



Managing Zones and Zone Sets

The Fabric Manager allows you to configure and monitor zones and zone sets (groups of zones) on the Cisco 9000 switch. Zoning allows you to set up access control between hosts and storage devices. You can use zones to control access between devices or user groups, and to increase network security and prevent data loss or corruption.

This chapter describes how to configure and monitor zones and zone sets using the Zone Server and the Zone Manager, which are available from the Fabric Manager.



Note

Zones and zone sets can only be created and configured in the Fabric Manager.

To verify the compatibility of the zone configuration on two connected switches, see [“Analyzing the Results of Merging Zones”](#) section on page 2-12. For information about zones and zone sets, and configuring them using the command-line interface (CLI), refer to the *Cisco 9000 Family Configuration Guide*.

This chapter includes the following sections:

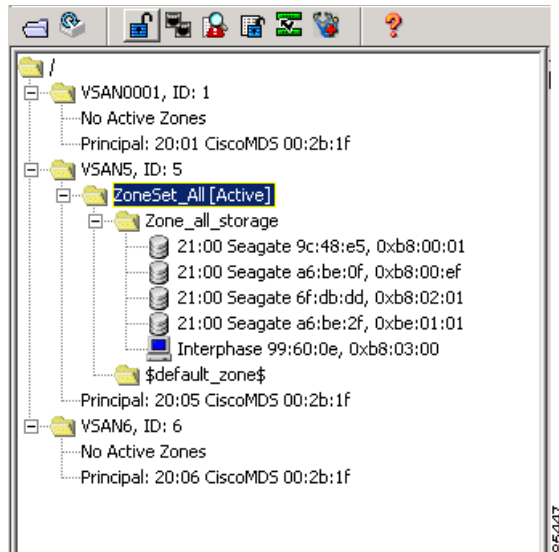
- [Creating Zones and Zone Sets](#), page 3-1
- [Adding Zones to a Zone Set](#), page 3-4
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- [Assigning Zone Members](#), page 3-5
- [Activating or Enforcing Zone Sets](#), page 3-6
- [Managing Zones](#), page 3-6

Creating Zones and Zone Sets

Zones are configured within VSANs, but you can configure zones without configuring any VSANs by configuring them within the default VSAN. The VSANs/Zones tab (see [Figure 3-1](#)) displays the VSANs configured in the currently discovered fabric.

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Figure 3-1 VSAN/Zones Tab



Note

Zone information must always be identical for all the switches in the network fabric.

To manage zones and zone sets, select a Zone Set folder or click **No Active Zones** in the VSAN pane and then click the **Edit VSAN** button on the main toolbar. You can also choose **Zones** from the Fabric View **Edit** menu bar or right-click a zone folder in the VSANs/Zones tab and choose **Edit Zones** from the pop-up menu.

You see the Edit Zones dialog box for the current VSAN in the Information pane. (See [Figure 3-2](#).) This window displays zone information for a specific switch. You can change zone information for the specific switch and when you click **Activate**, this configuration is distributed to the other switches in the network fabric.

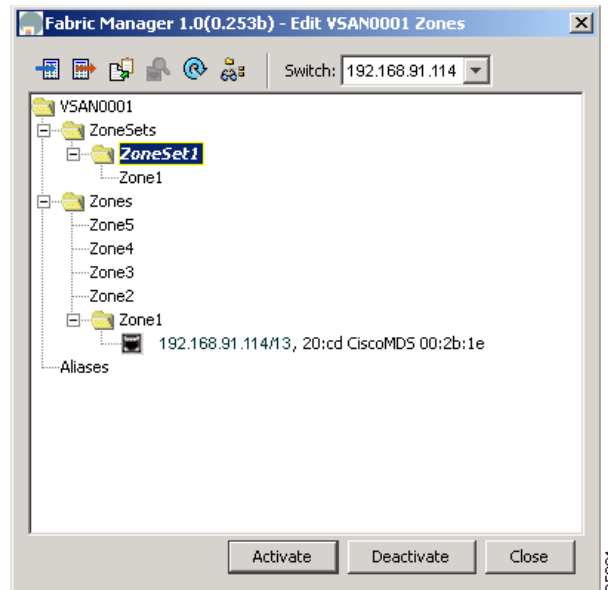


Note

When you confirm the activate operation, the current running configuration is saved to the startup configuration. This permanently saves any changes made to the running configuration (not just zoning changes).

