Esempio di configurazione da host iSCSI HP-UX a MDS/IPS-8

Sommario

Introduzione

I driver iSCSI Cisco, che risiedono sul server, sono un componente chiave di una soluzione iSCSI. Questi driver iSCSI intercettano i comandi **SCSI (Small Computer System Interface)**, li incapsulano in pacchetti IP e li reindirizzano al documento Cisco SN 5420, Cisco SN 5428, Cisco SN 5428-2 o Cisco MDS/IPS-8.This per fornire configurazioni di esempio per l'host iSCSI HP-UX al documento SN 5428.

Prerequisiti

Requisiti

Prima di provare la configurazione, verificare che siano soddisfatti i seguenti requisiti:

- Installare il driver iSCSI compatibile con la versione HP-UX in uso. La versione più aggiornata del driver è disponibile nella pagina di download Cisco iSCSI Driver (solo utenti registrati) all'indirizzo Cisco.com. Il file README.txt è incluso nel file zip(tar) del driver. Il file README contiene informazioni sul contratto di licenza, istruzioni per l'installazione e la configurazione dei driver e una panoramica tecnica dell'architettura dei driver.
- I requisiti del sistema operativo e i requisiti delle patch sono descritti nella sezione *Requisiti di sistema* delle note di rilascio del driver iSCSI Cisco per HP-UX.

Componenti usati

Le informazioni fornite in questo documento si basano sulle seguenti versioni software e hardware:

- Server HP-UX 9000/800 A500 con due processori.**Nota:** in questa configurazione di laboratorio, non è presente alcuna scheda Ethernet separata per iSCSI e quella in uso è 100 MB. In qualsiasi ambiente realistico, gli iniziatori iSCSI sono costituiti da una o più schede Gigabit Ethernet (GE) separate.

```
[/]#/opt/ignite/bin/print_manifest[...]
System Hardware
    Model:              9000/800/A500-5X
    Main Memory:        1024 MB
    Processors:         2
    OS mode:            64 bit
    LAN hardware ID:    0x00306E1B6F51
    Software ID:        586760518
    Keyboard Language:  Not_Applicable

    Storage devices                  HW Path      Interface
    SEAGATE ST318404LC 17366 Mb      0/0/1/1.15.0 SCSI C896 Ultra Wide Single-Ended
    SEAGATE ST318203LC 17366 Mb      0/0/2/1.15.0 SCSI C875 Ultra Wide Single-Ended

    I/O Interfaces
    Class          H/W Path       Driver         Description
    lan            0/0/0/0        btlan3         HP PCI 10/100Base-TX Core
    ext_bus        0/0/1/0        c720           SCSI C896 Ultra Wide LVD
    ext_bus        0/0/1/1        c720           SCSI C896 Ultra Wide Single-Ended
    ext_bus        0/0/2/0        c720           SCSI C875 Fast Wide Single-Ended
    ext_bus        0/0/2/1        c720           SCSI C875 Ultra Wide Single-Ended
    tty            0/0/4/0        asio0          PCI Serial (103c1048)
    tty            0/0/5/0        asio0          PCI Serial (103c1048)
    fc             0/2/0/0        td             HP Tachyon XL2 Fibre Channel Mass Storage
Adapter

Installed Software

    Your system was installed with HP-UX version B.11.00.

    Your system has the following software products installed and
    configured on the system disk drive(s).

    Product          Revision          Description
    A6795A           B.11.00.10        PCI Tachyon TL/TS/XL2 Fibre Channel
    BUNDLE           B.11.00           Patch Bundle
    HPUXEng64RT      B.11.00.01        English HP-UX 64-bit Runtime Environment
    HWE1100          B.11.00.0203.5    Hardware Enablement Patches for HP-UX 11.00, March
2002
    OnlineDiag       B.11.00.20.09     HPUX 11.0 Support Tools Bundle, Mar 2002
    UXCoreMedia      B.11.00.02        HP-UX Media Kit (Reference Only. See Description)
    UnlimUserLic     B.11.00.02        HP-UX Unlimited-User License
    XSWGR1100        B.11.00.47.08     General Release Patches, November 1999 (ACE)
[...]
```

- Èstato utilizzato il driver iSCSI Cisco 3.3.3 per HP-UX. Si consiglia di installare anche (almeno) la patch cumulativa di trasporto stabile ARPA (Address Resolution Protocol) di HP. Al momento della stesura del presente documento, questo era PHNE_28538. Questa patch ha diverse dipendenze, quindi è necessario installarle quando e come necessario.Per ulteriori informazioni sull'installazione, visitare il sito ufficiale del supporto HP (solo utenti registrati).

```
[/]# swlist
# Initializing...
# Contacting target "ape"...
#
# Target:  ape:/
#
#
# Bundle(s):
#

  A6795A                        B.11.00.10     PCI Tachyon TL/TS/XL2 Fibre Channel
  BUNDLE                        B.11.00        Patch Bundle
  HPUXEng64RT                   B.11.00.01     English HP-UX 64-bit Runtime Environment
  HWE1100                       B.11.00.0203.5 Hardware Enablement Patches for HP-UX 11.00,
March 2002
  OnlineDiag                    B.11.00.20.09  HPUX 11.0 Support Tools Bundle, Mar 2002
  QPK1100                       B.11.00.56.5   Quality Pack for HP-UX 11.00, March 2002
  UXCoreMedia                   B.11.00.02     HP-UX Media Kit (Reference Only. See
Description)
  UnlimUserLic                  B.11.00.02     HP-UX Unlimited-User License
  XSWGR1100                     B.11.00.47.08  General Release Patches, November 1999 (ACE)
#
# Product(s) not contained in a Bundle:
#

  ISCSI                         3.3.3          ISCSI software
  bison                         1.875          bison
  flex                          2.5.4a         flex
  gcc                           3.2.3          gcc
  gettext                       0.11.5         gettext
  less                          376            less
  libiconv                      1.9            libiconv
  make                          3.80           make
  ncurses                       5.2            ncurses
  termcap                       1.3.1          termcap
  zsh                           4.0.7          zsh


[/]# swlist BUNDLE
# Initializing...
# Contacting target "ape"...
#
# Target:  ape:/
#

# BUNDLE                B.11.00        Patch Bundle
  BUNDLE.PHCO_23651     1.0            fsck_vxfs(1M) cumulative patch
  BUNDLE.PHKL_28496     1.0            SCSI IO Subsystem Cumulative Patch
  BUNDLE.PHKL_27980     1.0            VxFS 3.1 cumulative patch: CR_EIEM
  BUNDLE.PHKL_22840     1.0            IDS/9000; syscalls related to file/socket
  BUNDLE.PHCO_28505     1.0            user/group(add/mod/del)(1M) cumulative patch
  BUNDLE.PHKL_28150     1.0            LVM Cumulative Patch w/Performance Upgrades
  BUNDLE.PHNE_28538     1.0            cumulative ARPA Transport patch
  BUNDLE.PHNE_28143     1.0            LAN product cumulative patch
  BUNDLE.PHNE_27902     1.0            Cumulative STREAMS Patch
  BUNDLE.PHKL_29434     1.0            POSIX AIO;getdirentries;MVFS;rcp;mmap/IDS;
  BUNDLE.PHKL_28766     1.0            Probe,IDDS,PM,VM,PA-8700,AIO,T600,FS,PDC,CLK
  BUNDLE.PHKL_28004     1.0            Fibre Channel Mass Storage Driver Patch
  BUNDLE.PHKL_27729     1.0            ioscan -u incorrect display (kernel patch).
  BUNDLE.PHKL_24187     1.0            ioscan performance gain for SCSI Subsystem
  BUNDLE.PHKL_24165     1.0            Kernel Patch For "ioscan -k" Performance
  BUNDLE.PHKL_23409     1.0            NFS, Large Data Space, kernel memory leak
  BUNDLE.PHKL_20016     1.0            2nd CPU not recognized in G70/H70/I70
  BUNDLE.PHKL_18543     1.0            PM/VM/UFS/async/scsi/io/DMAPI/JFS/perf patch
```

```
  BUNDLE.PHCO_27818     1.0            ioscan(1M) cumulative patch
  BUNDLE.PHCO_27375     1.0            cumulative SAM/ObAM patch
```

