C H A P T E R **17**

Creating Dynamic VSANs

Port VSAN membership on the switch is assigned on a port-by-port basis. By default each port belongs to the default VSAN.

You can dynamically assign VSAN membership to ports by assigning VSANs based on the device WWN. This method is referred to as the Dynamic Port VSAN Membership (DPVM) feature. DPVM offers flexibility and eliminates the need to reconfigure the port VSAN membership to maintain fabric topology when a host or storage device connection is moved between two Cisco MDS switches or two ports within a switch. It retains the configured VSAN regardless of where a device is connected or moved. To assign VSANs statically, see Chapter 16, "Configuring and Managing VSANs.".

This chapter includes the following sections:

About DPVM

assignments. A DPVM database contains mapping information for each device pWWN/nWWN assignment and the corresponding VSAN. The Cisco SAN-OS software checks the database during a device FLOGI and obtains the required VSAN details.

The pWWN identifies the host or device and the nWWN identifies a node consisting of multiple devices. You can assign any one of these identifiers or any combination of these identifiers to configure DPVM mapping. If you assign a combination, then preference is given to the pWWN.

DPVM uses the Cisco Fabric Services (CFS) infrastructure to allow efficient database management and distribution. DPVM uses the application driven, coordinated distribution mode and the fabric-wide distribution scope (see Chapter 5, "Using the CFS Infrastructure").

Note

Note

DPVM Requirements

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Enabling DPVM

	Command	Purpose
Step 1	switch# **config t** switch(config)#	
Step 2	switch(config)# **dpvm enable**	
	no dpvm enable	

The DPVM database consists of a series of device mapping entries. Each entry consists of a device pWWN/nWWN assignment along with the dynamic VSAN to be assigned. You can configure a maximum of 16,000 DPVM entries in the DPVM database. This database is global to the whole switch (and fabric) and is not maintained for each VSAN.

The DPVM feature uses three databases to accept and implement configurations.

- Configuration (config) database—All configuration changes are stored in the configuration database when distribution is disabled.

- Active database—The database currently enforced by the fabric.

- Pending database—All configuration changes are stored in the pending database when distribution is enabled (see the "Configuring DPVM Database Distribution" section on page 17-5).

Changes to the config database are not reflected in the active database until you activate the config database. Changes to the pending database are not reflected in the config/active database until you commit the pending database. This database structure allows you to create multiple entries, review changes, and let the config and pending databases take effect.

Configuring Config and Pending Databases

	config t	
	dpvm database switch(config-dpvm-db)#	
	switch(config)#	
Step 3	switch(config-dpvm-db)# **pwwn 12:33:56:78:90:12:34:56 vsan 100**	
	no pwwn 12:33:56:78:90:12:34:56 vsan 101	
Step 4	**nwwn 14:21:30:12:63:39:72:81 vsan 101**	
	no nwwn 14:21:30:12:63:39:72:80 vsan 101	

Activating Config Databases

database. However, you can force activation to override conflicting entries.

To disable DPVM, you must explicitly deactivate the currently active DPVM database by issuing the **no dpvm activate**

dpvm activate force	

auto-learn

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Clearing Learned Entries

- **clear dpvm auto-learn pwwn**

  ```
  clear dpvm auto-learn pwwn 55:22:33:44:55:66:77:88
  ```

  ```
  clear dpvm auto-learn
  ```

Tip

show dpvm pending

Disabling DPVM Database Distribution

	Command	Purpose
Step 1		
Step 2		

Locking the Fabric

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	Command	Purpose
Step 1		
Step 2		
Step 3		
Step 4	**exit**	
Step 5		

Committing Changes

	Command	Purpose
Step 1		
Step 2		

	Command	Purpose
Step 1		
Step 2		

Clearing a Locked Session

Tip The pending database is only available in the volatile directory and are subject to being discarded if the switch is restarted.

To use administrative privileges and release a locked DPVM session, use the command in EXEC mode.

Database Merge Guidelines

A database merge refers to a union of the configuration database and static (unlearned) entries in the active database. See the "CFS Merge Support" section on page 5-7 for detailed concepts.

When merging the database between two fabric, follow these guidelines:

- Verify that the activation status and the auto-learn status is the same is both fabrics.

- Verify that the combined number of device entries in each database does not exceed 16K.

