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# Configuring Solaris iSCSI Host to MDS/IPS–8

Document ID: 44860

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## Introduction

### Prerequisites

- Requirements
- Components Used
- Conventions

### Background Information

### Configure

- Network Diagram
- Configurations

### Verify

### Troubleshoot

- Troubleshooting Procedure

### NetPro Discussion Forums – Featured Conversations

### Related Information

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## Introduction

Cisco Small Computer Systems Interface over IP (iSCSI) drivers are a key component of the iSCSI solution. These iSCSI drivers reside on the server, where they:

- Intercept iSCSI commands.
- Encapsulate the commands into IP packets.
- Redirect the commands to the Cisco SN 5420, Cisco SN 5428, Cisco SN 5428–2, or Cisco MDS/IPS–8.

This document provides sample configurations for the Solaris iSCSI host to Cisco MDS/IPS–8.

## Prerequisites

### Requirements

Ensure that you meet these requirements before you attempt this configuration:

- Install the iSCSI driver that is compatible with your Solaris version and then create the iSCSI configuration on the Cisco MDS 9000. Refer to *Cisco iSCSI Drivers (registered customers only)* for the most current version of the driver (`solaris-iscsi-3.3.5.tar.Z`). A `README.txt` file is included in the driver ZIP (TAR) file. The `README.txt` file contains:
  - ◆ License agreement information
  - ◆ Driver installation and configuration instructions
  - ◆ A technical overview of the driver architecture
- Refer to the System Requirements sections in *Cisco iSCSI Driver for Sun Solaris Release Notes* for the operating system (OS) and patch requirements.
- The Cisco iSCSI Driver for Sun Solaris runs only on SPARC machines. The driver does not work with any other processor types (for example, x86).

## Components Used

The information in this document is based on these software and hardware versions:

- SunOS 5.9, SPARC Ultra-4 E450

```
#uname -a
```

```
SunOS baboon 5.9 Generic sun4u sparc SUNW,Ultra-4
```

- Cisco iSCSI Driver 3.3.3 for Solaris

```
#pkginfo -l CSCOiscsi
```

```
PKGINST: CSCOiscsi
NAME: Cisco iSCSI device driver
CATEGORY: system
ARCH: sparc
VERSION: 3.3.3
BASEDIR: /opt/CSCOiscsi
VENDOR: Cisco Systems, Inc.
DESC: Cisco iSCSI device driver 3.3.3
PSTAMP: solaris-920030807170521
INSTDATE: Aug 25 2003 23:41
HOTLINE: For contracted support, 1-800-553-2447,
Cisco Technical Assistance Center (TAC)
EMAIL: For online help, go to http://www.cisco.com/
STATUS: completely installed
FILES: 74 installed pathnames
16 shared pathnames
29 directories
32 executables
2182 blocks used (approx)
```

```
#iscsi-ls -v
```

```
iSCSI driver version: 3.3.3
```

- Cisco MDS 9216 with software release 1.1.2

```
canterbury#show module
```

Mod	Ports	Module-Type	Model	Status
1	16	1/2 Gbps FC/Supervisor	DS-X9216-K9-SUP	active *
2	8	IP Storage Module	DS-X9308-SMIP	ok

Mod	Sw	Hw	World-Wide-Name(s) (WWN)
1	1.1(2)	1.0	20:01:00:0c:30:6c:24:40 to 20:10:00:0c:30:6c:24:40
2	1.1(2)	0.3	20:41:00:0c:30:6c:24:40 to 20:48:00:0c:30:6c:24:40

Mod	MAC-Address(es)	Serial-Num
1	00-0b-be-f8-7f-08 to 00-0b-be-f8-7f-0c	JAB070804QK
2	00-05-30-00-ad-e2 to 00-05-30-00-ad-ee	JAB070806SB

```
* this terminal session
```

```
canterbury#show version
```

```
Cisco Storage Area Networking Operating System (SAN-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2003 by Cisco Systems, Inc. All rights reserved.
The copyright for certain works contained herein are owned by
```

Andiamo Systems, Inc. and/or other third parties and are used and distributed under license.

#### Software

```
BIOS:      version 1.0.7
loader:    version 1.0(3a)
kickstart: version 1.1(2)
system:    version 1.1(2)

BIOS compile time:      03/20/03
kickstart image file is: bootflash:/k112
kickstart compile time: 7/13/2003 20:00:00
system image file is:   bootflash:/s112
system compile time:    7/13/2003 20:00:00
```

#### Hardware

```
RAM 963112 kB

bootflash: 500736 blocks (block size 512b)
slot0:      0 blocks (block size 512b)

canterbury uptime is 16 days 20 hours 51 minute(s) 36 second(s)

Last reset at 684726 usecs after Mon Aug 11 13:53:17 2003
Reason: Reset Requested by CLI command reload
System version: 1.1(2)
```

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

## Conventions

Refer to Cisco Technical Tips Conventions for more information on document conventions.

## Background Information

The IP storage module provides IP hosts access to Fibre Channel (FC) storage devices. The IP storage module is a DS-X9308-SMIP that provides transparent iSCSI routing. IP hosts that use the iSCSI protocol can transparently access iSCSI (FC Protocol [FCP]) targets on the FC network. The IP host sends iSCSI commands encapsulated in iSCSI protocol data units (PDUs) to a Cisco MDS 9000 IP storage port over a TCP/IP connection. Gigabit Ethernet (GE) interfaces that are appropriately configured on the IP storage module provide connectivity. The IP storage module:

- Enables you to create virtual iSCSI targets and maps them to physical FC targets available in the FC SAN
- Presents the FC targets to IP hosts as if the physical targets are locally attached to the IP network

Each iSCSI host that requires access to storage via the IP storage module must have a compatible iSCSI driver installed. The iSCSI driver allows an iSCSI host to transport iSCSI requests and responses over an IP network with the iSCSI protocol. From the perspective of a host OS, the iSCSI driver appears to be an iSCSI transport driver similar to an FC driver for a peripheral channel in the host. Each IP host appears as an FC host from the perspective of the storage device.

Complete these steps to route iSCSI from the IP host to the FC storage device:

- Transport iSCSI requests and responses over an IP network between hosts and the IP storage module.
- Use the IP storage module to route iSCSI requests and responses between hosts on an IP network and the FC storage device (convert iSCSI to FCP and vice versa).
- Transport FCP requests or responses between the IP storage module and FC storage devices.

The IP storage module does not import FC targets to iSCSI by default. You must configure either dynamic or static mapping so that the IP storage module makes FC targets available to iSCSI initiators. Statically mapped FC targets have a configured name when both are configured. This configuration provides examples of static mapping.

Each time that the iSCSI host connects to the IP storage module with dynamic mapping:

- A new FC N port is created.
- The node world wide names (nWWNs) and port world wide names (pWWNs) allocated for this N port can be different.

Use the static mapping method if you must obtain the same nWWNs and pWWNs for the iSCSI host each time that it connects to the IP storage module. You can use static mapping on the IP storage module to access intelligent FC storage arrays that have:

- Access control
- Logical unit number (LUN) mapping and masking configuration that are based on the pWWNs or nWWNs of the initiator

Specify these items to control access to each statically–mapped iSCSI target:

- A list of IP storage ports on which they are advertised
- A list of iSCSI initiator node names that are allowed access

FC zoning–based access control and iSCSI–based access control are the two mechanisms by which access control can be provided for iSCSI. You can use both methods simultaneously. Default zoning has been permitted for a specific virtual storage area network (VSAN) in this configuration. IP storage modules use both iSCSI node name–based and FC zoning–based access control lists to enforce access control during iSCSI discovery and iSCSI session creation.

The iSCSI initiator can be statically defined either by IP address or by iSCSI qualified name (IQN). A **proxy–initiator** option enables the dynamic creation of iSCSI initiators in SAN–IOS 1.3 for the Cisco MDS switches.

iSCSI discovery occurs when an iSCSI host creates an iSCSI discovery session and queries for all iSCSI targets. The IP storage module returns only the list of iSCSI targets that the access control policies allow the iSCSI host to access.

iSCSI session creation occurs when an IP host initiates an iSCSI session. The IP storage module verifies:

- If the specified iSCSI target (in the session login request) is a static mapped target
- That the iSCSI node name of the IP host is allowed to access the target

The login is rejected if the IP host does not have access.

The IP storage module then:

- Creates an FC virtual N port (the N port can already exist) for this IP host
- Does an FC name server query for the Fiber Channel ID (FCID) of the FC target pWWN that the IP host accesses

The IP storage module uses the pWWN of the IP host virtual N port as the requester of the name server query. Thus, the name server does a zone–enforced query for the pWWN and responds to the query. The iSCSI session is accepted if the name server returns the FCID. Otherwise, the login request is rejected.