- Cisco MDS 9216 con software versione 1.2(1a).

```
vatican# 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    1.2(1a)      1.0     20:01:00:0c:30:57:5e:c0 to 20:10:00:0c:30:57:5e:c0
2    1.2(1a)      0.2     20:41:00:0c:30:57:5e:c0 to 20:48:00:0c:30:57:5e:c0

Mod  MAC-Address(es)                         Serial-Num
---  --------------------------------------  ----------
1    00-0b-be-f8-7f-00 to 00-0b-be-f8-7f-04  JAB070804Q3
2    00-05-30-00-a8-56 to 00-05-30-00-a8-62  JAB070205AM

* this terminal session

vatican# 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 1.0.8
  loader:    version 1.1(2)
  kickstart: version 1.2(1a)
  system:    version 1.2(1a)

  BIOS compile time:       08/07/03
  kickstart image file is: bootflash:/k121a
  kickstart compile time:  9/1/2003 17:00:00
  system image file is:    bootflash:/s121a
  system compile time:     9/1/2003 17:00:00

Hardware
  RAM 963108 kB

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

  vatican uptime is 1 days 6 hours 17 minute(s) 25 second(s)

  Last reset at 955065 usecs after Wed Sep 10 08:13:50 2003
    Reason: Reset Requested by CLI command reload
    System version: 1.1(2)
```

Le informazioni discusse in questo documento fanno riferimento a dispositivi usati in uno specifico ambiente di emulazione. Su tutti i dispositivi menzionati nel documento la configurazione è stata ripristinata ai valori predefiniti. Se la rete è operativa, valutare attentamente eventuali conseguenze derivanti dall'uso dei comandi.

Convenzioni

Il Cisco MDS 9000 utilizzato in questo documento si riferisce a qualsiasi prodotto switch Fibre Channel (FC) della famiglia MDS 9000 (MDS 9506, MDS 9509, MDS 9216). Il blade Cisco Intrusion Prevention System (IPS) fa riferimento al modulo IP Storage Services. Per ulteriori

informazioni sulle convenzioni usate, consultare il documento Cisco sulle convenzioni nei suggerimenti tecnici.

Premesse

Il modulo Cisco Intrusion Prevention System (IPS) fornisce agli host IP l'accesso ai dispositivi di storage Fibre Channel (FC). Il modulo IPS è DS-X9308-SMIP. Fornisce routing SCSI trasparente. Gli host IP che utilizzano il protocollo iSCSI possono accedere in modo trasparente alle destinazioni iSCSI sulla rete FC. L'host IP invia i comandi SCSI incapsulati nelle unità dati del protocollo (PDU) iSCSI a una porta IPS MDS 9000 su una connessione TCP/IP. Sul modulo IPS, la connettività viene fornita sotto forma di interfacce GE configurate in modo appropriato. Il modulo IPS consente di creare destinazioni iSCSI virtuali e di mapparle alle destinazioni FC fisiche disponibili nella SAN FC. Presenta le destinazioni FC agli host IP come se le destinazioni fisiche fossero collegate alla rete IP.

Ogni host iSCSI che richiede l'accesso allo storage tramite il modulo IPS deve disporre di un driver iSCSI compatibile installato. Con l'aiuto del protocollo iSCSI, il driver iSCSI consente a un host iSCSI di trasportare le richieste e le risposte SCSI su una rete IP. Dal punto di vista di un sistema operativo host, il driver iSCSI sembra essere un driver di trasporto SCSI simile a un driver FC per un canale periferica nell'host. Dal punto di vista del dispositivo di storage, ogni host IP viene visualizzato come host FC. Il routing di SCSI dall'host IP al dispositivo di storage FC è costituito dalle seguenti azioni principali:

- Trasporto di richieste e risposte iSCSI su una rete IP tra gli host e il modulo IPS
- Instradamento delle richieste e delle risposte SCSI tra gli host di una rete IP e il dispositivo di storage FC (conversione da iSCSI a FCP e da FCP a iSCSI). Questo routing viene eseguito dal modulo IPS.
- Trasporto di richieste o risposte FCP tra il modulo IPS e i dispositivi di storage FC

Per impostazione predefinita, il modulo IPS non importa destinazioni FC in iSCSI. È necessario configurare il mapping dinamico o statico prima che il modulo IPS renda disponibili le destinazioni FC agli iniziatori iSCSI. Quando entrambi sono configurati, le destinazioni FC mappate staticamente hanno un nome configurato. Questo documento fornisce un esempio di mappatura statica. Con la mappatura dinamica, ogni volta che l'host iSCSI si connette al modulo IPS, viene creata una nuova porta FC N e gli nWWN e i pWWN allocati per questa porta N possono essere diversi. Utilizzare il metodo di mappatura statica se è necessario ottenere gli stessi nWWN e pWWN per l'host iSCSI ogni volta che si connette al modulo IPS. La mappatura statica può essere utilizzata sul modulo IPS per accedere ad array di storage FC intelligenti che dispongono di configurazioni di mappatura e masking dei numeri di unità logica (LUN, Logical Unit Number) e di controllo dell'accesso basate sui pWWN o nWWN dell'iniziatore.

Èpossibile controllare l'accesso a ogni destinazione iSCSI mappata staticamente creando un elenco specifico di porte IPS su cui la destinazione viene annunciata e creando un elenco di nomi di nodi iniziatore iSCSI autorizzati ad accedervi. Il controllo degli accessi basato sullo zoning FC e il controllo degli accessi basato su iSCSI sono i due meccanismi attraverso i quali è possibile fornire il controllo degli accessi per iSCSI. Entrambi i metodi possono essere utilizzati contemporaneamente. In questa configurazione lo zoning predefinito è consentito per VSAN specifiche. I moduli IPS utilizzano elenchi di controllo degli accessi basati su nomi di nodi iSCSI e su zoning FC per imporre il controllo degli accessi durante il rilevamento iSCSI e la creazione di sessioni iSCSI.

- **Individuazione iSCSI:** Quando un host iSCSI crea una sessione di rilevamento iSCSI e

esegue query per tutte le destinazioni iSCSI, il modulo IPS restituisce solo l'elenco di destinazioni iSCSI a cui l'host iSCSI è autorizzato ad accedere in base ai criteri di controllo di accesso.