Caution

synchronize the databases and the activation states in the fabric.

Copying DPVM Databases

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Note

dpvm database copy

copy active
```
Legend: "+" New Entry, "-" Missing Entry, "*" Possible Conflict Entry
-------------------------------------------------------------------
-  pwwn  12:33:56:78:90:12:34:56  vsan 100
-  nwwn  14:21:30:12:63:39:72:81  vsan 101
```

Comparing Database Differences

• **dpvm database diff active**

dpvm database diff config

show dpvm pending-diff

Example 17-1   Displays the DPVM Configuration Status

```
      show dpvm status
DB is activated successfully, auto-learn is on
```

Example 17-2   Displays the DPVM Current Dynamic Ports for the Specified VSAN

```
Interface Vsan Device pWWN            Device nWWN
-------------------------------------------------------------
fc1/2     10   29:a0:00:05:30:00:6b:a0 fe:65:00:05:30:00:2b:a0
```

Example 17-3   Displays the DPVM Config Database

```
[Total 4 entries]
```

Example 17-4   Displays the DPVM Active Database

Example 17-5   Displays DPVM Config Database

Example 17-6   Compares Pending Database with the Config Database

Sample DPVM Configuration

Step 1

```
Enter configuration commands, one per line.  End with CNTL/Z.
switch1(config)#
switch1(config)#
switch1#
switch1#
switch1#




switch1#
Enter configuration commands, one per line.  End with CNTL/Z.
switch1(config)#
switch1(config)#
switch1(config)#
switch1#
switch1#
switch1#




switch1#
Enter configuration commands, one per line.  End with CNTL/Z.
switch1(config)#
switch1(config)#
switch1(config)#
switch1#
pwwn 21:00:00:e0:8b:0e:74:8a vsan 4(*)
pwwn 21:01:00:e0:8b:2e:87:8a vsan 5(*)
[Total 2 entries]
* is auto-learnt entry
switch1#
-------------------------------------------------------------
Interface   Vsan       Device pWWN       Device nWWN
-------------------------------------------------------------
fc1/24      4   21:00:00:e0:8b:0e:74:8a  20:00:00:e0:8b:0e:74:8a
fc1/27      5   21:01:00:e0:8b:2e:87:8a  20:01:00:e0:8b:2e:87:8a
switch1#
-----------------------------------------------------------------------
INTERFACE  VSAN    FCID         PORT NAME            NODE NAME
-----------------------------------------------------------------------
fc1/24     4    0xe70100   21:00:00:e0:8b:0e:74:8a  20:00:00:e0:8b:0e:74:8a
fc1/27     5    0xe80100   21:01:00:e0:8b:2e:87:8a  20:01:00:e0:8b:2e:87:8a

Total number of flogi = 2.

switch195#
DB is activated successfully, auto-learn is on
```

```
switch9#
pwwn 21:00:00:e0:8b:0e:87:8a vsan 1(*)
pwwn 21:01:00:e0:8b:2e:74:8a vsan 1(*)
[Total 2 entries]
* is auto-learnt entry
switch9#
DB is activated successfully, auto-learn is on


switch3#
pwwn 21:00:00:e0:8b:0e:76:8a vsan 1(*)
pwwn 21:01:00:e0:8b:2e:76:8a vsan 1(*)
[Total 2 entries]
* is auto-learnt entry
switch3#
DB is activated successfully, auto-learn is on
```

Step 6

```
switch1#
Enter configuration commands, one per line.  End with CNTL/Z.
switch1(config)#
switch1(config)#
switch1(config)#
switch1#
DB is activated successfully, auto-learn is off
switch1#
pwwn 21:00:00:e0:8b:0e:74:8a vsan 4
pwwn 21:01:00:e0:8b:2e:87:8a vsan 5
pwwn 21:00:00:e0:8b:0e:87:8a vsan 1
pwwn 21:01:00:e0:8b:2e:74:8a vsan 1
pwwn 21:00:00:e0:8b:0e:76:8a vsan 1
pwwn 21:01:00:e0:8b:2e:76:8a vsan 1
[Total 6 entries]
* is auto-learnt entry
switch1#
DB is activated successfully, auto-learn is off
```

Step 7   Access switch9 and issue the following commands.

Step 8

✎

Note

Default Settings

Table 17-1   Default DPVM Parameters

Parameters	Default