配置SolarisiSCSI主机到MDS/IPS-8

目录

简介

思科小型计算机系统IP接口(iSCSI)驱动程序是iSCSI解决方案的关键组件。这些iSCSI驱动程序驻留在服务器上，它们：

- 截取iSCSI命令。
- 将命令封装到IP数据包中。
- 将命令重定向到Cisco SN 5420、Cisco SN 5428、Cisco SN 5428-2或Cisco MDS/IPS-8。

本文档提供Solaris iSCSI主机到Cisco MDS/IPS-8的示例配置。

先决条件

要求

尝试进行此配置之前，请确保满足以下要求：

- 安装与Solaris版本兼容的iSCSI驱动程序，然后在Cisco MDS 9000上创建iSCSI配置。有关驱动程序(solaris-iscsi-3.3.5.tar.Z)的最新版本，请参阅Cisco iSCSI驱动程序（仅限注册客户）。驱动程序ZIP(TAR)文件中包含README.txt文件。README.txt文件包含：许可协议信息驱动程序安装和配置说明驱动程序架构的技术概述
- 有关操作系统(OS)和补丁要求，请参阅《Cisco iSCSI Driver for Sun Solaris发行版说明》中的“系统要求”部分。
- 用于Sun Solaris的Cisco iSCSI驱动程序仅在SPARC计算机上运行。驱动程序不能与任何其他处理器类型（例如x86）配合使用。

使用的组件

本文档中的信息基于以下软件和硬件版本：

- SunOS 5.9、SPARC Ultra-4 E450

```
#uname -a

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

- 用于Solaris的思科iSCSI驱动程序3.3.3

```
#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
```

- 软件版本为1.1.2的Cisco MDS 9216

