



Distributing Device Alias Services

All the switches in the Cisco MDS 9000 Series support Distributed Device Alias Services (device alias) on a fabric-wide basis. Device alias distribution allows you to move host bus adapters (HBAs) between VSANs without manually re-entering alias names.

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Understanding Device Aliases

While the port WWN (pWWN) of a device has to be specified to configure different features (zoning, QoS, and port security) in a Cisco MDS 9000 Family switch, you must assign the correct device name each time you configure these features. An incorrect device name may cause unexpected results. You can avoid this if you define a user-friendly name for a pWWN and use this name in all of the configuration commands, as required. These user-friendly names are referred to as *device aliases* in this chapter.

Device Alias Modes

Device-Alias Basic Mode and Enhanced Mode

The device alias feature supports two modes, basic mode and enhanced mode.

**Note**

- For applications such as NX-OS processes (zone, dpvm, ivr, and so on), the device-alias configurations get mapped to their PWWNs when device-alias is in basic mode. Whereas if device-alias is in enhanced mode, the device-alias configuration of the applications do not get mapped to their PWWNs immediately but will remain as configured in application which is referred as native form or format.
- From Cisco MDS NX-OS Release 8.5(1), the default device alias mode is enhanced mode.

When using device alias in basic mode, NX-OS processes such as zone, DPVM, IVR, and so on, immediately expand the device alias name into its associated pWWN in the configuration. For example, when a device alias member is added to a zone, it will be added as a pWWN member and not as a device alias member. Therefore, when you change the pWWN for the device alias entry any configuration (besides device alias) does not get automatically updated. You should manually edit the zones containing that device alias by removing the old entry and reconfiguring the zones and any other configuration where the PWWN is used by removing the old PWWN entry and adding it back with the same device alias name that now has the updated PWWN. After that is done, the configuration should be made active in whatever method is appropriate for the change. For example, if a zone was modified then the zoneset should be reactivated and committed, if necessary.

When using device alias in enhanced mode, NX-OS processes such as zone, DPVM, IVR, and so on, store the device alias names natively in the configuration as specified instead of expanding to pWWNs. The applications track the device alias database changes and take the necessary actions to enforce any changes made (for example like renaming a device alias).

In this mode, since the configuration is accepted in the native form, when the pWWN for the device alias is changed, the zones or other configuration containing that device alias are automatically updated.

Guidelines and Limitations

A native device alias configuration is not accepted in the interop mode VSAN. IVR zone set activation fails in the interop mode VSANs if the corresponding twilight zones being injected are native device alias members.

Device-Alias Mode Default

From Cisco MDS NX-OS Release 8.5(1), the default device alias mode is enhanced mode. Prior to Cisco MDS NX-OS Release 8.5(1), the default device alias mode was basic mode. After an upgrade from an earlier release to Cisco MDS NX-OS Release 8.5(1) or later releases, the device alias mode is set to enhanced mode only when there are no device alias entries configured and the device alias mode is basic. If device alias entries are present or the device alias mode is already in enhanced mode, then the device alias mode is not changed. When a switch initially boots up Cisco MDS NX-OS Release 8.5(1) or later releases, the default device alias mode is set to enhanced mode. If the switch is being downgraded from Cisco MDS NX-OS Release 8.5(1) or later releases to a Cisco MDS NX-OS Release 8.4(2b) or earlier releases and there are no device alias entries configured and the device alias mode is not set, the default alias mode reverts to basic mode. If device alias entries are present or the device alias mode is set, the device alias mode is not changed.

Downgrading from Cisco MDS NX-OS Release 8.5(1) to Release 8.4(2c) is a disruptive operation. Therefore, the device alias configuration is not retained on the switch and the default device alias mode is changed to basic mode, which is the default device alias mode in the Release 8.4(2c), after downgrading.

When the default has been set to enhanced mode the following syslog message will be displayed:

```
%DEVICE-ALIAS-2-DDAS_DEFAULT_MODE: Device alias mode has been set to enhanced mode
```



Note If a new switch running Cisco MDS NX-OS Release 8.5(1) or later releases is being introduced into an existing fabric running in device alias basic mode, then the device alias mode must be configured to basic mode in the new switch or the device alias mode can be set to enhanced mode for the switches in the existing fabric.

Changing Mode Settings

When a device alias mode is changed from basic mode to enhanced mode, the corresponding applications are informed about the change. The applications then start accepting the device alias-based configuration in the native format.



Note Because the device alias was previously running in the basic mode, the applications do not have any prior native device alias configuration.

The applications check for an existing device alias configuration in the native format. If the device alias is in the native format, the applications reject the request, and the device alias mode cannot be changed to basic.

All the native device alias configurations (both on local and remote switches) must be explicitly removed, or all the device alias members must be replaced with the corresponding pWWNs before changing the mode back to basic.

Device Alias Mode Distribution

If device alias distribution is turned on, it is distributed to the other switches in the network whenever there is a change in the mode.

Device Alias Diffs-Only Distribution

From the Cisco MDS NX-OS Release 7.3(0)D1(1), the Device Alias Diffs-Only Distribution feature is supported on the Cisco MDS switches.

When this feature is enabled on all the switches in a fabric, only the session commands are sent across the fabric instead of the entire database, which helps ensure better scalability.

DDAS supports 20,000 entries when all the switches in a fabric have the Device Alias Diffs-Only Distribution feature enabled. This feature is enabled by default.



Note Ensure that all the switches in a fabric are running a minimum of Cisco MDS NX-OS Release 7.3(0)D1(1) with the Device Alias Diffs-Only feature enabled.

Configuring Device Alias Diffs-Only Distribution

To configure the Device Alias Diff-Only Distribution feature, follow these steps:

Step 1 switch# **configure terminal**

Enters configuration mode.

Step 2 switch(config)# **device-alias distribute diffs-only**

Enable the distribution of diffs only on the switch.

This example shows how to enable and display the Device Alias Diffs-Only Distribution feature status on a switch:

Example:

```
switch(config)# device-alias distribute diffs-only
switch(config)# show device-alias status
Fabric Distribution: Enabled
Diffs-only Distribution: Enabled
Database:- Device Aliases 1 Mode: Basic
Checksum: 0x43a9fe35852e91354543d712c3ec9d3
```

Displaying Device Alias Diffs-Only Distribution Status

This example shows the device alias status during an active session when the Device Alias Diffs-Only Distribution feature is enabled on a switch and in a fabric:

Example:

```
switch(config-device-alias-db)# show device-alias status
Fabric Distribution: Enabled
Diffs-only Distribution: Disabled
Database:- Device Aliases 0 Mode: Basic
Checksum: 0xf6bd6b3389b87233d462029172c8612
Locked By:- User "CLI/SNMPv3:admin" SSWN 20:00:54:7f:ee:1c:2d:40
Pending Database:- Device Aliases 1 Mode: Basic
Diffs-only Distribution capability in the fabric: Enabled
```

Diffs-only distribution in Session: Enabled

This example shows the device alias status during an active session when the Device Alias Diff-Only Distribution feature is disabled on a switch and in a fabric:

Example:

```
switch(config-device-alias-db)# show device-alias status
Fabric Distribution: Enabled
Diffs-only Distribution: Disabled
Database:- Device Aliases 0 Mode: Basic
Checksum: 0xf6bd6b3389b87233d462029172c8612
Locked By:- User "CLI/SNMPv3:admin" SSWN 20:00:54:7f:ee:1c:2d:40
Pending Database:- Device Aliases 1 Mode: Basic
Diffs-only Distribution capability in the fabric: Disabled
SSWN which doesnot support Diffs-only Distribution:
20:00:54:7f:ee:1c:2d:40
20:00:54:7f:e1:1c:2c:40
Diffs-only distribution in Session: Disabled
```

Note The status of *Diffs-only distribution in session* does not change during a session.

