



CHAPTER 6

MDS 9000 Core with Brocade 3900/12000 Edge Topology

This chapter describes how to set up a basic core-edge topology with one 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 6-15](#)

Specifications

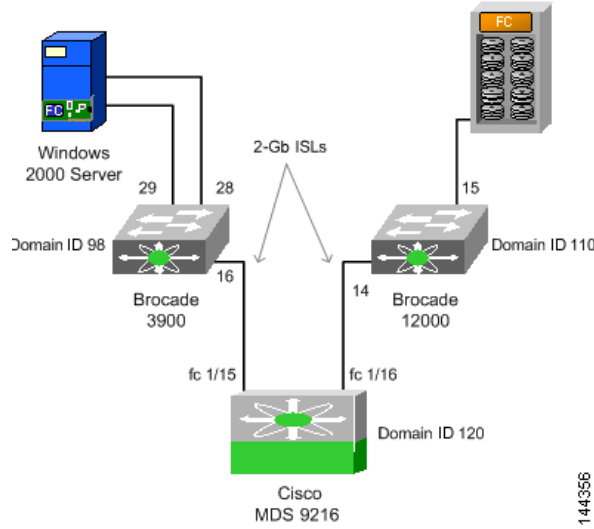
The following switches and code levels were used for this example configuration:

- MDS 9216 running MDS SAN-OS Release 1.1(1)
- Brocade 3900 Version 04.0.2d
- Brocade 12000 Version 4.0.2c

[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 3900 and 12000 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 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.



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.

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FSPF

All links within the topology show the link cost of 500.

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 9000 Switch, page 6-3](#)
- [Configuring the Brocade 3900 Switch, page 6-4](#)
- [Configuring the Brocade 12000 Switch, page 6-5](#)

Configuring the MDS 9000 Switch

Follow these steps to configure the MDS 9000 switch.

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

```
MDS9000# config t
MDS9000(config)# vsan database
MDS9000(config-vsan-db)# vsan 1 interop
```

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- 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.

In the MDS 9000 switch, the default is to request an ID from the principal switch. If the **preferred** keyword is used, the MDS 9000 switch requests a specific ID, but still joins the fabric if the principal switch assigns a different ID. If the **static** keyword is used, the MDS 9000 switch will not join the fabric unless the principal switch agrees, and assigns the requested ID.

```
MDS9000# config t
MDS9000(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.

```
MDS9000# config t
MDS9000(config)# fctimer e_d_tov ?
<1000-100000> E_D_TOV in milliseconds(1000-100000)

MDS9000(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.

```
MDS9509(config)# vsan database
MDS9509(config-vsan-db)# vsan 1 suspend
MDS9509(config-vsan-db)# no vsan 1 suspend
```

Configuring the Brocade 3900 Switch

Follow these steps to configure the Brocade 3900 switch in interoperability mode.

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

```
CA3900:admin> switchdisable
```

- Step 2** Enter the configuration dialog.

```
CA3900:admin> configure
```

```
Configure...
```

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

```
Domain: (97..239) [98] 98 <==== 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
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]
VC Encoded Address Mode: (0..1) [0]
Per-frame Route Priority: (0..1) [0]
BB credit: (1..16) [16]
```

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```
Virtual Channel parameters (yes, y, no, n): [no]
Zoning Operation parameters (yes, y, no, n): [no]
RSCN Transmission Mode (yes, y, no, n): [no]
NS Operation Parameters (yes, y, no, n): [no]
Arbitrated Loop parameters (yes, y, no, n): [no]
System services (yes, y, no, n): [no]
Portlog events enable (yes, y, no, n): [no]
```

- Step 3** Disable platform management services. Failure to do this will isolate any E ports that connect to non-Brocade switches.

```
CA3900:admin> msPIMgmtDeactivate
This will erase all Platform entries. Are you sure? (yes, y, no, n): [no] y
Committing configuration...done.
Request Fabric to Deactivate Platform Management services...
Done.
```

- Step 4** Configure interoperability mode, and then reboot.

```
CA3900:admin> interopmode 1 Set interop mode on
Committing configuration...done.
interopMode is 1
```

NOTE: It is recommended that you reboot the switch to make this change take effect



Note

Do not ignore the warning message. Anomalies were experienced that required a switch reboot.

```
CA3900:admin> fastboot
```

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 12000 Switch

Follow these steps to configure the Brocade 12000 switch in interoperability mode.

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

```
CA12000:admin> switchdisable
```

- Step 2** Enter the configuration dialog.

