



Configuring a Dual Fabric SAN Environment

Dual fabric SAN environments are an important configuration requirement. You can use CSM modules in combination with the Inter-VSAN Routing (IVR) feature to operate across two isolated fabrics.

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Overview

Redundant isolated fabrics (fabrics without an ISL connecting them) are used to ensure that disruptions in one fabric do not affect the other. Hosts and disk subsystems in such an environment can be configured to ensure that at least one port remains attached to each fabric.

Basic SVC Requirements

SVC has the following requirements:

- All SVC nodes must be able to communicate with each other in the management VSAN.
- All SVC nodes must be able to use the same preferred target controller port for a given Mdisk.

In a redundant, dual fabric configuration, the Cisco MDS Inter-VSAN Routing (IVR) feature must be used in order to satisfy these basic SVC requirements. IVR provides the same benefit of keeping the two fabrics separate while providing the connectivity required to implement SVC. Refer to *Cisco MDS 9000 Family Configuration Guide* for more information on IVR.

Dual Fabric Prerequisites

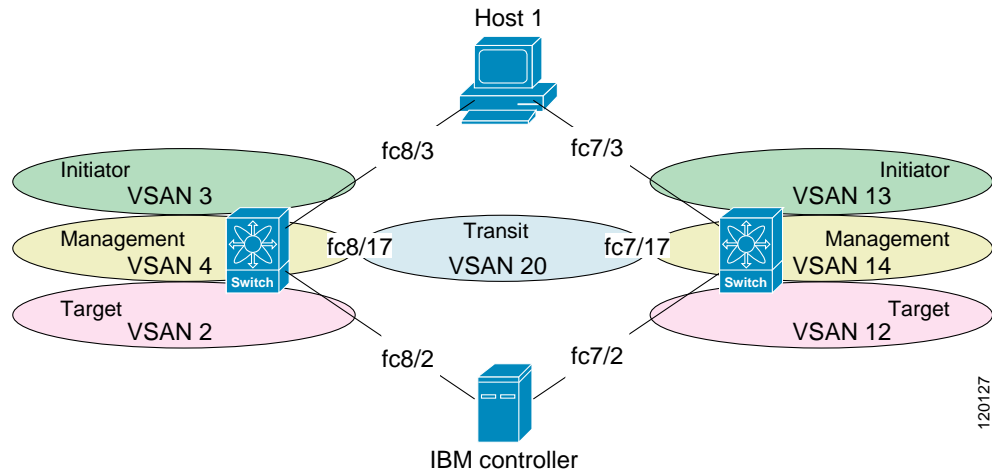
To configure a dual fabric SAN environment using IVR and SVC, verify the following requirements:

- Every VSAN must be assigned a unique number. This number should not be used for any other VSAN in both fabrics. This ensures that the IVR VSAN is not carried across any other non-dedicated dual-fabric E port.
- The same IVR configuration must be configured in each switch in each fabric.
- The default zone in the transit VSAN should be set to deny.
- The transit VSAN must only be dedicated for the dual fabric purpose.
- New interfaces should not be added to this VSAN once the configuration is implemented.
- Trunk Mode must be enabled for the transit VSAN.
- Route advertisement must be disabled for the transit VSAN.
- The Domain ID for the transit VSAN must be static and domain merges must be disabled on this VSAN.
- Topology discovery must be disabled for the transit VSAN.

Sample Configuration

Figure 10-1 displays a dual fabric SAN environment example used in this configuration. The procedure to configure this sample scenario is provided after the illustration.

Figure 10-1 Traffic Isolation and Connectivity Using SVC and IVR



To configure a dual fabric SAN environment in the first fabric, follow these steps:

Step 1 Get the switch WWN information for both switches.

```
switch1# show wwn switch
Switch WWN is 20:00:00:05:30:00:41:de

switch2# show wwn switch
Switch WWN is 20:00:00:05:30:00:07:1e
```

Step 2 Create the VSANs in Switch 1.

```
switch1# configure terminal
switch1(config)# vsan database
switch1(config-vsan-db)# vsan 2
switch1(config-vsan-db)# vsan 2 interface fc8/2          <-- target port
switch1(config-vsan-db)# vsan 3
switch1(config-vsan-db)# vsan 3 interface fc8/3          <-- initiator port
switch1(config-vsan-db)# vsan 4
switch1(config-vsan-db)# vsan 20
switch1(config-vsan-db)# exit
switch1(config)#
```