Step 3 switch(config)# **no device-alias distribute diffs-only**

Disables Device Alias Diffs-Only Distribution

This example shows how to disable and display the Device Alias Diffs-Only Distribution feature status on a switch:

Example:

```
switch(config)# no device-alias distribute diffs-only
switch(config)# show device-alias status
Fabric Distribution: Enabled
Diffs-only Distribution: Disabled
Database:- Device Aliases 1 Mode: Basic
Checksum: 0x43a9fe35852e91354543d712c3ec9d3
```

Merging Device Alias with the Diffs-Only Distribution Feature Enabled

Device alias merge failure occurs in the following scenarios:

- When a switch configured with more than 12,000 entries and enabled with the Device Alias Diffs-Only Distribution feature is added to a fabric, that does not support the feature.
- When a switch with disabled Device Alias Diff-Only Distribution feature is added to a fabric, that is configured with more than 12,000 entries and enabled with the Device Alias Diffs-Only feature.

Displaying Merge Failure

This example displays device alias merge failure when one of the fabrics does not support more than 12,000 entries:

```
switch(config)# show cfs merge status name device-alias
Physical-fc Merge Status: Failed [ Wed Jan 20 10:00:34 2016 ]
Failure Reason: One of the merging fabrics cannot support more than 12Kdevice-aliases
```



Note The Diffs-Only Distribution feature should be enabled on all the switches in a fabric for the device alias entries (more than 12,000) to be supported. If the Diffs-Only Distribution feature is not enabled on all the switches in a fabric, we recommend that you do not configure more than 12,000 entries.

Merging Device Alias in Different Modes

If two fabrics are running different device alias modes, the device alias merge fails. There is no automatic conversion of one mode to the other during the merge process. You will need to resolve the issue.

At the application level, a merger takes place between the applications and the fabric. For example, zone merge occurs when the E port is up, and the IVR,PSM/DPVM merge occurs due to CFS. This merge is completely independent of the device alias merge.

If an application running on an enhanced fabric has a native device alias configuration, the application must fail the merge even if the other fabric is can support the native device alias-based configuration, but is running in the basic mode. You will need to resolve the issue. After the device alias merge issue is resolved, each application must be fixed accordingly.

The following issue occurs when there is a device alias database mismatch in the switches that are a part of the same fabric:

The device alias associated to a pWWN is present in the port security/DPVM database even if the respective device alias member is not present in the switch. The device alias associated to a pWWN is missing in the port security/DPVM database even if the respective device alias member is present in the switch.

Resolving Merge Failure and Device Alias Mode Mismatch

If two fabrics are running in different modes and the device alias merge fails between the fabrics, the conflict can be resolved by selecting one mode or the other. Otherwise, the enhanced mode cannot be turned on. If you choose the basic mode, the applications running on the enhanced fabric have to comply with the device alias merge.

The device alias merge fails because of mode mismatch, but the application merge succeeds if it does not have any native device alias configurations.



Note The applications should not accept any native device alias configuration over SNMP if the device alias is running in the basic mode on that particular switch.



Note Confcheck will be added when the enhanced mode is turned on and removed when it is turned off. Applications should add confcheck if they have a device alias configuration in the native format, and remove it after the configuration is removed.

Device Alias Features

Device aliases have the following features:

- Device alias information is independent of your VSAN configuration.
- Device alias configuration and distribution is independent of the zone server and the zone server database.
- You can import legacy zone alias configurations without losing data.
- The device alias application uses the Cisco Fabric Services (CFS) infrastructure to enable efficient database management and distribution. Device aliases use the coordinated distribution mode and the fabric-wide distribution scope (refer to the *Cisco MDS 9000 Family NX-OS System Management Configuration Guide*).
- When you configure zones, IVR zones, or QoS features using device aliases, and if you display these configurations, you will automatically see that the device aliases are displayed along with their respective pWWNs.

Device Alias Requirements

Device aliases have the following requirements:

- You can only assign device aliases to pWWNs.
- The mapping between the pWWN and the device alias to which it is mapped must have a one-to-one relationship. A pWWN can be mapped to only one device alias and vice versa.

- Prior to Cisco MDS NX-OS Release 9.2(2), device-alias names were restricted to 64 alphanumeric characters. From Cisco MDS NX-OS Release 9.2(2), device-alias names are restricted to 63 alphanumeric characters. Device-alias names may include one or more of the following characters:
 - a to z and A to Z
 - 1 to 9
 - - (hyphen) and _ (underscore)
 - \$ (dollar sign) and ^ (up caret)



Note For releases prior to Cisco MDS NX-OS Release 9.2(2), if the device-alias name was 64 characters in length, the DPVM and other application databases do not update properly. Restrict the number of characters in the device-alias name to 63.

Zone Aliases Versus Device Aliases

[Table 1: Comparison Between Zone Aliases and Device Aliases](#), on page 7 compares the configuration differences between zone-based alias configuration and device alias configuration.

Table 1: Comparison Between Zone Aliases and Device Aliases

Zone-Based Aliases	Device Aliases
Aliases are limited to the specified VSAN.	You can define device aliases without specifying the VSAN number. You can also use the same definition in one or more VSANs without any restrictions.
Zone aliases are part of the zoning configuration. The alias mapping cannot be used to configure other features.	Device aliases can be used with any feature that uses the pWWN.
You can use any zone member type to specify the end devices.	Only pWWNs are supported along with new device aliases such as IP addresses.
Configuration is contained within the Zone Server database and is not available to other features.	Device aliases are not restricted to zoning. Device alias configuration is available to the FCNS, zone, fcping, traceroute, and IVR applications.
FC aliases are not displayed with the associated WWNs in the show command outputs like show zoneset active, show flogi database, and show fcns database.	Device aliases are displayed with the associated WWNs in the show command outputs like show zoneset active, show flogi database, and show fcns database.
FC aliases are not distributed as part of active zoneset and are only distributed as part of full zone database as per the FC standards.	Device Aliases are distributed through CFS.

Device Alias Databases

The device alias feature uses two databases to accept and implement device alias configurations.

- Effective database—The database currently used by the fabric.
- Pending database—Your subsequent device alias configuration changes are stored in the pending database.

If you modify the device alias configuration, you need to commit or discard the changes as the fabric remains locked during this period.