```
CA12000:admin> configure
```

```
Configure...
```

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

Domain: (97..239) [110] 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
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]
```

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```
VC Encoded Address Mode: (0..1) [0]
Per-frame Route Priority: (0..1) [0]
BB credit: (1..16) [16]
```

```
Virtual Channel parameters (yes, y, no, n): [no]
Zoning Operation parameters (yes, y, no, n): [n]
RSCN Transmission Mode (yes, y, no, n): [no]
NS Operation Parameters (yes, y, no, n): [no]
Arbitrated Loop parameters (yes, y, no, n): [no]
System services (yes, y, no, n): [no]
Portlog events enable (yes, y, no, n): [no]
```

Step 3 Disable platform management services. Failure to do this will isolate E ports that connect to non-Brocade switches.

```
CA12000:admin> msPlMgmtDeactivate
This will erase all Platform entries. Are you sure? (yes, y, no, n): [no] y
Committing configuration...done.
Request Fabric to Deactivate Platform Management services....
Done.
```

Step 4 Configure interoperability mode at the command line, and then reboot.

```
CA12000:admin> interopmode 1 Set interop mode on
Committing configuration...done.
interopMode is 1
NOTE: It is recommended that you boot this switch to make this change take effect
```

**Note**

Do not ignore the above warning message. Anomalies were experienced that required a switch reboot.

```
CA12000:admin> fastboot
```

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

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](#).

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Verifying the MDS 9000 Switch

The following examples show verification of the MDS 9000 switch.

MDS9000# **show version**

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

Software

```
BIOS:          version 1.0.7
loader:        version 1.0(3a) [last : 1.0(4)]
kickstart:     version 1.1(1)
system:        version 1.1(1)

BIOS compile time:      03/20/03
kickstart image file is: bootflash:/m9200-ek9-kickstart-mz.1.1.1.bin
kickstart compile time: 5/23/2003 0:00:00
system image file is:   bootflash:/m9200-ek9-mz.1.1.1.bin
system compile time:   5/23/2003 0:00:00
```

Hardware

```
RAM 963116 kB

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

MDS9000 uptime is 1 days 21 hours 38 minute(s) 3 second(s)

Last reset at 412363 usecs after Wed Jul 2 02:40:38 2003
Reason: Reset Requested by management application
System version: 1.1(1)
```

MDS9000# **show interface brief**

```
-----
Interface Vsan   Admin Admin   Status      Oper Oper   Port-channel
          Mode Trunk Mode                               Mode Speed
                               (Gbps)
-----
fc1/1     1     auto  on      notConnected --    --    --
fc1/2     1     auto  on      notConnected --    --    --
fc1/3     1     auto  on      down         --    --    --
fc1/4     1     auto  on      down         --    --    --
fc1/5     1     auto  on      down         --    --    --
fc1/6     1     auto  on      down         --    --    --
fc1/7     1     auto  on      down         --    --    --
fc1/8     1     auto  on      down         --    --    --
fc1/9     1     auto  on      down         --    --    --
fc1/10    1     auto  on      down         --    --    --
fc1/11    1     auto  on      down         --    --    --
fc1/12    1     auto  on      down         --    --    --
fc1/13    1     auto  on      down         --    --    --
fc1/14    1     auto  on      down         --    --    --
fc1/15    1     auto  on      up           E     2     --
fc1/16    1     E     on      up           E     2     --
-----
```

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```
-----
Interface          Status          Speed
                  (Gbps)
-----
```

```
sup-fc0            up              1
```

```
-----
Interface          Status          IP Address          Speed          MTU
-----
mgmt0              up              172.22.36.255/23   100 Mbps      1500
```

```
-----
Interface          Status          IP Address          Speed          MTU
-----
vsan1              up             --                  1 Gbps        1500
```

```
MDS9000# show running-config
```

```
Building Configuration ...
```

```
vsan database
vsan 1 interop
```

```
interface vsan1
```

```
snmp-server community public rw
snmp-server user admin network-admin auth md5 0xe649424ae4a77d12a40f7dd86f55965
  localizedkey
snmp-server host 10.10.3.20 traps version 1 public
snmp-server host 171.69.122.33 traps version 2c public udp-port 2162
snmp-server host 171.71.188.65 traps version 2c public udp-port 4058
```

```
boot system bootflash:/m9200-ek9-mz.1.1.1.bin
boot kickstart bootflash:/m9200-ek9-kickstart-mz.1.1.1.bin
```

```
ip default-gateway 172.22.36.1
kernel core module 1 level ram
kernel core module 2 level ram
kernel core module 3 level ram
kernel core module 4 level ram
kernel core module 5 level ram
kernel core module 6 level ram
kernel core module 7 level ram
kernel core module 8 level ram
kernel core module 9 level ram
kernel core module 10 level ram
kernel core module 11 level ram
kernel core module 12 level ram
kernel core module 13 level ram
kernel core module 14 level ram
kernel core module 15 level ram
```

```
switchname MDS9000
username admin password 5 AOpL5dCXKyzng role network-admin
zone name Bro12000 vsan 1
  member pwwn 21:01:00:e0:8b:29:8b:3e
  member pwwn 21:00:00:e0:8b:09:8b:3e
  member pwwn 50:06:0e:80:03:4e:95:32
```