Step 3 Set the static domains in Switch 1.

```
Sw1(config)# fcdomain domain 2 static vsan 2
Sw1(config)# fcdomain domain 3 static vsan 3
Sw1(config)# fcdomain domain 4 static vsan 4
Sw1(config)# fcdomain domain 20 static vsan 20
```

Step 4 Configure the SVC interface into the correct VSANs in Switch 1.

```
switch1(config)# int svc 1/1 - 2
switch1(config-if)# no initiator vsan 1
switch1(config-if)# initiator vsan 2
switch1(config-if)# no target vsan 1
switch1(config-if)# target vsan 3
switch1(config-if)# no mgmt vsan 1
switch1(config-if)# mgmt vsan 4
switch1(config-if)# exit
```

- Step 5** Set the default zone configuration for the transit VSAN in Switch 1.

```
switch1(config)# no zone default-zone permit vsan 20
```

- Step 6** Configure the target and SVC initiators in a zone in Switch 1.

```
switch1(config)# zone name z_2 vsan 2
switch1(config-zone)# member pwwn 20:06:00:a0:b8:0f:6c:34 <-- target
switch1(config-zone)# member pwwn 27:8d:00:05:30:00:33:2a <-- svc initiator
switch1(config-zone)# member pwwn 27:89:00:05:30:00:33:2a <-- svc initiator
switch1(config-zone)# exit
switch1(config)# zoneset name zs_2 vsan 2
switch1(config-zoneset)# member z_2
switch1(config-zoneset)# exit
switch1(config)# zoneset activate name zs_2 vsan 2
Zone set activation is now initiated. Check zone status.
```

- Step 7** Configure the initiator and SVC targets in a zone in Switch 1.

```
switch1(config)# zone name z_3 vsan 3
switch1(config-zone)# member pwwn 21:01:00:e0:8b:29:f0:04 <-- initiator
switch1(config-zone)# member pwwn 27:8e:00:05:30:00:33:2a <-- svc target
switch1(config-zone)# member pwwn 27:8a:00:05:30:00:33:2a <-- svc target
switch1(config-zone)# exit
switch1(config)# zoneset name zs_3 vsan 3
switch1(config-zoneset)# member z_3
switch1(config-zoneset)# exit
switch1(config)# zoneset activate name zs_3 vsan 3
Zone set activation is now initiated. Check zone status.
```

- Step 8** Configure the SVC management N ports in a zone in Switch 1.

```
switch1(config)# zone name z_4 vsan 4
switch1(config-zone)# member pwwn 27:90:00:05:30:00:33:2a <-- svc mgmt
switch1(config-zone)# member pwwn 27:8f:00:05:30:00:33:2a <-- svc mgmt
switch1(config-zone)# exit
switch1(config)# zoneset name zs_4 vsan 4
switch1(config-zoneset)# member z_4
switch1(config-zoneset)# exit
switch1(config)# zoneset activate name zs_4 vsan 4
Zone set activation is now initiated. Check zone status.
```

- Step 9** Enable and configure IVR using the switch WWNs (see Step 1 for the required WWNs).

```
switch1(config)# ivr enable
switch1(config)# ivr vsan-topology database
switch1(config-ivr-topology-db)# autonomous-fabric-id 1 switch-wwn 20:00:00:05:30:00:41:de
vsan-ranges 2,4,20
switch1(config-ivr-topology-db)# autonomous-fabric-id 1 switch-wwn 20:00:00:05:30:00:07:1e
vsan-ranges 12,14,20
switch1(config-ivr-topology-db)# exit
switch1(config)# ivr vsan-topology activate
```

- Step 10** Set up the IVR zone to allow SVC initiators in Switch 1 to talk to the target port in Switch 2.

```
switch1(config)# ivr zone name ivr_2_12
switch1(config-ivr-zone)# member pwwn 27:8d:00:05:30:00:33:2a vsan 2
switch1(config-ivr-zone)# member pwwn 27:89:00:05:30:00:33:2a vsan 2
switch1(config-ivr-zone)# member pwwn 20:07:00:a0:b8:0f:6c:34 vsan 12
switch1(config-ivr-zone)# exit
```

- Step 11** Set up the IVR zone to allow SVC initiators in Switch 2 to talk to target port in Switch 1.

```
switch1(config)# ivr zone name ivr_12_2
switch1(config-ivr-zone)# member pwwn 23:30:00:05:30:00:8d:e2 vsan 12
```

```
switch1(config-ivr-zone)# member pwn 23:31:00:05:30:00:8d:e2 vsan 12
switch1(config-ivr-zone)# member pwn 20:06:00:a0:b8:0f:6c:34 vsan 2
switch1(config-ivr-zone)# exit
```