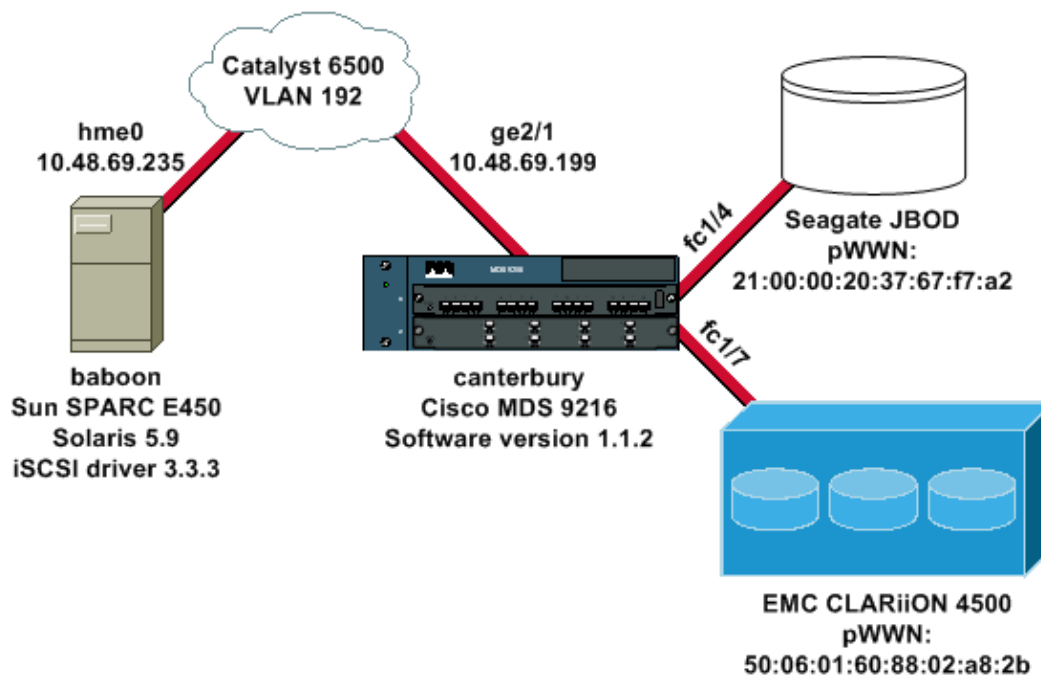
## Configure

In this section, you are presented with the information to configure the features described in this document.

**Note:** Use the Command Lookup Tool (registered customers only) to find more information on the commands used in this document.

## Network Diagram

This document uses this network setup:



## Configurations

This document uses these configurations:

- baboon (SunOS 5.9, SPARC E450)
- canterbury (Cisco MDS 9216)

baboon (SunOS 5.9, SPARC E450)

Modify these files on the Solaris host:

- /etc/iscsi.conf

- /etc/iscsi.bindings
- /kernel/drv/sd.conf

This is sample configuration output:

```
bash-2.05#cat /etc/iscsi.conf
```

```
# iSCSI configuration file - see iscsi.conf(4)

# DiscoveryAddress Settings
# -----
# Add "DiscoveryAddress=xxx" entries for each iSCSI router instance.
# The driver will attempt to discover iSCSI targets at that address
# and make as many targets as possible available for use.
# 'xxx' can be an IP address or a hostname. A TCP port number can be
# specified by appending a colon and the port number to the address.
# All entries have to start in column one and must not contain any
# whitespace.
#
# Example:
#
# DiscoveryAddress=scsirouter1
# DiscoveryAddress=10.48.69.199

!--- Configure the IP address of the GE interface that accepts iSCSI
!--- requests from your host.

# The DiscoveryAddress Settings can take following entry.
#
# 1) Authentication Settings
# 2) ConnectionTimeout Settings

!--- Other required driver parameters can be changed in the iscsi.conf file.
!--- Output is suppressed.
```

```
bash-2.05#cat /etc/iscsi.bindings
```

```
# iSCSI bindings, file format version 1.0.
# NOTE: this file is automatically maintained by the iSCSI daemon.
# You should not need to edit this file under most circumstances.
# If iSCSI targets in this file have been permanently deleted, you
# may wish to delete the bindings for the deleted targets.
#
# Format:
# bus  target  iSCSI
# id   id       TargetName
#
# 0     0       san-fc-jbod-1
# 0     1       clariion
# 0     2       clariion-lun-3-4-5

!--- The iSCSI driver discovery daemon process looks up each discovered target
!--- in the /etc/iscsi.bindings file.
!--- The corresponding iSCSI target ID is assigned to the target if an entry exists in the file
!--- The smallest available iSCSI target ID
!--- is assigned if no entry exists for the target, and an entry is written to the /etc/iscsi.bi
!--- this target.

!--- Note that the /etc/iscsi.bindings file permanently contains entries
!--- for all iSCSI targets ever logged into from this host.
!--- You can manually edit the file and remove
!--- entries so that the obsolete target no longer consumes an iSCSI target ID if a target is no
```

```

!--- Add an entry manually if you know the iSCSI target name
!--- in advance and want it to be assigned a particular iSCSI target ID.
!--- Stop the iSCSI driver before you edit the /etc/iscsi.bindings
!--- file. Issue the
!--- /etc/init.d/iscsi start command to manually start the iSCSI driver.
!--- Issue the /etc/init.d/iscsi stop command to manually stop the iSCSI driver.

```

```
bash-2.05#cat /kernel/drv/sd.conf
```

```
name="sd" class="scsi" class_prop="atapi"
target=0 lun=0;
```

```
name="sd" class="scsi" target=1 lun=0;
name="sd" class="scsi" target=1 lun=1;
name="sd" class="scsi" target=1 lun=2;
```

```

# Start iSCSI auto-generated configuration -- do NOT alter or delete this line
# You may need to add additional lines to probe for additional LUNs
# or targets. You SHOULD delete any lines that represent iSCSI targets
# or LUNs that are not used.

```

```
name="sd" parent="iscsi" target=0 lun=0;
name="sd" parent="iscsi" target=1 lun=0;
name="sd" parent="iscsi" target=1 lun=1;
name="sd" parent="iscsi" target=1 lun=2;
name="sd" parent="iscsi" target=2 lun=3;
name="sd" parent="iscsi" target=2 lun=4;
name="sd" parent="iscsi" target=2 lun=5;
name="sd" parent="iscsi" target=2 lun=0;
```

```
# End iSCSI auto-generated configuration -- do NOT alter or delete this line
```

```

!--- The corresponding entries for these devices must be made in the standard device configuration
!--- if the targets that get discovered by the iSCSI driver at any point in time
!--- do not have a corresponding entry in the standard device configuration files (for example,
!--- Then reboot the system and issue the standard Solaris administrative commands
!--- (devfsadm, drvconfig) once the system comes up.

```

```

!--- You do not need to reboot the system if the entries in the device configuration files are a
!--- commands (devfsadm, drvconfig, and so on) must be issued to configure the
!--- new iSCSI devices in the system.

```

### canterbury (Cisco MDS 9216)

```
!--- Output is suppressed.
```

```
vsan database
vsan 777
```

```
!--- VSAN 777 has been used for iSCSI targets.
!--- Output is suppressed.
```

```
vsan database
vsan 777 interface fc1/4
vsan 777 interface fc1/7
```

```
!--- Output is suppressed.
```

```

boot system bootflash:/s112
boot kickstart bootflash:/k112

ip domain-name cisco.com
ip name-server 144.254.10.123
ip default-gateway 10.48.69.129

ip routing
iscsi authentication none
iscsi initiator ip-address 10.48.69.235

!--- Identifies the iSCSI initiator based on the IP address. A virtual N port is
!--- created for each network interface card (NIC) or network interface.

vsan 777

!--- VSAN 777 has been used for iSCSI targets. Configure the initiator IP address.
!--- Targets via VSAN 777 are accessible by iSCSI initiators.

iscsi virtual-target name san-fc-jbod-1
  pWWN 21:00:00:20:37:67:f7:a2
advertise interface GigabitEthernet2/1
initiator ip address 10.48.69.235 permit

!--- Create a static iSCSI virtual target for LUN 0, 1, and 2 of CLARiION.

iscsi virtual-target name clariion
  pWWN 50:06:01:60:88:02:a8:2b fc-lun 0000 iscsi-lun 0000
  pWWN 50:06:01:60:88:02:a8:2b fc-lun 0001 iscsi-lun 0001
  pWWN 50:06:01:60:88:02:a8:2b fc-lun 0002 iscsi-lun 0002
advertise interface GigabitEthernet2/1
initiator ip address 10.48.69.235 permit

!--- Create a static iSCSI virtual target for LUN 3, 4, and 5 of CLARiION.

iscsi virtual-target name clariion-lun-3-4-5
  pWWN 50:06:01:60:88:02:a8:2b fc-lun 0003 iscsi-lun 0003
  pWWN 50:06:01:60:88:02:a8:2b fc-lun 0004 iscsi-lun 0004
  pWWN 50:06:01:60:88:02:a8:2b fc-lun 0005 iscsi-lun 0005
advertise interface GigabitEthernet2/1
initiator ip address 10.48.69.235 permit

!--- Output is suppressed.

switchname canterbury

!--- Output is suppressed.

zone default-zone permit vsan 777

!--- Output is suppressed.

interface GigabitEthernet2/1
ip address 10.48.69.199 255.255.255.192
iscsi authentication none
switchport mtu 2156
no shutdown

!--- Output is suppressed.

interface fc1/4
no shutdown

!--- Output is suppressed.