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```
zone default-zone permit vsan 2-4

zoneset name BrocadeZoneSet vsan 1
  member Bro12000

zoneset activate name BrocadeZoneSet vsan 1

interface fc1/1
no shutdown

interface fc1/2
no shutdown

interface fc1/3

interface fc1/4

interface fc1/5

interface fc1/6

interface fc1/7

interface fc1/8

interface fc1/9

interface fc1/10

interface fc1/11

interface fc1/12

interface fc1/13

interface fc1/14

interface fc1/15
no shutdown

interface fc1/16
switchport mode E
no shutdown

interface mgmt0
ip address 172.22.36.255 255.255.254.0
```

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```

MDS9000# show vsan 1
vsan 1 information
    name:VSAN0001 state:active
    interoperability mode:yes
    loadbalancing:src-id/dst-id/oxid
    operational state:up

MDS9000# show fcdomain vsan 1
The local switch is a Subordinated Switch.

Local switch run time information:
    State: Stable
    Local switch WWN:    20:01:00:05:30:00:68:5f
    Running fabric name: 10:00:00:60:69:90:08:2f
    Running priority: 128
    Current domain ID: 0x78(120) <==== Verify domain id

Local switch configuration information:
    State: Enabled
    FCID persistence: Disabled
    Auto-reconfiguration: Disabled
    Contiguous-allocation: Disabled
    Configured fabric name: 20:01:00:05:30:00:28:df
    Configured priority: 128
    Configured domain ID: 0x00(0) (preferred)

Principal switch run time information:
    Running priority: 2

Interface          Role          RCF-reject
-----
fc1/15             Upstream     Disabled
fc1/16             Downstream   Disabled
-----

MDS9000# show fcdomain domain-list vsan 1

Number of domains: 3
Domain ID          WWN
-----
0x62(98)          10:00:00:60:69:90:08:2f [Principal] <==== Brocade 3900
0x6e(110)         10:00:00:60:69:80:1d:cf <==== Brocade 12000
0x78(120)         20:01:00:05:30:00:68:5f [Local] <==== MDS9216

MDS9000# show fspf internal route vsan 1

FSPF Unicast Routes
-----
VSAN Number  Dest Domain  Route Cost  Next hops
-----
          1    0x62(98)      500      fc1/15
          1    0x6e(110)     500      fc1/16

MDS9000# show fspf internal route vsan 1

FSPF Unicast Routes
-----
VSAN Number  Dest Domain  Route Cost  Next hops
-----
          1    0x62(98)      500      fc1/15
          1    0x6e(110)     500      fc1/16

```

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```
MDS9000# show fcns database vsan 1

VSAN 1:
-----
FCID          TYPE  PWWN                               (VENDOR)          FC4-TYPE:FEATURE
-----
0x621c00      N     21:01:00:e0:8b:29:8b:3e (QLogic)
0x621d00      N     21:00:00:e0:8b:09:8b:3e (QLogic)
0x6e0e00      N     50:06:0e:80:03:4e:95:32                scsi-fcp