- **Creazione di sessioni iSCSI:** Quando un host IP avvia una sessione iSCSI, il modulo IPS verifica se la destinazione iSCSI specificata (nella richiesta di accesso alla sessione) è una destinazione mappata statica e, se true, verifica se il nome del nodo iSCSI dell'host IP è autorizzato ad accedere alla destinazione. Se l'host IP non ha accesso, il relativo accesso viene rifiutato.

Il modulo IPS crea quindi una porta FC virtuale N (la porta N potrebbe già esistere) per questo host IP ed esegue una query sul server dei nomi FC per il FCID del nome WWN della destinazione FC a cui l'host IP accede. Viene utilizzato il nome WWN della porta N virtuale dell'host IP come richiedente della query del server dei nomi. Pertanto, il server dei nomi esegue una query applicata a livello di zona per pWWN e risponde alla query. Se l'FCID viene restituito dal server dei nomi, la sessione iSCSI viene accettata. In caso contrario, la richiesta di accesso viene rifiutata.

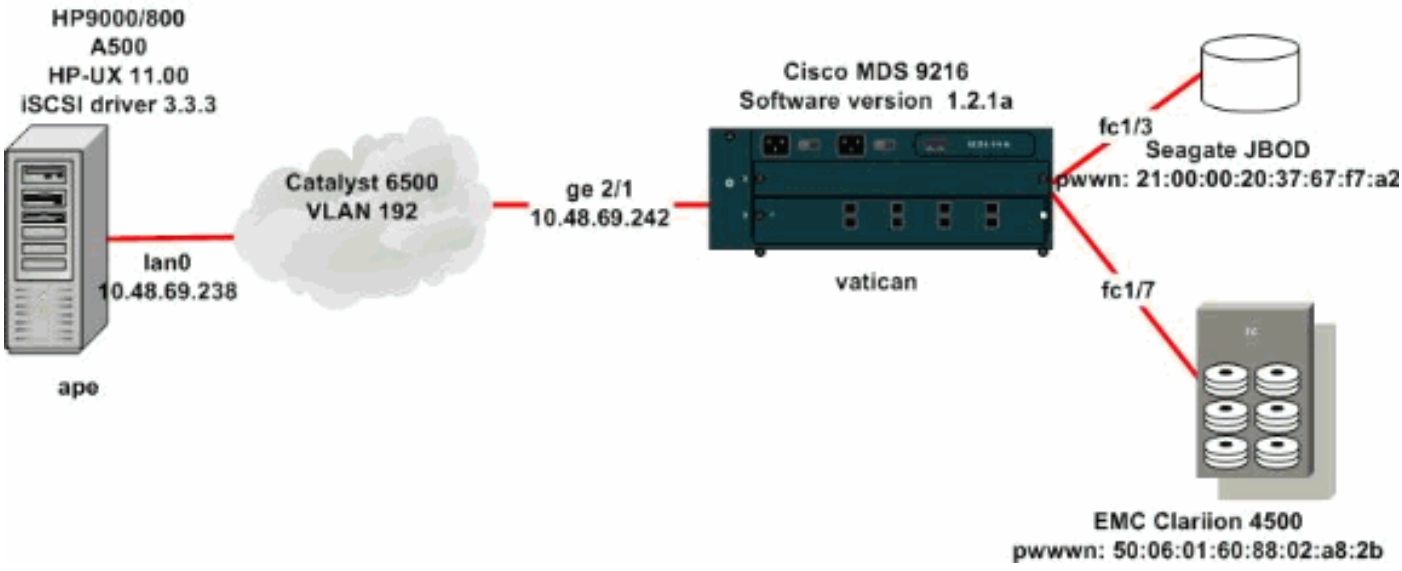
Configurazione

In questa sezione vengono presentate le informazioni necessarie per configurare MDS 9216 e il driver iSCSI Cisco per Linux.

Nota: per ulteriori informazioni sui comandi menzionati in questo documento, consultare la guida di riferimento dei comandi della famiglia Cisco MDS 9000 e la guida alla configurazione del software della famiglia Cisco MDS 9000.

Esempio di rete

Nel documento viene usata l'impostazione di rete mostrata nel diagramma:



Configurazioni

Questo documento utilizza le configurazioni mostrate di seguito:

- Ape (HP 9000/800 A500 HP-UX 11.00)

- Vaticano (MDS 9216)

Ape (HP 9000/800 A500 HP-UX 11.00)

On the HP-UX host only the file /etc/iscsi.conf has to be modified:

```
[/]# cat /etc/iscsi.conf
 # iSCSI configuration file - see iscsi.conf(4)
 # DiscoveryAddress Settings
 # ------------------------
 # Add "DiscoveryAddress=xxx" entries for each iSCSI
router instance.
 # The driver attempts 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=10.48.69.242

 !--- Configure the IP address of the GE interface that
acceps iSCSI request from your host.

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

 !--- Other required driver parameters could be changed
in the iscsi.conf file.

 ......

 [/]# cat /etc/iscsi.bindings
 # iSCSI bindings, file format version 1.0.
 # NOTE: this file is automatically maintained by the
iSCSI daemon.
 # You do 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       10      seagate
 0       11      spa-vt
```

*!--- The iSCSI driver discovery daemon process looks up each discovered !--- target in the /etc/iscsi.bindings file. If an entry exists in the file for the target, !--- the corresponding SCSI target ID is assigned to the target. If no entry !--- exists for the target, the smallest available SCSI target ID is assigned !--- 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. If a target is !--- no longer available to a host, you can manually edit the file and remove !--- entries so that the obsolete target no longer consumes a SCSI target ID. !--- If you know the iSCSI target name of a target in advance, and you want !--- it to be assigned a particular SCSI target ID, you can add an entry !--- manually. You must stop the iSCSI driver before editing the !--- /etc/iscsi.bindings file. The maximum number of targets is 14. !--- Enter [/]#***/sbin/init.d/iscsi*** start to manually start the iSCSI driver.*

*!--- Enter [/]#**/sbin/init.d/iscsi** stop to manually stop the iSCSI driver.*

Vaticano (Cisco MDS 9216)