```

```
interface fc1/7
no shutdown

interface mgmt0
ip address 10.48.69.156 255.255.255.192

interface iscsi2/1
no shutdown
```

## Verify

Use this section to confirm that your configuration works properly.

The Output Interpreter Tool (registered customers only) (OIT) supports certain **show** commands. Use the OIT to view an analysis of **show** command output.

- **netstat -n** Verifies the TCP connections on the Solaris host.
- **iscsi-ls -l** Shows the devices that are currently available on the Solaris host.
- **show zone status** Shows zone information.
- **show fcns database vsan 777** Shows name server information for a specific VSAN.
- **show flogi database vsan 777** Shows fabric login (FLOGI) server information for a specific VSAN.
- **show vsan membership** Shows interface information for different VSANs.
- **show iscsi initiator detail** Shows iSCSI initiator information.
- **show iscsi initiator iscsi-session detail** Shows detailed information for the iSCSI initiator session.
- **show iscsi initiator fcp-session detail** Shows detailed information for the iSCSI initiator FCP session.
- **show ips stats tcp interface gigabitethernet 2/1 detail** Shows TCP statistics for a specific GE interface.
- **show iscsi virtual-target configured** Shows iSCSI virtual targets that have been configured on the Cisco MDS 9000.
- **show iscsi initiator configured** Shows iSCSI initiators that have been configured on the Cisco MDS 9000.
- **show ips arp interface gigabitethernet 2/1** Shows IP storage Address Resolution Protocol (ARP) information for a specific GE interface.
- **show scsi-target devices vsan 777** Shows iSCSI devices for a specific VSAN (to map FC LUNs to iSCSI LUNs).
- **show int iscsi 2/1** Shows iSCSI interfaces.
- **show iscsi stats iscsi 2/1** Shows iSCSI statistics.
- **show int gigabitethernet 2/1** Shows the GE interface.
- **show ip route** Shows IP route information.

## Troubleshoot

Use this section to troubleshoot your configuration.

### Troubleshooting Procedure

- baboon Output
- canterbury Cisco MDS 9216 Output
- Fabric Manager and Device Manager Output

**bash-2.05# /etc/init.d/iscsi stop**

```
iSCSI is stopping.
Aug 28 09:42:08 baboon iscsimod: iSCSIs: closing connection to target 2 at 10.48.69.199
Aug 28 09:42:08 baboon iscsimod: iSCSIs: closing connection to target 1 at 10.48.69.199
Aug 28 09:42:08 baboon iscsimod: iSCSIs: closing connection to target 0 at 10.48.69.199
```

**bash-2.05# /etc/init.d/iscsi start**

iSCSI is starting.

**bash-2.05# bash-2.05# netstat -n**

TCP: IPv4

Local Address	Remote Address	Swind	Send-Q	Rwind	Recv-Q	State
10.48.69.235.32797	10.48.69.199.3260	65535	0	49172	0	ESTABLISHED
10.48.69.235.32798	10.48.69.199.3260	9379072	0	263152	0	ESTABLISHED
10.48.69.235.32799	10.48.69.199.3260	9379072	0	263152	0	ESTABLISHED

Active UNIX domain sockets

Address	Type	Vnode	Conn	Local Addr	Remote Addr
30002d95c88	dgram	30000205828	00000000	/tmp/portal	

**/etc/iscsi.bindings**

```
#
0      0      san-fc-jbod-1
0      1      clariion
```

**bash-2.05# devfsadm**

```
Aug 28 09:45:04 baboon iscsimod: NOTICE: iSCSIs: bus 0 tgt 1 lun 0, Cmd 0x4d, Sense:
Aug 28 09:45:04 baboon iscsimod:       70000500 0000000a 00000000 20000000 0000
Aug 28 09:45:04 baboon iscsimod: NOTICE: iSCSIs: bus 0 tgt 1 lun 0, Cmd 0x5e, Sense:
Aug 28 09:45:04 baboon iscsimod:       70000500 0000000a 00000000 20000000 0000
Aug 28 09:45:04 baboon iscsimod: NOTICE: iSCSIs: bus 0 tgt 1 lun 1, Cmd 0x00, Sense:
Aug 28 09:45:04 baboon iscsimod:       70000600 0000000a 00000000 29000000 0000
Aug 28 09:45:04 baboon iscsimod: NOTICE: iSCSIs: bus 0 tgt 1 lun 1, Cmd 0x4d, Sense:
Aug 28 09:45:04 baboon iscsimod:       70000500 0000000a 00000000 20000000 0000
Aug 28 09:45:04 baboon iscsimod: NOTICE: iSCSIs: bus 0 tgt 1 lun 1, Cmd 0x5e, Sense:
Aug 28 09:45:04 baboon iscsimod:       70000500 0000000a 00000000 20000000 0000
Aug 28 09:45:04 baboon iscsimod: NOTICE: iSCSIs: bus 0 tgt 1 lun 2, Cmd 0x00, Sense:
Aug 28 09:45:04 baboon iscsimod:       70000600 0000000a 00000000 29000000 0000
Aug 28 09:45:04 baboon iscsimod: NOTICE: iSCSIs: bus 0 tgt 1 lun 2, Cmd 0x4d, Sense:
Aug 28 09:45:04 baboon iscsimod:       70000500 0000000a 00000000 20000000 0000
Aug 28 09:45:04 baboon iscsimod: NOTICE: iSCSIs: bus 0 tgt 1 lun 2, Cmd 0x5e, Sense:
Aug 28 09:45:04 baboon iscsimod:       70000500 0000000a 00000000 20000000 0000
Aug 28 09:45:05 baboon iscsimod: NOTICE: iSCSIs: bus 0 tgt 0 lun 0, Cmd 0x1c, Sense:
Aug 28 09:45:05 baboon iscsimod:       70000500 0000000a 00000000 35010300 0000
```

**bash-2.05# format output**

AVAILABLE DISK SELECTIONS:

0. c0t0d0 <SUN18G cyl 7506 alt 2 hd 19 sec 248>  
/pci@1f,4000/scsi@3/sd@0,0
1. c0t1d0 <SUN18G cyl 7506 alt 2 hd 19 sec 248>  
/pci@1f,4000/scsi@3/sd@1,0
2. c3t0d0 <SEAGATE-ST318203FC-0004 cyl 9770 alt 2 hd 12 sec 303>  
/iscsipseudo/iscsi@0/sd@0,0
3. c3t1d0 <DGC-RAID0-0632 cyl 5459 alt 2 hd 3 sec 128>  
/iscsipseudo/iscsi@0/sd@1,0

4. c3t1d1 <DGC-RAID0-0632 cyl 5459 alt 2 hd 3 sec 128>  
/iscsipseudo/iscsi@0/sd@1,1
5. c3t1d2 <DGC-RAID0-0632 cyl 5459 alt 2 hd 3 sec 128>  
/iscsipseudo/iscsi@0/sd@1,2
6. c3t2d0 <drive not available>  
/iscsipseudo/iscsi@0/sd@2,0

!--- After you add the clariion-lun-3-4-5 virtual target on the Cisco MDS 9216.