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Figure 3-2 Edit Zones Dialog Box



Each VSAN contains a default zone, which by default, contains all connected devices assigned to the VSAN. Storage or host devices in a default zone do not belong to any other zone and, by default, are denied access to any other devices. You can change the default zone policy for any VSAN by choosing **FC > Default Zone Policies** from the Fabric View menu tree. However, we recommend that you establish connectivity among devices by assigning them to a nondefault zone.

The active zone set is shown in italic type. After you have made changes to the active zone set and before you activate the changes, the zone set is shown in boldface italic type. The tooltip for each zone indicates the activation time or modification time.

To create additional zones and zone sets, follow these steps:

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- Step 1** Choose the **Zones** folder and click the **Insert** button on the Information pane toolbar, or right-click the **Zones** folder and choose **Insert** from the pop-up menu.
 - Step 2** Enter the zone name in the dialog box that appears and click **OK** to add the zone.
The zone is automatically added to the zone database.
 - Step 3** Select a **ZoneSets** folder in the Edit Zones dialog box and click the **Insert** button on the toolbar to create a zone set.
You can also right-click the **ZoneSets** folder and choose **Insert** from the pop-up menu.
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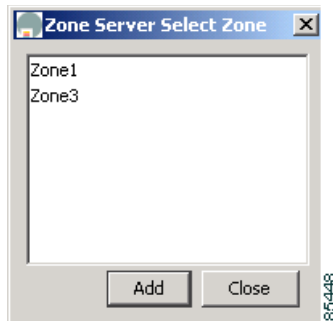
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Adding Zones to a Zone Set

To add a zone to a zone set, on the Edit Zones window, drag and drop the zone to the folder for the zone set. Alternatively, follow these steps:

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- Step 1** Click the ZoneSets folder and then click the **Insert** button on the Information pane toolbar. You can also right-click the folder for the zone set to which you want to add a zone and choose **Insert** from the pop-up menu. You see the Zone Server Select Zone dialog box shown in [Figure 3-3](#).

Figure 3-3 Zone Server Select Zone



- Step 2** Select the zone that you want to add to the zone set and click **Add**. The zone is added to the zone set in the zone database.
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Cloning Zones and Zone Sets

Another method of adding zones and zone sets is to clone existing zones and zone sets. To clone a zone or zone set, follow these steps:

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- Step 1** Click the **Zones** or **ZoneSets** folder and then click the **Clone** button on the Information pane toolbar. You can also right-click the folder for the zone or zone set that you want to clone and choose **Clone** from the pop-up menu.
- Step 2** Enter the name of the cloned zone or zone set. By default, the dialog displays the selected zone as ClonedZone1.
- Step 3** Click **OK** to add the cloned zone to the zone database.
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Assigning Zone Members

Once you have created a zone, you can assign members to the zone. You can assign members using the following port identification types:

- pWWN—The world wide name of the port configured on the end device (in hex format).
- Fabric port WWN—The world wide name of the fabric port on the switch (in hex format).
- FC alias—The alias name in alphabetic characters (for example, Payroll).
- LUN—The logical unit number of a disk in a disk device.

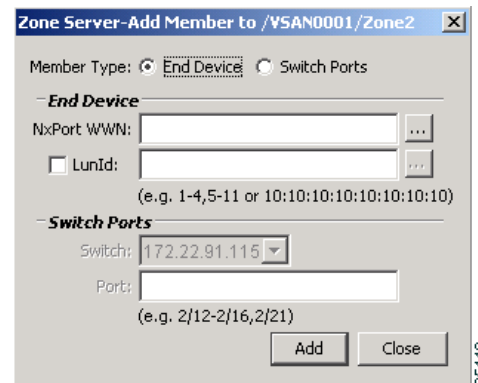
For more information about port identification types, refer to the *Cisco 9000 Family Configuration Guide*.

To assign members to a zone, follow these steps:

- Step 1** Click the folder for the zone and then click the **Insert** button on the Information pane toolbar, or right-click the folder and choose **Insert** from the pop-up menu.

You see the window shown in [Figure 3-4](#).