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 3900 Switch

The following examples show verification of the Brocade 3900 switch.

```
CA3900:admin> version
Kernel:      2.4.2
Fabric OS:   v4.0.2d
Made on:     Sat Apr 5 00:22:58 2003
Flash:       Mon Jun 23 18:49:49 2003
BootProm:   3.1.18

CA3900:admin> licenseshow
edcczbyc9pedd0X:
  Web license
  Zoning license
  Fabric license
  Fabric Watch license
  Trunking license

CA3900:admin> switchshow
switchName:   CA3900
switchType:   12.1
switchState:  Online
switchRole:   Principal
switchDomain: 98
switchId:     fffc62
switchWwn:    10:00:00:60:69:90:08:2f
switchBeacon: OFF

Port Gbic Speed State
=====
 0  --  N2  No_Module
 1  --  N2  No_Module
 2  --  N2  No_Module
 3  --  N2  No_Module
 4  --  N2  No_Module
 5  --  N2  No_Module
 6  --  N2  No_Module
 7  --  N2  No_Module
 8  --  N2  No_Module
 9  --  N2  No_Module
10  --  N2  No_Module
11  --  N2  No_Module
12  --  N2  No_Module
13  --  N2  No_Module
```

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```

14  --  N2  No_Module
15  id  N2  No_Light
16  id  N2  Online    E-Port  20:01:00:05:30:00:68:5f (downstream)
17  --  N2  No_Module
18  --  N2  No_Module
19  --  N2  No_Module
20  --  N2  No_Module
21  --  N2  No_Module
22  --  N2  No_Module
23  --  N2  No_Module
24  --  N2  No_Module
25  --  N2  No_Module
26  --  N2  No_Module
27  --  N2  No_Module
28  id  N2  Online    F-Port  21:01:00:e0:8b:29:8b:3e
29  id  N2  Online    F-Port  21:00:00:e0:8b:09:8b:3e
30  id  N2  No_Light
31  id  N2  No_Light

```

```
CA3900:admin> topologyshow
```

```
3 domains in the fabric; Local Domain ID: 98
```

```

Domain:          110
Metric:          1000
Name:            CA12000
Path Count:      1

                Hops:          2
                Out Port:      16
                In Ports:      28 29
                Total Bandwidth: 2 Gbps
                Bandwidth Demand: 200 %
                Flags:         D

```

```

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

                Hops:          1
                Out Port:      16
                In Ports:      28 29
                Total Bandwidth: 2 Gbps
                Bandwidth Demand: 200 %
                Flags:         D

```

```
CA3900:admin> interopmode
```

```
InteropMode: On
```

```

Usage: InteropMode 0|1
       0: to turn it off
       1: to turn it on

```

```
CA3900:admin> nsallshow
```

```

3 Nx_Ports in the Fabric {
  621c00 621d00 6e0e00
}

```



Note

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

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```
CA3900:admin> urouteshow
```

```
Local Domain ID: 98
```

In Port	Domain	Out Port	Metric	Hops	Flags	Next (Dom, Port)
28	110	16	1000	2	D	120,65550
	120	16	500	1	D	120,65550

Verifying the Brocade 12000 Switch

The following examples show the commands used to verify the configuration of the Brocade 12000 switch.

```
CA12000:admin> version
```

```
Kernel:      2.4.2
Fabric OS:   v4.0.2c
Made on:    Wed Jan 22 04:17:49 2003
Flash:      Thu Mar 20 23:48:04 2003
BootProm:   3.1.18
```

```
CA12000:admin> licenseshow
```

```
SQeRRcyyRzdRFSSz:
  Web license
  Zoning license
  Fabric Watch license
  Trunking license
Rzb9SzQc99S0cATc:
  Fabric license
```

```
CA12000:admin> switchshow
```

```
switchName:   CA12000
switchType:   10.1
switchState:  Online
switchRole:   Subordinate
switchDomain:  110
switchId:     fffc6e
switchWwn:    10:00:00:60:69:80:1d:cf
switchBeacon: OFF
blade7 Beacon: OFF
```

```
Area Slot Port Gbic Speed State
```

```
=====
 0  7  0  id  N2  No_Light
 1  7  1  id  N2  No_Light
 2  7  2  id  N2  No_Light
 3  7  3  id  N2  No_Light
 4  7  4  id  N2  No_Light
 5  7  5  id  N2  No_Light
 6  7  6  id  N2  No_Light
 7  7  7  id  N2  No_Light
 8  7  8  id  N2  No_Light
 9  7  9  id  N2  No_Light
10  7 10  id  N2  No_Light
11  7 11  id  N2  No_Light
12  7 12  id  N2  No_Light
13  7 13  id  N2  No_Light
14  7 14  id  N2  Online  F-Port  50:06:0e:80:03:4e:95:32
15  7 15  id  N2  Online  E-Port  20:01:00:05:30:00:68:5f (upstream)
```