Step 12 Set up the IVR zone to allow SVC management on both switches to talk to each other.

```
switch1(config)# ivr zone name ivr_4_14
switch1(config-ivr-zone)# member pwn 27:90:00:05:30:00:33:2a vsan 4
switch1(config-ivr-zone)# member pwn 27:8f:00:05:30:00:33:2a vsan 4
switch1(config-ivr-zone)# member pwn 23:34:00:05:30:00:8d:e2 vsan 14
switch1(config-ivr-zone)# member pwn 23:35:00:05:30:00:8d:e2 vsan 14
switch1(config-ivr-zone)# exit
```

Step 13 Create the IVR zone set with the IVR zones and activate the IVR zone set.

```
switch1(config)# ivr zoneset name ivr_zs
switch1(config-ivr-zoneset)# member ivr_2_12
switch1(config-ivr-zoneset)# member ivr_12_2
switch1(config-ivr-zoneset)# member ivr_4_14
switch1(config-ivr-zoneset)# exit
switch1(config)# ivr zoneset activate name ivr_zs
Zone set activation is now initiated. Check inter-VSAN zoneset status.
```

If any VSANs are configured to permit the default-zone, then you must use the **force** option to activate the IVR zone set

```
switch1(config)# ivr zoneset activate name ivr_zs force
Zone set activation is now initiated. Check inter-VSAM zoneset status.
```

Step 14 Bring up all interfaces, including the E-port, for the IVR transit VSAN.

```
switch1(config)# interface fc8/2, fc8/3
switch1(config-if)# no shutdown
switch1(config-if)# exit
switch1(config)# interface fc8/17
switch1(config-if)# switchport trunk mode on
switch1(config-if)# switchport mode E
switch1(config-if)# no shutdown
switch1(config-if)# switchport trunk allowed vsan 20
switch1(config-if)# exit
```

You have now configured the first fabric for the dual fabric SAN environment displayed in [Figure 10-1](#).

To configure a dual fabric SAN environments in the second fabric, follow these steps:

Step 1 Get the switch WWN information for both switches (see Step 1 in the previous procedure).

Step 2 Create the VSANs in Switch2.

```
switch2# configure terminal
switch2(config)# vsan database
switch2(config-vsan-db)# vsan 12
switch2(config-vsan-db)# vsan 12 interface fc7/2          <-- target port
switch2(config-vsan-db)# vsan 13
switch2(config-vsan-db)# vsan 13 interface fc7/3          <-- initiator port
switch2(config-vsan-db)# vsan 14
switch2(config-vsan-db)# vsan 20
switch2(config-vsan-db)# exit
```

Step 3 Set the static domains in Switch 2.

```
switch2(config)# fcdomain domain 12 static vsan 12
```

```
switch2(config)# fcdomain domain 13 static vsan 13
switch2(config)# fcdomain domain 14 static vsan 14
switch2(config)# fcdomain domain 40 static vsan 20
```

Step 4 Configure the SVC interface into the correct VSANs in Switch 2.

```
switch2(config)# int svc 2/1 - 2
switch2(config-if)# no initiator vsan 1
switch2(config-if)# initiator vsan 12
switch2(config-if)# no target vsan 1
switch2(config-if)# target vsan 13
switch2(config-if)# no mgmt vsan 1
switch2(config-if)# mgmt vsan 14
switch2(config-if)# exit
```

Step 5 Set the default zone configuration for the transit VSAN in Switch 2.

```
switch1(config)# no zone default-zone permit vsan 20
```

Step 6 Configure the target and SVC initiators in a zone in Switch 2.

```
switch2(config)# zone name z_12 vsan 12
switch2(config-zone)# member pwwn 20:07:00:a0:b8:0f:6c:34      <-- target
switch2(config-zone)# member pwwn 23:30:00:05:30:00:8d:e2    <-- svc initiator
switch2(config-zone)# member pwwn 23:31:00:05:30:00:8d:e2    <-- svc initiator
switch2(config-zone)# exit
switch2(config)# zoneset name zs_12 vsan 12
switch2(config-zoneset)# member z_12
switch2(config-zoneset)# exit
switch2(config)# zoneset activate name zs_12 vsan 12
Zone set activation is now initiated. Check zone status.
```