**/etc/iscsi.bindings**

```
0      0      san-fc-jbod-1
0      1      clariion
0      2      clariion-lun-3-4-5
```

bash-2.05#**bash-2.05# netstat -n**

TCP: IPv4

Local Address	Remote Address	Swind	Send-Q	Rwind	Recv-Q	State
10.48.69.235.32797	10.48.69.199.3260	65535	0	49172	0	TIME_WAIT
10.48.69.235.32798	10.48.69.199.3260	9379072	0	263152	0	ESTABLISHED
10.48.69.235.32799	10.48.69.199.3260	9379072	0	263152	0	ESTABLISHED
10.48.69.235.32800	10.48.69.199.3260	65535	0	49108	0	ESTABLISHED
10.48.69.235.32801	10.48.69.199.3260	9379072	0	263152	0	ESTABLISHED

Active UNIX domain sockets

Address	Type	Vnode	Conn	Local Addr	Remote Addr
30002d95c88	dgram	30000205828	00000000	/tmp/portal	

bash-2.05# **devfsadm**

```
Aug 28 09:47:58 baboon iscsimod: NOTICE: iSCSIs: bus 0 tgt 2 lun 3, Cmd 0x00, Sense:
Aug 28 09:47:58 baboon iscsimod:       70000600 0000000a 00000000 29000000 0000
Aug 28 09:47:58 baboon iscsimod: NOTICE: iSCSIs: bus 0 tgt 2 lun 3, Cmd 0x4d, Sense:
Aug 28 09:47:58 baboon iscsimod:       70000500 0000000a 00000000 20000000 0000
Aug 28 09:47:58 baboon iscsimod: NOTICE: iSCSIs: bus 0 tgt 2 lun 3, Cmd 0x5e, Sense:
Aug 28 09:47:58 baboon iscsimod:       70000500 0000000a 00000000 20000000 0000
Aug 28 09:47:58 baboon iscsimod: NOTICE: iSCSIs: bus 0 tgt 2 lun 4, Cmd 0x00, Sense:
Aug 28 09:47:58 baboon iscsimod:       70000600 0000000a 00000000 29000000 0000
Aug 28 09:47:58 baboon iscsimod: NOTICE: iSCSIs: bus 0 tgt 2 lun 4, Cmd 0x5e, Sense:
Aug 28 09:47:58 baboon iscsimod:       70000500 0000000a 00000000 20000000 0000
Aug 28 09:47:58 baboon iscsimod: NOTICE: iSCSIs: bus 0 tgt 2 lun 5, Cmd 0x00, Sense:
Aug 28 09:47:58 baboon iscsimod:       70000600 0000000a 00000000 29000000 0000
Aug 28 09:47:58 baboon iscsimod: NOTICE: iSCSIs: bus 0 tgt 2 lun 5, Cmd 0x4d, Sense:
Aug 28 09:47:58 baboon iscsimod:       70000500 0000000a 00000000 20000000 0000
Aug 28 09:47:58 baboon iscsimod: NOTICE: iSCSIs: bus 0 tgt 2 lun 5, Cmd 0x5e, Sense:
Aug 28 09:47:58 baboon iscsimod:       70000500 0000000a 00000000 20000000 0000
```

And the **format** output:

0. c0t0d0 <SUN18G cyl 7506 alt 2 hd 19 sec 248>  
/pci@1f,4000/scsi@3/sd@0,0
1. c0t1d0 <SUN18G cyl 7506 alt 2 hd 19 sec 248>  
/pci@1f,4000/scsi@3/sd@1,0
2. c3t0d0 <SEAGATE-ST318203FC-0004 cyl 9770 alt 2 hd 12 sec 303>  
/iscsipseudo/iscsi@0/sd@0,0
3. c3t1d0 <DGC-RAID0-0632 cyl 5459 alt 2 hd 3 sec 128>  
/iscsipseudo/iscsi@0/sd@1,0
4. c3t1d1 <DGC-RAID0-0632 cyl 5459 alt 2 hd 3 sec 128>  
/iscsipseudo/iscsi@0/sd@1,1
5. c3t1d2 <DGC-RAID0-0632 cyl 5459 alt 2 hd 3 sec 128>  
/iscsipseudo/iscsi@0/sd@1,2
6. c3t2d0 <drive not available>  
/iscsipseudo/iscsi@0/sd@2,0

7. c3t2d3 <DGC-RAID0-0632 cyl 10920 alt 2 hd 3 sec 128>  
/iscsipseudo/iscsi@0/sd@2,3
8. c3t2d4 <DGC-RAID0-0632 cyl 5459 alt 2 hd 3 sec 128>  
/iscsipseudo/iscsi@0/sd@2,4
9. c3t2d5 <DGC-RAID0-0632 cyl 5459 alt 2 hd 3 sec 128>  
/iscsipseudo/iscsi@0/sd@2,5

*!-- Issue the **iscsi-ls -v** command to see iSCSI driver version.*

**bash-2.05# iscsi-ls -v**

iSCSI driver version: 3.3.3

*!-- Issue the **iscsi-ls -l** or **iscsi-ls** commands to see the devices that are currently available.*

**bash-2.05# iscsi-ls -l**

```
*****
TARGET NAME san-fc-jbod-1
TARGET ID 0:
  ADDRESS = 10.48.69.199:3260, 128
  STATUS = Connected 10.48.69.235:32798<->10.48.69.199:3260 8/28/2003 09:43:59
  SESSION = ISID 00023d000001 TSID 128 PID 463
  LUN 0 = DISK c3t0d0 (sd296) 'SEAGATE-ST318203FC-0004' SERIAL# LRE80915
          BLOCKS: 35566479 BLOCK SIZE: 512
*****
TARGET NAME clariion
TARGET ID 1:
  ADDRESS = 10.48.69.199:3260, 128
  STATUS = Connected 10.48.69.235:32799<->10.48.69.199:3260 8/28/2003 09:43:59
  SESSION = ISID 00023d000001 TSID 128 PID 464
  LUN 0 = DISK c3t1d0 (sd297) 'DGC-RAID 0-0632' SERIAL# 008E080000CL
          BLOCKS: 2097023 BLOCK SIZE: 512
  LUN 1 = DISK c3t1d1 (sd298) 'DGC-RAID 0-0632' SERIAL# 0127AB0000CL
          BLOCKS: 2097023 BLOCK SIZE: 512
  LUN 2 = DISK c3t1d2 (sd299) 'DGC-RAID 0-0632' SERIAL# 02E4180000CL
          BLOCKS: 2097023 BLOCK SIZE: 512
*****
TARGET NAME clariion-lun-3-4-5
TARGET ID 2:
  ADDRESS = 10.48.69.199:3260, 128
  STATUS = Connected 10.48.69.235:32801<->10.48.69.199:3260 8/28/2003 09:46:42
  SESSION = ISID 00023d000001 TSID 128 PID 482
  LUN 0 : SCSI Inquiry failed - Bad file number
  LUN 3 = DISK c3t2d3 (sd371) 'DGC-RAID 0-0632' SERIAL# 03E0A1E330CL
          BLOCKS: 4194047 BLOCK SIZE: 512
  LUN 4 = DISK c3t2d4 (sd372) 'DGC-RAID 0-0632' SERIAL# 04E9A1E330CL
          BLOCKS: 2097023 BLOCK SIZE: 512
  LUN 5 = DISK c3t2d5 (sd373) 'DGC-RAID 0-0632' SERIAL# 0594B1E330CL
          BLOCKS: 2097023 BLOCK SIZE: 512
*****
```

*!-- Issue the **iscsi-ls -c** command to see detailed statistics for currently established iSCSI sessions.*

**bash-2.05# iscsi-ls -c**

```
*****
TARGET NAME san-fc-jbod-1
TARGET ID 0:
  ADDRESS = 10.48.69.199:3260, 128
  STATUS = Connected 10.48.69.235:32798<->10.48.69.199:3260 8/28/2003 09:43:59
  SESSION = ISID 00023d000001 TSID 128 PID 463
  InitialR2T = Yes
```

```

MaxRecvDataSegmentLength = 131072 Bytes
MaxXmitDataSegmentLength = 2048 Bytes
FirstBurstLength         = 262144 Bytes
MaxBurstLength           = 16776192 Bytes
LoginTimeout             = 15 Seconds
AuthTimeout              = 45 Seconds
ActiveTimeout            = 5 Seconds
IdleTimeout              = 60 Seconds
PingTimeout              = 5 Seconds
HeaderDigest             = None
DataDigest               = None
ConnFailTimeout          = Default
MultiPath                = None

```

\*\*\*\*\*

TARGET NAME clarion

TARGET ID 1:

```

ADDRESS = 10.48.69.199:3260, 128
STATUS  = Connected 10.48.69.235:32799<->10.48.69.199:3260  8/28/2003 09:43:59
SESSION = ISID 00023d000001 TSID 128 PID 464
InitialR2T = Yes
MaxRecvDataSegmentLength = 131072 Bytes
MaxXmitDataSegmentLength = 2048 Bytes
FirstBurstLength         = 262144 Bytes
MaxBurstLength           = 16776192 Bytes
LoginTimeout             = 15 Seconds
AuthTimeout              = 45 Seconds
ActiveTimeout            = 5 Seconds
IdleTimeout              = 60 Seconds
PingTimeout              = 5 Seconds
HeaderDigest             = None
DataDigest               = None
ConnFailTimeout          = Default
MultiPath                = None

