



CHAPTER 6

MDS 9000 Core with Brocade 5300/7800 Edge Topology

This chapter describes how to set up a basic core-edge topology with one Cisco MDS 9000 switch configured for interop mode 1 at the core and two Brocade switches at the edge. All devices are connected to the edge switches. However, all traffic must flow through the core switch to reach its destination.

This chapter includes the following sections:

- [Specifications, page 6-1](#)
- [Expected Topology Behavior, page 6-2](#)
- [Configuration, page 6-3](#)
- [Verification, page 6-6](#)
- [Zoning, page 6-12](#)

Specifications

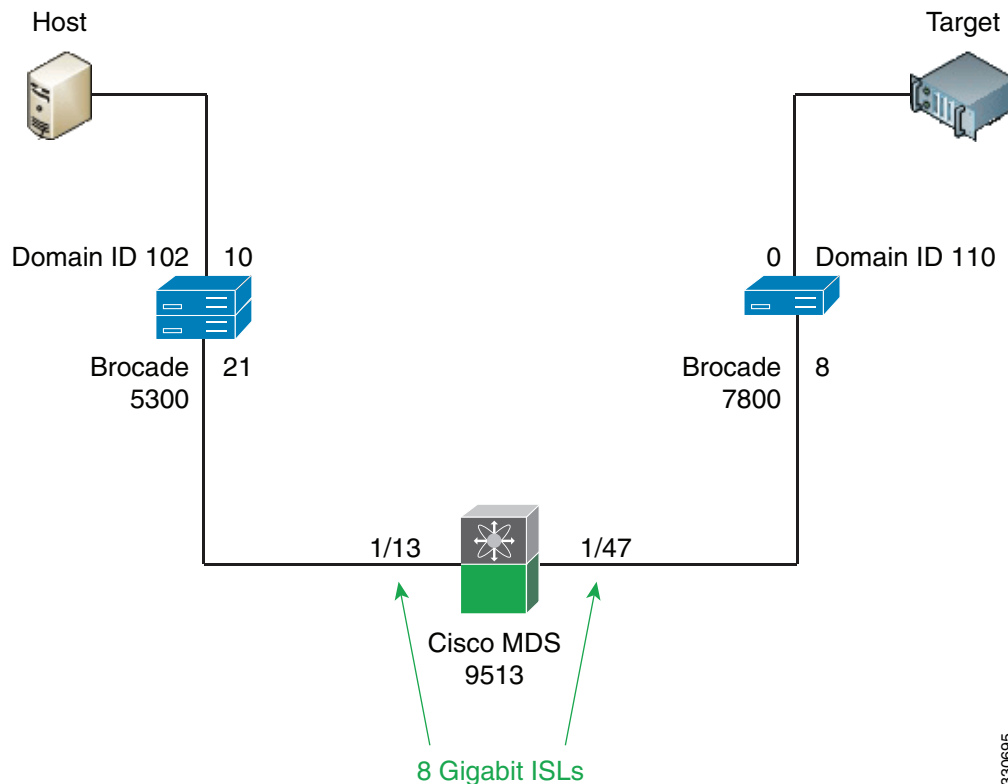
The following switches and code levels were used for this example configuration:

- MDS 9513 running MDS NX-OS Release 5.2(1)
- Brocade 5300 Version 6.4.1a
- Brocade 7800 Version 6.3.0a

[Figure 6-1](#) shows the topology used for this example configuration.

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Figure 6-1 MDS 9000 Switch Core Switch with Brocade 5300 and 7800 Edge Switch Topology



Expected Topology Behavior

This section covers the Fibre Channel services and features that act differently in this topology (Figure 6-1) as compared to a homogeneous, single-vendor implementation.