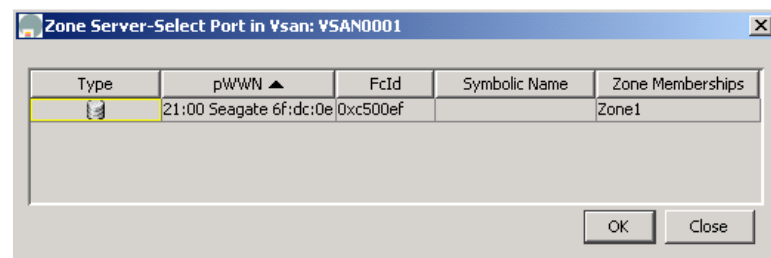
Figure 3-4 Zone Server Add Member in Vsan



- Step 2** Click the button to the right of the NxPort WWN field.

You see Zone Server Select Port in Vsan dialog box shown in [Figure 3-5](#).

Figure 3-5 Zone Server Select Port in Vsan



- Step 3** Select one of the ports in the VSAN and click OK to add it to the zone.

You see member in the Zone Server database in the left frame.

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Step 4 Repeat these steps to add other members to the zone.

Activating or Enforcing Zone Sets

Once zones and zone sets have been created and populated with members, you must activate or enforce the zone set.



Note Only one zone set can be activated at any time.

If zoning is activated, any member that is not assigned to an active zone belongs to the default zone. If zoning is not activated, all members belong to the default zone.

To activate a zone set, follow these steps:

Step 1 Click the zone set in the Edit Zone dialog box.

Step 2 Click **Activate**.

You see the zone set in the Active Zone Set folder.



Note If one zone set is active and you activate another zone set, the currently active zone set is automatically deactivated.

Managing Zones

This section describes how to configure and monitor zones from the Zone Server and includes the following sections:

- [Searching the Zone Database, page 3-6](#)
- [Displaying Port Membership Information, page 3-7](#)
- [Deleting Zones, Zone Sets, and Members, page 3-7](#)
- [Changing the Default Zone Policy, page 3-7](#)
- [Viewing Zone Statistics, page 3-9](#)

Searching the Zone Database

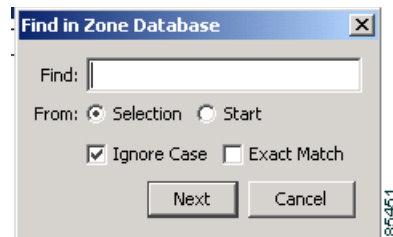
To search the zone or active zone set databases, follow these steps:

Step 1 Click the **Find** button on the Information pane toolbar.

You see the window shown in [Figure 3-6](#).

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Figure 3-6 Find in Database Dialog Box



- Step 2** Enter the name of the member to be searched for.
- Step 3** Click the **From: Selection** or **Start** radio button.
- Step 4** Check either the **Ignore Case** or **Exact Match** check box.
- Step 5** Click **Next** to launch the search.

Displaying Port Membership Information

To display port membership information for members assigned to zones, click a member within a zone and then click the **Port Membership** button on the toolbar, or right-click the member and choose **Port Membership** from the pop-up menu.

You see the window shown earlier (see [Figure 3-5](#)).

Select a row and click **OK**.



Note

The default zone members are explicitly listed only when the default zone policy is configured as **permit**. When the default zone policy is configured as **deny**, the members of this zone are not shown. For more information, see the [“Changing the Default Zone Policy”](#) section on page 3-7.

Deleting Zones, Zone Sets, and Members

To delete zones, zone sets, or members, click the object in the Information pane and click the **Delete** button on the toolbar, or right-click the object and choose **Delete** from the pop-up menu. The selected object is deleted from the zone database.

Changing the Default Zone Policy

Each member in the fabric can belong to any zone. If a member does not belong to any zone, it is part of the default zone. If no zone has been activated in the fabric, all members belong to the default zone. Even though a member can belong to multiple zones, a member in the default zone cannot be part of any other zone.

Traffic can be permitted and denied to members in the default zone. This information is not distributed to all switches. Permission and denial must be set for each switch in the fabric.

To permit or deny traffic to members in the default zone from the Zone Server, follow these steps:

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Step 1 Choose **FC > Default Zone Policy** from the Fabric Manager menu tree.

You see the dialog box shown in [Figure 3-7](#). This dialog box displays the default zone behavior for multiple switches.

