



Managing FLOGI, Name Server, FDMI, and RSCN Databases

This chapter describes the fabric login (FLOGI) database, the name server features, the Fabric-Device Management Interface, and Registered State Change Notification (RSCN) information provided in the Cisco MDS 9000 Family. It includes the following sections:

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About FLOGI

In a Fibre Channel fabric, each host or disk requires an Fibre Channel ID. Use the **show flogi** command to verify if a storage device is displayed in the FLOGI table as in the next section. If the required device is displayed in the FLOGI table, the fabric login is successful. Examine the FLOGI database on a switch that is directly connected to the host HBA and connected ports.

Displaying FLOGI Details

To view the FLOGI database details, use the `show flogi database` command. See Examples [Displays Details on the FLOGI Database , on page 1](#) to [Displays the FLOGI Database by FC ID, on page 2](#).

Displays Details on the FLOGI Database

```
switch# show flogi database
```

```
-----  
INTERFACE  VSAN      FCID      PORT NAME      NODE NAME
```

```

-----
sup-fc0      2      0xb30100  10:00:00:05:30:00:49:63  20:00:00:05:30:00:49:5e
fc9/13      1      0xb200e2  21:00:00:04:cf:27:25:2c  20:00:00:04:cf:27:25:2c
fc9/13      1      0xb200e1  21:00:00:04:cf:4c:18:61  20:00:00:04:cf:4c:18:61
fc9/13      1      0xb200d1  21:00:00:04:cf:4c:18:64  20:00:00:04:cf:4c:18:64
fc9/13      1      0xb200ce  21:00:00:04:cf:4c:16:fb  20:00:00:04:cf:4c:16:fb
fc9/13      1      0xb200cd  21:00:00:04:cf:4c:18:f7  20:00:00:04:cf:4c:18:f7
Total number of flogi = 6.

```

Displays the FLOGI Database by Interface

```

switch# show flogi database interface fc1/11
-----
INTERFACE  VSAN    FCID      PORT NAME      NODE NAME
-----
fc1/11     1       0xa002ef  21:00:00:20:37:18:17:d2  20:00:00:20:37:18:17:d2
fc1/11     1       0xa002e8  21:00:00:20:37:38:a7:c1  20:00:00:20:37:38:a7:c1
fc1/11     1       0xa002e4  21:00:00:20:37:6b:d7:18  20:00:00:20:37:6b:d7:18
fc1/11     1       0xa002e2  21:00:00:20:37:18:d2:45  20:00:00:20:37:18:d2:45
fc1/11     1       0xa002e1  21:00:00:20:37:39:90:6a  20:00:00:20:37:39:90:6a
fc1/11     1       0xa002e0  21:00:00:20:37:36:0b:4d  20:00:00:20:37:36:0b:4d
fc1/11     1       0xa002dc  21:00:00:20:37:5a:5b:27  20:00:00:20:37:5a:5b:27
fc1/11     1       0xa002da  21:00:00:20:37:18:6f:90  20:00:00:20:37:18:6f:90
fc1/11     1       0xa002d9  21:00:00:20:37:5b:cf:b9  20:00:00:20:37:5b:cf:b9
fc1/11     1       0xa002d6  21:00:00:20:37:46:78:97  0:00:00:20:37:46:78:97
Total number of flogi = 10.

```

Displays the FLOGI Database by VSAN

```

switch# show flogi database vsan 1
-----
INTERFACE  VSAN    FCID      PORT NAME      NODE NAME
-----
fc1/3      1       0xef02ef  22:00:00:20:37:18:17:d2  20:00:00:20:37:18:17:d2
fc1/3      1       0xef02e8  22:00:00:20:37:38:a7:c1  20:00:00:20:37:38:a7:c1
fc1/3      1       0xef02e4  22:00:00:20:37:6b:d7:18  20:00:00:20:37:6b:d7:18
fc1/3      1       0xef02e2  22:00:00:20:37:18:d2:45  20:00:00:20:37:18:d2:45
fc1/3      1       0xef02e1  22:00:00:20:37:39:90:6a  20:00:00:20:37:39:90:6a
fc1/3      1       0xef02e0  22:00:00:20:37:36:0b:4d  20:00:00:20:37:36:0b:4d
fc1/3      1       0xef02dc  22:00:00:20:37:5a:5b:27  20:00:00:20:37:5a:5b:27
fc1/3      1       0xef02da  22:00:00:20:37:18:6f:90  20:00:00:20:37:18:6f:90
fc1/3      1       0xef02d9  22:00:00:20:37:5b:cf:b9  20:00:00:20:37:5b:cf:b9
fc1/3      1       0xef02d6  22:00:00:20:37:46:78:97  20:00:00:20:37:46:78:97
Total number of flogi = 10.