This section includes the following sections:

Creating Device Aliases

To create a device alias in the pending database, follow these steps:

-
- Step 1** `switch# config t`
`switch(config)#`
 Enters configuration mode.
- Step 2** `switch(config)# device-alias database`
`switch(config-device-alias-db)#`
 Enters the pending database configuration submode.
- Step 3** `switch(config-device-alias-db)# device-alias name Device1 pwwn 21:01:00:e0:8b:2e:80:93`
 Specifies a device name (Device1) for the device that is identified by its pWWN. Starts writing to the pending database and simultaneously locks the fabric as this is the first-issued device alias configuration command.
- Step 4** `switch(config-device-alias-db)# no device-alias name Device1`
 Removes the device name (Device1) for the device that is identified by its pWWN.
- Step 5** `switch(config-device-alias-db)# device-alias rename Device1 Device2`
 Renames an existing device alias (Device1) with a new name (Device2).
 To display the device alias configuration, use the **show device-alias name** command.

```
switch# show device-alias name x
device-alias name x pwwn 21:01:00:e0:8b:2e:80:93
```

About Device Alias Distribution

By default, device alias distribution is enabled. The device alias feature uses the coordinated distribution mechanism to distribute the modifications to all switches in a fabric.

If you have not committed the changes and you disable distribution, then a commit task will fail.

Displays a Failed Status

```
switch# show
  device-alias status
Fabric Distribution: Disabled
Database:- Device Aliases 25
Status of the last CFS operation issued from this switch:
=====
Operation: Commit
Status: Failed (Reason: Operation is not permitted as the fabric distribution is
currently disabled.)
```



Note From the Cisco MDS NX-OS Release 6.2.9 onwards, the ASCII configuration replay takes longer time for DDAS (Distributing Device Alias Services) without the write erase command.

About Creating a Device Alias

When you perform the first device alias task (regardless of which device alias task), the fabric is automatically locked for the device alias feature. Once you lock the fabric, the following situations apply:

- No other user can make any configuration changes to this feature.
- A copy of the effective database is obtained and used as the pending database. Modifications from this point on are made to the pending database. The pending database remains in effect until you commit the modifications to the pending database or discard (**abort**) the changes to the pending database.

About Device Alias Configuration Best Practices

As a part of the device-alias configuration best practices, the following guidelines need to be adopted within a device-alias session:

If a device-alias name is reused while configuring a rename command, then the command fails and gets moved to the rejected list.

Displays the rejected device-alias command

```
switch(config-device-alias-db)# device-alias name dev10 pwnn 10:10:10:10:10:10:10:10
switch(config-device-alias-db)# device-alias rename dev10 new-dev10
Command rejected. Device-alias reused in current session :dev10
Please use 'show device-alias session rejected' to display the rejected set of commands and
for the device-alias best-practices recommendation.
switch(config-device-alias-db)#
```

If a PWWN is reused while configuring an add or delete command, then the command fails and gets moved to the rejected list.

Displays the rejected device-alias command

```
switch(config-device-alias-db)# device-alias name dev11 pwnn 11:11:11:11:11:11:11:11
switch(config-device-alias-db)# no device-alias name dev11
```

```

Command rejected. Pwvn reused in current session: 11:11:11:11:11:11:11:11 is mapped to
device-alias dev11
Please use 'show device-alias session rejected' to display the rejected set of commands and
for the device-alias best-practices recommendation.
switch(config-device-alias-db)#

```

If a device-alias name is reused in an add command which was earlier being renamed in a rename command, the command fails and gets moved to the rejected list.

```

switch(config-device-alias-db)# device-alias rename da3 new-da3
switch(config-device-alias-db)# device-alias name da3 pwvn 2:2:2:2:3:3:3:3
Command rejected. Device-alias name reused in current session: da3
Please use 'show device-alias session rejected' to display the rejected set of commands and
for the device-alias best-practices recommendation.
switch(config-device-alias-db)#

```

Displays the rejected device-alias command

The rejected set of commands can be displayed using the show device-alias session rejected command.

```

switch(config-device-alias-db)# show device-alias session rejected
To avoid command rejections, within a device alias session
Do not reuse:
a) a device alias name while configuring a rename command
b) a Pwvn while configuring an add or delete command
c) a device alias name already renamed while configuring add command

Rejected commands must be committed in a separate device alias session
which may cause traffic interruption for those devices. Plan accordingly.
Refer to this command in the NX-OS Command Reference Guide
for more information about device alias configuration best practices

Rejected Command List
-----
device-alias rename dev10 new-dev10
no device-alias name dev11
device-alias name da3 pwvn 02:02:02:02:03:03:03:03
switch(config-device-alias-db)# #

```

Committing Changes

If you commit the changes made to the pending database, the following events occur:

1. The pending database contents overwrites the effective database contents.
2. The pending database is emptied of its contents.
3. The fabric lock is released for this feature.

To commit the changes, follow these steps:

Step 1 switch# config terminal

```
switch(config)#
```

Enters configuration mode.

Step 2 switch(config)# device-alias commit

Commits the changes made to the currently active session.

Whenever a switch in the fabric gets locked and goes for a blank commit, the following warning is displayed:

```
WARNING: Device-alias DB is empty in this switch.
Initiating a commit from this switch will clear [wipe out] Device-alias DB across all the
switches in the fabric, losing Device-alias full DB config permanently.
Do you want to continue? (y/n) [n]
```

Note After the **device-alias commit** is complete, the running configuration is modified on all switches participating in device-alias distribution. You can then use the **copy running-config startup-config fabric** command to save the running-config to the startup-config on all the switches in the fabric.

Step 3 switch(config)# **device-alias commit force**

Commits the changes forcefully and overwrite the changes made to the currently active session.

Enabling the Device Alias Pending Diff Display

To enable the display of the pending-diff and the subsequent confirmation on issuing a device-alias commit, follow these steps:

Step 1 switch# **config t**

```
switch(config)#
```

Enters configuration mode.

Step 2 switch(config)# **device-alias confirm-commit**

Enables the confirm commit option for device- alias.

Step 3 switch(config)# **device-alias commit**

```
The following device-alias changes are about to be committed
+ device-alias name Device1 pwnn 21:01:00:e0:8b:2e:80:93
Do you want to continue? (y/n) [n] y
```

If the device-alias confirm-commit command is enabled, on committing the pending database, the pending-diff is displayed on the console and user is prompted for Yes or No. If the device -alias confirm-commit command is disabled, the pending-diff is not displayed and the user is not prompted for Yes or No.

Discarding Changes

If you discard the changes made to the pending database, the following events occur:

1. The effective database contents remain unaffected.
2. The pending database is emptied of its contents.
3. The fabric lock is released for this feature.

To discard the device alias session, perform this task:

Step 1 switch# **config terminal**

switch(config)#

Enters configuration mode.

Step 2 switch(config)# **device-alias abort**

Discards the currently active session.

