C H A P T E R 26

Managing FLOGI, Name Server, FDMI, and RSCN Databases

This chapter describes the fabric login 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:

FLOGI

In a Fibre Channel fabric, each host or disk requires an FC ID. 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. See the "Default Company ID list" section on page 29-7 and the "Switch Interoperability" section on page 29-8.

Displaying FLOGI Details

To verify that a storage device is in the fabric login (FLOGI) table using Fabric Manager, follow these steps:

Step 1 Expand **Switches**, expand **Interfaces** and then select **FC Physical**.

You see the interface configuration in the Information pane.

Step 2 Click the **FLOGI** tab.

You see all end devices that are logged into the fabric (see Figure 26-1).

Figure 26-1   FLOGI Physical Interfaces

Name Server Proxy

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 wish 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:

- About Registering Name Server Proxies, page 26-2
- Registering Name Server Proxies, page 26-2
- About Rejecting Duplicate pWWN, page 26-3
- Rejecting Duplicate pWWNs, page 26-3
- To reject duplicate pWWNs, refer to the Cisco MDS 9000 Family CLI Configuration Guide. About Name Server Database Entries, page 26-3
- Viewing Name Server Database Entries, page 26-3

About Registering Name Server Proxies

All name server registration requests come from the same port whose parameter is registered or changed. If it does not, then the request is rejected.

This authorization enables WWNs to register specific parameters for another node.
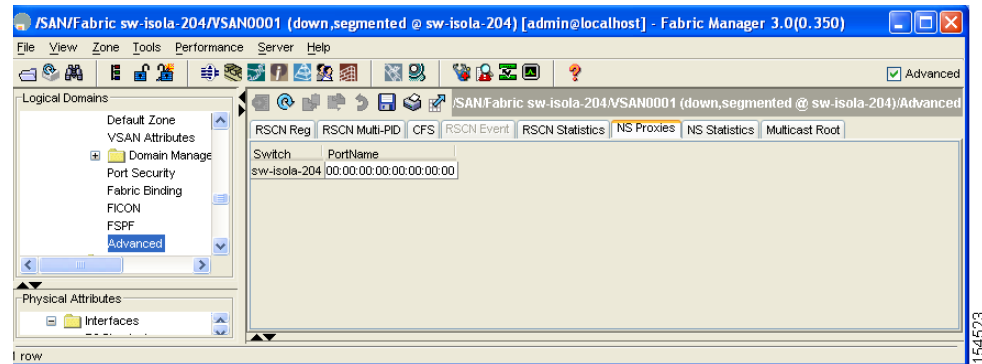
Registering Name Server Proxies

To register the name server proxy using Fabric Manager, follow these steps:

Step 1   Expand a fabric, expand a VSAN, and then select **Advanced**.

You see the VSAN advanced configuration in the Information pane.

Step 2   Click the **NS Proxies** tab.

You see the existing name server proxy for the selected VSAN shown in Figure 26-2.

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Figure 26-2   Name Server Proxies

Step 3   Double-click the PortName field to register a new name server proxy.

Step 4   Click **Apply Changes** to save these changes, or click **Undo Changes** to cancel any unsaved changes.

About Rejecting Duplicate pWWN

You can prevent malicious or accidental log in using another device's pWWN. These pWWNs are allowed to log in to the fabric and replace the first device in the name server database.

Rejecting Duplicate pWWNs

To reject duplicate pWWNs, refer to the *Cisco MDS 9000 Family CLI Configuration Guide.* **About 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.
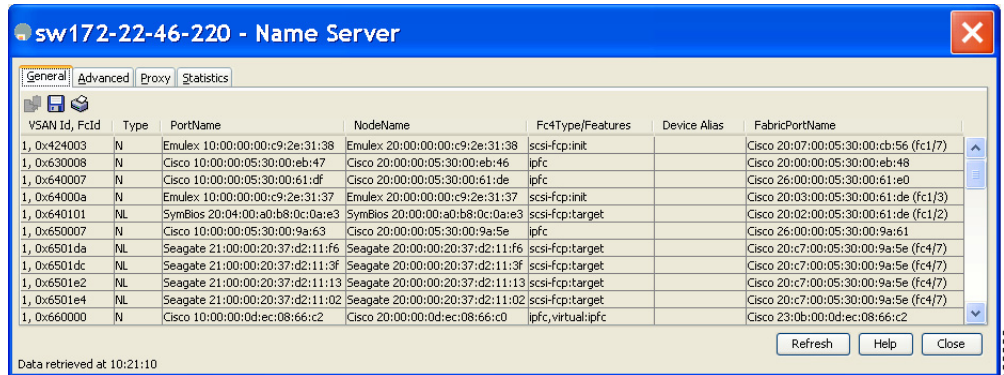
Viewing Name Server Database Entries

To view the name server database using Device Manager, follow these steps:

Step 1   Click **FC > Name Server**.

You see the Name Server dialog box as shown in .

Figure 26-3   Name Server Dialog Box

The General tab is the default tab; you see the name server database.

Step 2   Click the **Statistics** tab.

You see the name server statistics.

Step 3   Click **Clos**e to close the dialog box.

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 SAN-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

To display the FDMI database information using Device Manager, choose **FC > Advanced > FDMI**. You see the FDMI dialog box.