```

\*\*\*\*\*

TARGET NAME clarion-lun-3-4-5

TARGET ID 2:

```

ADDRESS = 10.48.69.199:3260, 128
STATUS  = Connected 10.48.69.235:32801<->10.48.69.199:3260  8/28/2003 09:46:42
SESSION = ISID 00023d000001 TSID 128 PID 482
InitialR2T = Yes
MaxRecvDataSegmentLength = 131072 Bytes
MaxXmitDataSegmentLength = 2048 Bytes
FirstBurstLength         = 262144 Bytes
MaxBurstLength           = 16776192 Bytes
LoginTimeout             = 15 Seconds
AuthTimeout              = 45 Seconds
ActiveTimeout            = 5 Seconds
IdleTimeout              = 60 Seconds
PingTimeout              = 5 Seconds
HeaderDigest             = None
DataDigest               = None
ConnFailTimeout          = Default
MultiPath                = None

```

\*\*\*\*\*

*!--- You can see these iSCSI connections in the /var/adm/messages or dmesg:*

```

Aug 28 09:43:59 baboon iscsid[454]: [ID 702911 daemon.notice]
version 3.3.3 ( 7-Aug-2003)
Aug 28 09:43:59 baboon iscsid[463]: [ID 702911 daemon.notice]
iSCSI normal session to san-fc-jbod-1 established
Aug 28 09:43:59 baboon iscsid[463]: [ID 702911 daemon.notice]
logged into target san-fc-jbod-1 -- id 0, Initiator sid 00023d000001, target sid 128
Aug 28 09:43:59 baboon iscsid[464]: [ID 702911 daemon.notice]

```

```

iSCSI normal session to clariion established
Aug 28 09:43:59 baboon iscsid[464]: [ID 702911 daemon.notice]
logged into target clariion -- id 1, Initiator sid 00023d000001, target sid 128
Aug 28 09:45:23 baboon iscsi: [ID 318680 kern.notice] NOTICE:
tran_start disabled to bus 0, target 2, lun 0
Aug 28 09:46:42 baboon iscsid[482]: [ID 702911 daemon.notice]
iSCSI normal session to clariion-lun-3-4-5 established
Aug 28 09:46:42 baboon iscsid[482]: [ID 702911 daemon.notice]
logged into target clariion-lun-3-4-5 -- id 2, Initiator sid 00023d000001,
target sid 128

```

### canterbury Cisco MDS 9216 Output

```
canterbury#show zone status
```

```

VSAN: 1 default-zone: permit distribute: active only Interop: Off
Full Zoning Database :
  Zonesets:0 Zones:0 Aliases: 0
Active Zoning Database :
  Database Not Available
Status: Deactivation completed at Fri Aug 22 11:47:53 2003

```

```

VSAN: 777 default-zone: permit distribute: active only Interop: Off.
Full Zoning Database :
  Zonesets:0 Zones:0 Aliases: 0
Active Zoning Database :
  Database Not Available
Status: Default zoning policy changed to permit at Mon Aug 25 20:19:31 2003

```

*!--- VSAN 777 has been used for this configuration, and default-zone behavior has been !--- set to permit.*

```
canterbury#show flogi da vsan 777
```

```

-----
INTERFACE  VSAN    FCID          PORT NAME          NODE NAME
-----
fc1/4      777     0x7000e8     21:00:00:20:37:67:f7:a2  20:00:00:20:37:67:f7:a2
fc1/7      777     0x700103     50:06:01:60:88:02:a8:2b  50:06:01:60:11:02:a8:2b
iscsi2/1   777     0x700100     21:02:00:0c:30:6c:24:42  21:01:00:0c:30:6c:24:42

```

```
Total number of flogi = 3.
```

```
canterbury#show fcns database vsan 777
```

```
VSAN 777:
```

```

-----
FCID        TYPE  PWWN          (VENDOR)          FC4-TYPE:FEATURE
-----
0x7000e8    NL    21:00:00:20:37:67:f7:a2 (Seagate)         scsi-fcp:target
0x700100    N     21:02:00:0c:30:6c:24:42 (Cisco)           scsi-fcp:init isc..w
0x700103    N     50:06:01:60:88:02:a8:2b (Clariion)       scsi-fcp:target

```

```
Total number of entries = 3
```

*!--- FCID 0X700100 is the virtual N port (HBA) for the iSCSI host.*

```
canterbury#show fcns database detail vsan 777
```

```

-----
VSAN:777    FCID:0x7000e8
-----
port-wwn (vendor)      :21:00:00:20:37:67:f7:a2 (Seagate)

```

```

node-wwn          :20:00:00:20:37:67:f7:a2
class             :3
node-ip-addr      :0.0.0.0
ipa              :ff ff ff ff ff ff ff ff
fc4-types:fc4_features:scsi-fcp:target
symbolic-port-name :
symbolic-node-name :
port-type         :NL
port-ip-addr      :0.0.0.0
fabric-port-wwn   :20:04:00:0c:30:6c:24:40
hard-addr         :0x000000
-----
VSAN:777   FCID:0x700100
-----
port-wwn (vendor) :21:02:00:0c:30:6c:24:42 (Cisco)
node-wwn          :21:01:00:0c:30:6c:24:42
class             :2,3
node-ip-addr      :10.48.69.235
ipa              :ff ff ff ff ff ff ff ff
fc4-types:fc4_features:scsi-fcp:init iscsi-gw

!--- Virtual N port for host.

symbolic-port-name :
symbolic-node-name :10.48.69.235
port-type         :N
port-ip-addr      :0.0.0.0
fabric-port-wwn   :20:41:00:0c:30:6c:24:40
hard-addr         :0x000000
-----
VSAN:777   FCID:0x700103
-----
port-wwn (vendor) :50:06:01:60:88:02:a8:2b (Clariion)
node-wwn          :50:06:01:60:11:02:a8:2b
class             :3
node-ip-addr      :0.0.0.0
ipa              :ff ff ff ff ff ff ff ff
fc4-types:fc4_features:scsi-fcp:target
symbolic-port-name :
symbolic-node-name :
port-type         :N
port-ip-addr      :0.0.0.0
fabric-port-wwn   :20:07:00:0c:30:6c:24:40
hard-addr         :0x000000

```

Total number of entries = 3

canterbury#**show vsan membership**

```

vsan 777 interfaces:
    fcl/4   fcl/7

```

canterbury#**show iscsi initiator**

```

iSCSI Node name is 10.48.69.235
  iSCSI Initiator name: iqn.1987-05.com.cisco:01.894b196796e7
  iSCSI alias name: baboon
  Node WWN is 21:01:00:0c:30:6c:24:42 (dynamic)
  Member of vsans: 777
  Number of Virtual n_ports: 1
  Virtual Port WWN is 21:02:00:0c:30:6c:24:42 (dynamic)
    Interface iSCSI 2/1, Portal group tag: 0x80
    VSAN ID 777, FCID 0x700100