!--- If you are starting from the factory default configuration, you !--- need to setup the IP address and mask of the management interface. !--- This would normally be done during the initial setup . interface mgmt0 ip address 10.48.69.156 255.255.255.192 *!--- In this configuration example, all the iSCSI targets are in a single vsan* . vsan database vsan 1016 vsan 1016 interface fc1/3 vsan 1016 interface fc1/7 *!--- These are the boot variables.* boot system bootflash:/s111a boot kickstart bootflash:/k111a # Simple IP configuration ip domain-name cisco.com ip name-server 144.254.10.123 ip default-gateway 10.48.69.129 *!--- Declare that the iSCSI initiator with the IP address of the host.* # It belongs to the vsan of our choice iscsi authentication none iscsi initiator ip-address 10.48.69.238 vsan 1016 *!--- Define the first virtual target, it is a JBOD. Identify the target !--- by its pWWN, advertise it on a GE interface, and allow access to the initiator.* iscsi virtual-target name seagate pWWN 21:00:00:20:37:67:f7:a2 advertise interface GigabitEthernet2/1 initiator ip address 10.48.69.238 permit *!--- The second target is a Clariion disk array. Since the maximum LUN number that you !--- can have under HP-UX without additional software is 7, define a mapping from FC LUN numbers !--- to the iSCSI LUN numbers you are going to present to the host.* iscsi virtual-target name spa-vt pWWN 50:06:01:60:88:02:a8:2b fc-lun 0020 iscsi-lun 0003 pWWN 50:06:01:60:88:02:a8:2b fc-lun 0021 iscsi-lun 0004 advertise interface GigabitEthernet2/1 initiator ip address 10.48.69.238 permit *!--- Permit access to the targets on the FC level. Create a simple zone configuration to do this. !--- Alternatively, you could have simply set the default zoning policy in vsan 1016 to permit.* zone name jbod vsan 1016 member pwwn 21:00:00:20:37:67:f7:a2 member symbolic-nodename

```
10.48.69.238 zone name spa vsan 1016 member pwwn
50:06:01:60:88:02:a8:2b member symbolic-nodename
10.48.69.238 zoneset name iscsidoc vsan 1016 member jbod
member spa zoneset activate name iscsidoc vsan 1016 !---
Set the IP address and mask of the GE interface and
enable it. interface GigabitEthernet2/1 ip address
10.48.69.242 255.255.255.192 iscsi authentication none
no shutdown # Lastly we bring up the iSCSI interface up
interface iscsi2/1 no shutdown
```

Verifica

Le informazioni contenute in questa sezione permettono di verificare che la configurazione funzioni correttamente e di risolvere i problemi eventualmente riscontrati.

Alcuni comandi **show** sono supportati dallo strumento di ricerca dei comandi (solo utenti registrati); lo strumento permette di visualizzare un'analisi dell'output del comando **show**.

Comandi host HP-UX

- **netstat-n o lsof**: verifica le connessioni TCP.
- **iscsi-ls**: visualizza i dispositivi attualmente disponibili.
- **dmesg** - raccoglie i messaggi diagnostici.

Comandi MDS/IPS-8

- **show zone** - visualizza le informazioni sulla zona.
- **show floppy database**: visualizza le informazioni sul server FLOGI.
- **show fcns database**: visualizza le informazioni sul server dei nomi per una VSAN specifica.
- **show vsan membership**: visualizza le informazioni di interfaccia per le diverse VSAN.
- **show iscsi**: visualizza diverse informazioni iSCSI.
- **show ips**: visualizza diverse informazioni sui servizi IP.
- **show scsi-target**: visualizza i dispositivi SCSI per VSAN specifiche (per la mappatura di LUN FC a LUN iSCSI).
- **show interface** - visualizza informazioni sulle varie interfacce.
- **show ip route**: visualizza le informazioni sulla route IP.

Risoluzione dei problemi

Le informazioni contenute in questa sezione permettono di risolvere i problemi relativi alla configurazione.

Ecco alcune informazioni utili per risolvere eventuali problemi con questa configurazione:

- Display Ape (HP 9000/800 A500 HP-UX 11.00)
- Display dal Vaticano (MDS 9216)
- Display di Fabric Manager e Device Manager

Ape (HP 9000/800 A500 HP-UX 11.00)

```
# /sbin/init.d/iscsi stop
 Waiting for iscsid to terminate .....
 Waiting for iscsid to terminate .....
 Waiting for iscsid to terminate .....
 Waiting for iscsid to terminate .....
 Waiting for iscsi_[tr]x_threads to terminate .....

 [/]# /sbin/init.d/iscsi start
 Number of indices in scsi_isc table used by System: 5
 Index used by iSCSI controller: 255
 Number of free indices: 251
 [/]# netstat -n | grep '10.48.69.242'
 tcp        0      0  10.48.69.238.49501
10.48.69.242.3260       ESTABLISHED
 tcp        0      0  10.48.69.238.49500
10.48.69.242.3260       ESTABLISHED
 tcp        0      0  10.48.69.238.49499
10.48.69.242.3260       ESTABLISHED

!--- If you have lsof, you can also try the following:

 [/]# lsof -i @10.48.69.242
 COMMAND  PID USER   FD   TYPE     DEVICE SIZE/OFF NODE
NAME
 iscsid  2836 root    1u  inet 0x41aa9268   0t1300  TCP
ape.cisco.com:49499->10.48.69.242:3260 (ESTABLISHED)

!--- Note that ioscan does not report iSCSI devices. To
see the list
!--- of available iSCSI devices from the host, issue the
iscsi-ls command.

 [/]# iscsi-ls -l

#########################################################
#####

  TARGET NAME      = seagate
  TARGET ID        = 10
  ADDRESS          = 10.48.69.242:3260,128
  STATUS           = CONNECTED 10.48.69.238:49501 <->
10.48.69.242:3260
                     9/19/2003 15:40:42
  SESSION          = ISID 00023d000001 TSID 80

  LUN     0        = DISK  c255t10d0  'SEAGATE
ST318203FC      0004'
                     BLOCKS : 35566479  BLOCKSIZE : 512
CAPACITY : 17366.00MB


#########################################################
#####

  TARGET NAME      = spa-vt
  TARGET ID        = 11
  ADDRESS          = 10.48.69.242:3260,128
  STATUS           = CONNECTED 10.48.69.238:49500 <->
10.48.69.242:3260
                     9/19/2003 15:40:42
  SESSION          = ISID 00023d000001 TSID 80

  LUN     4        = DISK  c255t11d4  'DGC      RAID 1
0632'
```

```
                    BLOCKS : 6291419  BLOCKSIZE : 512
CAPACITY : 3071.00MB

  LUN     3        = DISK  c255t11d3  'DGC      RAID 1
0632'
                    BLOCKS : 10485607  BLOCKSIZE : 512
CAPACITY : 5119.00MB

 !--- To see detailed statistics for currently
established iSCSI sessions, use this:

 [/]# iscsi-ls -c

##########################################################
#####
  TARGET NAME      = seagate
  TARGET ID        = 10
  ADDRESS          = 10.48.69.242:3260,128
  STATUS           = CONNECTED 10.48.69.238:49501 <->
10.48.69.242:3260
                     9/19/2003 15:40:42
  SESSION          = ISID 00023d000001 TSID 80
  InitialR2T       = Yes
  FirstBurstLength = 262144 Bytes
  MaxBurstLength   = 16776192 Bytes
  Header Digest    = 1
  Data Digest      = 1
  Login Timeout    = 15 Seconds
  Auth Timeout     = 45 Seconds
  Active Timeout   = 5 Seconds
  Idle Timeout     = 60 Seconds
  Ping Timeout     = 5 Seconds

##########################################################
#####
  TARGET NAME      = spa-vt
  TARGET ID        = 11
  ADDRESS          = 10.48.69.242:3260,128
  STATUS           = CONNECTED 10.48.69.238:49500 <->
10.48.69.242:3260
                     9/19/2003 15:40:42
  SESSION          = ISID 00023d000001 TSID 80
  InitialR2T       = Yes
  FirstBurstLength = 262144 Bytes
  MaxBurstLength   = 16776192 Bytes
  Header Digest    = 1
  Data Digest      = 1
  Login Timeout    = 15 Seconds
  Auth Timeout     = 45 Seconds
  Active Timeout   = 5 Seconds
  Idle Timeout     = 60 Seconds
  Ping Timeout     = 5 Seconds

 !--- Here are some of the entries you can expect to
find in the syslog: [/]# dmesg
 [...]
 iSCSI: session 0x4179b000 target 11 accepted the
preferred value (None) DataDigest=CRC32C
 iSCSI: session 0x41a64800 target 10 accepted the
preferred value (None) DataDigest=CRC32C
 iSCSI: Direct Access Device found at lun 3 on target 11
         Vendor Id  : DGC
         Product Id : RAID 1                    Product
Rev: 0632
```

```
 iSCSI: Direct Access Device found at lun 0 on target 10
        Vendor Id  : SEAGATE
        Product Id : ST318203FC                 Product
Rev: 0004
 iSCSI: Direct Access Device found at lun 4 on target 11
        Vendor Id  : DGC
        Product Id : RAID 1                     Product
Rev: 0632
 iSCSI: iscsi_recv_cmd: session (0x4179b000)
recv_cmd(sc) (0x41844800), Cmd 0x25, status 0x2,
          senselen 18, sense key 06, ASC/ASCQ 29/00,
task (0x40718b00) to (host 255 target 11 lun 3),
          TargetAlias spa-vt
        Sense 70000600 0000000a 00000000 29000000 0000

 READ_CAPACITY result = 0x2 Target = 0xb LUN = 0x3
 iSCSI: iscsi_recv_cmd: task (0x40718b00) itt 9 to (host
255 target 11 lun 3), Cmd 0x25,
         U(Overflow/Underflow) underflow, received
0(task->rxdata), residual 8, expected 8
 iSCSI: iscsi_recv_cmd: session (0x4179b000)
recv_cmd(sc) (0x41844800), Cmd 0x25, status 0x2,
senselen 18,
          sense key 06, ASC/ASCQ 29/00, task
(0x40718c00) to (host 255 target 11 lun 4), TargetAlias
spa-vt
        Sense 70000600 0000000a 00000000 29000000 0000

 READ_CAPACITY result = 0x2 Target = 0xb LUN = 0x4
 iSCSI: iscsi_recv_cmd: task (0x40718c00) itt 11 to
(host 255 target 11 lun 4), Cmd 0x25,
          U(Overflow/Underflow) underflow, received
0(task->rxdata), residual 8, expected 8
```

