RAID$ show spare_pool=6 physical_disks
                                          |Health|
Encl|Slot|Vendor|Product ID| ::::::::::|Pool|State | Idx|State|WWN|
-----------------------------------------------------------------
   2   53 HITACHI : : : : : : : : : :    6 SPARE   648 NORM  :::
```

6. Assign spare pools to storage pools. Enter:
SET POOL=<pool-id> SPARE_POOL=<spare-pool-id>
where <pool-id> and <spare-pool-id> are the index names of the storage pool and spare pool, respectively. Repeat this step for each storage pool.

```
RAID$ set pool=0 spare_pool=6
POOL 0 OID=0x1130000 attributes set with STATUS='Success' (0x0)
```

Note : Each storage pool must have a spare pool assigned to it. If a storage pool's attributes show **"**Global Spare Pool: UNASSIGNED**",** no spare pool will serve this storage pool.

7. Use the **SHOW POOL** command to view the new storage pool information.

```
RAID$ show pool=0 all
   Index:                0
   OID:                  0x180d0000
   Type:                 STORAGE
   Name:                 pool-0
     :
     :
   Total Capacity:       600 GB
   UUID:                 60000000000000000000180d0000
   Global Spare Pool:    6
   DiskTimeout(FRT):     10 minutes
     :
     :
```

7.4 Presentation of Virtual Disks to Hosts

Virtual disks are only presented to the hosts that have been given authorized access. Follow these steps to configure the settings:

1. To display the currently available initiators, enter:
APP SHOW DISCOVERED_INITIATORS *

   A discovered initiator is defined as a Fibre-Channel or InfiniBand initiator that has logged into the SGI InfiniteStorage 16000.

```
RAID$ app show discovered_initiators *

                  |        Initiator Identifier         | Controller 0  | Controller 1  |
Index |Type|   ID  |   node           |      port        | RP 0  | RP 1  | RP 0  | RP 1  |
-------------------------------------------------------------------------------------------
00001   FC |0x0000e8 0x2001001b32ae096c 0x2101001b32ae096c         |       |     3 |
00002   FC |0x0000e8 0x2001001b32aeb580 0x2101001b32aeb580         |       |       |0
00003   FC |0x0000e8 0x2001001b328e0280 0x2001001b328e0280         |       |   2   |
00004   FC |0x0000e8 0x2001001b32ae176c 0x2001001b32ae176c         |       |       |  1
00005   FC |0x0000e8 0x2001001b328eb580 0x2001001b328eb580        |0      |       |
00006   FC |0x0000e8 0x2001001b32aeb280 0x2001001b32aeb280      2  |       |       |
00007   FC |0x0000e8 0x2001001b328e176c 0x2001001b328e176c         |  1    |       |
00008   FC |0x0000e8 0x2001001b328e096c 0x2101001b328e096c        3|       |       |

Total FC Initiators: 8
```

2. Create a host. Enter:
APP CREATE HOST NAME=<host name> OSTYPE=<os type>
where <host name> is an assigned host name to help make mapping simpler for the user; <os type> is the mode which can be set to characteristics specific to an operating system, especially for Mac OSX.

   Use the **APP CREATE HOST** command to create more hosts as needed.

   To display the current settings, enter: **APP SHOW HOST ***

```
RAID$ app create host name=server1-port1 ostype=linux
HOST 0 OID=0x18d0000 creation STATUS='Success' (0x0)

RAID$ app create host name=server1-port2 ostype=linux
HOST 1 OID=0x18e0001 creation STATUS='Success' (0x0)

RAID$ app show host *
                          |Stack| Host Mode Attributes  |
Index|Host Name           |Index|OS Type|Characteristics|
-----------------------------------------------------------
00000 server1-port1        00000 LINUX   0x0000000000000001
00001 server1-port2        00001 LINUX   0x0000000000000001

Total Hosts: 2
```

3. Map a host to a discovered initiator. Enter:
APP IMPORT DISCOVERED_INITIATOR=<initiator-id> HOST=<host-id>

where <initiator-id> is the index name of the discovered initiator; <host-id> is the index name of the host.

```
RAID$ app import discovered_initiator=6 host=0

INITIATOR 0 OID=0x280f0000 imported from DISCOVERED_INITIATOR
6 oid=0X30000006 STATUS='Success' (0x0)
```

Use the **APP IMPORT** command to map the other hosts to the initiators as needed.

To display the current settings, enter:
APP SHOW INITIATOR *

```
RAID$ app show initiator *

           |Host |        Initiator Identifier          |
Index |Type|Index|      node         |      port         |
-------------------------------------------------------------
00000   FC  00000 0x2001001b32aeb280 0x2001001b32aeb280

Total FC Initiators: 1
```

4. Present the virtual disks to the hosts. Enter:
APP CREATE PRESENTATION HOST=<host-id> VIRTUAL_DISK=<vd-id>
where <host-id> is the index name of the host; <vd-id> is the virtual disk to be presented.