To display the status of the discard operation, use the show **device alias status** command.

```
switch# show
  device-alias status
Fabric Distribution: Enabled
Database:- Device Aliases 24
Status of the last CFS operation issued from this switch:
=====
Operation: Abort
Status: Success
```

Fabric Lock Override

If you have performed a device alias task and have forgotten to release the lock by either committing or discarding the changes, an administrator can release the lock from any switch in the fabric. If the administrator performs this task, your changes to the pending database are discarded and the fabric lock is released.



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

To clear device-alias session, use the **clear device-alias session** command in CONFIGURATION mode.

```
switch(config)# clear device-alias session
```

To verify the status of the clear operation, use the **show device-alias session status** command.

```
switch(config)# show device-alias session status
Last Action Time Stamp      : None
Last Action                  : None
Last Action Result          : None
Last Action Failure Reason  : none
```

Clearing Database Content

To clear all the database content, use the **clear device-alias database** command in CONFIGURATION mode.

```
switch(config)# clear device-alias database
To verify the status of the clear device-alias database
command, use the show device-alias database
```

```
command.
switch(config)# show device-alias database
```

Clearing Statistics

To clear all the statistics, use the `clear device-alias statistics` command in CONFIGURATION mode.

```
switch# clear device-alias statistics
```

Disabling and Enabling Device Alias Distribution

To disable or enable the device alias distribution, follow these steps:

Step 1 switch# **config t**

```
switch(config)#
```

Enters configuration mode.

Step 2 switch(config)# **no device-alias distribute**

Disables the distribution.

Step 3 switch(config)# **device-alias distribute**

Enables the distribution (default).

To display the status of device alias distribution, use the `show device-alias status` command (see the following examples).

Displays Device Alias Status When Distribution Is Enabled

Displays Device Alias Status When Distribution Is Disabled

```
switch# show
device-alias status
Fabric Distribution: Enabled <-----Distribution is enabled
Database:-Device Aliases 24
Locked By:-User "Test" SWWN 20:00:00:0c:cf:f4:02:83<-Lock holder's user name and switch ID
Pending Database:- Device Aliases 24
Status of the last CFS operation issued from this switch:
=====
Operation: Enable Fabric Distribution
Status: Success
```

```
switch# show
device-alias status
Fabric Distribution: Disabled
Database:- Device Aliases 24
Status of the last CFS operation issued from this switch:
=====
```

```
Operation: Disable Fabric Distribution
Status: Success
```

About Legacy Zone Alias Configuration Conversion

You can import legacy zone alias configurations to use this feature without losing data, if they satisfy the following restrictions:

- Each zone alias has only one member.
- The member type is pWWN.
- The name and definition of the zone alias should not be the same as any existing device alias name.

If any name conflict exists, the zone aliases are not imported.



Tip Ensure to copy any required zone aliases to the device alias database as required by your configuration.

When an import operation is complete, the modified alias database is distributed to all other switches in the physical fabric when you perform the **commit** operation. At this time if you do not want to distribute the configuration to other switches in the fabric, you can perform the **abort** operation and the merge changes are completely discarded.

This section includes the following topics:

Importing a Zone Alias



Note Device alias does not allow importing and manually adding of device alias entries to the database in the same session.

To import the zone alias for a specific VSAN, follow these steps:

SUMMARY STEPS

1. switch# **config t**
2. switch(config)# **device-alias import fcalias vsan 3**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# config t Example: switch# config t switch(config) #	Enters configuration mode.
Step 2	switch(config)# device-alias import fcalias vsan 3	Imports the fcalias information for the specified VSAN.

	Command or Action	Purpose
		To display device alias information in zone sets, use the show zoneset command (see the following examples).

Displays the Device Aliases in the Zone Set Information

```
switch# show zoneset
zoneset name s1 vsan 1
  zone name z1 vsan 1
    pwn 21:01:00:e0:8b:2e:80:93 [x] <-----Device alias displayed for each pwwn.
    pwn 21:00:00:20:37:39:ab:5f [y]
  zone name z2 vsan 1
    pwn 21:00:00:e0:8b:0b:66:56 [SampleName]
    pwn 21:00:00:20:37:39:ac:0d [z]
```

Example: Displays the Device Aliases in the Active Zone Set

```
switch# show zoneset active
zoneset name s1 vsan 1
  zone name z1 vsan 1
    * fcid 0x670100 [pwn 21:01:00:e0:8b:2e:80:93] [x]
    pwn 21:00:00:20:37:39:ab:5f [y]
  zone name z2 vsan 1
    * fcid 0x670200 [pwn 21:00:00:e0:8b:0b:66:56] [SampleName]
    pwn 21:00:00:20:37:39:ac:0d [z]
```

Device Alias Statistics Cleanup

Use the **clear device-name statistics** command to clear device alias statistics (for debugging purposes):

```
switch# clear device-alias statistics
```

Database Merge Guidelines

For information about CFS merge support, refer to the *Cisco MDS 9000 Series NX-OS System Management Configuration Guide* for detailed concepts.

When merging two device alias databases, follow these guidelines:

- Verify that two device aliases with different names are not mapped to the same pWWN.
- Verify that two different pWWNs are not mapped to the same device aliases.
- Ensure the device -alias mode is similar for the both the fabrics being merged.

Device Alias Configuration Verification

You can view device alias information by using the **show device-alias** command. See the following examples.

Displays All Configured Device Aliases from the Effective Database

```
switch# show
device-alias database
device-alias name SampleName pwn 21:00:00:e0:8b:0b:66:56
device-alias name x pwn 21:01:00:e0:8b:2e:80:93
Total number of entries = 2
```

Displays the Pending Database with No Modifications

```
switch# show
device-alias database pending
There are no pending changes
```

Displays the Pending Database with Modifications

```
switch# show
device-alias database pending
device-alias name x pwn 21:01:00:e0:8b:2e:80:93
device-alias name SampleName pwn 21:00:00:e0:8b:0b:66:56
device-alias name y pwn 21:00:00:20:37:39:ab:5f
device-alias name z pwn 21:00:00:20:37:39:ac:0d
Total number of entries = 4
```

Displays the Specified Device Name in the Pending Database

```
switch# show
device-alias name x pending
device-alias name x pwn 21:01:00:e0:8b:2e:80:93
```

Displays the Specified pWWN in the Pending Database

```
switch# show
device-alias pwn 21:01:00:e0:8b:2e:80:93 pending
device-alias name x pwn 21:01:00:e0:8b:2e:80:93
```

Displays the Difference Between the Pending and Effective Databases

```
switch# show
device-alias database pending-diff
- device-alias name Doc pwn 21:01:02:03:00:01:01:01
+ device-alias name SampleName pwn 21:00:00:e0:8b:0b:66:56
```

Displays the Specified pWWN

```
switch# show
device-alias pwn 21:01:01:01:01:11:01:01
device-alias name Doc pwn 21:01:01:01:01:11:01:01
```