This section contains the following topics:

- [Zoning, page 6-2](#)
- [FSPF, page 6-3](#)
- [Trunking and PortChannels, page 6-3](#)
- [Domain IDs, page 6-3](#)

Zoning

In the core-edge topology (using standard interop mode), zone members are all pWWNs because the Brocade domain/port nomenclature is not a valid form according to the FC standard. When a zone set (or *configuration*, in Brocade terminology) activation is made at the core switch, the zone set activation reaches all switches at the same time because they are all the same distance from the core.

The Brocade edge switches provide all of the zone security because the Cisco MDS 9000 switch does not check the source and destination of the frame when traversing E ports. Brocade switches only check the zoning information on the egress port of the fabric.

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**Note**

After two active zone sets successfully merge, always copy the active zone set to the full zone set database prior to modifying it on the MDS 9000 switch.

FSPF

All links within the topology show the link cost of 125.

Because the Brocade switches load balance their routes using source and destination, the ingress edge switch uses the same core switch for all traffic that has the same source and destination pair. If the Brocade switch could load balance using source/destination/ox-id, then it could choose either of the two core switches for the route through the fabric.

Trunking and PortChannels

The lack of MDS 9000 switch-to-MDS 9000-switch connections prohibits the topology from containing TE ports or PortChannels. While in interop mode, the Brocade switches do not support trunked ports of any type. Only standard E ports are used for the ISLs.

Domain IDs

The domain IDs are limited to the 97 to 127 range due to a restriction imposed by McData's inability to handle IDs outside of that range. While Brocade switches and MDS 9000 switches can handle domain IDs outside of this range, their implementation of interoperability mode includes this limitation.

Domain ID modifications can be handled in two ways, disruptively or nondisruptively:

- **Disruptive**—This event impacts the entire switch. When changing domain IDs, Brocade requires the entire switch to be taken offline and/or rebooted.
- **Nondisruptive**—This event is limited to the VSAN where the event is taking place. Only the MDS 9000 switch can perform this action, as the domain manager process for this VSAN is restarted and not the entire switch. This restart requires any device logged into the VSAN to log into the fabric again to obtain a new FC ID.

Configuration

This section describes the configuration process and includes the following topics:

- [Configuring the MDS 9513 Switch, page 6-3](#)
- [Configuring the Brocade 5300 Switch, page 6-4](#)
- [Configuring the Brocade 7800 Switch, page 6-5](#)
- [Configuring a Persistent FCID in an IVR Configuration with Brocade Switches, page 6-6](#)

Configuring the MDS 9513 Switch

To configure the MDS 9513 switch, follow these steps:

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-
- Step 1** Place the VSAN of the E ports(s) that connect to the OEM switch in interoperability mode.

```
MDS9513# config t
Enter configuration commands, one per line. End with CNTL/Z.
MDS9513(config)# vsan database
MDS9513(config-vsan-db)# vsan 11 interop
vsan 11:interoperability mode 1 allowed domain list [97-127] does not include all assigned
and configured domains or conflicts with existing allowed domain lists
```

- Step 2** Assign a domain ID in the range of 97 (0x61) through 127 (0x7F). This interop mode limitation restricts the fabric to a total of 31 switches.

```
MDS9000# config t
Enter configuration commands, one per line. End with CNTL/Z.
MDS9513(config)# fcdomain domain 120 preferred vsan 1
```

- Step 3** Change the Fibre Channel timers if they have been changed from the system defaults.

The FC error Detect (ED_TOV) and Resource Allocation (RA_TOV) timers on the MDS 9000 switch and Brocade switches default to the same values. The RA_TOV defaults to 10 seconds, and the ED_TOV defaults to 2 seconds. These values can be changed. According to the FC-SW2 standard, these values must be the same on each switch in the fabric.

```
MDS9513# config t
MDS9513(config)# fctimer e_d_tov ?
<1000-100000> E_D_TOV in milliseconds(1000-4000)

MDS9513(config)# fctimer r_a_tov ?
<5000-100000> R_A_TOV in milliseconds(5000-100000)
```