```

Displays the FLOGI Database by FC ID

```

switch# show flogi database fcid 0xef02e2
-----
INTERFACE  VSAN    FCID      PORT NAME      NODE NAME
-----
fc1/3      1       0xef02e2  22:00:00:20:37:18:d2:45  20:00:00:20:37:18:d2:45
Total number of flogi = 1.

```

For more information, see the [Default Company ID List](#) and refer to the “Loop Monitoring” section in the *Cisco MDS 9000 Family Troubleshooting Guide*.

Name Server

The name server functionality maintains a database containing the attributes for all hosts and storage devices in each VSAN. Name servers allow a database entry to be modified by a device that originally registered the information.

The proxy feature is useful when you want to modify (update or delete) the contents of a database entry that was previously registered by a different device.

This section includes the following topics:

Bulk Notification Sent from the Name Server

In order to improve the performance of the Fibre Channel protocols on the Cisco MDS 9000 switch, the name server optimizes the remote entry change notifications by sending multiple notifications in one MTS payload. Nearly 10 other components that receive this MTS notification would have to function on the single bulk notification instead of multiple notifications.

Enabling Name Server Bulk Notification

For NX-OS Release 6.2(1) to 6.2(7), bulk notification is disabled by default. Enabling this feature in one switch has no bearing on the other switches in the same fabric.



Note

From NX-OS Release 6.2(9) onwards, bulk notification is enabled by default.

Restrictions

- Whenever the intelligent applications such as the DMM, IOA, and SME are enabled, the bulk notification feature is not supported.
- Any configuration present in the FC-Redirect, conflicts with the bulk notification feature.



Note

The above restrictions are applicable only to release 6.2.7.

To enable the name server bulk notification, follow these steps for NX-OS Release 6.2(1) to 6.2(7):

Step 1

```
switch# config t
Enters configuration mode.
```

Step 2

```
switch(config)# fcns bulk-notify
switch(config)#
```

Enables the transmission of multiple name server entry change notification in one Messaging and Transaction Services (MTS) payload.

Disabling Name Server Bulk Notification

To disable the name server bulk notification, follow these steps for NX-OS Release 6.2(1) to 6.2(7):

-
- | | |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Step 1 | <code>switch# config t</code>
Enters configuration mode. |
| Step 2 | <code>switch(config)# no fcns bulk-notify</code>
<code>switch(config)#</code>

Disables the transmission of multiple name server entry change notification in one Messaging and Transaction Services (MTS) payload. |
-

Disabling Name Server Bulk Notification for NX-OS Release 6.2(9)

To disable the name server bulk notification, follow these steps for NX-OS Release 6.2(9) and later:

-
- | | |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Step 1 | <code>switch# config t</code>
Enters configuration mode. |
| Step 2 | <code>switch(config)# fcns no-bulk-notify</code>
<code>switch(config)#</code>

Disables the transmission of multiple name server entry change notification in one Messaging and Transaction Services (MTS) payload. |
-

Re-enabling Name Server Bulk Notification

To re-enable once it is disabled already for NX-OS Release 6.2(9) and later, follow these steps:

-
- | | |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Step 1 | <code>switch# config terminal</code>
Enters configuration mode. |
| Step 2 | <code>switch(config)# no fcns no-bulk-notify</code>
<code>switch(config)#</code>

Re-enables the transmission of multiple name server entry change notification in one Messaging and Transaction Services (MTS) payload. |
-

Name Server Proxy Registration

All name server registration requests are sent from the same port with a parameter that is registered or changed. If the port that does not have the parameter, then the request is rejected.

This authorization enables WWNs to register specific parameters for another node.

Registering Name Server Proxies

To register the name server proxy, follow these steps:

-
- | | |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Step 1 | <pre>switch# config terminal switch(config)#</pre> <p>Enters configuration mode.</p> |
| Step 2 | <pre>switch(config)# fcns proxy-port 21:00:00:e0:8b:00:26:d0 vsan 2</pre> <p>Configures a proxy port for the specified VSAN.</p> |
-

About Rejecting Duplicate pWWN

By FC standard, NX-OS will accept a login on any interface of a pwwn that is already logged in on the same switch, same vsan and same fcdomain. To prevent the same pwwn from logging in the same switch on a different interface, use the port security feature.