Displays the Device Alias in the FLOGI Database

```
switch# show flogi database
-----
INTERFACE  VSAN    FCID          PORT NAME          NODE NAME
-----
fc2/9      1       0x670100     21:01:00:e0:8b:2e:80:93  20:01:00:e0:8b:2e:80:93
                        [x]
] <-----Device alias name
fc2/12     1       0x670200     21:00:00:e0:8b:0b:66:56  20:00:00:e0:8b:0b:66:56
                        [SampleName]
] <-----Device alias name
Total number of flogi = 2
```

Displays the Device Alias in the FCNS Database

```
switch# show fcns database
VSAN 1:
-----
FCID      TYPE  PWWN          (VENDOR)          FC4-TYPE:FEATURE
-----
0x670100  N     21:01:00:e0:8b:2e:80:93 (Qlogic)          scsi-fcp:init
                        [x]
]
0x670200  N     21:00:00:e0:8b:0b:66:56 (Qlogic)          scsi-fcp:init
                        [SampleName]
]
Total number of entries = 2
```

Displays the fcping Statistics for the Specified Device Alias

```
switch# fcping device-alias x vsan 1
28 bytes from 21:01:00:e0:8b:2e:80:93 time = 358 usec
28 bytes from 21:01:00:e0:8b:2e:80:93 time = 226 usec
28 bytes from 21:01:00:e0:8b:2e:80:93 time = 372 usec
```

Displays the fctrace Information for the Specified Device Alias

```
switch# fctrace device-alias x vsan 1
Route present for : 21:01:00:e0:8b:2e:80:93
20:00:00:05:30:00:4a:e2(0xfffc67)
```

Where available, device aliases are displayed regardless of a member being configured using a **device-alias** command or a zone-specific **member pwwn** command.

Displays Statistics for the Device Alias Application

```
switch# show
device-alias statistics
      Device Alias Statistics
=====
Lock requests sent: 2
Database update requests sent: 1
Unlock requests sent: 1
Lock requests received: 1
Database update requests received: 1
Unlock requests received: 1
```

```

Lock rejects sent: 0
Database update rejects sent: 0
Unlock rejects sent: 0
Lock rejects received: 0
Database update rejects received: 0
Unlock rejects received: 0
Merge requests received: 0
Merge request rejects sent: 0
Merge responses received: 2
Merge response rejects sent: 0
Activation requests received: 0
Activation request rejects sent: 0
Activation requests sent: 2
Activation request rejects received: 0

```

Default Settings

Table 2: Default Device Alias Parameters , on page 18 lists the default settings for device alias parameters.

Table 2: Default Device Alias Parameters

Parameters	Default
Database in use	Effective database.
Database to accept changes	Pending database.
Device alias fabric lock state	Locked with the first device alias task.

Resolving Device Alias Merge Failures

The most common device-alias merge failure issues occur when merging databases. When a device-alias merge fails, we recommend that you review the syslog messages on the switch in which the merge was initiated in order to identify the issues. The application server in each fabric that is responsible for the merge is indicated by the term Merge Master in the messages.

In this example, the syslog messages indicate that the merge failed as a result of a database mismatch:

```

2007 Apr 9 15:52:42 switch-1 %CFS-3-MERGE_FAILED: Merge failed for app device-alias, local
switch wwn 20:00:00:0d:ec:2f:c1:40, ip 172.20.150.38, remote switch wwn
20:00:00:0d:ec:04:99:40, ip 172.20.150.30
2007 Apr 9 15:52:42 switch-1 %DEVICE-ALIAS-3-MERGE_FAILED: Databases could not be merged
due to mismatch.

```



Note Use the **device-alias distribute** command to initiate a merge or remerge of device-alias databases. Use the **device-alias commit** command to *push* a switch's device-alias database to all the other switches in a fabric. If the switches whose device-alias databases are not merged (more than one merge master is shown in the output of the **show cfs merge status name device-alias** command), then the **device-alias commit** command causes the device-alias databases that are not merged to be overwritten.

Connecting an MDS switch running a version of NX-OS that is prior to Cisco MDS NX-OS Release 9.2(2) with an MDS switch running Release 9.2(2) may encounter a device-alias and zone merge failure. Consider two switches where switch 1 is running Cisco MDS NX-OS Release 9.2(2) or later release and switch 2 is running a release prior to Cisco MDS NX-OS Release 9.2(2). Both the switches are in device alias enhanced mode. Switch 2 has one or more device-alias names that are configured with 64 alphanumeric characters. Both zone and device alias merge will fail between switch 1 and switch 2 because switch 2 is using a device-alias name that is configured using 64 alphanumeric characters. In such a case, we recommend that all device-alias names configured with 64 alphanumeric characters be reconfigured to 63 alphanumeric characters or less. After that is done, the device alias database should be remerged using the no device-alias distribute command followed by the device-alias distribute command. The zoneset then can be remerged and the VSAN be brought out of isolation on the ISL by removing the VSAN from the ISL, readding it or shutting down the ISL, and bringing it back up again if it is only transporting a single VSAN.

Device Alias Best Practices

This section lists the best practices that you should follow when creating and using device aliases:

- Device aliases should be used to simplify the management of world wide names (WWNs) whenever possible. It is easier to identify devices with aliases rather than with WWNs. Hence, you should assign aliases to WWNs to easily identify the WWNs.
- Device-alias names are case-sensitive.
- Operate device aliases in Enhanced mode whenever possible. In Enhanced mode, applications accept a device-alias name in its *native* format, rather than expanding the alias to a port world wide name (pWWN). Because applications such as zone server, Inter-VSAN Routing (IVR), Port Security Manager (PSM), and Dynamic Port VSAN Membership automatically track and enforce device-alias membership changes, you have a single point of change.



Note Interop mode VSANs do not accept Enhanced mode configurations.

- Preplan device-alias configurations and implement a consistent naming convention.
- Keep documented backups of all device-alias configurations.
- Plan for what the final device-alias database should be after the merge, before attempting to resolve merge failures. This can prevent traffic disruptions caused by accidentally overwriting device-alias entries.



Caution Avoid performing a *blank commit* to resolve Cisco Fabric Services (CFS) merge failures. A blank commit overwrites the device-alias databases on all the switches with the device-alias database on the local switch.



Note A blank commit is a device-alias commit that is used when there are no changes (including mode changes), or when it is okay to overwrite the device-alias databases on the remote switches with the local switch's device-alias database.

Device alias mismatches might occur because of the following reasons:

- Duplicate Device-Alias Names—Same device-alias name, but different pWWNs. In such a scenario, the **show device-alias merge status** command displays the reason for the merge failure as Reason: Another device-alias already present with the same name.
- Duplicate pWWNs—Different device-alias names, but same pWWN. In such a scenario, the **show device-alias merge status** command displays the reason for the merge failure as Reason: Another device-alias already present with the same pwwn.



Note Each time device-alias changes are committed, the running configuration should be copied to the startup configuration on all the switches that were updated. Use the **copy running-config startup-config fabric** command to copy the running configuration to the startup configuration for all the switches in the fabric. If you do not copy the running configuration to the startup configuration after the device-alias changes are committed, and if the switch reloads, or loses power and restarts, the startup configuration will not have the correct device-alias database and merge failure will occur.

