CHAPTER 10

# Configuring Fabric Binding

This chapter describes the fabric binding feature provided in the Cisco MDS 9000 Family of directors and switches. It includes the following sections:



## About Fabric Binding

The fabric binding feature ensures ISLs are only enabled between specified switches in the fabric binding configuration. Fabric binding is configured on a per-VSAN basis.

This feature helps prevent unauthorized switches from joining the fabric or disrupting current fabric operations. It uses the Exchange Fabric Membership Data (EFMD) protocol to ensure that the list of authorized switches is identical in all switches in the fabric.

This section has the following topics:



### Licensing Requirements

Fabric binding requires that you install either the MAINFRAME_PKG license or the ENTERPRISE_PKG license on your switch.

See the *Cisco MDS 9000 Family NX-OS Licensing Guide* for more information on license feature support and installation.

### Port Security Versus Fabric Binding

Port security and fabric binding are two independent features that can be configured to complement each other. Table 10-1 compares the two features.

*Table 10-1 Fabric Binding and Port Security Comparison*

| Fabric Binding | Port Security |
|---|---|
| Uses a set of sWWNs and a persistent domain ID. | Uses pWWNs/nWWNs or fWWNs/sWWNs. |
| Binds the fabric at the switch level. | Binds devices at the interface level. |
| Authorizes only the configured sWWN stored in the fabric binding database to participate in the fabric. | Allows a preconfigured set of Fibre Channel devices to logically connect to a SAN ports. The switch port, identified by a WWN or interface number, connects to a Fibre Channel device (a host or another switch), also identified by a WWN. By binding these two devices, you lock these two ports into a group (or list). |
| Requires activation on a per VSAN basis. | Requires activation on a per VSAN basis. |
| Allows specific user-defined switches that are allowed to connect to the fabric, regardless of the physical port to which the peer switch is connected. | Allows specific user-defined physical ports to which another device can connect. |
| Does not learn about switches that are logging in. | Learns about switches or devices that are logging in if learning mode is enabled. |
| Cannot be distributed by CFS and must be configured manually on each switch in the fabric. | Can be distributed by CFS. |

Port-level checking for xE ports is as follows:

- The switch login uses both port security binding and fabric binding for a given VSAN.
- Binding checks are performed on the port VSAN as follows:
  - E port security binding check on port VSAN
  - TE port security binding check on each allowed VSAN

While port security complements fabric binding, they are independent features and can be enabled or disabled separately.

# Fabric Binding Enforcement

To enforce fabric binding, configure the switch world wide name (sWWN) to specify the xE port connection for each switch. Enforcement of fabric binding policies are done on every activation and when the port tries to come up. In a FICON VSAN, the fabric binding feature requires all sWWNs connected to a switch and their persistent domain IDs to be part of the fabric binding active database. In a Fibre Channel VSAN, only the sWWN is required; the domain ID is optional.

**Note** All switches in a Fibre Channel VSAN using fabric binding must be running Cisco MDS SAN-OS Release 3.0(1) and NX-OS Release 4.1(1b) or later.

# Fabric Binding Configuration

To configure fabric binding in each switch in the fabric, follow these steps:

**Step 1** Enable the fabric configuration feature.

**Step 2** Configure a list of sWWNs and their corresponding domain IDs for devices that are allowed to access the fabric.

**Step 3** Activate the fabric binding database.

**Step 4** Copy the fabric binding active database to the fabric binding config database.

**Step 5** Save the fabric binding configuration.

**Step 6** Verify the fabric binding configuration.

## Enabling Fabric Binding

The fabric binding feature must be enabled in each switch in the fabric that participates in the fabric binding. By default, this feature is disabled in all switches in the Cisco MDS 9000 Family. The configuration and verification commands for the fabric binding feature are only available when fabric binding is enabled on a switch. When you disable this configuration, all related configurations are automatically discarded.

## Configuring Switch WWN List

A user-specified fabric binding list contains a list of switch WWNs (sWWNs) within a fabric. If an sWWN attempts to join the fabric, and that sWWN is not on the list or the sWWN is using a domain ID that differs from the one specified in the allowed list, the ISL between the switch and the fabric is automatically isolated in that VSAN and the switch is denied entry into the fabric.

The persistent domain ID can be specified along with the sWWN. Domain ID authorization is required in FICON VSANs where the domains are statically configured and the end devices reject a domain ID change in all switches in the fabric. Domain ID authorization is not required in Fibre Channel VSANs.

## Fabric Binding Activation

The fabric binding feature maintains a configuration database (config-database) and an active database. The config-database is a read-write database that collects the configurations you perform. These configurations are only enforced upon activation. This activation overwrites the active database with the contents of the config- database. The active database is read-only and is the database that checks each switch that attempts to log in.

By default, the fabric binding feature is not activated. You cannot activate the fabric binding database on the switch if entries existing in the configured database conflict with the current state of the fabric. For example, one of the already logged in switches may be denied login by the config-database. You can choose to forcefully override these situations.

**Note** After activation, any already logged in switch that violates the current active database will be logged out, and all switches that were previously denied login because of fabric binding restrictions are reinitialized.

## Saving Fabric Binding Configurations

When you save the fabric binding configuration, the config database is saved to the running configuration.

**Caution** You cannot disable fabric binding in a FICON-enabled VSAN.

# Default Settings

Table 10-2 lists the default settings for the fabric binding feature.

*Table 10-2 Default Fabric Binding Settings*

| Parameters | Default |
|---|---|
| Fabric binding | Disabled |