Display dal Vaticano (MDS 9216)

```
vatican# show zone status vsan 1016
 VSAN: 1016 default-zone: deny distribute: active only
Interop: Off
 Full Zoning Database :
     Zonesets:1  Zones:3 Aliases: 0
 Active Zoning Database :
     Name: iscsidoc  Zonesets:1  Zones:3
 Status: Activation completed at Wed Sep 17 13:03:56
2003

 vatican# show zone active vsan 1016
 zone name jbod vsan 1016
 * fcid 0x7902e8 [pwwn 21:00:00:20:37:67:f7:a2]
 * fcid 0x790100 [symbolic-nodename 10.48.69.238]

 zone name spa vsan 1016
 * fcid 0x790104 [pwwn 50:06:01:60:88:02:a8:2b]
 * fcid 0x790100 [symbolic-nodename 10.48.69.238]

 zone name spb vsan 1016
 * fcid 0x790105 [pwwn 50:06:01:68:88:02:a8:2b]
 * fcid 0x790100 [symbolic-nodename 10.48.69.238]

 vatican# show flogi database vsan 1016
 --------------------------------------------------------
--------------------
 INTERFACE  VSAN    FCID            PORT NAME
```

```
NODE NAME
 --------------------------------------------------------
--------------------
 fc1/3      1016  0x7902e8  21:00:00:20:37:67:f7:a2
20:00:00:20:37:67:f7:a2
 fc1/7      1016  0x790104  50:06:01:60:88:02:a8:2b
50:06:01:60:11:02:a8:2b
 fc1/11     1016  0x790105  50:06:01:68:88:02:a8:2b
50:06:01:60:11:02:a8:2b
 iscsi2/1   1016  0x790100  20:03:00:0c:30:57:5e:c2
20:02:00:0c:30:57:5e:c2

 Total number of flogi = 4.


 vatican# show fcns database vsan 1016
 VSAN 1016:
 --------------------------------------------------------
------------------
 FCID        TYPE  PWWN                    (VENDOR)
FC4-TYPE:FEATURE
 --------------------------------------------------------
------------------
 0x790100    N     20:03:00:0c:30:57:5e:c2 (Cisco)
scsi-fcp:init isc..w
 0x790104    N     50:06:01:60:88:02:a8:2b (Clariion)
scsi-fcp:target
 0x790105    N     50:06:01:68:88:02:a8:2b (Clariion)
scsi-fcp:target
 0x7902e8    NL    21:00:00:20:37:67:f7:a2 (Seagate)
scsi-fcp:target
 Total number of entries = 4

 --- FCID 0X790100 is the virtual N port(HBA) for the
iSCSI host.

 vatican# show fcns database detail vsan 1016
 ------------------------
 VSAN:1016  FCID:0x790100
 ------------------------
 port-wwn (vendor)     :20:03:00:0c:30:57:5e:c2 (Cisco)
 node-wwn              :20:02:00:0c:30:57:5e:c2
 class                 :2,3
 node-ip-addr          :10.48.69.238
 ipa                   :ff ff ff ff ff ff ff ff
 fc4-types:fc4_features:scsi-fcp:init iscsi-gw
 symbolic-port-name    :
 symbolic-node-name    :10.48.69.238
 port-type             :N
 port-ip-addr          :0.0.0.0
 fabric-port-wwn       :20:41:00:0c:30:57:5e:c0
 hard-addr             :0x000000
 ------------------------
 VSAN:1016  FCID:0x790104
 ------------------------
 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:30:57:5e:c0
 hard-addr             :0x000000
 ------------------------
 VSAN:1016  FCID:0x790105
 ------------------------
 port-wwn (vendor)     :50:06:01:68:88:02: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       :20:0b:00:0c:30:57:5e:c0
 hard-addr             :0x000000
 ------------------------
 VSAN:1016  FCID:0x7902e8
 ------------------------
 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       :20:03:00:0c:30:57:5e:c0
 hard-addr             :0x000000

 Total number of entries = 4


 vatican# show iscsi initiator
 iSCSI Node name is 10.48.69.238
     iSCSI Initiator name: iqn.1987-
05.com.cisco.01.a06c4e2b8b247cadceb8af1a8474da1e
     iSCSI alias name: ape
     Node WWN is 20:02:00:0c:30:57:5e:c2 (dynamic)
     Member of vsans: 1016
     Number of Virtual n_ports: 1
     Virtual Port WWN is 20:03:00:0c:30:57:5e:c2
(dynamic)
       Interface iSCSI 2/1, Portal group tag: 0x80
       VSAN ID 1016, FCID 0x790100

 vatican# show iscsi initiator configured
 iSCSI Node name is 10.48.69.238
     Member of vsans: 1016

 vatican# show iscsi initiator detail
 iSCSI Node name is 10.48.69.238
     iSCSI Initiator name: iqn.1987-
05.com.cisco.01.a06c4e2b8b247cadceb8af1a8474da1e
     iSCSI alias name: ape
     Node WWN is 20:02:00:0c:30:57:5e:c2 (dynamic)
```

```
     Member of vsans: 1016
     Number of Virtual n_ports: 1

     Virtual Port WWN is 20:03:00:0c:30:57:5e:c2
(dynamic)
       Interface iSCSI 2/1, Portal group tag is 0x80
       VSAN ID 1016, FCID 0x790100
       2 FC sessions, 2 iSCSI sessions
       iSCSI session details
         Target: spa-vt
           Statistics:
             PDU: Command: 10, Response: 10
             Bytes: TX: 416, RX: 0
             Number of connection: 1
           TCP parameters
             Local 10.48.69.242:3260, Remote
10.48.69.238:49500
             Path MTU: 1500 bytes
             Retransmission timeout: 300 ms
             Round trip time: Smoothed 62 ms, Variance:
3
             Advertized window: Current: 256 KB,
Maximum: 256 KB, Scale: 3
             Peer receive window: Current: 576 KB,
Maximum: 576 KB, Scale: 4
             Congestion window: Current: 4 KB
         Target: seagate
           Statistics:
             PDU: Command: 4, Response: 4
             Bytes: TX: 304, RX: 0
             Number of connection: 1
           TCP parameters
             Local 10.48.69.242:3260, Remote
10.48.69.238:49501
             Path MTU: 1500 bytes
             Retransmission timeout: 300 ms
             Round trip time: Smoothed 62 ms, Variance:
3
             Advertized window: Current: 256 KB,
Maximum: 256 KB, Scale: 3
             Peer receive window: Current: 576 KB,
Maximum: 576 KB, Scale: 4
             Congestion window: Current: 4 KB

       FCP Session details
         Target FCID: 0x790104 (S_ID of this session:
0x790100)
           pWWN: 50:06:01:60:88:02:a8:2b, nWWN:
50:06:01:60:11:02:a8:2b
           Session state: LOGGED_IN
           1 iSCSI sessions share this FC session
             Target: spa-vt
           Negotiated parameters
             RcvDataFieldSize 1024 our_RcvDataFieldSize
1392
             MaxBurstSize 0, EMPD: FALSE
             Random Relative Offset: FALSE, Sequence-in-
order: Yes
           Statistics:
             PDU: Command: 0, Response: 10
         Target FCID: 0x7902e8 (S_ID of this session:
0x790100)
           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: seagate
          Negotiated parameters
            RcvDataFieldSize 1392 our_RcvDataFieldSize
1392
            MaxBurstSize 0, EMPD: FALSE
            Random Relative Offset: FALSE, Sequence-in-
order: Yes
          Statistics:
            PDU: Command: 0, Response: 4

 vatican# show iscsi initiator iscsi-session detail
 iSCSI Node name is 10.48.69.238
     iSCSI Initiator name: iqn.1987-
05.com.cisco.01.a06c4e2b8b247cadceb8af1a8474da1e
     iSCSI alias name: ape
     Node WWN is 20:02:00:0c:30:57:5e:c2 (dynamic)
     Member of vsans: 1016
     Number of Virtual n_ports: 1
     Virtual Port WWN is 20:03:00:0c:30:57:5e:c2
(dynamic)
       Interface iSCSI 2/1, Portal group tag is 0x80
       VSAN ID 1016, FCID 0x790100
       2 FC sessions, 2 iSCSI sessions
       iSCSI session details
         Target: spa-vt
           Statistics:
             PDU: Command: 10, Response: 10
             Bytes: TX: 416, RX: 0
             Number of connection: 1
           TCP parameters
             Local 10.48.69.242:3260, Remote
10.48.69.238:49500
             Path MTU: 1500 bytes
             Retransmission timeout: 300 ms
             Round trip time: Smoothed 62 ms, Variance:
2
             Advertized window: Current: 256 KB,
Maximum: 256 KB, Scale: 3
             Peer receive window: Current: 576 KB,
Maximum: 576 KB, Scale: 4
             Congestion window: Current: 4 KB