- You will be unable to upgrade to Cisco MDS NX-OS Release 9.2(2) or later releases if you have configured any device-alias names using 64 alphanumeric characters. For more information, see the [Cisco MDS 9000 NX-OS Software Upgrade and Downgrade Guide, Release 9.x](#).

Resolving Device Alias Mismatches

If a switch with an existing device-alias database is being added to an existing fabric, conflicts might arise because of the following reasons:

- The same device-alias name is used, but with different pWWNs.
- The same pWWN is used, but with different device-alias names.

To resolve duplicate device-alias names, perform these steps:

Step 1 Run the **show cfs merge status name device-alias** command to review the CFS or device-alias merge failure syslogs to confirm that the merge failed:

```
switch-1# show cfs merge status name device-alias

Physical-fc Merge Status: Failed
[Sun Sep 25 14:45:55 2016]
Failure Reason: Another device-alias already present with the same pwwn

Local Fabric
-----
Switch WWN          IP Address
-----
20:00:54:7f:ee:1b:0e:b0 10.127.103.211      [Merge Master] <<< Merge Master#1
                        [switch-1]

Total number of switches = 1

Remote Fabric
```

```

-----
Switch WWN                IP Address
-----
20:00:54:7f:ee:1b:0e:50  10.197.111.54      [Merge Master] <<< Merge Master#2

Total number of switches = 1

```

Note A properly merged device-alias application should only show a single merge master. If there is more than one merge master, as shown in the above example, it indicates that the device-alias databases are not merged.

Step 2 Use the **no device-alias distribute** command on the switch in which the merge failure occurred in order to disable the device-alias distribution:

```

switch-1# configure terminal
switch-1(config)# no device-alias distribute

```

Step 3 Resolve merge failure on the switch. See [Resolving Merge Failures, on page 21](#) section.

Resolving Merge Failures

This section provides information about how to resolve merge failures.

Resolving Duplicate Device Alias Names (Same Device Alias Name, Different pWWNs)



Note A device-alias name is considered to be duplicate when the same device-alias name is used to point to different pWWNs.

To verify if a duplicate device-alias name exists in fabrics, perform these steps:

Step 1 Run the **show device-alias merge status** command to identify if the reason for the merge failure is a database mismatch:

```

switch# show device-alias merge status
Result: Failure
Reason: Another device-alias already present with the same name

```

Note A properly merged device-alias application should only show a single merge master. If there is more than one merge master, as shown in the above example, it indicates that the device-alias databases are not merged.

Step 2 Review the CFS or the device-alias merge failure syslog to confirm that the merge failed. Alternatively, run the **show cfs merge status name device-alias** command to view the status of the merge:

```

switch# show cfs merge status name device-alias
Physical-fc Merge Status: Failed [ Mon Apr 9 15:57:58 2007 ] <===Merge status
Local Fabric
-----
Switch WWN                IP Address
-----

```

```

20:00:00:0d:ec:2f:c1:40 172.20.150.38 [Merge Master] <<< Merge Master#1
                        switch-1
Total number of switches = 1

Remote Fabric
-----
Switch WWN              IP Address
-----
20:00:00:0d:ec:04:99:40 172.20.150.30 [Merge Master] <<< Merge Master#2
                        switch-2
Total number of switches = 1

```

Step 3 Depending on the Cisco MDS NX-OS release your switch is using, run one of the following commands:

- Cisco MDS NX-OS Release 8.1(1) and later releases

Run the **show device-alias merge conflicts** command to display the device alias and pWWNs that are causing the merge failure.

Note Run the **show device-alias merge conflicts** command from a switch listed as a merge master.

In the following example, the same device-alias name, A1, is assigned to two different pWWNs—a pWWN on a local switch and a pWWN on a peer switch:

```

switch-1# show device-alias merge conflicts
Merge Status : Failure
Peer Switch SWWN : 20:00:00:0d:ec:24:f5:00
Conflicts :
1. Conflicting Pwvns : 1
-----
Local PWWN      Peer PWWN      Device-alias
-----
pwn 0:01:01:01:01:01:01:02  pwn :01:01:01:01:01:01:03  A1

```

- Cisco MDS NX-OS Release 7.3 and earlier releases

Compare the device-alias databases manually to identify the duplicate device-alias names.

In the following example, the same device-alias name, A1, is assigned to two different pWWNs—a pWWN on a local switch and a pWWN on a peer switch.

From merge master#1:

```

switch-1# show device-alias database
...output trimmed to show only mismatched device-alias
device-alias name A1 pwn 21:01:01:01:01:01:01:02

switch-2# show device-alias database
...output trimmed to show only mismatched device-alias
device-alias name A1 pwn 21:01:01:01:01:01:01:03

```

Step 4 Run the **device-alias name name pwn id** command to change the pWWN on one of the switches to match the pWWN on the other switch.

Note Perform this step after device-alias distribution is disabled by running the **no device-alias distribute** command.

In the following example, the pWWN 21:01:01:01:01:01:01:02 on switch-1 is changed to match the pWWN 21:01:01:01:01:01:01:03 on switch-2:

```

switch-1# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch-1(config)# device-alias database
switch-1(config-device-alias-db)# no device-alias name A1
switch-1(config-device-alias-db)# show device-alias database | i A1
switch-1(config-device-alias-db)# device-alias name A1 pwn 21:01:01:01:01:01:03
switch-1(config-device-alias-db)# show device-alias database | i A1
device-alias name A1 pwn 21:01:01:01:01:01:03

```

Step 5 If there are more duplicate device-alias names, perform step [Step 3, on page 22](#) and step [Step 4, on page 22](#) to resolve the duplicate device-alias names issue.

Step 6 Use the **device-alias distribute** command to enable the device-alias distribution and initiate a merge:

```
switch-1(config)# device-alias distribute
```

Step 7 Use the **show cfs merge status name device-alias** command to verify in the output if the merge was successful.

Resolving Duplicate pWWNs (Different Device Alias Names, Same pWWN)

To verify that the same pWWN is mapped to different device-alias names in fabrics, perform these steps:

Step 1 Run the **show device-alias merge status** command to identify if the reason for the merge failure is a database mismatch:

```

switch# show device-alias merge status
Result: Failure
Reason: Another device-alias already present with the same pwn.

```

Note A properly merged device-alias application should only show a single merge master. If there is more than one merge master, as shown in the above example, it indicates that the device-alias databases are not merged.

Step 2 Review the CFS or the device-alias merge failure syslog to confirm that the merge failed. Alternatively, run the **show cfs merge status name device-alias** command to view the status of the merge:

```

switch# show cfs merge status name device-alias
Physical-fc Merge Status: Failed [ Mon Apr 9 15:57:58 2007 ] <===Merge status
  Local Fabric
  -----
  Switch WWN          IP Address
  -----
  20:00:00:0d:ec:2f:c1:40  172.20.150.38      [Merge Master] <<< Merge Master#1
                           switch-1
Total number of switches = 1

  Remote Fabric
  -----
  Switch WWN          IP Address
  -----
  20:00:00:0d:ec:04:99:40  172.20.150.30      [Merge Master] <<< Merge Master#2
                           switch-2
Total number of switches = 1

```

Step 3 Depending on the Cisco MDS NX-OS release your switch is using, run one of the following commands:

- Cisco MDS NX-OS Release 8.1(1) and later releases

Use the **show device-alias merge conflicts** command to display the device alias and pWWNs that are causing a merge failure. Use the **no device-alias distribute** command, followed by the **device-alias distribute** command to update the information about the merge conflicts.