By default, any future flogi (with duplicate pwwn) on different switch in the same vsan, will be rejected and previous FLOGI retained, which does not follow FC standards. If you disable this option, any future flogi (with duplicate pwwn) on different switch in the same VSAN, would be allowed to succeed by deleting previous FCNS entry

Rejecting Duplicate pWWNs

To reject duplicate pWWNs, follow these steps:

-
- | | |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Step 1 | <pre>switch# configure terminal switch(config)#</pre> <p>Enters configuration mode.</p> |
| Step 2 | <pre>switch(config)# fcns reject-duplicate-pwwn vsan 1</pre> <p>Any future flogi (with duplicate pwwn) on different switch, will be rejected and previous FLOGI retained. (default)</p> |
| Step 3 | <pre>switch(config)# no fcns reject-duplicate-pwwn vsan 1</pre> <p>Any future flogi (with duplicate pwwn) on different switch, will be allowed to succeed by deleting earlier FCNS entry.</p> |

But you can still see the earlier entry in FLOGI database in the other switch.

Name Server Database Entries

The name server stores name entries for all hosts in the FCNS database. The name server permits an Nx port to register attributes during a PLOGI (to the name server) to obtain attributes of other hosts. These attributes are deregistered when the Nx port logs out either explicitly or implicitly.

In a multiswitch fabric configuration, the name server instances running on each switch shares information in a distributed database. One instance of the name server process runs on each switch.

Optimizing Name Server Database Sync

If an end device doesn't register FC4 feature with Name Server database, VHBA (also called scsi-target) component would perform PRLI to the end device to discover FC4 feature and register with Name Server on behalf of end device. This discovery from VHBA was performed both for locally connected devices

as well as remotely connected devices. This discovery was unnecessary for remotely connected devices because, Name Server would get FC4 feature of remotely connected devices through regular Name Server sync protocol. So, the default behavior of VHBA component has been modified to discover only locally connected devices. To modify this behavior, follow these steps:

Step 1 switch(config)# scsi-target discovery
Enables a switch to discover fc4-feature for remote devices also. But this would not be the default behavior if the users reload or switchover the switch.

Step 2 switch(config)# scsi-target discovery local-only
Switches back to the default behavior.

Verifying the Number of Name Server Database Entries

To Verify the number of name server database entries, follow these steps:

Step 1 switch# show fcns internal info global
Displays the number of device entries in the name server database.

Step 2 switch# show fcns internal info
Displays the number of devices in the name server database at the end of the output.

Displaying Name Server Database Entries

Use the **show fcns** command to display the name server database and statistical information for a specified VSAN or for all VSANs (see Examples [Displays the Name Server Database, on page 7](#) to [Displays the Name Server Statistics, on page 8](#)).

Displays the Name Server Database

```
switch# show fcns database
```

FCID	TYPE	PWWN	(VENDOR)	FC4-TYPE:FEATURE
0x010000	N	50:06:0b:00:00:10:a7:80		scsi-fcp fc-gs
0x010001	N	10:00:00:05:30:00:24:63	(Cisco)	ipfc
0x010002	N	50:06:04:82:c3:a0:98:52	(Company 1)	scsi-fcp 250
0x010100	N	21:00:00:e0:8b:02:99:36	(Company A)	scsi-fcp
0x020000	N	21:00:00:e0:8b:08:4b:20	(Company A)	
0x020100	N	10:00:00:05:30:00:24:23	(Cisco)	ipfc
0x020200	N	21:01:00:e0:8b:22:99:36	(Company A)	scsi-fcp

Displays the Name Server Database for the Specified VSAN

```
switch# show fcns database vsan 1
VSAN 1:
```

FCID	TYPE	PWWN	(VENDOR)	FC4-TYPE:FEATURE
0x030001	N	10:00:00:05:30:00:25:a3	(Cisco)	ipfc
0x030101	NL	10:00:00:00:77:99:60:2c	(Interphase)	
0x030200	N	10:00:00:49:c9:28:c7:01		
0xec0001	NL	21:00:00:20:37:a6:be:14	(Seagate)	scsi-fcp