         Target: seagate
           Statistics:
             PDU: Command: 4, Response: 4
             Bytes: TX: 304, RX: 0
             Number of connection: 1
           TCP parameters
             Local 10.48.69.242:3260, Remote
10.48.69.238:49501
             Path MTU: 1500 bytes
             Retransmission timeout: 300 ms
             Round trip time: Smoothed 62 ms, Variance:
2
             Advertized window: Current: 256 KB,
Maximum: 256 KB, Scale: 3
             Peer receive window: Current: 576 KB,
Maximum: 576 KB, Scale: 4
             Congestion window: Current: 4 KB

 vatican# show iscsi initiator fcp-session detail
 iSCSI Node name is 10.48.69.238
     iSCSI Initiator name: iqn.1987-
```

```
05.com.cisco.01.a06c4e2b8b247cadceb8af1a8474da1e
     iSCSI alias name: ape
     Node WWN is 20:02:00:0c:30:57:5e:c2 (dynamic)
     Member of vsans: 1016
     Number of Virtual n_ports: 1
     Virtual Port WWN is 20:03:00:0c:30:57:5e:c2
(dynamic)
       Interface iSCSI 2/1, Portal group tag is 0x80
       VSAN ID 1016, FCID 0x790100
       2 FC sessions, 2 iSCSI sessions
       FCP Session details
         Target FCID: 0x790104 (S_ID of this session:
0x790100)
           pWWN: 50:06:01:60:88:02:a8:2b, nWWN:
50:06:01:60:11:02:a8:2b
           Session state: LOGGED_IN
           1 iSCSI sessions share this FC session
             Target: spa-vt
           Negotiated parameters
             RcvDataFieldSize 1024 our_RcvDataFieldSize
1392
             MaxBurstSize 0, EMPD: FALSE
             Random Relative Offset: FALSE, Sequence-in-
order: Yes
           Statistics:
             PDU: Command: 0, Response: 10
         Target FCID: 0x7902e8 (S_ID of this session:
0x790100)
           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: seagate
           Negotiated parameters
             RcvDataFieldSize 1392 our_RcvDataFieldSize
1392
             MaxBurstSize 0, EMPD: FALSE
             Random Relative Offset: FALSE, Sequence-in-
order: Yes
           Statistics:
             PDU: Command: 0, Response: 4

 vatican# show iscsi virtual-target configured
 target: seagate
   * Port WWN 21:00:00:20:37:67:f7:a2
   === The "*" means you have both discovery and target
session. If there
 is no "*" in front of the pWWN, it means you only have
discovery session.
  Configured node
     No. of LU mapping: 1
       iSCSI LUN: 0000, FC LUN: 0000
     No. of advertised interface: 1
       GigabitEthernet 2/1
     No. of initiators permitted: 1
       initiator 10.48.69.238/32 is permitted
     all initiator permit is disabled
 target: spa-vt
   * Port WWN 50:06:01:60:88:02:a8:2b
     Secondary PWWN 50:06:01:68:88:02:a8:2b
     Configured node
     No. of LU mapping: 2
       iSCSI LUN: 0003, FC LUN: 0020
       iSCSI LUN: 0004, FC LUN: 0021
```

```
     No. of advertised interface: 1
       GigabitEthernet 2/1
     No. of initiators permitted: 1
       initiator 10.48.69.238/32 is permitted
     all initiator permit is disabled

 vatican# show iscsi stats iscsi 2/1
 iscsi2/1
     5 minutes input rate 16 bits/sec, 2 bytes/sec, 0
frames/sec
     5 minutes output rate 16 bits/sec, 2 bytes/sec, 0
frames/sec
     iSCSI statistics
       50932 packets input, 60370640 bytes
         Command 3659 pdus, Data-out 41069 pdus,
56533832 bytes, 2476 fragments
       output 115926 packets, 112863536 bytes
         Response 3374 pdus (with sense 206), R2T 1897
pdus
         Data-in 103999 pdus, 106404584 bytes

 vatican# 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    10.48.69.201        5     0202.3d30.45c9
ARPA  GigabitEthernet2/1
 Internet    10.48.69.206        5     0202.3d30.45ce
ARPA  GigabitEthernet2/1
 Internet    10.48.69.209        3     0202.3d30.45d1
ARPA  GigabitEthernet2/1
 Internet    10.48.69.226        2     0060.08f6.bc1a
ARPA  GigabitEthernet2/1
 Internet    10.48.69.229        4     0800.209e.edab
ARPA  GigabitEthernet2/1
 Internet    10.48.69.231        1     0002.b3c1.7dab
ARPA  GigabitEthernet2/1
 Internet    10.48.69.233        0     0010.4200.7d5b
ARPA  GigabitEthernet2/1
 Internet    10.48.69.238        0     0030.6e1b.6f51
ARPA  GigabitEthernet2/1
 Internet    10.48.69.239       10     0030.6e1c.a00b
ARPA  GigabitEthernet2/1
 Internet    10.48.69.241        0     000b.cdaf.b4c3
ARPA  GigabitEthernet2/1
 Internet    10.48.69.248        4     0202.3d30.45f8
ARPA  GigabitEthernet2/1
 Internet    10.48.69.252        1     0202.3d30.45fc
ARPA  GigabitEthernet2/1
 Internet      10.10.2.28        7     0202.3d0a.021c
ARPA  GigabitEthernet2/1

 vatican# show ips stats tcp interface gigabitethernet
2/1 detail
 TCP Statistics for port GigabitEthernet2/1
     TCP send stats
       261205 segments, 117757220 bytes
       140632 data, 51907 ack only packets
       2655 control (SYN/FIN/RST), 0 probes, 2639 window
updates
       63382 segments retransmitted, 90885612 bytes
       63382 retransmitted while on ethernet send queue,
1 packets split
```

```
       13327 delayed acks sent
     TCP receive stats
       249073 segments, 72669 data packets in sequence,
61525764 bytes in sequence
       2335 predicted ack, 68605 predicted data
       0 bad checksum, 0 multi/broadcast, 0 bad offset
       0 no memory drops, 0 short segments
       4396 duplicate bytes, 205 duplicate packets
       0 partial duplicate bytes, 0 partial duplicate
packets
       0 out-of-order bytes, 2625 out-of-order packets
       0 packet after window, 0 bytes after window
       0 packets after close
       80504 acks, 117762158 ack bytes, 0 ack toomuch,
96274 duplicate acks
       0 ack packets left of snd_una, 7 non-4 byte
aligned packets
       54199 window updates, 0 window probe
       6343 pcb hash miss, 709 no port, 6 bad SYN, 0
paws drops
     TCP Connection Stats
       0 attempts, 2718 accepts, 2718 established
       2716 closed, 15 drops, 0 conn drops
       3 drop in retransmit timeout, 10 drop in
keepalive timeout
       0 drop in persist drops, 0 connections drained
     TCP Miscellaneous Stats
       37062 segments timed, 41787 rtt updated
       817 retransmit timeout, 1 persist timeout
       22654 keepalive timeout, 22643 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
       2720 entries, 2718 connections completed, 0
entries timed out
       0 dropped due to overflow, 2 dropped due to RST
       0 dropped due to ICMP unreach, 0 dropped due to
bucket overflow
       0 abort due to no memory, 2 duplicate SYN, 183
no-route SYN drop
       0 hash collisions, 0 retransmitted
     TCP Active Connections
       Local  Address        Remote Address        State
Send-Q   Recv-Q
       10.48.69.242:3260     10.48.69.238:49499
ESTABLISH  0        0
       10.48.69.242:3260     10.48.69.238:49500
ESTABLISH  0        0
       10.48.69.242:3260     10.48.69.238:49501
ESTABLISH  0        0
       0.0.0.0:3260          0.0.0.0:0
LISTEN     0        0
 vatican# discover scsi-target local
 discovery started

 vatican# show scsi-target devices vsan 1016
 ----------------------------------------------------
-------------------------
 VSAN    FCID        PWWN                      VENDOR
MODEL            REV
 ----------------------------------------------------
```

```
-------------------------
 1016    0x790104    50:06:01:60:88:02:a8:2b   DGC
RAID 0            0632
 1016    0x7902e8    21:00:00:20:37:67:f7:a2   SEAGATE
ST318203FC        0004
 vatican# show scsi-target lun vsan 1016

 - RAID from DGC (Rev 0632)
   FCID is 0x790104 in VSAN 1016, 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
```