Figure 3-7 *FC > Default Zone Policy Dialog Box, Fabric Manager*

Switch	Vsan	DefaultZoneBehaviour	SetPropagationMode
172.22.91.114	1	permit	fullZoneSet
172.22.91.114	2	permit	fullZoneSet
172.22.91.114	3	permit	fullZoneSet activeZoneSet
172.22.91.114	4	permit	fullZoneSet activeZoneSet
172.22.91.114	5	permit	1541526
172.22.91.114	6	permit	1554543
172.22.91.114	13	permit	fullZoneSet
172.22.91.114	20	permit	fullZoneSet
172.22.91.114	26	permit	Unknown: 12
172.22.91.114	600	permit	fullZoneSet

Step 2 Click the **DefaultZoneBehaviour** field and choose either **permit** or **deny** from the pull-down menu.

The dialog box shows the display-only information described in [Table 3-1](#).

Table 3-1 *Fabric > Default Zone Policy—Display-Only Attributes*

Display-Only Attribute	Description
Switch	Displays the switch ID. This attribute is only displayed from the Fabric Manager.
Vsan	Displays the VSAN ID.

[Table 3-2](#) describes the configurable attributes for zone policy.

Table 3-2 *Fabric > Zone Server > Defaults—Display-Only Attributes*

Display-Only Attribute	Description
DefaultZoneBehaviour	Specifies whether the default zone policy is to permit or deny access.
SetPropagationMode	<p>Specifies one of the following propagation modes when sending zoneset information to other switches:</p> <ul style="list-style-type: none"> • FullZoneSet causes the full zoneset information to be sent. • ActiveZoneSet causes only the active zoneset information to be sent. <p>Note To preserve zoneset changes after the switches restart, save the running configuration of each affected switch to the startup configuration using the Admin > Copy Configuration option from the menu tree.</p>

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Viewing Zone Statistics

To monitor zone statistics from the Zone Server, choose **FC > Zone Statistics** from the Fabric Manager menu tree. You see the window shown in [Figure 3-8](#). This view displays zone statistics for multiple switches.

Figure 3-8 FC > Zone Statistics Dialog Box

Switch	Vsan	Merge				Change				GS3	
		Requests		Accepts		Requests		Accepts		TxRejects	RxRequests
		Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx		
switch1	1	2328459	110133056	110133052	2327035	0	20	20	0	0	0
switch3	1	109380170	109380161	109380157	109380154	25	8	8	24	0	0
switch2	1	219535980	111708625	111708616	219513204	16	12	12	16	0	0
switch1	2	0	0	0	0	0	0	0	0	0	0
switch3	2	0	0	0	0	0	0	0	0	0	0
switch2	2	0	0	0	0	0	0	0	0	0	0
switch1	3	0	0	0	0	0	0	0	0	0	0
switch2	3	0	0	0	0	0	0	0	0	0	0

The dialog box shows the display-only attributes described in [Table 3-3](#).

Table 3-3 Fabric > Zone Server > Stats—Display-Only Attributes

Display-Only Attribute	Description
Switch	Displays the switch number.
Vsan	Displays the VSAN ID.
Merge Requests—Tx	Displays the number of merge request frames sent by this zone server to other zone servers in the fabric on this VSAN.
Merge Requests—Rx	Displays the number of merge request frames received by this zone server from other zone servers in the fabric on this VSAN.
Merge Accepts—Tx	Displays the number of merge accept frames sent by this zone server to other zone servers in the fabric on this VSAN.
Merge Accepts—Rx	Displays the number of merge accept frames received by this zone server from other zone servers in the fabric on this VSAN.
Change Requests—Tx	Displays the number of change requests sent by this zone server to other zone servers in the fabric on this VSAN.
Acquire change authorization requests	Stage fabric configuration update requests
Update fabric config request	Release change authorization requests
Change Requests—Rx	Displays the number of change requests received by this zone server from other zone servers in the fabric on this VSAN.
Acquire change authorization requests	Stage fabric configuration update requests
Update fabric config request	Release change authorization requests

Send documentation comments to**Table 3-3 Fabric > Zone Server > Stats—Display-Only Attributes (continued)**

Display-Only Attribute	Description
Change Accepts—Tx	Displays the number of change responses sent by this zone server to other zone servers in the fabric on this VSAN.
Acquire change authorization accept	Stage fabric configuration update accept
Update fabric config accept	Release change authorization accept frames
Change Accepts—Rx	Displays the number of change responses received by this zone server from other zone servers in the fabric on this VSAN.
Acquire change authorization accept	Stage fabric configuration update accept
Update fabric config accept	Release change authorization accept frames
GS3—TxRejects	Displays the number of FC-GS3 requests rejected by this zone server on this VSAN.
GS3—RxRejects	Displays the number of FC-GS3 requests received by this zone server on this VSAN.