Total number of entries = 4

Displays the Name Server Database Details

```
switch# show fcns database detail
```

```
VSAN:1      FCID:0x030001
```

```
port-wwn (vendor)      :10:00:00:05:30:00:25:a3 (Cisco)
node-wwn                :20:00:00:05:30:00:25:9e
class                   :2,3
node-ip-addr            :0.0.0.0
ipa                     :ff ff ff ff ff ff ff ff
fc4-types:fc4_features:ipfc
symbolic-port-name      :
symbolic-node-name      :
port-type               :N
port-ip-addr            :0.0.0.0
fabric-port-wwn         :00:00:00:00:00:00:00:00
hard-addr               :0x000000
```

```
VSAN:1      FCID:0xec0200
```

```
port-wwn (vendor)      :10:00:00:5a:c9:28:c7:01
node-wwn                :10:00:00:5a:c9:28:c7:01
class                   :3
node-ip-addr            :0.0.0.0
ipa                     :ff ff ff ff ff ff ff ff
```

```

fc4-types:fc4_features:
symbolic-port-name      :
symbolic-node-name      :
port-type               :N
port-ip-addr            :0.0.0.0
fabric-port-wwn         :22:0a:00:05:30:00:26:1e
hard-addr               :0x000000
Total number of entries = 2

```

Displays the Name Server Statistics

```

switch# show fcns statistics

registration requests received = 27
deregistration requests received = 0
queries received = 57
queries sent = 10
reject responses sent = 14
RSCNs received = 0
RSCNs sent = 0

```

FDMI

Cisco MDS 9000 Family switches provide support for the Fabric-Device Management Interface (FDMI) functionality, as described in the FC-GS-4 standard. FDMI enables management of devices such as Fibre Channel host bus adapters (HBAs) through in-band communications. This addition complements the existing Fibre Channel name server and management server functions.

Using the FDMI functionality, the Cisco NX-OS software can extract the following management information about attached HBAs and host operating systems without installing proprietary host agents:

- Manufacturer, model, and serial number
- Node name and node symbolic name
- Hardware, driver, and firmware versions
- Host operating system (OS) name and version number

All FDMI entries are stored in persistent storage and are retrieved when the FDMI process is started.

Displaying FDMI

Use the **show fmdi** command to display the FDMI database information (see Examples [Displays All HBA Management Servers](#), on page 8 to [Displays Details for the Specified HBA Entry](#), on page 9).

Displays All HBA Management Servers

```

switch# show fmdi database
Registered HBA List for VSAN 1
  10:00:00:00:c9:32:8d:77
  21:01:00:e0:8b:2a:f6:54
switch# show fmdi database detail
Registered HBA List for VSAN 1
-----
HBA-ID: 10:00:00:00:c9:32:8d:77
-----
Node Name           :20:00:00:00:c9:32:8d:77

```



```

Manufacturer      :Emulex Corporation
Serial Num        :0000c9328d77
Model             :LP9002
Model Description:Emulex LightPulse LP9002 2 Gigabit PCI Fibre Channel Adapter
Hardware Ver      :2002606D
Driver Ver        :SLI-2 SW_DATE:Feb 27 2003, v5-2.20a12
ROM Ver           :3.11A0
Firmware Ver      :3.90A7
OS Name/Ver       :Window 2000
CT Payload Len    :1300000
  Port-id: 10:00:00:00:c9:32:8d:77
-----
HBA-ID: 21:01:00:e0:8b:2a:f6:54
-----
Node Name         :20:01:00:e0:8b:2a:f6:54
Manufacturer      :QLogic Corporation
Serial Num        :\74262
Model             :QLA2342
Model Description:QLogic QLA2342 PCI Fibre Channel Adapter
Hardware Ver      :FC5010409-10
Driver Ver        :8.2.3.10 Beta 2 Test 1 DBG (W2K VI)
ROM Ver           :1.24
Firmware Ver      :03.02.13.
OS Name/Ver       :500
CT Payload Len    :2040
  Port-id: 21:01:00:e0:8b:2a:f6:54