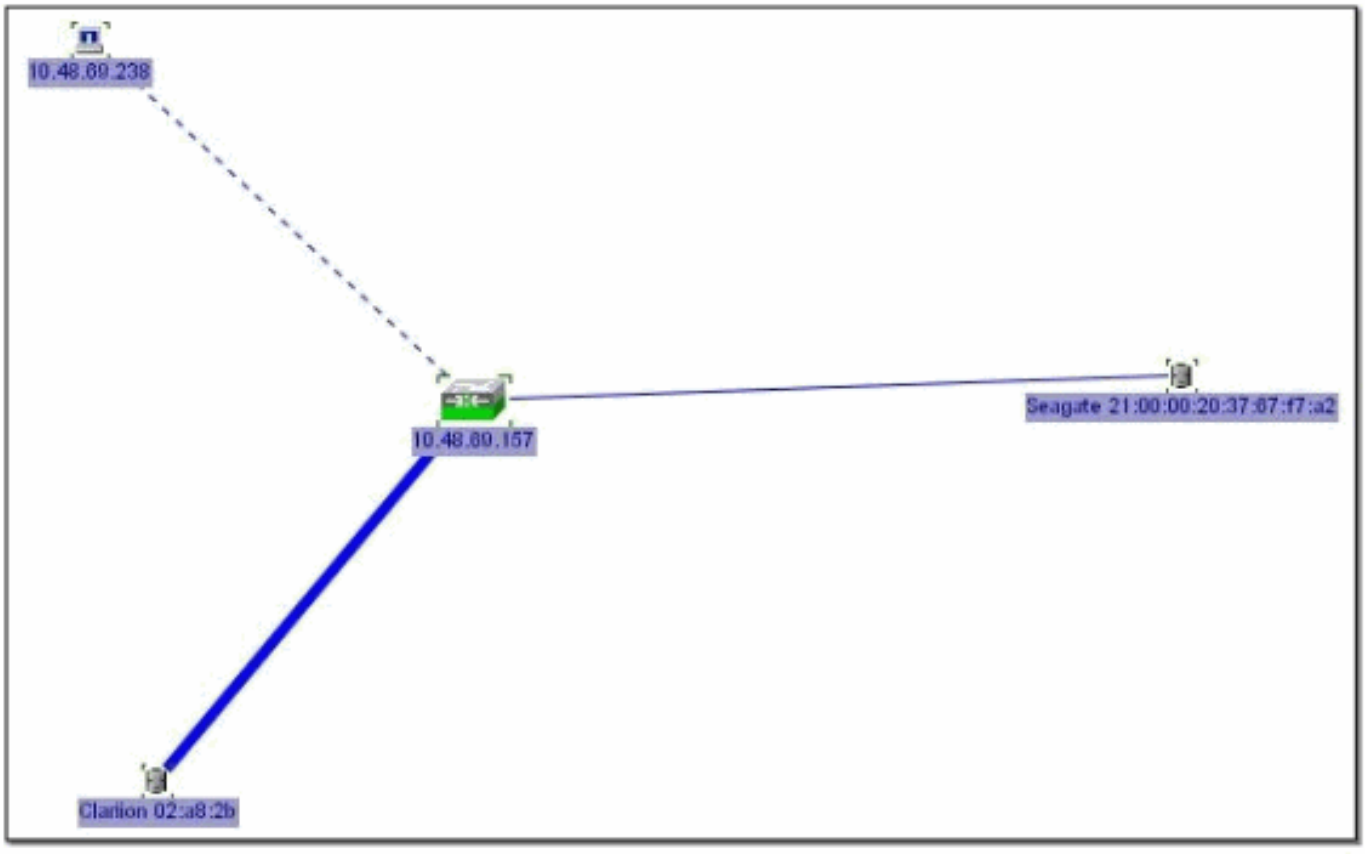
```
                                                    C:1 A:0
T:0 00:20:00:00
   0x21   3221      Online  f60004202091     C:1 A:0 T:3
60:06:01:60:88:02:a8:2b

74:d2:42:9e:31:8d:ff:86
                                                    C:1 A:0
T:0 00:21:00:00

 - ST318203FC from SEAGATE (Rev 0004)
   FCID is 0x7902e8 in VSAN 1016, 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


 vatican# show interface iscsi 2/1
 iscsi2/1 is up
     Hardware is GigabitEthernet
     Port WWN is 20:41:00:0c:30:57:5e:c0
     Admin port mode is ISCSI
     Port mode is ISCSI
     Speed is 1 Gbps
     iSCSI initiator is identified by name
     Number of iSCSI session: 0, Number of TCP
connection: 0
     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 500000 kbps
         Minimum available bandwidth is 500000 kbps
         Estimated round trip time is 10000 usec
     5 minutes input rate 16 bits/sec, 2 bytes/sec, 0
frames/sec
     5 minutes output rate 16 bits/sec, 2 bytes/sec, 0
frames/sec
     iSCSI statistics
       Input 50920 packets, 60370032 bytes
         Command 3659 pdus, Data-out 41069 pdus,
56533832 bytes fragments 2476
       Output 115914 packets, 112862928 bytes
         Response 3374 pdus (with sense 206), R2T 1897
pdus
         Data-in 103999 pdus, 106404584 bytes


 vatican# show interface gigabitethernet 2/1
 GigabitEthernet2/1 is up
     Hardware is GigabitEthernet, address is
0005.3000.a85a
     Internet address is 10.48.69.242/26
     MTU 1500  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 440 bits/sec, 55 bytes/sec, 0
frames/sec
     5 minutes output rate 80 bits/sec, 10 bytes/sec, 0
frames/sec
     850346 packets input, 127958119 bytes
       6488 multicast frames, 0 compressed
       0 input errors, 0 frame, 0 overrun 0 fifo
     289960 packets output, 201600774 bytes, 0 underruns
       0 output errors, 0 collisions, 0 fifo
       0 carrier errors

 vatican# show ip route

 Codes: C - connected, S - static

 Default gateway 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
```