Note Run the **show device-alias merge conflicts** command from a switch listed as a merge master.

In the following example, the pWWN 21:01:01:01:01:01:02 is mapped to device-alias A3 on switch-1, and to device-alias A1 on switch-2:

```
switch-1# show device-alias merge conflicts
Merge Status : Failure
Peer Switch SWWN : 20:00:00:0d:ec:24:f5:00
Conflicts :
1. Conflicting Device-aliases : 1
-----
Local Device-alias Peer Device-alias PWWN
-----
A3 A1 pwn 21:01:01:01:01:01:02
```

- Cisco MDS NX-OS Release 7.3 and earlier releases

Compare the device-alias databases manually to identify the pWWNs that are causing a merge failure.

On the switches where the merge failed in step [Step 1, on page 23](#), use the **show device-alias database** command to identify if a pWWN that is mapped to two different device-alias names exists.

In this example, the pWWN 21:01:01:01:01:01:02 is mapped to the device-alias A3 on switch-1 and to the device-alias A1 on switch-2:

```
switch-1# show device-alias database
device-alias name A3 pwn 21:01:01:01:01:01:02
Total number of entries = 1

switch-2# show device-alias database
device-alias name A1 pwn 21:01:01:01:01:01:02
```

Step 4 Run the **device-alias name name pwn id** command to change the device-alias name on one of the switches to match the device-alias name on the other switch.

Note Perform this step after device-alias distribution is disabled by running the **no device-alias distribute** command.

In the following example, the device-alias name A3 on switch-1 is changed to match the device-alias name A1 on switch-2:

```
switch-1# configure
Enter configuration commands, one per line. End with CNTL/Z.
switch-1(config)# device-alias database
switch-1(config-device-alias-db)# no device-alias name A3
switch-1(config-device-alias-db)# device-alias name A1 pwn 21:01:01:01:01:01:02
```

Step 5 If there are more duplicate device-alias names, perform step [Step 3, on page 24](#) and step [Step 4, on page 24](#) to resolve the duplicate device-alias names issue.

Step 6 Use the **device-alias distribute** command to enable the device-alias distribution and initiate a merge:


```
switch-1(config)# device-alias distribute
```

- Step 7** Use the **show cfs merge status name device-alias** command to verify in the output if the merge was successful.

Resolving Mode Mismatch

The Device Alias feature can operate in either Basic or Enhanced mode. If the modes are different in two fabrics, CFS merge between the fabrics fails.

To verify that the device-alias mode is different in two fabrics, perform these steps:

- Step 1** Review the CFS or device-alias merge failure syslog to confirm that the merge failed. Alternatively, run the **show cfs merge status name device-alias** command to view the status of the merge.

```
switch# show cfs merge status name device-alias
Physical-fc Merge Status: Failed [ Mon Apr  9 15:57:58 2007 ] <==Merge status
  Local Fabric
-----
Switch WWN                IP Address
-----
20:00:00:0d:ec:2f:c1:40  172.20.150.38      [Merge Master] <<< Merge Master#1
                        switch-1
Total number of switches = 1
  Remote Fabric
-----
Switch WWN                IP Address
-----
20:00:00:0d:ec:04:99:40  172.20.150.30      [Merge Master] <<< Merge Master#2
                        switch-2
Total number of switches = 1
```

- Step 2** Use the **show device-alias merge status** command to verify that the reason for the merge failure is a mode mismatch. If there is a mode mismatch, the reason that is displayed in the output is either "Databases could not be merged due to mode mismatch" or "One of the merging fabrics cannot support device-alias Enhanced mode."

```
switch# show device-alias merge status
Result: Failure
Reason: Databases could not be merged due to mode mismatch.
```

- Step 3** Use the **show device-alias status** command to verify the device-alias mode for each of the fabric. In this example, switch-1 is running in Enhanced mode, while switch-2 is running in Basic mode:

```
switch-1# show device-alias status
Fabric Distribution: Enabled
Database:- Device Aliases 2 Mode: Enhanced

switch-2# show device-alias status
Fabric Distribution: Enabled
```

```
Database:- Device Aliases 2 Mode: Basic
```

Step 4 Use the **no device-alias distribute** command to disable device-alias distribution after you detect mismatched device-alias modes.

Step 5 Depending on the mode you want to change in the switch, use the **device-alias mode enhanced** command to change to enhanced mode, or use the **no device-alias mode enhanced** command to change the switch mode to basic mode.

- Note**
- Prior to Cisco MDS NX-OS Release 8.5(1), the default device alias mode was basic mode. From Cisco MDS NX-OS Release 8.5(1), the default device alias mode is enhanced mode.
 - If you want to change the device-alias mode from Enhanced to Basic, but an application contains a device-alias configuration in the native format, the device-alias mode cannot be changed until you explicitly remove all the native device-alias configurations or replace all the device-alias members with the corresponding pWWNs.

Step 6 Use the **device-alias distribute** command to enable the device-alias distribution and initiate a merge.

Resolving a Validation Failure

If the merger of device aliases takes place without any conflicts, the resultant device-alias database is validated with the registered applications on each switch in both the fabrics being merged. If an application fails the validation of the merged database for any reason, the device-alias merge fails.

To verify that the device-alias database merge is failing because of an application-validation failure, perform these steps:

Step 1 Review the CFS or device-alias merge failure syslog to confirm that the merge failed. Alternatively, run the **show cfs merge status name device-alias** command to view the status of the merge.

Step 2 Use the **show device-alias merge status** command to verify that the reason for the merge failure is an application-validation failure:

```
switch# show device-alias merge status
Result: Failure
Reason: This is a non device-alias error.
```

Step 3 Examine the syslog messages. The syslog for the switch in which the validation is rejected and the syslog for the switch managing the merge show relevant error messages.

This example shows a sample message on a switch in which the validation is rejected:

```
2007 Apr 10 00:00:06 switch-2 %DEVICE-ALIAS-3-MERGE_VALIDATION_REJECTED:
Failed SAP: 110 Reason: inter-VSAN zone member cannot be in more than one
VSAN Expln:
```

This example shows the syslog message on a switch that is managing the merge, and in which the validation is rejected:

```
2007 Apr 9 16:41:22 switch-1 %DEVICE-ALIAS-3-MERGE_VALIDATION_FAILED: Failed
SWWN: 20:00:00:0d:ec:04:99:40 Failed SAP: 110 Reason: inter-VSAN zone member cannot be in more than
```

```
one
VSAN Expln:
```

Step 4 Use the **show device-alias internal validation-info** command on the switch managing the merge, and examine the output.