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, page 26-5
- Displaying RSCN Information, page 26-5
- About the multi-pid Option, page 26-6
- Configuring the multi-pid Option, page 26-6
- Clearing RSCN Statistics, page 26-7
- RSCN Timer Configuration Distribution Using CFS, page 26-7
- Configuring the RSCN Timer with CFS, page 26-8

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.
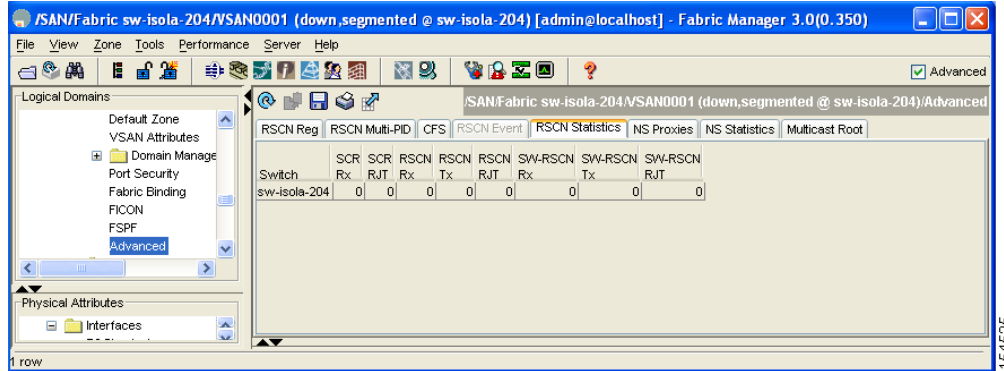
Displaying RSCN Information

To display RSCN information using Fabric Manager, follow these steps:

Step 1   Expand a fabric, expand a VSAN and then select **Advanced**.

You see the VSAN advanced configuration in the Information pane.

Step 2   Select the **RSCN Reg** tab or the **RSCN Statistics** tab (see Figure 26-4).

Figure 26-4   RSCN Statistics

About the 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 so, disable the RSCN **multi-pid** option.
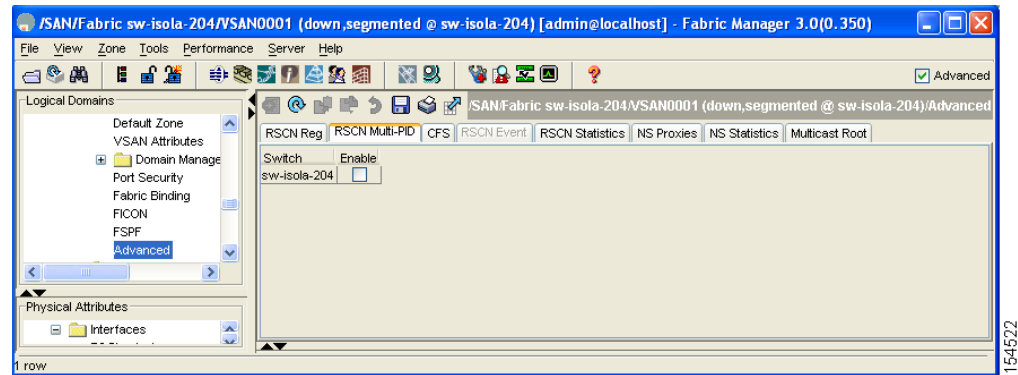
Configuring the multi-pid Option

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

Step 1   Expand a fabric, expand a VSAN and then select **Advanced**.

You see the VSAN advanced configuration in the Information pane.

Step 2   Click the **RSCN Multi-PID** tab.

You see the screen shown in Figure 26-5.

Figure 26-5   RSCN Multi-PID

Step 3   Check the **Enable** check box.

Step 4   Click **Apply Changes** to save these changes, or click **Undo Changes** to cancel any unsaved changes.

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 (like ONLINE or OFFLINE events). You can use these statistics to monitor responses for each event in the VSAN.

To clear the RSCN statistics for the specified VSAN, refer to the *Cisco MDS 9000 Family CLI Configuration Guide*.

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 RCSN 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 SAN-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 to 3.0.
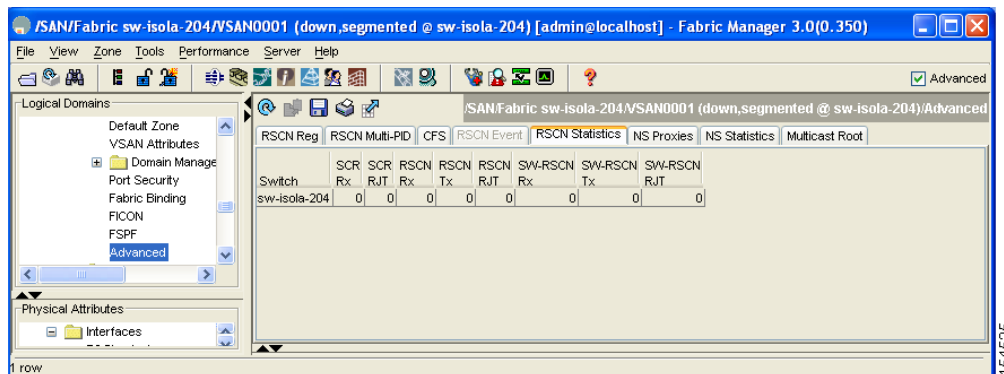
Configuring the RSCN Timer with CFS

To configure the RSCN timer with CFS using Fabric Manager, follow these steps:

Step 1 Expand a fabric, expand a VSAN and then select **Advanced** in the Logical Domains pane.

Step 2 Select the **RSCN Event** tab.

You see the VSAN advanced configuration in the Information pane shown in Figure 26-6.

Figure 26-6   VSAN Advanced Configuration

Step 3 Double-click the **TimeOut** value to change the value (in milliseconds) for the selected VSAN.

Step 4 Click **Apply Changes** to save these changes, or click **Undo Changes** to cancel any unsaved changes.

Default Settings

Table 26-1 lists the default settings for RSCN.

Table 26-1   Default RSCN Settings

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

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