Display di Fabric Manager e Device Manager

In questa sezione vengono fornite le schermate acquisite da MDS Fabric Manager 1.2(1a) e Device Manager 1.2(1a).

Diagramma topologico da Fabric Manager



Gestione periferiche

Selezionare **FC- > LUN** in Gestione dispositivi per visualizzare i nomi WWN, gli ID LUN e la capacità delle LUN.

vatican - LUN

Discover | Targets | LUNs

VsanId, Port WWN	Id	Capacity (MB)	SerialNum
1016, Clariion 50:06:01:60:88:02:a8:2b	0x0	1074	f60004202091
1016, Clariion 50:06:01:60:88:02:a8:2b	0x1	1074	f60004202091
1016, Clariion 50:06:01:60:88:02:a8:2b	0x2	1074	f60004202091
1016, Clariion 50:06:01:60:88:02:a8:2b	0x3	2147	f60004202091
1016, Clariion 50:06:01:60:88:02:a8:2b	0x4	1074	f60004202091
1016, Clariion 50:06:01:60:88:02:a8:2b	0x5	1074	f60004202091
1016, Clariion 50:06:01:60:88:02:a8:2b	0x6	1074	f60004202091
1016, Clariion 50:06:01:60:88:02:a8:2b	0x7	1074	f60004202091
1016, Clariion 50:06:01:60:88:02:a8:2b	0x8	1074	f60004202091
1016, Clariion 50:06:01:60:88:02:a8:2b	0x9	1074	f60004202091
1016, Clariion 50:06:01:60:88:02:a8:2b	0xa	1074	f60004202091
1016, Clariion 50:06:01:60:88:02:a8:2b	0xb	1074	f60004202091
1016, Clariion 50:06:01:60:88:02:a8:2b	0xc	1074	f60004202091
1016, Clariion 50:06:01:60:88:02:a8:2b	0xd	1074	f60004202091
1016, Clariion 50:06:01:60:88:02:a8:2b	0xe	1074	f60004202091
1016, Clariion 50:06:01:60:88:02:a8:2b	0xf	1074	f60004202091
1016, Clariion 50:06:01:60:88:02:a8:2b	0x10	1074	f60004202091
1016, Clariion 50:06:01:60:88:02:a8:2b	0x11	1074	f60004202091
1016, Clariion 50:06:01:60:88:02:a8:2b	0x20	5369	f60004202091
1016, Clariion 50:06:01:60:88:02:a8:2b	0x21	3221	f60004202091
1016, Seagate 21:00:00:20:37:67:f7:a2	0x0	18210	LRE8091500007039HLT6

Refresh Help Close

21 row(s)

Selezionare **IP > -iSCSI** in Gestione periferiche per visualizzare le sessioni iSCSI.

vatican - iSCSI

Initiators | Targets | Sessions | Sessions Detail | Session Statistics

Name or IpAddress	TargetName	Immediate Data	Ready To Transfer		Burst Size		Data InOrder		Connection Number	Recovery Level
			Initial	MaxOutstanding	First	Max	Sequence	PDU		
10.48.69.238		false	true	1	0	0	false	false	1	0
10.48.69.238	spa-vt	false	true	1	0	0	false	false	1	0
10.48.69.238	seagate	false	true	1	0	0	false	false	1	0

Refresh Help Close

Data retrieved at 17:49:36