```
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
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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)
```

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您使用的是真实网络，请确保您已经了解所有命令的潜在影响。

规则

有关文档规则的详细信息，请参阅 Cisco 技术提示规则。

背景信息

IP存储模块提供对光纤通道(FC)存储设备的IP主机访问。IP存储模块是提供透明iSCSI路由的DS-X9308-SMIP。使用iSCSI协议的IP主机可以透明地访问FC网络上的iSCSI（FC协议[FCP]）目标。IP主机通过TCP/IP连接将封装在iSCSI协议数据单元(PDU)中的iSCSI命令发送到Cisco MDS 9000 IP存储端口。在IP存储模块上正确配置的千兆以太网(GE)接口提供连接。IP存储模块：

- 使您能够创建虚拟iSCSI目标，并将它们映射到FC SAN中可用的物理FC目标
- 将FC目标呈现给IP主机，就像物理目标本地连接到IP网络一样

每个需要通过IP存储模块访问存储的iSCSI主机都必须安装兼容的iSCSI驱动程序。iSCSI驱动程序允许iSCSI主机使用iSCSI协议通过IP网络传输iSCSI请求和响应。从主机操作系统的角度来看，iSCSI驱动程序似乎是iSCSI传输驱动程序，类似于主机中外围通道的FC驱动程序。从存储设备的角度来看，每台IP主机都显示为FC主机。

完成以下步骤，将iSCSI从IP主机路由到FC存储设备：

- 在主机和IP存储模块之间通过IP网络传输iSCSI请求和响应。
- 使用IP存储模块在IP网络上的主机和FC存储设备之间路由iSCSI请求和响应（将iSCSI转换为FCP，反之亦然）。
- 在IP存储模块和FC存储设备之间传输FCP请求或响应。

默认情况下IP存储模块不导入FC目标到iSCSI。必须配置动态或静态映射，以便IP存储模块使FC目标可用于iSCSI启动器。静态映射的FC目标在配置时都具有已配置的名称。此配置提供静态映射示例。

每次iSCSI主机通过动态映射连接到IP存储模块时：

- 将创建新的FC N端口。
- 为此N端口分配的节点全球名称(nWWN)和端口全球名称(pWWN)可能不同。

如果每次iSCSI主机连接到IP存储模块时必须获得相同的nWWN和pWWN，请使用静态映射方法。您可以在IP存储模块上使用静态映射来访问具有以下功能的智能FC存储阵列：

- 访问控制
- 基于启动器的pWWN或nWWN的逻辑单元号(LUN)映射和掩码配置

指定以下项以控制对每个静态映射的iSCSI目标的访问：

- 通告IP存储端口的列表
- 允许访问的iSCSI启动器节点名称列表

FC基于分区的访问控制和基于ISCSI的访问控制是访问控制可以为iSCSI提供的二个机制。可以同时使用这两种方法。此配置中允许特定虚拟存储区域网络(VSAN)使用默认分区。IP存储模块使用基于iSCSI节点名称的访问控制列表和基于FC分区的访问控制列表，以在iSCSI发现和iSCSI会话创建期间实施访问控制。

iSCSI启动器可以通过IP地址或iSCSI限定名称(IQN)静态定义。代理**启动器选**项可在SAN-IOS 1.3中为Cisco MDS交换机动态创建iSCSI启动器。

iSCSI发现是指iSCSI主机为所有iSCSI目标创建iSCSI发现会话和查询时发生的。IP存储模块仅返回访问控制策略允许iSCSI主机访问的iSCSI目标列表。

当IP主机启动iSCSI会话时，会创建iSCSI会话。IP存储模块验证：

- 如果指定的iSCSI目标（在会话登录请求中）是静态映射目标
- 允许IP主机的iSCSI节点名称访问目标

如果IP主机没有访问权限，则登录被拒绝。

然后，IP存储模块：

- 为此IP主机创建FC虚拟N端口（N端口可能已存在）
- FC名称服务器是否查询IP主机访问的FC目标pWWN的光纤通道ID(FCID)

IP存储模块使用IP主机虚拟N端口的pWWN作为域名服务器查询的请求方。因此，名称服务器执行的一次强制的pwwn区域查询并且回应查询。如果名称服务器返回FCID，则接受iSCSI会话。否则，登录请求被拒绝。

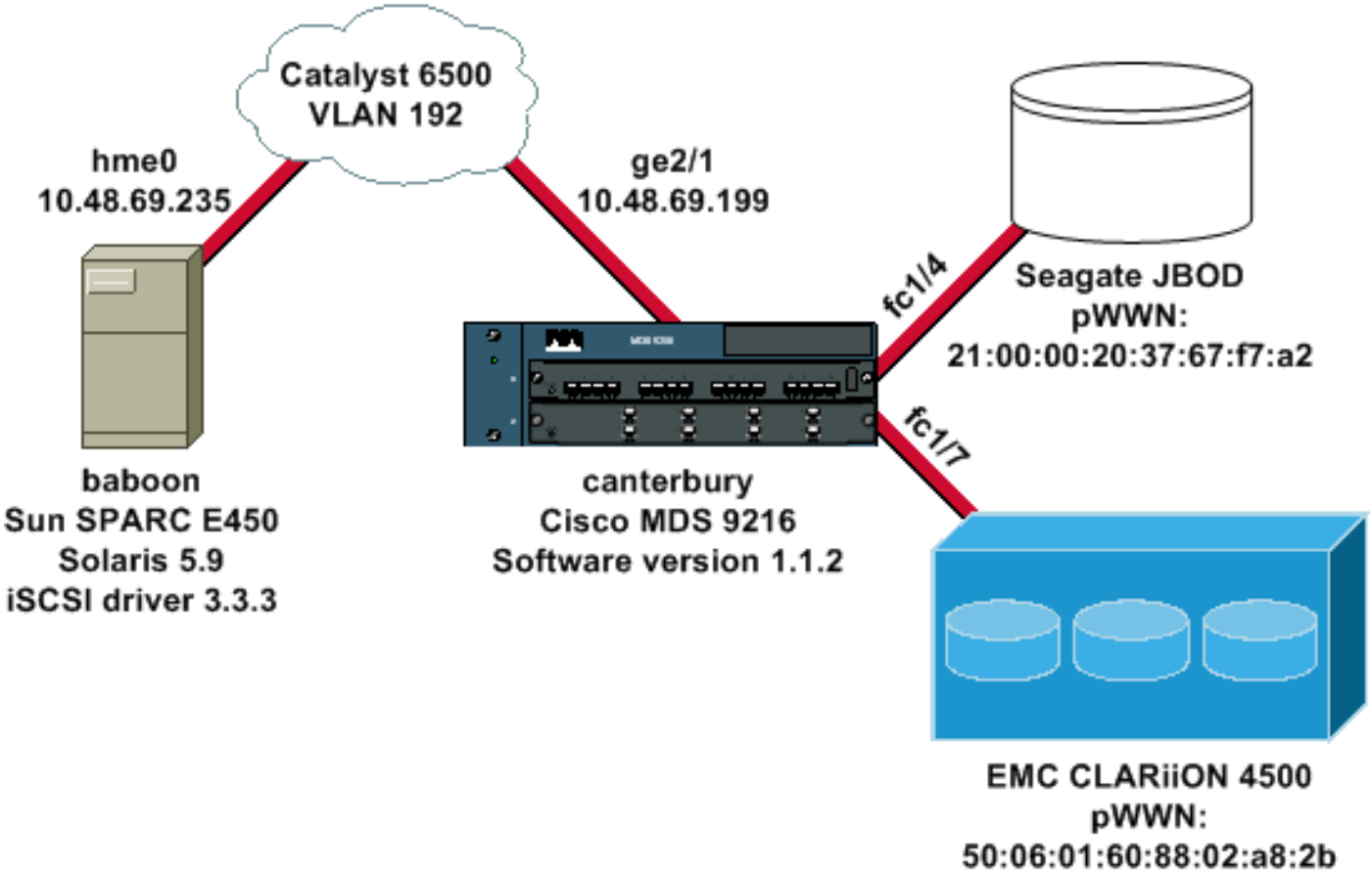
配置

本部分提供有关如何配置本文档所述功能的信息。

注意：使用命令查找工具(仅限注册客户)可查找有关本文档中使用的命令的详细信息。

网络图

本文档使用以下网络设置：



配置

本文档使用以下配置：

- baboon(SunOS 5.9、SPARC E450)
- 坎特伯雷（思科MDS 9216）

baboon(SunOS 5.9、SPARC E450)

在Solaris主机上修改以下文件：

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

以下是配置输出示例：