```

```
canterbury#show iscsi initiator detail
```

```
iSCSI Node name is 10.48.69.235
```

```
  iSCSI Initiator name: ign.1987-05.com.cisco:01.894b196796e7
```

```
  iSCSI alias name: baboon
```

```
  Node WWN is 21:01:00:0c:30:6c:24:42 (dynamic)
```

```
  Member of vsans: 777
```

```
  Number of Virtual n_ports: 1
```

```
Virtual Port WWN is 21:02:00:0c:30:6c:24:42 (dynamic)
```

```
  Interface iSCSI 2/1, Portal group tag is 0x80
```

```
  VSAN ID 777, FCID 0x700100
```

```
  2 FC sessions, 3 iSCSI sessions
```

```
  iSCSI session details
```

```
    Target: san-fc-jbod-1
```

```
      Statistics:
```

```
        PDU: Command: 24, Response: 24
```

```
        Bytes: TX: 3504, RX: 0
```

```
        Number of connection: 1
```

```
      TCP parameters
```

```
        Local 10.48.69.199:3260, Remote 10.48.69.235:32798
```

```
        Path MTU: 1500 bytes
```

```
        Retransmission timeout: 300 ms
```

```
        Round trip time: Smoothed 4 ms, Variance: 6
```

```
        Advertized window: Current: 256 KB, Maximum: 257 KB, Scale: 3
```

```
        Peer receive window: Current: 9159 KB, Maximum: 9159 KB, Scale: 8
```

```
        Congestion window: Current: 11 KB
```

```
    Target: clariion-lun-3-4-5
```

```
      Statistics:
```

```
        PDU: Command: 73, Response: 73
```

```
        Bytes: TX: 9740, RX: 0
```

```
        Number of connection: 1
```

```
      TCP parameters
```

```
        Local 10.48.69.199:3260, Remote 10.48.69.235:32801
```

```
        Path MTU: 1500 bytes
```

```
        Retransmission timeout: 300 ms
```

```
        Round trip time: Smoothed 7 ms, Variance: 13
```

```
        Advertized window: Current: 256 KB, Maximum: 257 KB, Scale: 3
```

```
        Peer receive window: Current: 9159 KB, Maximum: 9159 KB, Scale: 8
```

```
        Congestion window: Current: 11 KB
```

```
    Target: clariion
```

```
      Statistics:
```

```
        PDU: Command: 101, Response: 101
```

```
        Bytes: TX: 14828, RX: 0
```

```
        Number of connection: 1
```

```
      TCP parameters
```

```
        Local 10.48.69.199:3260, Remote 10.48.69.235:32799
```

```
        Path MTU: 1500 bytes
```

```
        Retransmission timeout: 300 ms
```

```
        Round trip time: Smoothed 2 ms, Variance: 1
```

```
        Advertised window: Current: 256 KB, Maximum: 257 KB, Scale: 3
```

```
        Peer receive window: Current: 9159 KB, Maximum: 9159 KB, Scale: 8
```

```
        Congestion window: Current: 11 KB
```

```
FCP Session details
```

```
  Target FCID: 0x7000e8 (S_ID of this session: 0x700100)
```

```
  pWWN: 21:00:00:20:37:67:f7:a2, nWWN: 20:00:00:20:37:67:f7:a2
```

```
  Session state: LOGGED_IN
```

```
  1 iSCSI sessions share this FC session
```

```
    Target: san-fc-jbod-1
```

```
  Negotiated parameters
```

```
    RcvDataFieldSize 2048 our_RcvDataFieldSize 2048
```

```
    MaxBurstSize 0, EMPD: FALSE
```

```
    Random Relative Offset: FALSE, Sequence-in-order: Yes
```

```
Statistics:
  PDU: Command: 0, Response: 24
Target FCID: 0x700103 (S_ID of this session: 0x700100)
pWWN: 50:06:01:60:88:02:a8:2b, nWWN: 50:06:01:60:11:02:a8:2b
Session state: LOGGED_IN
2 iSCSI sessions share this FC session
  Target: clariion-lun-3-4-5
  Target: clariion
Negotiated parameters
  RcvDataFieldSize 1024 our_RcvDataFieldSize 2048
  MaxBurstSize 0, EMPD: FALSE
  Random Relative Offset: FALSE, Sequence-in-order: Yes
Statistics:
  PDU: Command: 0, Response: 174
```

canterbury#show iscsi initiator iscsi-session detail

```
iSCSI Node name is 10.48.69.235
iSCSI Initiator name: ign.1987-05.com.cisco:01.894b196796e7
iSCSI alias name: baboon
Node WWN is 21:01:00:0c:30:6c:24:42 (dynamic)
Member of vsans: 777
Number of Virtual n_ports: 1

Virtual Port WWN is 21:02:00:0c:30:6c:24:42 (dynamic)
Interface iSCSI 2/1, Portal group tag is 0x80
VSAN ID 777, FCID 0x700100
2 FC sessions, 3 iSCSI sessions
iSCSI session details
  Target: san-fc-jbod-1
  Statistics:
    PDU: Command: 24, Response: 24
    Bytes: TX: 3504, RX: 0
    Number of connection: 1
  TCP parameters
    Local 10.48.69.199:3260, Remote 10.48.69.235:32798
    Path MTU: 1500 bytes
    Retransmission timeout: 300 ms
    Round trip time: Smoothed 4 ms, Variance: 6
    Advertized window: Current: 256 KB, Maximum: 257 KB, Scale: 3
    Peer receive window: Current: 9159 KB, Maximum: 9159 KB, Scale: 8
    Congestion window: Current: 11 KB
  Target: clariion-lun-3-4-5
  Statistics:
    PDU: Command: 73, Response: 73
    Bytes: TX: 9740, RX: 0
    Number of connection: 1
  TCP parameters
    Local 10.48.69.199:3260, Remote 10.48.69.235:32801
    Path MTU: 1500 bytes
    Retransmission timeout: 300 ms
    Round trip time: Smoothed 7 ms, Variance: 13
    Advertized window: Current: 256 KB, Maximum: 257 KB, Scale: 3
    Peer receive window: Current: 9159 KB, Maximum: 9159 KB, Scale: 8
    Congestion window: Current: 11 KB
  Target: clariion
  Statistics:
    PDU: Command: 101, Response: 101
    Bytes: TX: 14828, RX: 0
    Number of connection: 1
  TCP parameters
    Local 10.48.69.199:3260, Remote 10.48.69.235:32799
    Path MTU: 1500 bytes
    Retransmission timeout: 300 ms
```

Round trip time: Smoothed 2 ms, Variance: 1  
Advertized window: Current: 256 KB, Maximum: 257 KB, Scale: 3  
Peer receive window: Current: 9159 KB, Maximum: 9159 KB, Scale: 8  
Congestion window: Current: 11 KB

**canterbury#show iscsi initiator fcp-session detail**

iSCSI Node name is 10.48.69.235  
iSCSI Initiator name: ign.1987-05.com.cisco:01.894b196796e7  
iSCSI alias name: baboon  
Node WWN is 21:01:00:0c:30:6c:24:42 (dynamic)  
Member of vsans: 777  
Number of Virtual n\_ports: 1  
  
Virtual Port WWN is 21:02:00:0c:30:6c:24:42 (dynamic)  
Interface iSCSI 2/1, Portal group tag is 0x80  
VSAN ID 777, FCID 0x700100  
2 FC sessions, 3 iSCSI sessions  
  
FCP Session details  
Target FCID: 0x7000e8 (S\_ID of this session: 0x700100)  
pWWN: 21:00:00:20:37:67:f7:a2, nWWN: 20:00:00:20:37:67:f7:a2  
Session state: LOGGED\_IN  
1 iSCSI sessions share this FC session  
Target: san-fc-jbod-1  
Negotiated parameters  
RcvDataFieldSize 2048 our\_RcvDataFieldSize 2048  
MaxBurstSize 0, EMPD: FALSE  
Random Relative Offset: FALSE, Sequence-in-order: Yes  
Statistics:  
PDU: Command: 0, Response: 24  
Target FCID: 0x700103 (S\_ID of this session: 0x700100)  
pWWN: 50:06:01:60:88:02:a8:2b, nWWN: 50:06:01:60:11:02:a8:2b  
Session state: LOGGED\_IN  
2 iSCSI sessions share this FC session  
Target: clariion-lun-3-4-5  
Target: clariion  
Negotiated parameters  
RcvDataFieldSize 1024 our\_RcvDataFieldSize 2048  
MaxBurstSize 0, EMPD: FALSE  
Random Relative Offset: FALSE, Sequence-in-order: Yes  
Statistics:  
PDU: Command: 0, Response: 174

**canterbury#show ips stats tcp interface gigabitethernet 2/1 detail**

TCP Statistics for port GigabitEthernet2/1  
TCP send stats  
28621 segments, 4231096 bytes  
15842 data, 12335 ack only packets  
168 control (SYN/FIN/RST), 0 probes, 210 window updates  
66 segments retransmitted, 63724 bytes  
66 retransmitted while on ethernet send queue, 1127 packets split  
480 delayed acks sent  
TCP receive stats  
36728 segments, 12911 data packets in sequence, 2668162 bytes in sequence  
0 predicted ack, 12050 predicted data  
0 bad checksum, 0 multi/broadcast, 0 bad offset  
0 no memory drops, 0 short segments  
48 duplicate bytes, 1 duplicate packets  
0 partial duplicate bytes, 0 partial duplicate packets  
0 out-of-order bytes, 164 out-of-order packets  
0 packet after window, 0 bytes after window  
0 packets after close

```

12621 acks, 3486850 ack bytes, 0 ack toomuch, 11652 duplicate acks
0 ack packets left of snd_una, 6 non-4 byte aligned packets
8333 window updates, 0 window probe
624 pcb hash miss, 79 no port, 0 bad SYN, 0 paws drops
TCP Connection Stats
  0 attempts, 231 accepts, 231 established
  227 closed, 14 drops, 0 conn drops
  0 drop in retransmit timeout, 2 drop in keepalive timeout
  0 drop in persist drops, 0 connections drained
TCP Miscellaneous Stats
  11761 segments timed, 12027 rtt updated
  51 retransmit timeout, 304 persist timeout
  10452 keepalive timeout, 10450 keepalive probes
TCP SACK Stats
  0 recovery episodes, 0 data packets, 0 data bytes
  0 data packets retransmitted, 0 data bytes retransmitted
  0 connections closed, 0 retransmit timeouts
TCP SYN Cache Stats
  233 entries, 231 connections completed, 1 entries timed out
  0 dropped due to overflow, 1 dropped due to RST
  0 dropped due to ICMP unreachable, 0 dropped due to bucket overflow
  0 abort due to no memory, 4 duplicate SYN, 76 no-route SYN drop
  0 hash collisions, 0 retransmitted

TCP Active Connections
  Local Address      Remote Address      State      Send-Q  Recv-Q
  10.48.69.199:3260  10.48.69.235:32798 ESTABLISH  0       0
  10.48.69.199:3260  10.48.69.235:32799 ESTABLISH  0       0
  10.48.69.199:3260  10.48.69.235:32800 ESTABLISH  0       0
  10.48.69.199:3260  10.48.69.235:32801 ESTABLISH  0       0
  0.0.0.0:3260       0.0.0.0:0          LISTEN    0       0