```

Displays HBA Details for a Specified VSAN

```

switch# show fdbi database detail vsan 1
Registered HBA List for VSAN 1
-----
HBA-ID: 10:00:00:00:c9:32:8d:77
-----
Node Name         :20:00:00:00:c9:32:8d:77
Manufacturer      :Emulex Corporation
Serial Num        :0000c9328d77
Model             :LP9002
Model Description:Emulex LightPulse LP9002 2 Gigabit PCI Fibre Channel Adapter
Hardware Ver      :2002606D
Driver Ver        :SLI-2 SW_DATE:Feb 27 2003, v5-2.20a12
ROM Ver           :3.11A0
Firmware Ver      :3.90A7
OS Name/Ver       :Window 2000
CT Payload Len    :1300000
  Port-id: 10:00:00:00:c9:32:8d:77
-----
HBA-ID: 21:01:00:e0:8b:2a:f6:54
-----
Node Name         :20:01:00:e0:8b:2a:f6:54
Manufacturer      :QLogic Corporation
Serial Num        :\74262
Model             :QLA2342
Model Description:QLogic QLA2342 PCI Fibre Channel Adapter
Hardware Ver      :FC5010409-10
Driver Ver        :8.2.3.10 Beta 2 Test 1 DBG (W2K VI)
ROM Ver           :1.24
Firmware Ver      :03.02.13.
OS Name/Ver       :500
CT Payload Len    :2040
  Port-id: 21:01:00:e0:8b:2a:f6:54

```

Displays Details for the Specified HBA Entry

```

switch# show fdbi database detail hba-id 21:01:00:e0:8b:2a:f6:54 vsan 1
Node Name         :20:01:00:e0:8b:2a:f6:54
Manufacturer      :QLogic Corporation
Serial Num        :\74262
Model             :QLA2342

```

```

Model Description:QLogic QLA2342 PCI Fibre Channel Adapter
Hardware Ver      :FC5010409-10
Driver Ver       :8.2.3.10 Beta 2 Test 1 DBG (W2K VI)
ROM Ver          :1.24
Firmware Ver     :03.02.13.
OS Name/Ver      :500
CT Payload Len   :2040
Port-id: 21:01:00:e0:8b:2a:f6:54

```

RSCN

The Registered State Change Notification (RSCN) is a Fibre Channel service that informs hosts about changes in the fabric. Hosts can receive this information by registering with the fabric controller (through SCR). These notifications provide a timely indication of one or more of the following events:

- Disks joining or leaving the fabric.
- A name server registration change.
- A new zone enforcement.
- IP address change.
- Any other similar event that affects the operation of the host.

This section includes the following topics:

About RSCN Information

Apart from sending these events to registered hosts, a switch RSCN (SW-RSCN) is sent to all reachable switches in the fabric.



Note

The switch sends an RSCN to notify registered nodes that a change has occurred. It is up to the nodes to query the name server again to obtain the new information. The details of the changed information are not delivered by the switch in the RSCN sent to the nodes.

Displaying RSCN Information

Use the **show rscn** command to display RSCN information (see Examples [Displays Register Device Information, on page 10](#) and [Displays RSCN Counter Information, on page 11](#)).

Displays Register Device Information

```

switch# show rscn scr-table vsan 1
SCR table for VSAN: 1
-----
FC-ID          REGISTERED FOR
-----
0x1b0300       fabric detected rscns
Total number of entries = 1

```

**Note**

The SCR table is not configurable. It is populated when hosts send SCR frames with RSCN information. If hosts do not receive RSCN information, then the **show rscn scr-table** command will not return entries.

Displays RSCN Counter Information

```
switch(config)# show rscn statistics vsan 106
Statistics for VSAN: 106
-----
Number of SCR received           = 0
Number of SCR ACC sent           = 0
Number of SCR RJT sent           = 0
Number of RSCN received          = 0
Number of RSCN sent              = 0
Number of RSCN ACC received      = 0
Number of RSCN ACC sent          = 0
Number of RSCN RJT received      = 0
Number of RSCN RJT sent          = 0
Number of SW-RSCN received       = 0
Number of SW-RSCN sent           = 0
Number of SW-RSCN ACC received   = 0
Number of SW-RSCN ACC sent       = 0
Number of SW-RSCN RJT received   = 0
Number of SW-RSCN RJT sent       = 0
Number of CSWR received          = 3137
Number of CSWR sent              = 0
Number of CSWR ACC received      = 0
Number of CSWR ACC sent          = 3137
Number of CSWR RJT received      = 0
Number of CSWR RJT sent          = 0
Number of CSWR RJT not sent      = 0
```

multi-pid Option

If the RSCN **multi-pid** option is enabled, then RSCNs generated to the registered Nx ports may contain more than one affected port IDs. In this case, zoning rules are applied before putting the multiple affected port IDs together in a single RSCN. By enabling this option, you can reduce the number of RSCNs. For example: Suppose you have two disks (D1, D2) and a host (H) connected to switch 1. Host H is registered to receive RSCNs. D1, D2 and H belong to the same zone. If disks D1 and D2 are online at the same time, then one of the following applies:

- The **multi-pid** option is disabled on switch 1: two RSCNs are generated to host H—one for the disk D1 and another for disk D2.
- The **multi-pid** option is enabled on switch 1: a single RSCN is generated to host H, and the RSCN payload lists the affected port IDs (in this case, both D1 and D2).