```
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 for the
target. !--- The smallest available iSCSI target ID !---
is assigned if no entry exists for the target, and an
entry is written to the /etc/iscsi.bindings file for !--
- 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 longer available to a host. !---
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 files !---
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, /kernel/drv/sd.conf or /kernel/drv/st.conf). !-
-- 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 already present. However, the standard device
configuration !--- commands (devfsadm, drvconfig, and so
on) must be issued to configure the !--- new iSCSI
devices in the system.
```

坎特伯雷（思科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
```

验证

使用本部分可确认配置能否正常运行。

命令输出解释程序（仅限注册用户）(OIT) 支持某些 show 命令。使用 OIT 可查看对 show 命令输出的分析。

- **netstat -n** — 验证Solaris主机上的TCP连接。
- **iscsi-ls -l** — 显示Solaris主机上当前可用的设备。
- **show zone status** — 显示区域信息。
- **show fcns database vsan 777** — 显示特定VSAN的名称服务器信息。
- **show flogi database vsan 777** — 显示特定VSAN的交换矩阵登录(FLOGI)服务器信息。
- **show vsan membership** — 显示不同VSAN的接口信息。
- **show iscsi initiator detail** — 显示iSCSI启动器信息。
- **show iscsi initiator iscsi-session detail** — 显示iSCSI启动器会话的详细信息。
- **show iscsi initiator fcp-session detail** — 显示iSCSI启动器FCP会话的详细信息。
- **show ips stats tcp interface gigabitethernet 2/1 detail** — 显示特定GE接口的TCP统计信息。
- **show iscsi virtual-target configured** — 显示已在Cisco MDS 9000上配置的iSCSI虚拟目标。
- **show iscsi initiator configured** — 显示已在Cisco MDS 9000上配置的iSCSI启动器。
- **show ips arp interface gigabitethernet 2/1** — 显示特定GE接口的IP存储地址解析协议(ARP)信息。
- **show scsi-target devices vsan 777** — 显示特定VSAN的iSCSI设备（将FC LUN映射到iSCSI LUN）。
- **show int iscsi 2/1** — 显示iSCSI接口。
- **show iscsi stats iscsi 2/1** — 显示iSCSI统计信息。
- **show int gigabitethernet 2/1** — 显示GE接口。
- **show ip route** — 显示IP路由信息。

故障排除

使用本部分可排除配置故障。

故障排除步骤

- baboon输出
- 坎特伯雷思科MDS 9216输出

- 交换矩阵管理器和设备管理器输出

baboon输出

```
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 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
  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 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
  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 estabished
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 estabished
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
```