```

canterbury#show iscsi virtual-target configured

target: san-fc-jbod-1

\* Port WWN 21:00:00:20:37:67:f7:a2

*!--- The \* means that you have both discovery and target sessions.*  
*!--- You only have a discovery session if there is no \* in front of the pWWN.*

```

Configured node
No. of advertised interface: 1
  GigabitEthernet 2/1
No. of initiators permitted: 3
  initiator iqn.1987-05.com.cisco.02.89451e183581.mcandegew2k1 is permitted
  initiator 10.48.69.235/32 is permitted
  initiator 10.48.69.232/32 is permitted
all initiator permit is disabled

```

target: clariion

\* Port WWN 50:06:01:60:88:02:a8:2b

```

Configured node
No. of LU mapping: 3
  iSCSI LUN: 0000, FC LUN: 0000
  iSCSI LUN: 0001, FC LUN: 0001
  iSCSI LUN: 0002, FC LUN: 0002
No. of advertised interface: 1
  GigabitEthernet 2/1
No. of initiators permitted: 1
  initiator 10.48.69.235/32 is permitted
all initiator permit is disabled

```

target: clariion-lun-3-4-5

\* Port WWN 50:06:01:60:88:02:a8:2b

```

Configured node
No. of LU mapping: 3
  iSCSI LUN: 0003, FC LUN: 0003
  iSCSI LUN: 0004, FC LUN: 0004
  iSCSI LUN: 0005, FC LUN: 0005
No. of advertised interface: 1
  GigabitEthernet 2/1
No. of initiators permitted: 1
  initiator 10.48.69.235/32 is permitted
  all initiator permit is disabled

```

canterbury#show iscsi initiator configured

```

iSCSI Node name is 10.48.69.235
Member of vsans: 777

```

canterbury#show ips arp interface gigabitethernet 2/1

Protocol	Address	Age (min)	Hardware Addr	Type	Interface
Internet	10.48.69.200	0	0008.e21e.c7bc	ARPA	GigabitEthernet2/1
Internet	10.48.69.206	7	0005.9ba6.95ff	ARPA	GigabitEthernet2/1
Internet	10.48.69.209	4	0009.7c60.561f	ARPA	GigabitEthernet2/1
Internet	10.48.69.226	0	0060.08f6.bc1a	ARPA	GigabitEthernet2/1
Internet	10.48.69.229	15	0800.209e.edab	ARPA	GigabitEthernet2/1
Internet	10.48.69.233	0	0010.4200.7d5b	ARPA	GigabitEthernet2/1
Internet	10.48.69.235	9	0800.20b6.6559	ARPA	GigabitEthernet2/1
Internet	10.48.69.238	5	0030.6e1b.6f51	ARPA	GigabitEthernet2/1
Internet	10.48.69.239	12	0030.6e1c.a00b	ARPA	GigabitEthernet2/1
Internet	10.48.69.248	5	0202.3d30.45f8	ARPA	GigabitEthernet2/1
Internet	10.48.69.252	1	0202.3d30.45fc	ARPA	GigabitEthernet2/1
Internet	10.10.2.28	9	0202.3d0a.021c	ARPA	GigabitEthernet2/1

canterbury#show scsi-target devices vsan 777

VSAN	FCID	PWWN	VENDOR	MODEL	REV
777	0x7000e8	21:00:00:20:37:67:f7:a2	SEAGATE	ST318203FC	0004
777	0x700103	50:06:01:60:88:02:a8:2b	DGC	RAID 0	0632

canterbury#show scsi-target lun vsan 777

```

- ST318203FC from SEAGATE (Rev 0004)
FCID is 0x7000e8 in VSAN 777, PWWN is 21:00:00:20:37:67:f7:a2

```

LUN	Capacity (MB)	Status	Serial Number	Device-Id
0x0	18210	Online	LRE8091500007039	C:1 A:0 T:3 20:00:00:20:37:67:f7:a2

```

- RAID from DGC (Rev 0632)
FCID is 0x700103 in VSAN 777, PWWN is 50:06:01:60:88:02:a8:2b

```

LUN	Capacity (MB)	Status	Serial Number	Device-Id
0x0	1074	Online	f60004202091	C:1 A:0 T:3 60:06:01:60:88:02:a8:2b da:05:b6:a9:b6:9d:7b:00
0x1	1074	Online	f60004202091	C:1 A:0 T:0 00:00:00:00 C:1 A:0 T:3 60:06:01:60:88:02:a8:2b 6a:66:0d:74:cb:33:88:6c
0x2	1074	Online	f60004202091	C:1 A:0 T:0 00:01:00:00 C:1 A:0 T:3 60:06:01:60:88:02:a8:2b ec:81:5b:a2:c4:43:0d:8a C:1 A:0 T:0 00:02:00:00

```

0x3    2147    Online    f60004202091    C:1 A:0 T:3 60:06:01:60:88:02:a8:2b
                                                e0:47:b3:be:3b:00:e0:d5
                                                C:1 A:0 T:0 00:03:00:00
0x4    1074    Online    f60004202091    C:1 A:0 T:3 60:06:01:60:88:02:a8:2b
                                                00:51:5b:7f:3d:9a:7b:ce
                                                C:1 A:0 T:0 00:04:00:00
0x5    1074    Online    f60004202091    C:1 A:0 T:3 60:06:01:60:88:02:a8:2b
                                                ab:b1:ae:80:59:c0:fc:f0
                                                C:1 A:0 T:0 00:05:00:00
0x6    1074    Online    f60004202091    C:1 A:0 T:3 60:06:01:60:88:02:a8:2b
                                                ad:91:58:af:d2:fd:c7:47
                                                C:1 A:0 T:0 00:06:00:00
0x7    1074    Online    f60004202091    C:1 A:0 T:3 60:06:01:60:88:02:a8:2b
                                                b1:ef:e7:6c:44:5c:16:97
                                                C:1 A:0 T:0 00:07:00:00
0x8    1074    Online    f60004202091    C:1 A:0 T:3 60:06:01:60:88:02:a8:2b
                                                84:4f:09:60:30:1e:fc:50
                                                C:1 A:0 T:0 00:08:00:00
0x9    1074    Online    f60004202091    C:1 A:0 T:3 60:06:01:60:88:02:a8:2b
                                                aa:6d:e2:0e:ce:7a:cc:21
                                                C:1 A:0 T:0 00:09:00:00
0xa    1074    Online    f60004202091    C:1 A:0 T:3 60:06:01:60:88:02:a8:2b
                                                5b:66:67:89:6c:f2:d1:56
                                                C:1 A:0 T:0 00:0a:00:00
0xb    1074    Online    f60004202091    C:1 A:0 T:3 60:06:01:60:88:02:a8:2b
                                                a9:32:bd:04:4a:bb:3d:9b
                                                C:1 A:0 T:0 00:0b:00:00
0xc    1074    Online    f60004202091    C:1 A:0 T:3 60:06:01:60:88:02:a8:2b
                                                cd:d9:96:f7:57:3f:07:0c
                                                C:1 A:0 T:0 00:0c:00:00
0xd    1074    Online    f60004202091    C:1 A:0 T:3 60:06:01:60:88:02:a8:2b
                                                0c:e5:ba:39:68:ca:d6:f0
                                                C:1 A:0 T:0 00:0d:00:00
0xe    1074    Online    f60004202091    C:1 A:0 T:3 60:06:01:60:88:02:a8:2b
                                                60:6e:ee:76:98:fc:ab:97
                                                C:1 A:0 T:0 00:0e:00:00
0xf    1074    Online    f60004202091    C:1 A:0 T:3 60:06:01:60:88:02:a8:2b
                                                8b:58:80:7b:12:fb:6b:12
                                                C:1 A:0 T:0 00:0f:00:00
0x10   1074    Online    f60004202091    C:1 A:0 T:3 60:06:01:60:88:02:a8:2b
                                                a1:2f:6d:b0:c3:d6:c2:46
                                                C:1 A:0 T:0 00:10:00:00
0x11   1074    Online    f60004202091    C:1 A:0 T:3 60:06:01:60:88:02:a8:2b
                                                2c:48:c4:74:25:4b:26:dd
                                                C:1 A:0 T:0 00:11:00:00
0x20   5369    Online    f60004202091    C:1 A:0 T:3 60:06:01:60:88:02:a8:2b
                                                ba:18:6a:40:22:40:94:75
                                                C:1 A:0 T:0 00:20:00:00
0x21   3221    Online    f60004202091    C:1 A:0 T:3 60:06:01:60:88:02:a8:2b
                                                74:d2:42:9e:31:8d:ff:86
                                                C:1 A:0 T:0 00:21:00:00