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```

CA12000:admin> topologysshow

3 domains in the fabric; Local Domain ID: 110

Domain:          98
Metric:          1000
Name:            CA3900
Path Count:     1

                Hops:                2
                Out Port:             7/15
                In Ports:             7/14
                Total Bandwidth:      2 Gbps
                Bandwidth Demand:    100 %
                Flags:                D

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

                Hops:                1
                Out Port:             7/15
                In Ports:             7/14
                Total Bandwidth:      2 Gbps
                Bandwidth Demand:    100 %
                Flags:                D

CA12000:admin> interopmode
InteropMode: On

Usage: InteropMode 0|1
       0: to turn it off
       1: to turn it on

CA12000:admin> nssshow
The Local Name Server has 1 entry {
  Type Pid    COS    PortName                               NodeName                               TTL(sec)
  N    6e0e00;  3;50:06:0e:80:03:4e:95:32;50:06:0e:80:03:4e:95:32; na
      FC4s: FCP [HITACHI OPEN-3          2105]
      Fabric Port Name: 20:0e:00:60:69:80:1d:cf
}
CA12000:admin> nsallshow
3 Nx_Ports in the Fabric {
  621c00 621d00 6e0e00
}

```

**Note**

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

```

CA12000:admin> urouteshow

Local Domain ID: 110

In Port    Domain    Out Port    Metric    Hops    Flags    Next (Dom, Port)
-----
      14         98         15         1000     2       D        120,65551
                120         15          500     1       D        120,65551

```

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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.

Creating Zones on the MDS 9000 Switch

Follow these steps to create zones on the MDS 9000 switch.

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

```
MDS9000# show fcns database vsan 1

VSAN 1:
-----
FCID          TYPE  PWWN                               (VENDOR)          FC4-TYPE:FEATURE
-----
0x621c00      N     21:01:00:e0:8b:29:8b:3e (QLogic)
0x621d00      N     21:00:00:e0:8b:09:8b:3e (QLogic)
0x6e0e00      N     50:06:0e:80:03:4e:95:32                scsi-fcp

Total number of entries = 3
```

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

```
MDS9000# conf t
Enter configuration commands, one per line. End with CNTL/Z.

MDS9000(config)# zone name Bro12000 vsan 1
MDS9000(config-zone)# member pwn 21:01:00:e0:8b:29:8b:3e
MDS9000(config-zone)# member pwn 21:00:00:e0:8b:09:8b:3e
MDS9000(config-zone)# member pwn 50:06:0e:80:03:4e:95:32

MDS9000(config)#
MDS9000(config)# zoneset name BrocadeZoneSet vsan 1

MDS9000(config-zoneset)# member Bro12000
```

At this point, we have created one zone (Bro12000) within the zone set named BrocadeZoneSet.

Step 3 Activate the zone set BrocadeZoneSet.

```
MDS9000(config)# zoneset activate name BrocadeZoneSet vsan 1
Zoneset Activation initiated. check zone status
MDS9000(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.

```
MDS9000# show zoneset active vsan 1
zoneset name BrocadeZoneSet vsan 1
```

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```
zone name Bro12000 vsan 1
* fcid 0x621c00 [pwwn 21:01:00:e0:8b:29:8b:3e]
* fcid 0x621d00 [pwwn 21:00:00:e0:8b:09:8b:3e]
* fcid 0x6e0e00 [pwwn 50:06:0e:80:03:4e:95:32]
```

Verifying Zoning on the Brocade 12000 Switch

The Brocade 12000 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.

```
CA12000:admin> cfgshow
  Defined configuration:
  no configuration defined

  Effective configuration:
  cfg:  BrocadeZoneSet
  zone:  Bro12000
         21:01:00:e0:8b:29:8b:3e
         21:00:00:e0:8b:09:8b:3e
         50:06:0e:80:03:4e:95:32
```

Verifying Zoning on the Brocade 3900 Switch

The following example shows commands used to verify the configuration of the Brocade 3900 switch.

```
CA3900:admin> cfgshow
  Defined configuration:
  no configuration defined

  Effective configuration:
  cfg:  BrocadeZoneSet
  zone:  Bro12000
         21:01:00:e0:8b:29:8b:3e
         21:00:00:e0:8b:09:8b:3e
         50:06:0e:80:03:4e:95:32
```



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.