Managing FLOGI, Name Server, FDMI, and RSCN Databases

This chapter describes the fabric login database, the name server features, and Registered State Change Notification (RSCN) information provided in the Cisco MDS 9000 Family.

This chapter contains the following topics:

Displaying FLOGI Details

In a Fibre Channel fabric, each host or disk requires an FC ID. Choose **Switches > FC Logical > FLOGI** to verify if a storage device is displayed in the Fabric login (FLOGI) table as in the following examples. 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.

Configuring the Name Server Proxy Feature

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 which 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.

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.

Displaying 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.

Displaying FDMI

SAN-OS 1.3(x) provides support for the Fabric-Device Management Interface (FDMI) functionally, as described in the FC-GS-4 standard. FDMI enables management of devices such as Fibre Channel Host Bus Adaptors (HBAs) through inband 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 RSCN Information

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

- Or any other similar event that affects the operation of the host

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

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.

The SCR table cannot be configured, it is only populated if one or more hosts send SCR frames to register for RSCN information. If there are no entries in the SCR tables, no host is interested in receiving RSCN information.

Sending RSCNs

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, you have two disks (D1, D2) and a host (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:

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

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

Viewing General Attributes for the Name Server

To view general name server attributes from the Device Manager, choose **Name Server** from the FC menu. The Name Server dialog box, with the General tab selected, displays name server attributes for a single switch.

Viewing Advanced Attributes for the Name Server

To monitor advanced name server attributes from the Device Manager, choose **Name Server** from the FC menu and click the **Advanced** tab. The Name Server dialog box, with the Advanced tab selected, displays advanced name server attributes for a single switch.

Proxy Ports for the Name Server

To configure proxy ports for the name server from Fabric Manager, choose **FC > Name Server** on the menu tree and click the **Proxies** tab. The Information pane from the Fabric Manager displays name server proxy ports for multiple switches.

To configure proxy ports for the name server from the Device Manager, choose **Name Server** from the FC menu and click the **Proxy** tab. The Name Server dialog box, with the Proxy tab selected, displays name server proxies for a single switch.

Configure proxy attributes for the name server.

Viewing Name Server Statistics

To monitor name server statistics from the Fabric Manager, choose **FC > Name Server** on the menu tree and click the **Statistics** tab. The Information pane from the Fabric Manager displays name server statistics for multiple switches.

To monitor name server statistics from the Device Manager, choose **Name Server** from the FC menu and click the **Statistics** tab. The Name Server dialog box, with the Statistics tab selected, displays name server statistics for a single switch.

Viewing RSCN Nx Registrations

To view Nx registrations for RSCN from the Fabric Manager, choose **FC > RSCN** on the menu tree, and click the **Registrations** tab. The Information pane from the Fabric Manager displays Nx registrations for RSCN for multiple switches.

To monitor Nx registrations for RSCN from the Device Manager, choose **RSCN** from the FC menu. The RSCN dialog box, with the Nx Registrations tab selected, displays Nx registrations for RSCN for a single switch.

Viewing RSCN Statistics

To monitor registered state change notification (RSCN) statistics from the Fabric Manager, choose **FC > RSCN** on the menu tree and click the **Statistics** tab. The Information pane from the Fabric Manager displays RSCN statistics for multiple switches.

To monitor RSCN from the Device Manager, choose **RSCN** from the FC menu and click the **Statistics** tab. The RSCN dialog box, with the Statistics tab selected, displays RSCN statistics for a single switch.

Viewing FLOGI Attributes

To view fabric login (FLOGI) attributes, such as the Fibre Channel ID (FCID), port name, and class of service for FxPorts from the Fabric Manager, choose **FC > Physical Interfaces** on the menu tree, and click the **FLOGI** tab.

To view FLOGI attributes from the Device Manager, choose **FxPorts** or **All Ports** from the Interface menu and click the **FLOGI** tab.

The Information pane in Fabric Manager displays attributes for multiple switches. The dialog box from Device Manager displays attributes for a single switch.

Viewing Port ELP Attributes

To monitor exchange link parameter (ELP) attributes, such as port and node world wide names and class of service from the Fabric Manager, choose **FC > Physical Interfaces** from the menu tree and click the **ELP** tab.

To monitor these attributes from the Device Manager, choose **xEPorts** or **All Ports** from the Interface menu and click the **ELP** tab.

The Information pane in Fabric Manager displays attributes for multiple switches. The dialog box from Device Manager displays attributes for a single switch.

Viewing Trunk Configuration

To monitor trunking for ports from the Fabric Manager, choose **FC > Physical Interfaces** from the menu tree, and then click the **Trunk Failures** tab.

To view trunking for ports from the Device Manager, choose **xEPorts** from the Interface menu and then click the **Trunk Failures** tab.

The Information pane in Fabric Manager displays attributes for multiple switches. The dialog box from Device Manager displays attributes for a single switch.