**Note**

Some Nx ports may not understand multi-pid RSCN payloads. If not, disable the RSCN **multi-pid** option.

Configuring the multi-pid Option

To configure the **multi-pid** option, follow these steps:

-
- Step 1** switch# **config terminal**
 switch(config)#
 Enters configuration mode.
- Step 2** switch(config)# **rscn multi-pid vsan 105**
 Sends RSCNs in a multi-pid format for VSAN 105.
-

Suppressing Domain Format SW-RSCNs

A domain format SW-RSCN is sent whenever the local switch name or the local switch management IP address changes. This SW-RSCN is sent to all other domains and switches over the ISLs. The remote switches can issue GMAL and GIELN commands to the switch that initiated the domain format SW-RSCN to determine what changed. Domain format SW-RSCNs can cause problems with some non-Cisco MDS switches (refer to the).

To suppress the transmission of these SW RSCNs over an ISL, follow these steps:

-
- Step 1** switch# **config terminal**
 switch(config)#
 Enters configuration mode.
- Step 2** switch(config)# **rscn suppress domain-swrsn vsan 105**
 Suppresses transmission of domain format SW-RSCNs for VSAN 105.
- Note** You cannot suppress transmission of port address or area address format RSCNs.
-

Coalesced SW-RSCN

In order to improve the performance of the Fibre Channel protocols on the Cisco MDS 9000 switch, SW-RSCNs are delayed, collected and sent as a single coalesced SW-RSCN to all the switches in the fabric in a single Fibre Channel exchange.

Enabling Coalesced SW-RSCNs

Restrictions

- All the switches in the fabric should be running Cisco MDS 6.2(7) and above.
- This feature does not have interoperability with non-Cisco MDS switches.

To enable the coalesced SW-RSCNs, follow these step:

Step 1	<code>switch# config terminal</code> Enters configuration mode.
Step 2	<code>switch(config)# rscn coalesce swrscn vsan 1</code> <code>switch(config)#</code> Enables coalescing of Switch Registered State Change Notification (SWRSCN) in VSAN 1. The default delay is 500 milliseconds.
Step 3	<code>switch(config)# rscn coalesce swrscn vsan 1 delay 800</code> <code>switch(config)#</code> Enables coalescing of Switch Registered State Change Notification (SWRSCN) in VSAN 1. Delays the SW-RSCNs maximum by 800 milliseconds.
Note	All the switches running 6.2(7) and above are capable of processing coalesced SW-RSCN by default, but they are capable of sending coalesced SW-RSCN only after enabling through CLI.

Disabling Coalesced SW-RSCNs

To disable the coalesced SW-RSCNs, follow these steps:

Step 1	<code>switch# config terminal</code> Enters configuration mode.
Step 2	<code>switch(config)# no rscn coalesce swrscn vsan 1</code> <code>switch(config)#</code> Disables coalescing of Switch Registered State Change Notification (SWRSCN) in VSAN 1.

Clearing RSCN Statistics

You can clear the counters and later view the counters for a different set of events. For example, you can keep track of how many RSCNs or SW-RSCNs are generated on a particular event (such as ONLINE or OFFLINE events). You can use these statistics to monitor responses for each event in the VSAN.

Use the **clear rscn statistics** command to clear the RSCN statistics for the specified VSAN.

```
switch# clear rscn statistics vsan 1
```

After clearing the RSCN statistics, you can view the cleared counters by issuing the **show rscn** command.

```
switch# show rscn statistics vsan 1
Statistics for VSAN: 1
-----
Number of SCR received           = 0
Number of SCR ACC sent          = 0
Number of SCR RJT sent          = 0
Number of RSCN received         = 0
Number of RSCN sent             = 0
Number of RSCN ACC received     = 0
Number of RSCN ACC sent         = 0
Number of RSCN RJT received     = 0
Number of RSCN RJT sent         = 0
Number of SW-RSCN received      = 0
Number of SW-RSCN sent          = 0
Number of SW-RSCN ACC received  = 0
Number of SW-RSCN ACC sent      = 0
Number of SW-RSCN RJT received  = 0
Number of SW-RSCN RJT sent      = 0
Number of CSWR received         = 0
Number of CSWR sent             = 0
Number of CSWR ACC received     = 0
Number of CSWR ACC sent         = 0
Number of CSWR RJT received     = 0
Number of CSWR RJT sent         = 0
Number of CSWR RJT not sent     = 0
```