- Step 4** After making changes to the domain, restart the MDS 9000 switch domain manager function for the altered VSAN. To do this, suspend and then resume the VSAN.

```
MDS9513(config)# vsan database
MDS9513(config-vsan-db)# vsan 11 suspend
MDS9513(config-vsan-db)# no vsan 11 suspend
```

Configuring the Brocade 5300 Switch

To configure the Brocade 5300 switch in interoperability mode, follow these steps:

-
- Step 1** Disable the switch. This is a disruptive process.

```
BR_5300:root> switchdisable
```

- Step 2** Enter the configuration dialog.

```
BR_5300:root> configure

Configure...

Fabric parameters (yes, y, no, n): [no] y

Domain: (97..127) [102]
  WWN Based persistent PID (yes, y, no, n): [no]
  R_A_TOV: (4000..120000) [10000]
  E_D_TOV: (1000..5000) [2000]
  WAN_TOV: (0..30000) [0]
```

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```

MAX_HOPS: (7..19) [7]
Data field size: (256..2112) [2112]
Sequence Level Switching: (0..1) [0]
Disable Device Probing: (0..1) [0]
Suppress Class F Traffic: (0..1) [0]
Per-frame Route Priority: (0..1) [0]
Long Distance Fabric: (0..1) [0]
BB credit: (1..27) [16]
Disable FID Check (yes, y, no, n): [yes]
Insistent Domain ID Mode (yes, y, no, n): [yes]
Configure edge hold time (yes, y, no, n): [yes]
Edge hold time: (100..500) [220]
...
...

```

Step 3 Configure interoperability mode, and then reboot.

```

BR_5300:root> interopmode 3 Set interop mode on
The switch effective and defined configuration
will be lost if interop Mode is changed.

```

```

Interop Mode or Domain Offset Will Be Changed
and switch will be Enabled

```

```

Do you want to continue? (yes, y, no, n): [no] y
InteropMode: McDATA Open Fabric ( IM3 )
Domain Id offset: 0x60

```

To return to non-interop mode, you must disable the switch. Reconfigure the switch, set the interoperability mode to 0, and then reboot.

Configuring the Brocade 7800 Switch

To configure the Brocade 7800 switch in interoperability mode, follow these steps:

Step 1 Disable the switch. This is a disruptive process.

```

Brcd-7800:root> switchdisable

```

Step 2 Enter the configuration dialog.

```

Brcd-7800:root> configure

```

```

Configure...

```

```

Fabric parameters (yes, y, no, n): [no] y

```

```

Domain: (1..239) [1] 110 <=== Assign Domain ID in the 97-127 range
R_A_TOV: (4000..120000) [10000] <=== Must match other switches in the fabric
E_D_TOV: (1000..5000) [2000] <=== Must match other switches in the fabric
WAN_TOV: (0..30000) [0]
MAX_HOPS: (7..19) [7]
Data field size: (256..2112) [2112]
Sequence Level Switching: (0..1) [0]
Disable Device Probing: (0..1) [0]
Suppress Class F Traffic: (0..1) [0]
Per-frame Route Priority: (0..1) [0]
Long Distance Fabric: (0..1) [0]

```

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```
BB credit: (1..27) [16]
Disable FID Check (yes, y, no, n): [no]
...
...
```

Step 3 Configure interoperability mode at the command line, and then reboot.

```
Brzd-7800:root> interopmode 3 Set interop mode on
The switch effective and defined configuration
will be lost if interop Mode is changed.
```

```
Interop Mode or Domain Offset Will Be Changed
and switch will be Enabled
```

```
Do you want to continue? (yes, y, no, n): [no] y
InteropMode: McDATA Open Fabric ( IM3 )
Domain Id offset: 0x60
```

To return to non-interop mode, disable the switch. Reconfigure the switch, set interoperability mode to 0, and then reboot.