```

```
canterbury#show interface iscsi 2/1
```

```

iscsi2/1 is up
  Hardware is GigabitEthernet
  Port WWN is 20:41:00:0c:30:6c:24:40
  Admin port mode is ISCSI
  Port mode is ISCSI
  Speed is 1 Gbps
  iSCSI initiator is identified by name
  Number of iSCSI session: 4, Number of TCP connection: 4
  Configured TCP parameters
    Local Port is 3260

```

```
PMTU discover is enabled, reset timeout is 3600 sec
Keepalive-timeout is 60 sec
Minimum-retransmit-time is 300 ms
Max-retransmissions 4
Sack is disabled
Maximum allowed bandwidth is 800000 kbps
Minimum available bandwidth is 800000 kbps
Estimated round trip time is 100000 usec
5 minutes input rate 168 bits/sec, 21 bytes/sec, 0 frames/sec
5 minutes output rate 728 bits/sec, 91 bytes/sec, 0 frames/sec
iSCSI statistics
  Input 12209 packets, 2668348 bytes
    Command 3282 pdus, Data-out 1038 pdus, 1989664 bytes
  Output 14762 packets, 3486596 bytes
    Response 3059 pdus (with sense 77), R2T 153 pdus
    Data-in 3215 pdus, 2744116 bytes
```

```
canterbury#show iscsi stats iscsi 2/1
```

```
iscsi2/1
  5 minutes input rate 168 bits/sec, 21 bytes/sec, 0 frames/sec
  5 minutes output rate 728 bits/sec, 91 bytes/sec, 0 frames/sec
iSCSI statistics
  12209 packets input, 2668348 bytes
    Command 3282 pdus, Data-out 1038 pdus, 1989664 bytes, 0 fragments
  output 14762 packets, 3486596 bytes
    Response 3059 pdus (with sense 77), R2T 153 pdus
    Data-in 3215 pdus, 2744116 bytes
```

```
canterbury#show interface gigabitethernet 2/1
```

```
GigabitEthernet2/1 is up
Hardware is GigabitEthernet, address is 0005.3000.ade6
Internet address is 10.48.69.199/26
MTU 2156 bytes
Port mode is IPS
Speed is 1 Gbps
Beacon is turned off
Auto-Negotiation is turned on
iSCSI authentication: NONE
5 minutes input rate 392 bits/sec, 49 bytes/sec, 0 frames/sec
5 minutes output rate 64 bits/sec, 8 bytes/sec, 0 frames/sec
126128 packets input, 12476013 bytes
  2 multicast frames, 0 compressed
  0 input errors, 0 frame, 0 overrun 0 fifo
43443 packets output, 6256174 bytes, 0 underruns
  0 output errors, 0 collisions, 0 fifo
  0 carrier errors
```

```
canterbury#show ip route
```

```
Codes: C - connected, S - static
```

```
Gateway of last resort is 10.48.69.129
```

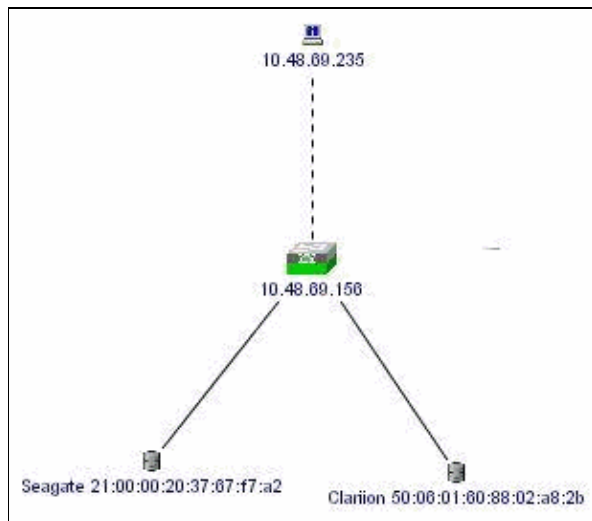
```
C 10.48.69.192/26 is directly connected, gigabitethernet2-1
```

```
C 10.48.69.128/26 is directly connected, mgmt0
```

## Fabric Manager and Device Manager Output

This section provides sample output from the MDS Fabric Manager 1.1(2) and Device Manager 1.1.(2).

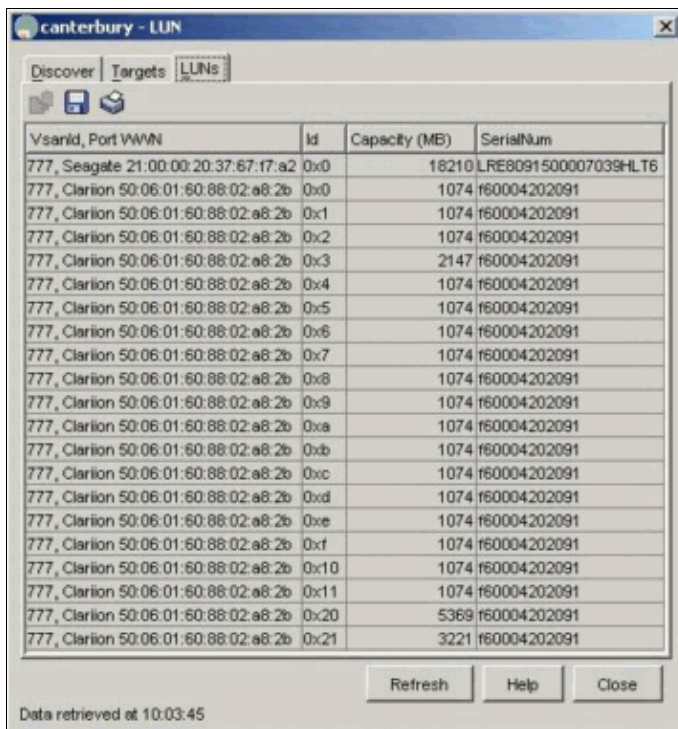
## Topology Diagram from the Fabric Manager



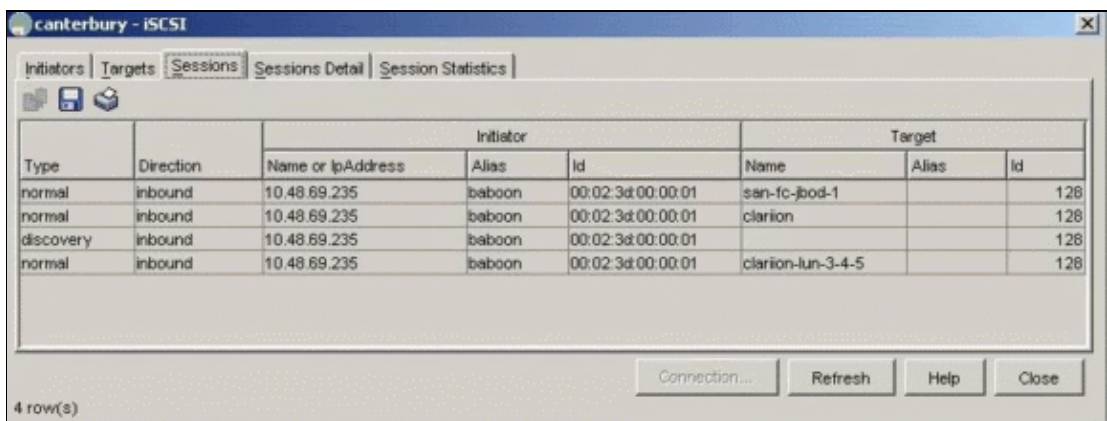
This is a sample screen shot of the Device Manager 1.1(2) view on canterbury.



1. Select **FC > LUNs** in the Device Manager window to display the pWWNs, LUN IDs, and the capacity of your LUNs.



2. Select IP > iSCSI to display the iSCSI sessions.



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- [Cisco iSCSI Drivers \( registered customers only\)](#)
- [Release Notes for Cisco Sun Solaris iSCSI Driver](#)
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