RSCN Timer Configuration Distribution Using CFS

Because the timeout value for each switch is configured manually, a misconfiguration occurs when different switches time out at different times. This means different N ports in a network can receive RSCNs at different times. Cisco Fabric Services (CFS) alleviates this situation by automatically distributing configuration information to all switches in a fabric. This also reduces the number of SW-RSCNs.

RSCN supports two modes, distributed and nondistributed. In distributed mode, RSCN uses CFS to distribute configuration to all switches in the fabric. In nondistributed mode, only the configuration commands on the local switch are affected.



Note

All configuration commands are not distributed. Only the **rscn event-tov tov vsan vsan** command is distributed.

The RSCN timer is registered with CFS during initialization and switchover. For high availability, if the RSCN timer distribution crashes and restarts or a switchover occurs, it resumes normal functionality from the state prior to the crash or switchover.



Note

Before performing a downgrade, make sure that you revert the RSCN timer value in your network to the default value. Failure to do so will disable the links across your VSANs and other devices.

Compatibility across various Cisco MDS NX-OS releases during an upgrade or downgrade is supported by **conf-check** provided by CFS. If you attempt to downgrade from Cisco MDS SAN-OS Release 3.0, you are prompted with a **conf-check** warning. You are required to disable RSCN timer distribution support before you downgrade.

By default, the RSCN timer distribution capability is disabled and is therefore compatible when upgrading from any Cisco MDS SAN-OS release earlier than Release 3.0.

Configuring the RSCN Timer

RSCN maintains a per-VSAN event list queue, where the RSCN events are queued as they are generated. When the first RSCN event is queued, a per VSAN timer starts. Upon time-out, all the events are dequeued and coalesced RSCNs are sent to registered users. The default timer values minimize the number of coalesced RSCNs sent to registered users. Some deployments require smaller event timer values to track changes in the fabric.


Note

The RSCN timer value must be the same on all switches in the VSAN. See the [RSCN Timer Configuration Distribution](#), on page 16.


Note

Before performing a downgrade, make sure that you revert the RSCN timer value in your network to the default value. Failure to do so will disable the links across your VSANs and other devices.

To configure the RSCN timer, follow these steps:

-
- | | |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Step 1 | <pre>switch# config t switch(config)#</pre> <p>Enters configuration mode.</p> |
| Step 2 | <pre>switch(config)# rscn distribute</pre> <p>Enables RSCN timer configuration distribution.</p> |
| Step 3 | <pre>switch(config)# rscn event-tov 300 vsan 10</pre> <p>Sets the event time-out value in milliseconds for the selected VSAN. In this example, the event time-out value is set to 300 milliseconds for VSAN 12. The range is 0 to 2000 milliseconds. Setting a zero (0) value disables the timer.</p> |
| Step 4 | <pre>switch(config)# no rscn event-tov 300 vsan 10</pre> <p>Reverts to the default value (2000 milliseconds for Fibre Channel VSANs or 1000 milliseconds for FICON VSANs).</p> |
| Step 5 | <pre>switch(config)# rscn commit vsan 10</pre> <p>Commits the RSCN timer configuration to be distributed to the switches in VSAN 10.</p> |
-

Verifying the RSCN Timer Configuration

You verify the RSCN timer configuration using the **show rscn event-tov vsan** command.

```
switch# show rscn event-tov vsan 10
Event TOV : 1000 ms
```

RSCN Timer Configuration Distribution

Because the timeout value for each switch is configured manually, a misconfiguration occurs when different switches time out at different times. This means different N-ports in a network can receive RSCNs at different times. Cisco Fabric Services (CFS) infrastructure alleviates this situation by automatically distributing the RSCN timer configuration information to all switches in a fabric. This also reduces the number of SW-RSCNs. Refer to the *Cisco MDS 9000 Family NX-OS System Management Configuration Guide*.