Configuring a Persistent FCID in an IVR Configuration with Brocade Switches

The following information is relevant if you have a fabric that consists of Cisco MDS 9000 switches and Brocade switches, and the Cisco MDS switches are running either NX-OS Release 4.x or Release 5.x and Brocade is running FOS higher than 6.x. In an IVR configuration, when IVR NAT is enabled on a Cisco MDS 9000 switch, the device in the native VSAN should be configured with a persistent FCID. Assuming the FCID is 0xAABBCC, AA should be configured with the virtual IVR domain ID of the VSAN that contains the ISLs and BB should be configured in the following range:

- 1 through 64 if the Brocade switch is operating in native interop mode.
- 1 through 30 if the Brocade switch is operating in McData Fabric mode or McData Open Fabric Mode.

This configuration ensures that the devices connected to the Cisco MDS 9000 switch can be seen in the name server database on the Brocade switch,

Verification

The following section highlights the commands used to verify that the fabric is up and running in interoperability mode.

In this example topology, there are only single ISLs. If there were multiple ISLs connecting the edge Brocade switches to the core MDS 9000 switch, the Brocade switches would load balance their routes using source and destination, and the ingress edge switch would use the same ISL for all traffic that has the same source and destination pair. The MDS 9000 switch would continue to load balance across ISLs using the source/destination/ox-id of the frame. This principle is illustrated in [Figure 5-12](#).



Note

An ISL will be isolated if the default zoning policy is set to deny and the zone set is not active on one switch, and the default zoning policy is set to deny or permit and the zone set is active on the other switch. To avoid this situation, set the default zoning policy to permit on the switch where there is no active zone set.

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Verifying the MDS 9513 Switch

The following examples show verification of the MDS 9000 switch:

```
MDS9000# show version
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Documents:
http://www.cisco.com/en/US/products/ps9372/tsd_products_support_series_home.html
Copyright (c) 2002-2011, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained herein are owned by
other third parties and are used and distributed under license.
Some parts of this software are covered under the GNU Public
License. A copy of the license is available at
http://www.gnu.org/licenses/gpl.html.
```

```
Software
  BIOS:          version 1.0.10
  loader:        version N/A
  kickstart:     version 5.2(1)
  system:        version 5.2(1)
  BIOS compile time: 01/08/09
  kickstart image file is: bootflash:///m9500-sf2ek9-kickstart-mz.5.2.1.bin.S74
  kickstart compile time: 12/25/2020 12:00:00 [07/16/2011 22:48:52]
  system image file is:  bootflash:///m9500-sf2ek9-mz.5.2.1.bin.S74
  system compile time: 6/7/2011 13:00:00 [07/17/2011 00:15:24]
```

```
Hardware
  cisco MDS 9513 (13 Slot) Chassis ("Supervisor/Fabric-2a")
  Motorola, 7447A, altivec with 2071296 kB of memory.
  Processor Board ID JAE141501UD
```

```
Device name: MDS9513
bootflash: 1000440 kB
slot0: 0 kB (expansion flash)
```

```
Kernel uptime is 36 day(s), 0 hour(s), 1 minute(s), 51 second(s)
```

```
Last reset
  Reason: Unknown
  System version: 5.2(1)
  Service:
```

```
plugin
  Core Plugin
```

```
MDS9000# show interface brief
```

```
-----
Interface  Vsan  Admin  Admin  Status  SFP  Oper  Oper  Port
          Mode  Mode  Mode
          Mode
-----
fc1/1      11    auto  on     down    sw1  --   --   --
fc1/2      1     FX    on     down    sw1  --   --   --
fc1/3      1     FX    on     down    sw1  --   --   --
fc1/4      1     FX    on     sfpAbsent  --  --   --   --
fc1/5      1     auto  on     isolated sw1  --   --   --
fc1/6      1     FX    on     sfpAbsent  --  --   --   --
fc1/7      1     FX    on     down    sw1  --   --   --
fc1/8      1     FX    on     sfpAbsent  --  --   --   --
fc1/9      1     FX    on     sfpAbsent  --  --   --   --
-----
```

