



## CHAPTER 9

# MDS 9000 Legacy Switch Interop Mode 4

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This chapter covers legacy switch interop mode 4 for connecting Cisco MDS 9000 switches to McData switches running in McData Fabric 1.0 mode. It includes the following sections:

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## Specifications

Legacy switch interoperability mode 4, introduced in Cisco SAN-OS Release 3.0(1), provides the means to not disruptively connect a McData switch running in McData Fabric 1.0 mode with an MDS 9000 switch.

MDS switches supports domain/port and pWWN zoning in interop mode 4. Domain/port zoning cannot be used for MDS-attached hosts because the McData switches do not understand the MDS 9000 switch fWWN interface nomenclature.

While in this mode, the MDS VSAN emulates the behavior of a McData switch, including the use of offsets when referring to domain IDs and FC IDs, and in its ability to only establish an Inter-Switch Link (ISL) with another switch that uses McData's OUI (08:00:88).



### Note

- If an MDS 9000 switch is using IVR to provide access between McData connected devices and devices in other VSANs, all zoning should be done from the MDS switch.
  - Cisco DCNM-SAN running Cisco MDS SAN-OS Release 3.0(1) or higher must be used to manage fabrics containing interop mode 4 VSANs.
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## VSAN World Wide Name

A VSAN running in interop mode 4 must be configured to use a WWN that follows a specific set of rules regarding the following format:

2y:yy:08:00:88:zz:zz:zz

- **Mandatory:** The first byte must begin with 2.

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- **Mandatory:** y = 0:00 or hex representation of the VSAN number. (For example, 0:0a for VSAN 10.)
- **Mandatory:** 3rd, 4th and 5th bytes of the WWN must be 08:00:88 (McData OUI).
- **Recommended:** z = last three bytes of the switch WWN.
- **Mandatory:** The chosen WWN must be unique across the fabric.



### Note

Because the WWN has a McData OUI, the WWN can conflict only with McData switches or other MDS switches with VSANs running in interop mode 4.



### Tip

The easiest method to obtain a WWN that meets these conditions is to use the system-assigned local switch WWN and replace the OUI. Notice that 0xbc0 is 3008 in decimal.

```
switch# show fcdomain vsan 3008
The local switch is the Principal Switch.
```

```
Local switch run time information:
  State: Stable
  Local switch WWN:    2b:c0:00:0c:85:e9:d2:c1
  Running fabric name: 2b:c0:00:0c:85:e9:d2:c1
  Running priority: 128
  Current domain ID: 0x0a(10)
```

The VSAN WWN cannot be configured unless the VSAN is in a suspended state. Set the WWN using the following command:

```
switch# conf t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# wwn vsan VSAN # vsan-wwn wwn
```

## Domain and FC IDs

A McData switch refers to domain IDs in the range of 1 to 31, while FC IDs are used within the range 97 to 127, with an offset of 96. The interop mode 4 VSAN emulates the same behavior as the McData switch. Therefore, when configuring static domain IDs on an MDS switch, the range 1 to 31 should be used; however, devices that log into the VSAN (even physically located on the MDS switch) receive an FC ID whose domain ID is 97 to 127.



### Note

If a static domain ID is configured on the MDS switch, it must be in the range 1 to 31 for the interop mode 4 VSAN. However, persistent FC IDs must be configured in the range 97 to 127.

For example, in the following output, a device in VSAN 3008 is assigned an FC ID that contains domain ID 0x6a (106), but upon examining the domain-list, domain ID 10 is displayed. McData's offset of 96 is the difference between the device's FC ID and the domain ID within the domain-list.

```
switch# show flogi database vsan 3008
-----
INTERFACE  VSAN    FCID                PORT NAME                NODE NAME
-----
fc2/5      3008   0x6a0000 50:06:0e:80:04:27:e0:46  50:06:0e:80:04:27:e0:46
```

```
Total number of flogi = 1.
```

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```
switch# show fcdomain domain-list vsan 3008

Number of domains: 2
Domain ID          WWN
-----
0x06(6)           10:00:08:00:88:a0:ee:f7 [Principal]
0x0a(10)          2b:c0:08:00:88:e9:d2:c1 [Local]
```



### Note

If IVR-1 is configured, the domain that is in non-interop mode 4 must have a domain ID in the range 97 to 127 because IVR-1 does not modify the domain ID or FC ID, unlike IVR-2 (NAT).

No modifications to the McData switch are required to connect to the MDS switch. A short procedure is required on the MDS switch prior to establishing the ISL. Cisco DCNM-SAN running Cisco SAN-OS Release 3.0(1) or higher should be used to manage an MDS-based fabric that contains an interop mode 4 VSAN.

## Configuration

To establish connectivity between the McData switch and an MDS switch, follow these steps:

### Step 1 Create the VSAN.

```
switch# conf t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# vsan database
switch(config-vsan-db)# vsan 3008
```

### Step 2 Record the local switch WWN:

```
switch(config-vsan-db)# do show fcdomain vsan 3008
The local switch is the Principal Switch.

Local switch run time information:
  State: Stable
  Local switch WWN:    2b:c0:00:0c:85:e9:d2:c1
  Running fabric name: 2b:c0:00:0c:85:e9:d2:c1
  Running priority: 128
  Current domain ID: 0x0a(10)
```

### Step 3 Suspend the VSAN.

```
switch(config-vsan-db)# vsan 3008 suspend
```

### Step 4 Configure interop mode 4 for the VSAN.

```
switch(config-vsan-db)# vsan 3008 interop 4
```

### Step 5 Configure the VSAN WWN for the VSAN according to the rules specified in the “[VSAN World Wide Name](#)” section on page 9-5.

```
switch(config-vsan-db)# do show wwn switch
Switch WWN is 20:00:00:0c:85:e9:d2:c0
switch(config)# wwn vsan 3008 vsan-wwn 2b:c0:08:00:88:e9:d2:c1
switch(config)#
```

### Step 6 Unsuspend the VSAN.

```
switch(config)# vsan database
```

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```
switch(config-vsantdb)# no vsan 3008 suspend
```

**Step 7** Add the ISL to the VSAN and verify connectivity.

```
switch# show fcdomain domain-list vsan 3008
```

```
Number of domains: 2
Domain ID          WWN
-----
0x06(6)           10:00:08:00:88:a0:ee:f7 [Principal]
0x0a(10)          2b:c0:08:00:88:e9:d2:c1 [Local]
```

```
switch# show topology vsan 3008
```

```
FC Topology for VSAN 3008 :
```

```
-----
Interface Peer Domain Peer Interface Peer IP Address
-----
fc2/15    0x06(6)      Port 63     ::
```

At this point, devices within the VSAN can be zoned using either the Cisco NX-OS CLI, Cisco DCNM-SAN, or the McData GUI.

## Full Zone Set Distribution to MDS

In interop mode 4 with McData, full zone set is present only on the managing switch and will not be distributed to remote switches. Only the active zone set is distributed to remote switches. This is because McData does not distribute the full zone set and MDS emulates McData behavior. This situation creates issues if you want to manage the network from multiple switches. As of MDS NX-OS Release 5.0(1) and later, full zone set distribution can be enabled in interop mode 4. Whenever a zone database change happens and if full zone set distribution is enabled, the full zone set is distributed to remote switches if the remote switches are MDS NX-OS Release 5.0(1) or later. Only the active zone set is distributed to the remote switches if the remote switches are not MDS NX-OS Release 5.0(1) or later. You can use the **zoneset distribute full vsan** *vsan-id* command to enable full zone set distribution.