RSCN supports two modes, distributed and nondistributed. In distributed mode, RSCN uses CFS to distribute configuration to all switches in the fabric. In nondistributed mode, only the configuration commands on the local switch are affected.



Note All configuration commands are not distributed. Only the **rscn event-tov tov vsan vsan** command is distributed.



Note Only the RSCN timer configuration is distributed.

The RSCN timer is registered with CFS during initialization and switchover. For high availability, if the RSCN timer distribution crashes and restarts or a switchover occurs, it resumes normal functionality from the state prior to the crash or switchover.



Note You can determine the compatibility when downgrading to an earlier Cisco MDS NX-OS release using **show incompatibility system** command. You must disable RSCN timer distribution support before downgrading to an earlier release.



Note By default, the RSCN timer distribution capability is disabled and is compatible when upgrading from any Cisco MDS SAN-OS release earlier than 3.0.



Note For CFS distribution to operate correctly for the RSCN timer configuration, all switches in the fabric must be running Cisco SAN-OS Release 3.0(1) or later, or Cisco NX-OS 4.1(1b).

This section includes the following topics:

Enabling RSCN Timer Configuration Distribution

To enable RSCN timer configuration distribution, follow these steps:

Step 1

```
switch# config terminal
```

```
switch(config)#
```

Enters configuration mode.

- Step 2** `switch(config)# rscn distribute`
Enables RSCN timer distribution.
- Step 3** `switch(config)# no rscn distribute`
Disables (default) RSCN timer distribution.
-

Locking the Fabric

The first action that modifies the database creates the pending database and locks the feature in the VSAN. Once you lock the fabric, the following situations apply:

- No other user can make any configuration changes to this feature.
- A copy of the configuration database becomes the pending database along with the first active change.

Committing the RSCN Timer Configuration Changes

If you commit the changes made to the active database, the configuration is committed to all the switches in the fabric. On a successful commit, the configuration change is applied throughout the fabric and the lock is released.

To commit RSCN timer configuration changes, follow these steps:

-
- Step 1** `switch# config t`
`switch(config)#`
Enters configuration mode.
- Step 2** `switch(config)# rscn commit vsan 10`
Commits the RSCN timer changes.
-

Discarding the RSCN Timer Configuration Changes

If you discard (abort) the changes made to the pending database, the configuration database remains unaffected and the lock is released.

To discard RSCN timer configuration changes, follow these steps:

-
- Step 1** `switch# config t`
`switch(config)#`
Enters configuration mode.

Step 2 `switch(config)# rscn abort vsan 10`

Discards the RSCN timer changes and clears the pending configuration database.

Clearing a Locked Session

If you have changed the RSCN timer configuration 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 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 **clear rscn session vsan** command in EXEC mode.

```
switch# clear rscn session vsan 10
```

Displaying RSCN Configuration Distribution Information

Use the **show cfs application name rscn** command to display the registration status for RSCN configuration distribution.

```
switch# show cfs application name rscn
Enabled       : Yes
Timeout       : 5s
Merge Capable : Yes
Scope         : Logical
```

Use the **show rscn session status vsan** command to display session status information for RSCN configuration distribution.

**Note**

A merge failure results when the RSCN timer values are different on the merging fabrics.

```
switch# show rscn session status vsan 1
Session Parameters for VSAN: 1
-----
Last Action           : Commit
Last Action Result    : Success
Last Action Failure Reason : None
```

Use the **show rscn pending** command to display the set of configuration commands that would take effect when you commit the configuration.

**Note**

The pending database includes both existing and modified configuration.

```
switch# show rscn pending
rscn event-tov 2000 ms vsan 1
```

```
rscn event-tov 2000 ms vsan 2  
rscn event-tov 300 ms vsan 10
```

Use the **show rscn pending-diff** command to display the difference between pending and active configurations. The following example shows the time-out value for VSAN 10 was changed from 2000 milliseconds (default) to 300 milliseconds.

```
switch# show rscn pending-diff  
- rscn event-tov 2000 ms vsan 10  
+ rscn event-tov 300 ms vsan 10
```

Default Settings

Table 1: Default RSCN Settings , on page 19 lists the default settings for RSCN.

Table 1: Default RSCN Settings

Parameters	Default
RSCN timer value	2000 milliseconds for Fibre Channel VSANs 1000 milliseconds for FICON VSANs
RSCN timer configuration distribution	Disabled

Enabling Port Pacing

For detailed information, refer to the *Cisco MDS 9000 Family NX-OS System Management* .