This example shows that SAP 110 on switch 20:00:00:0d:ec:04:99:40 (switch-2) rejected the validation. The status message shows the reason for the failure along with the system application number:

```
switch# show device-alias internal validation-info
Validation timer: 0s
Per SAP Info Table:
=====
SAPS: 0
MTS Buffer Array Details:
=====
Buffers: 0
Local Status:
=====
Num Reqs Sent: 0 20:00:00:0d:ec:04:99:40
Num SAPs Done: 0
Failed SAP : 0 Status: success Expln:
Remote Status:
=====
CFS Resp Rcvd: TRUE
Failed SWWN : 20:00:00:0d:ec:04:99:40
SAP : 110 Status: inter-VSAN zone member cannot be in more than one VSAN <=== Status
Expln:
```

Step 5 Use the **show system internal mts sup sap number description** command to find the application that rejected the configuration on the switch that rejected the validation.

In this example, the application that rejected the device-alias validation was the IVR process.

```
switch# show system internal mts sup sap 110 description
IVR-SAP
```

Step 6 Analyze the device-alias validation failure. This analysis is dependent on the application that failed the validation as well as the device-alias database configuration.

In this example, IVR is failing the validation. To troubleshoot this problem, begin by reviewing the device-alias databases that are being merged. Use the **show device-alias database** command from the switch managing the merge for each fabric.

```
switch# show device-alias database
device-alias name A1 pwn 21:01:01:01:01:01:01:01
device-alias name A2 pwn 21:01:01:01:01:01:01:02 => Pre-merge: A2 defined on switch-1
Total number of entries = 2

switch# show device-alias database
device-alias name A1 pwn 21:01:01:01:01:01:01:01 => Pre-merge: A2 not defined on switch-2
Total number of entries = 1
Because IVR is enabled on switch-2, review the IVR zone set.
switch# show ivr zoneset
zoneset name s1
zone name z1
pwn 21:01:01:01:01:01:01:02 vsan 1 autonomous-fabric-id 1
device-alias A2 vsan 2 autonomous-fabric-id 1
```

Prior to the database merge, device-alias A2 is not defined on switch-2. Because of the merge between switch-1 and switch-2, device-alias A2 becomes available on switch-2, and A2 is mapped to pWWN 21:01:01:01:01:01:02.

The device alias-based member A2 in the IVR zone z1 is resolved and mapped to pWWN 21:01:01:01:01:01:02, and is a member of VSAN 2. However, pWWN 21:01:01:01:01:01:02 is already a member of VSAN 1. The mapping that occurs because of the device-alias merge makes the IVR configuration illegal. The same pWWN cannot be a member of multiple VSANs.

In the case when IVR configuration is illegal, the pWWN in VSAN 2 is defined using the device alias (A2), while the member in VSAN 1 is defined using the actual pWWN. The IVR detects this situation and rejects the device-alias validation. As a result, the device-alias merge fails.

Resolving Database Conflicts

If an entry in the device-alias database conflicts with the configuration of a registered application, the device-alias database commit fails the validation process. Correct either the device-alias database or the application configuration.

To determine the application that failed the validation and the reason for the failure, perform these steps:

Step 1 Use the **device-alias commit** command to view the output.

This example shows that the commit failed because there is a conflict between the device-alias database and an application configuration:

```
switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# device-alias commit
inter-VSAN zone member cannot be in more than one VSAN ==> reason for commit failure
```

Step 2 Determine which application configuration is in conflict with the device-alias database by reviewing the syslogs for the switch in which the commit was issued.

This example shows that SAP 110 (IVR) on sWWN 20:00:00:0d:ec:04:99:40 (switch-2) has rejected the validation, and therefore, the device-alias commit has failed:

```
2007 Apr 10 11:54:24 switch-1 %DEVICE-ALIAS-3-VALIDATION_FAILED: Failed=>Validation Status
SWWN: 20:00:00:0d:ec:04:99:40 Failed SAP: 110 Reason: inter-VSAN zone ==>Switch and SAP member cannot
be in more than one VSAN Expln: ==>Reason
2007 Apr 10 11:54:24 switch-1 %DEVICE-ALIAS-3-COMMIT_FAILED: Failed to ==>Commit status commit the
pending database: inter-VSAN zone member cannot be in more ==>Reason than one VSAN
```

Step 3 Review the syslog on the switch in which the validation is rejected.

This example shows that the following syslog is printed on switch-2:

```
2007 Apr 10 19:13:08 switch-2 %DEVICE-ALIAS-3-VALIDATION_REJECTED: Failed
SAP: 110 Reason: inter-VSAN zone member cannot be in more than one VSAN ==>SAP and reason
```

Step 4 Compare the existing device-alias database (including the desired changes) and the application configuration to find the conflict.

This example uses the **show device-alias database** and **show ivr zoneset** commands along with the console logs of the device-alias database changes made prior to the commit. The comparison shows that the definition of the new device-alias A2 results in the resolution of the enhanced device-alias member A2 in the IVR zone z1 to pWWN 21:01:01:01:01:01:02, which is already a member of zone z1. The pWWN is directly defined as a member of VSAN 1, while the enhanced device-alias A2 is defined as a member of VSAN 2. This configuration is not allowed in the IVR. The IVR detects the configuration problem and rejects the device-alias database validation.

```
switch# show device-alias database          ==> existing device alias database
device-alias name A1 pwwn 21:01:01:01:01:01:01
Total number of entries = 1
switch# show ivr zoneset                  ==> display existing IVR zone set
zoneset name s1
zone name z1
pwwn 21:01:01:01:01:01:02 vsan 1 autonomous-fabric-id 1
device-alias A2 vsan 2 autonomous-fabric-id 1
switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# device-alias database
switch(config-device-alias-db)# device-alias name A2 pwwn 21:01:01:01:01:01:02
switch(config-device-alias-db)# exit
switch(config)# device-alias commit
inter-VSAN zone member cannot be in more than one VSAN
```

Step 5 Correct the conflict by making adjustments to the application configuration, or by making changes to the device-alias database, and running the **device-alias commit** command again.

Verifying the Device-Alias Database Status

This section provides information about verifying the device-alias database status.

Table 3. Verifying the Device-Alias Database Status

Command Name	Description
show cfs merge status name device-alias	Displays information about the status of the CFS merge for the device-alias database.
show device-alias database	Displays the entire device-alias database.
show device-alias internal validation info	Displays information about the status of the validation process (part of a commit or merge).
show device-alias merge conflicts	Displays the device-alias names or pWWNs causing a merge failure in Cisco MDS NX-OS Release 8.1(1) and later releases.
show device-alias merge status	Displays the result of the device-alias merge operation and the reason for the result.

Command Name	Description
show device-alias session status	Returns the status of the last CFS command, such as clear , commit , or terminate . The results of the last used CFS command and reason fields help identify the reason for the failure.
show device-alias status	Displays configuration information for the device-alias service, including whether fabric distribution is enabled, the number of device aliases in the database, lock information, and the database mode (Basic or Enhanced).