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```

fc1/10      1      FX      on      sfpAbsent  --      --      --
fc1/11      1      FX      on      down       swl     --      --
fc1/12      1      FX      on      sfpAbsent  --      --      --
fc1/13      1      auto   on      up         swl     E       8      --
fc1/14      1      FX      on      sfpAbsent  --      --      --
...
...

fc1/42      1      FX      on      sfpAbsent  --      --      --
fc1/43      1      FX      on      sfpAbsent  --      --      --
fc1/44      1      FX      on      sfpAbsent  --      --      --
fc1/45      1      FX      on      sfpAbsent  --      --      --
fc1/46      1      FX      on      sfpAbsent  --      --      --
fc1/47      11     E       on      up         swl     E       8      --
fc1/48      1      FX      on      sfpAbsent  --      --      --
fc13/1      1      auto   on      down       swl     --      --

```

```

MDS9000# show vsan 11
vsan 11 information
      name:VSAN0011 state:active
      interoperability mode:default
      loadbalancing:src-id/dst-id/oxid
      operational state:up

```

```

MDS9000# show fcdomain vsan 11
The local switch is the Principal Switch.

```

```

Local switch run time information:
      State: Stable
      Local switch WWN: 20:0b:00:05:9b:01:b4:b3
      Running fabric name: 20:0b:00:05:9b:01:b4:b3
      Running priority: 2
      Current domain ID: 0x78(120)

```

```

Local switch configuration information:
      State: Enabled
      FCID persistence: Enabled
      Auto-reconfiguration: Disabled
      Contiguous-allocation: Disabled
      Configured fabric name: 20:01:00:05:30:00:28:df
      Optimize Mode: Disabled
      Configured priority: 128
      Configured domain ID: 0x78(120) (preferred)

```

```

Principal switch run time information:
      Running priority: 2

```

Interface	Role	RCF-reject
fc1/13	Downstream	Disabled
fc1/47	Downstream	Disabled

```

MDS9000# show fcdomain domain-list vsan 11

```

```

Number of domains: 3
Domain ID          WWN
-----
0x78(120)          20:0b:00:05:9b:01:b4:b3 [Local] [Principal] <=== MDS9513
0x66(102)          10:00:00:05:1e:e8:ea:ad  <==== Brocade 5300
0x6e(110)          10:00:00:05:1e:e0:20:a0  <==== Brocade 7800
Number of domains: 3

```


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```
MDS9000# show fcns database vsan 11

VSAN 11:
-----
FCID          TYPE  PWWN                               (VENDOR)          FC4-TYPE:FEATURE
-----
0x660a00      N     21:00:00:e0:8b:12:47:89 (Qlogic)          scsi-fcp:init
0x660b23      NL    21:00:00:04:cf:cf:44:0a (Seagate)         scsi-fcp:target
0x6e0000      N     20:04:00:a0:b8:17:45:07 (SymBios)         scsi-fcp:target

Total number of entries = 3
```

**Note**

The MDS name server shows both local and remote entries, and it does not time out the entries.