坎特伯雷思科MDS 9216输出

```
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:
        fc1/4   fc1/7

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: 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 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: 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 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: 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 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 unreach, 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.mcandege-w2k1 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  Status  Serial Number    Device-Id
         (MB)
  ---------------------------------------------------------
------------------------
  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  Status  Serial Number    Device-Id
         (MB)
  ---------------------------------------------------------
------------------------
  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
                                            C:1 A:0 T:0
00:00:00:00
  0x1    1074      Online  f60004202091     C:1 A:0 T:3
60:06:01:60:88:02:a8:2b

6a:66:0d:74:cb:33:88:6c
                                            C:1 A:0 T:0
00:01:00:00
  0x2    1074      Online  f60004202091     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
```

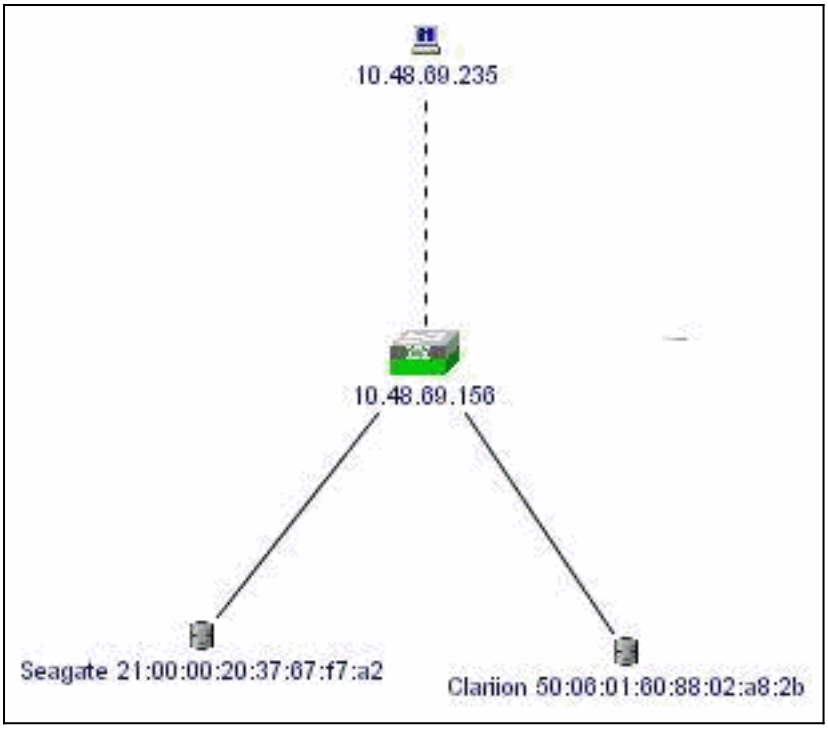
```
00:0d:00:00
  0xe    1074      Online  f60004202091     C:1 A:0 T:3
60:06:01:60:88:02:a8:2b

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
```