```
RAID$ app create presentation host=0 vd=0

PRESENTATION 0 OID=0x0x20110000 creation STATUS='Success' (0x0)
```

Use the **APP CREATE PRESENTATION** command to configure other presentations as needed.

To display the current settings, enter:
APP SHOW PRESENTATION *

```
RAID$ app show presentation *
                                          |      Channel Mask        |
                                          | Controller 0|Controller 1 |
Pres.|Host           Host | VD  |     |Home|Read|  RP 0| RP 1 |  RP 0| RP 1 |
Index|Name           Index|Index| LUN |Only|Only| 0123 | 0123 | 0123 | 0123 |
-------------------------------------------------------------------------------
00000 server1-port1   00000 00000  000  OFF  R/W    f      f      f      f

Total Presentations: 1
```

Your SGI InfiniteStorage 16000 configuration is now complete .

8. Rack System Safety Precautions

Important: SGI InfiniteStorage 16000 drive enclosures should only be installed in SGI InfiniteStorage 16000 racks. Mounting and installing these drive enclosures in any other rack is not authorized or supported by SGI.

The SGI InfiniteStorage 16000 drive enclosures are pre-installed in the rack before shipment. If the drive enclosures must be re-installed and mounted, the following safety requirements must be considered when the unit is mounted in a rack.

- The rack stabilizing (anti-tip) plates should be installed and secured to prevent the rack from tipping or being pushed over during installation or normal use.
- When loading a rack with the units, fill the rack from the bottom up and empty from the top down.
- Always remove all modules and drives, to minimize weight, before loading the chassis into a rack.

Warning: It is recommended that you do not slide more than one enclosure out of the rack at a time, to avoid danger of the rack tipping over.

- When mounting in a rack, ensure that the enclosure is pushed fully back into the rack.
- The electrical distribution system must provide a reliable earth ground for each unit and the rack.
- Each power supply in each unit has an earth leakage current of 1.5mA. The design of the electrical distribution system must take into consideration the total earth leakage current from all the power supplies in all the units.

9. Safety

Important: SGI InfiniteStorage 16000 drive enclosures must be installed in SGI InfiniteStorage 16000 racks. SGI does not authorize or support the use of these drive enclosures in any standalone benchtop or enclosure-on-enclosure stacking configuration.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

The SGI InfiniteStorage 16000 MUST be grounded before applying power. Unplug the unit if you think that it has become damaged in any way and before you move it.

Caution: Plug-in modules are part of the fire enclosure and must only be removed when a replacement can be immediately added. The system must not be run without all units in place. Operate the system with the enclosure top cover closed.

- In order to comply with applicable safety, emission and thermal requirements no covers should be removed.
- The drive enclosure unit must only be operated from a power supply input voltage range of 200 V AC to 240 V AC.
- The plug on the power supply cord is used as the main disconnect device. Ensure that the socket outlets are located near the equipment and are easily accessible.

Warning: To ensure protection against electric shock caused by HIGH LEAKAGE CURRENT (TOUCH CURRENT), the SGI

InfiniteStorage 16000 must be connected to at least two separate and independent sources. This is to ensure a reliable earth connection.

- The equipment is intended to operate with two (2) working PCMs. Before removal/replacement of any module disconnect all supply power for complete isolation.

- A faulty PCM must be replaced with a fully operational module within 24 hours.

Warning: To ensure your system has warning of a power failure please disconnect the power from the power supply, by either the switch (where present) or by physically removing the power source, prior to removing the PCM from the enclosure/shelf.

- Do not remove a faulty PCM unless you have a replacement unit of the correct type ready for insertion.

- The power connection must always be disconnected prior to removal of the PCM from the enclosure.

- A safe electrical earth connection must be provided to the power cord.

- Provide a suitable power source with electrical overload protection to meet the requirements laid down in the technical specification.

Warning: Do not remove covers from the PCM. Danger of electric shock inside. Return the PCM to your supplier for repair.

Warning: Operation of the enclosure with ANY modules missing will disrupt the airflow and the drives will not receive sufficient cooling. It is ESSENTIAL that all apertures are filled before operating the unit.