Verifying the Brocade 5300 Switch

The following examples show verification of the Brocade 5300 switch:

```
BR_5300:root> version
Kernel:      2.6.14.2
Fabric OS:   v6.4.1a
Made on:     Tue Dec 14 02:51:24 2010
Flash:      Wed Aug 3 18:07:09 2011
BootProm:   1.0.15
```

```
BR_5300:root> switchshow
switchName:   BR_5300
switchType:   64.3
switchState:  Online
switchMode:   McDATA Open Fabric
switchRole:   Subordinate
DomainIDOffset: 0x60
switchDomain: 102
switchID:     fffc66
switchWwn:    10:00:00:05:1e:e8:ea:ad
zoning:       OFF
switchBeacon: OFF
FC Router:    OFF
FC Router BB Fabric ID: 1
Address Mode: 0
```

```
Index Port Address Media Speed State      Proto
=====
  0   0   660000  id   N8   No_Light  FC
  1   1   660100  id   N8   No_Light  FC
  2   2   660200  id   N8   No_Light  FC
  3   3   660300  id   N8   No_Light  FC
  4   4   660400  id   N8   In_Sync   FC  Disabled (Persistent)
  5   5   660500  id   N8   In_Sync   FC  Disabled (Persistent)
  6   6   660600  id   N8   No_Light  FC
  7   7   660700  id   N8   No_Light  FC
  8   8   660800  id   N8   No_Light  FC
  9   9   660900  id   N8   No_Light  FC
 10  10   660a00  id   N2   Online    FC  F-Port 21:00:00:e0:8b:12:47:89
 11  11   660b00  id   N2   Online    FC  L-Port 1 public
 12  12   660c00  id   N8   No_Sync   FC  Disabled (Persistent)
 13  13   660d00  id   N8   No_Light  FC
 14  14   660e00  id   N8   No_Light  FC
```

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```

15 15 660f00 id N8 No_Light FC
16 16 661000 id N8 Online FC E-Port segmented, (ESC mismatch, Unknown)
17 17 661100 id N8 No_Light FC
18 18 661200 id 8G In_Sync FC Disabled (Persistent)
19 19 661300 -- N8 No_Module FC
20 20 661400 id N8 No_Light FC
21 21 661500 id N8 Online FC E-Port 20:0b:00:05:9b:01:b4:b3 "MDS9513"
(upstream)
22 22 661600 id N8 No_Light FC
23 23 661700 id N8 No_Light FC
...
...

```

```
BR_5300:root> topologysshow
```

```
3 domain(s) in the fabric; Local Domain ID: 102
```

```

Domain:      110
Metric:      625
Name:        Brcd-7800
Path Count:  1

```

```

Hops:        2
Out Port:    21
In Ports:    10 11
Total Bandwidth: 8.000 Gbps
Bandwidth Demand: 100 %
Flags:       D

```

```
Type <CR> to continue, Q<CR> to stop:
```

```

Domain:      120
Metric:      500
Name:        MDS9513
Path Count:  1

```

```

Hops:        1
Out Port:    21
In Ports:    10 11
Total Bandwidth: 8.000 Gbps
Bandwidth Demand: 100 %
Flags:       D

```

```
Type <CR> to continue, Q<CR> to stop:
```

```

BR_5300:root> nsallshow
{
660a00 660b23 6e0000
3 Nx_Ports in the Fabric }

```



Note

The Brocade switch remote name server entries time out of the cache after 900 seconds (15 minutes).

```
BR_5300:root> uroutesshow
```

```
Local Domain ID: 102
```

In Port	Domain	Out Port	Metric	Hops	Flags	Next (Dom, Port)
10	110	21	625	2	D	120,65548
	120	21	500	1	D	120,65548

```
Type <CR> to continue, Q<CR> to stop:
```

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Verifying the Brocade 7800 Switch

The following examples show the commands used to verify the configuration of the Brocade 7800 switch:

```
Brcd-7800:root> version
Kernel:      2.6.14.2
Fabric OS:   v6.3.0a
Made on:     Wed Sep 30 18:24:31 2009
Flash:       Fri Mar 12 15:00:24 2010
BootProm:    1.0.9
```

```
Brcd-7800:root> switchshow
switchName:   Brcd-7800
switchType:   83.3
switchState:  Online
switchMode:   McDATA Open Fabric
switchRole:   Subordinate
DomainIDOffset: 0x60
switchDomain: 110
switchId:     fffc6e
switchWwn:    10:00:00:05:1e:e0:20:a0
zoning:       OFF
switchBeacon: OFF
FC Router:    OFF
FC Router BB Fabric ID: 1
```