Step 7 Configure the initiator and SVC targets in a zone in Switch 1.

```
switch2(config)# zone name z_13 vsan 13
switch2(config-zone)# member pwwn 21:00:00:e0:8b:09:f0:04      <-- initiator
switch2(config-zone)# member pwwn 23:32:00:05:30:00:8d:e2    <-- svc target
switch2(config-zone)# member pwwn 23:33:00:05:30:00:8d:e2    <-- svc target
switch2(config-zone)# zoneset name zs_13 vsan 13
switch2(config-zoneset)# member z_13
switch2(config-zoneset)# zoneset activate name zs_13 vsan 13
Zone set activation is now initiated. Check zone status.
```

Step 8 Configure the SVC management N ports in a zone in Switch 1.

```
switch2(config)# zone name z_14 vsan 14
switch2(config-zone)# member pwwn 23:34:00:05:30:00:8d:e2      <-- svc mgmt
switch2(config-zone)# member pwwn 23:35:00:05:30:00:8d:e2      <-- svc mgmt
switch2(config-zone)# zoneset name zs_14 vsan 14
switch2(config-zoneset)# member z_14
switch2(config-zoneset)# zoneset activate name zs_14 vsan 14
Zone set activation is now initiated. Check zone status.
```

Step 9 Enable and configure IVR using the switch WWNs (see Step 1 in the previous procedure).

```
switch2(config)# ivr vsan-topology database
switch2(config-ivr-topology-db)# autonomous-fabric-id 1 switch-wwn 20:00:00:05:30:00:41:de
vsan-ranges 2,4,20
switch2(config-ivr-topology-db)# autonomous-fabric-id 1 switch-wwn 20:00:00:05:30:00:07:1e
vsan-ranges 12,14,20
switch2(config-ivr-topology-db)# exit
switch2(config)# ivr vsan-topology activate
```

Step 10 Set up the IVR zone to allow SVC initiators in Switch 1 to talk to the target port in Switch 2.

```
switch2(config)# ivr zone name ivr_2_12
```

```
switch2(config-ivr-zone)# member pwn 27:8d:00:05:30:00:33:2a vsan 2
switch2(config-ivr-zone)# member pwn 27:89:00:05:30:00:33:2a vsan 2
switch2(config-ivr-zone)# member pwn 20:07:00:a0:b8:0f:6c:34 vsan 12
switch2(config-ivr-zone)# exit
```

- Step 11** Set up the IVR zone to allow SVC initiators in Switch 2 to talk to target port in Switch 1.

```
switch2(config)# ivr zone name ivr_12_2
switch2(config-ivr-zone)# member pwn 23:30:00:05:30:00:8d:e2 vsan 12
switch2(config-ivr-zone)# member pwn 23:31:00:05:30:00:8d:e2 vsan 12
switch2(config-ivr-zone)# member pwn 20:06:00:a0:b8:0f:6c:34 vsan 2
switch2(config-ivr-zone)# exit
```

- Step 12** Set up the IVR zone to allow SVC management on both switches to talk to each other.

```
switch2(config)# ivr zone name ivr_4_14
switch2(config-ivr-zone)# member pwn 27:90:00:05:30:00:33:2a vsan 4
switch2(config-ivr-zone)# member pwn 27:8f:00:05:30:00:33:2a vsan 4
switch2(config-ivr-zone)# member pwn 23:34:00:05:30:00:8d:e2 vsan 14
switch2(config-ivr-zone)# member pwn 23:35:00:05:30:00:8d:e2 vsan 14
switch2(config-ivr-zone)# exit
```

- Step 13** Create the IVR zone set with the IVR zones and activate the IVR zone set.

```
switch2(config)# ivr zoneset name ivr_zs
switch2(config-ivr-zoneset)# member ivr_2_12
switch2(config-ivr-zoneset)# member ivr_12_2
switch2(config-ivr-zoneset)# member ivr_4_14
switch2(config-ivr-zoneset)# exit
switch2(config)# ivr zoneset activate name ivr_zs
Zone set activation is now initiated. Check inter-VSAN zoneset status.
```

If any VSANs are configured to permit the default-zone, then you must use the **force** option to activate the IVR zone set

```
switch1(config)# ivr zoneset activate name ivr_zs force
Zone set activation is now initiated. Check inter-VSAN zoneset status.
```

- Step 14** Bring up all interfaces, including the E-port, for the IVR transit VSAN.

```
switch2(config)# interface fc7/2, fc7/3
switch2(config-if)# no shutdown
switch2(config-if)# exit
switch2(config)# interface fc7/17
switch1(config-if)# switchport trunk mode on
switch1(config-if)# switchport mode E
switch2(config-if)# no shutdown
switch2(config-if)# switchport trunk allowed vsan 20
switch2(config-if)# exit
```

You have now configured the second fabric for the dual fabric SAN environment displayed in [Figure 10-1](#).