交换矩阵管理器和设备管理器输出

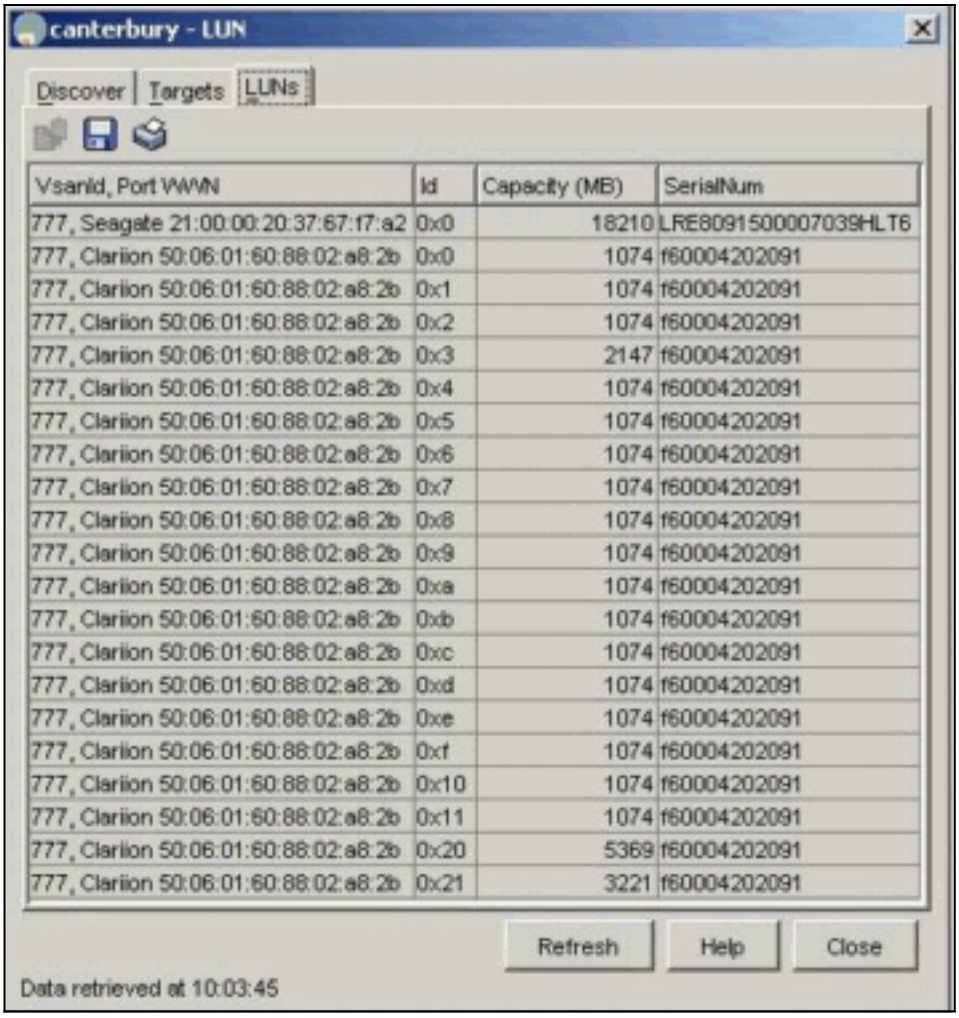
本节提供MDS交换矩阵管理器1.1(2)和设备管理器1.1.(2)的输出示例。

交换矩阵管理器的拓扑图

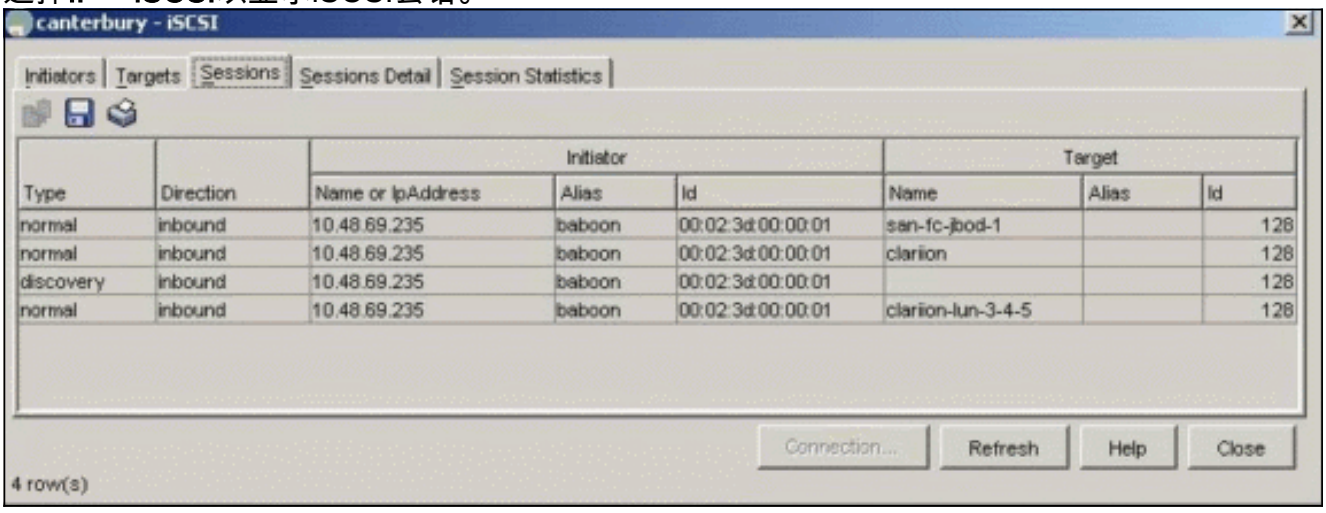


这是坎特伯雷上设备管理器1.1(2)视图的屏幕截图示例。

1. 在“**设备管理器**”窗口中选择FC > LUN ，以显示pWWN、LUN ID和LUN的容量。



2. 选择**IP > iSCSI**以显示iSCSI会话。



相关信息

- 小型计算机系统IP接口(iSCSI)技术支持