```
Index Port Address Media Speed State      Proto
=====
0  0  6e0000  id  N2  Online  FC  F-Port  20:04:00:a0:b8:17:45:07
1  1  6e0100  id  N8  No_Light  FC
2  2  6e0200  id  N8  No_Light  FC
3  3  6e0300  id  N8  No_Light  FC
4  4  6e0400  id  N8  No_Light  FC
5  5  6e0500  id  N8  No_Light  FC
6  6  6e0600  id  N8  No_Light  FC
7  7  6e0700  id  N8  No_Light  FC
8  8  6e0800  id  N8  Online  FC  E-Port  20:0b:00:05:9b:01:b4:b3 "MDS9513"
(upstream)
9  9  6e0900  id  N8  No_Light  FC
10 10 6e0a00  id  N8  No_Light  FC
```

```
Brcd-7800:root> topologyshow

3 domain(s) in the fabric; Local Domain ID: 110

Domain:      102
Metric:      625
Name:        BR_5300
Path Count:  1

      Hops:          2
      Out Port:      8
      In Ports:      0
      Total Bandwidth: 8.000 Gbps
      Bandwidth Demand: 50 %
      Flags:         D

Type <CR> to continue, Q<CR> to stop:
Domain:      120
Metric:      500
```

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```
Name:          MDS9513
Path Count:    1

      Hops:          1
      Out Port:      8
      In Ports:      0
      Total Bandwidth: 8.000 Gbps
      Bandwidth Demand: 50 %
      Flags:         D
```

Type <CR> to continue, Q<CR> to stop:

```
Brcd-7800:root> nsshow
{
  Type Pid      COS      PortName          NodeName          TTL(sec)
  N   6e0000;    3;20:04:00:a0:b8:17:45:07;20:04:00:a0:b8:17:45:06; na
      FC4s: FCP [LSI Universal Xport 0540]
      Fabric Port Name: 20:00:00:05:1e:e0:20:a0
      Permanent Port Name: 20:04:00:a0:b8:17:45:07
      Port Index: 0
      Share Area: No
      Device Shared in Other AD: No
      Redirect: No
  The Local Name Server has 1 entry }
}
Brcd-7800:root> nsallshow
{
  660a00 660b23 6e0000
  3 Nx_Ports in the Fabric
```



Note

The Brocade switch remote name server entries time out of the cache after 900 seconds (15 minutes).

```
Brcd-7800:root> urouteshow
```

Local Domain ID: 110

In Port	Domain	Out Port	Metric	Hops	Flags	Next (Dom, Port)
0	102	8	625	2	D	120,65582
	120	8	500	1	D	120,65582

Zoning

In this example, the zone is created on the MDS 9000 switch and the zone set is activated. After activation, the verification process confirms that the Brocade switches properly learn the zones and zone sets. In Brocade terminology, the zone set is known as the configuration. On Brocade switches, the MDS 9000 *active zone set* is known as the *effective configuration*.

The example shows how to use the name server database as a tool when building the zones. When predefining zones, you may use pWWNs of equipment not attached, or in the name server database.

Zones that are defined while the switch is in interop mode *must* be zoned by pWWN. Zoning by alias or FC ID is not permitted while the Brocade switch is operating in interop mode. This limits the Brocade switches to soft zoning. The MDS 9000 switch will always implement hardware-enforced zoning.

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Zone set activation or deactivation on any switch in a fabric will fail if the fabric has an MDS 9000 Family switch where Reliable Commit Service (RCS) is not supported or enabled, and there is a Brocade switch in the fabric running version 6.x or later. RCS is supported in Cisco NX-OS 5.0(x) and later. The MDS switch should be upgraded to a release that supports RCS. The RCS mode will be automatically enabled, when the MDS switch is upgraded to a release that supports RCS.

To see the status of RCS for a VSAN, enter the following command:

```
switch# show zone internal rcs-info vsan vsan-id
```

To enable RCS on an MDS switch, enter the following command:

```
switch(config)# zone rcs enable vsan vsan-id
```

To disable RCS on an MDS switch, enter the following command:

```
switch(config)# no zone rcs enable vsan vsan-id
```

Creating Zones on the MDS 9513 Switch

To create zones on the MDS 9513 switch, follow these steps:

- Step 1** Display the name server database to see the pWWN information.

```
MDS9513# show fcns database vsan 11
```

```
VSAN 11:
```

```
-----
FCID          TYPE  PWWN                                (VENDOR)          FC4-TYPE:FEATURE
-----
0x660a00      N     21:00:00:e0:8b:12:47:89 (Qlogic)          scsi-fcp:init
0x660b23      NL    21:00:00:04:cf:cf:44:0a (Seagate)         scsi-fcp:target
0x6e0000      N     20:04:00:a0:b8:17:45:07 (SymBios)         scsi-fcp:target
-----
```

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

- Step 2** Now that the pWWNs are visible, use tools like cut and paste to create the zones.

```
MDS9513# conf t
Enter configuration commands, one per line. End with CNTL/Z.
MDS9513(config)# zone name edgezone vsan 11
MDS9513(config-zone)# member pwwn 21:00:00:e0:8b:12:47:89
MDS9513(config-zone)# member pwwn 21:00:00:04:cf:cf:44:0a
MDS9513(config-zone)# member pwwn 20:04:00:a0:b8:17:45:07

MDS9513(config-zone)# zoneset name edge_zs vsan 11
MDS9513(config-zoneset)# member edgezone
MDS9513(config-zoneset)# exit
```

At this point, we have created one zone (edgezone) within the zone set named edge_zs.

- Step 3** Activate the zone set edge_zs.

```
MDS9513(config)# zoneset activate name edge_zs vsan 11
Zoneset Activation initiated. check zone status
MDS9513(config)# exit
```

- Step 4** View each switch in the fabric to verify that the defined zoning is in place. The running config will show the zone and zone set, because they were created on this switch.

```
MDS9513# show zoneset active
```

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```
zoneset name edge_zs vsan 11
zone name edgezone vsan 11
* fcid 0x660a00 [pwwn 21:00:00:e0:8b:12:47:89]
* fcid 0x660b23 [pwwn 21:00:00:04:cf:cf:44:0a]
* fcid 0x6e0000 [pwwn 20:04:00:a0:b8:17:45:07]
```

Verifying Zoning on the Brocade 7800 Switch

The Brocade 7800 switch does not have a defined configuration, but it does contain an effective configuration. The effective configuration was passed to it by the MDS 9000 switch when the MDS 9000 switch full zone set was activated.

```
Brzd-7800:root> cfgshow
  Defined configuration:
    no configuration defined

Effective configuration:
  cfg:   edge_zs
  zone:  edgezone
        21:00:00:e0:8b:12:47:89
        21:00:00:04:cf:cf:44:0a
        20:04:00:a0:b8:17:45:07
```

Verifying Zoning on the Brocade 5300 Switch

The following example shows commands used to verify the configuration of the Brocade 5300 switch:

```
BR_5300:root> cfgshow
  Defined configuration:
    no configuration defined

Effective configuration:
  cfg:   edge_zs
  zone:  edgezone
        21:00:00:e0:8b:12:47:89
        21:00:00:04:cf:cf:44:0a
        20:04:00:a0:b8:17:45:07
```



Note

The zones created in the MDS 9000 switch are propagated to the Brocade switches. Although the **cfgshow** command does not show these zones as the defined configuration, if the switch is isolated and rebooted, the correct zone configuration is effective.

On the MDS 9000 switch, the active zone configuration is always saved to memory. It will not display in the running configuration. If the switch is isolated and rebooted, the last active zone set is reinstated as the current active zone set.

Any changes to the zones or zone set while the switch is isolated will need to pass a zone merge validation when the ISLs are activated.