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Zoning

User Manual

BROCADE

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About This Document

In this chapter

How this document is organized

This document is organized to help you find the information that you want as quickly and easily as possible.

The document contains the following components:

- Chapter 1, *Configuring Zoning* provides information about and procedures to accomplish zoning configuration.
- Chapter 2, *Zoning Administration* provides procedures to perform administrative tasks for zoning.
- Chapter 3, *FICON CUP Zoning* provides information about FICON CUP Zoning and how to enable it and use it.
- Appendix A, "Reference" provides a table of *topic-specific items* for quick lookup.

  An *Index* is also provided.

  For a glossary of terms, refer to the *EFC Manager Software User Manual.*

Supported hardware and software

In those instances in which procedures or parts of procedures documented here apply to some switches but not to others, this guide identifies exactly which switches are supported and which are not.

Although many different software and hardware configurations are tested and supported by Brocade Communications Systems, Inc. for 5.3.0, documenting all possible configurations and scenarios is beyond the scope of this document.

- All B model switches and directors

- All M model switches, directors, and SAN routers
- FOS 5.3 or later
- M-EOS and M-EOSn 9.6

What's new in this document

The following changes have been made since this document was last released:

- Information that was added:
  - Multi-user zone configuration.
- Information that was changed:
  - The format of the document has been changed.
  - Reserved prefixes information for zone names has been clarified.
- Information that was deleted:
  - Zone Configuration Update Alert.

For further information, refer to the release notes.

Document conventions

This section describes text formatting conventions and important notices formats.

Text formatting

The narrative-text formatting conventions that are used in this document are as follows:

bold text	Identifies command names Identifies the names of user-manipulated GUI elements Identifies keywords and operands Identifies text to enter at the GUI or CLI
italic text	Provides emphasis Identifies variables Identifies paths and Internet addresses Identifies document titles
`code` text	Identifies CLI output Identifies syntax examples

For readability, command names in the narrative portions of this guide are presented in mixed lettercase: for example, switchShow. In actual examples, command lettercase is often all lowercase. Otherwise, this manual specifically notes those cases in which a command is case sensitive.

Notes, cautions, and warnings

The following notices and statements are used in this manual. They are listed below in order of increasing severity of potential hazards.

NOTE
A note provides a tip, guidance or advice, emphasizes important information, or provides a reference to related information.

ATTENTION
An Attention statement indicates potential damage to hardware or data.

CAUTION

A Caution statement alerts you to situations that can be potentially hazardous to you.

DANGER

A Danger statement indicates conditions or situations that can be potentially lethal or extremely hazardous to you. Safety labels are also attached directly to products to warn of these conditions or situations.

Key terms

For definitions specific to Brocade and Fibre Channel, see the *Brocade Glossary*.

For definitions of SAN-specific terms, visit the Storage Networking Industry Association online dictionary at:

http://www.snia.org/education/dictionary

Additional information

This section lists additional Brocade and industry-specific documentation that you might find helpful.

Brocade resources

To get up-to-the-minute information, join Brocade Connect. It's free! Go to *http://www.brocade.com* and click **Brocade Connect** to register at no cost for a user ID and password.

For practical discussions about SAN design, implementation, and maintenance, you can obtain *Building SANs with Brocade Fabric Switches* through:

http://www.amazon.com

For additional Brocade documentation, visit the Brocade SAN Info Center and click the Resource Library location:

http://www.brocade.com

Release notes are available on the Brocade Connect Web site and are also bundled with the Fabric OS firmware.

Other industry resources

- White papers, online demos, and data sheets are available through the Brocade Web site at *http://www.brocade.com/products/software.jhtml*.
- Best practice guides, white papers, data sheets, and other documentation is available through the Brocade Partner Web site.

For additional resource information, visit the Technical Committee T11 Web site. This Web site provides interface standards for high-performance and mass storage applications for Fibre Channel, storage management, and other applications:

http://www.t11.org

For information about the Fibre Channel industry, visit the Fibre Channel Industry Association Web site:

http://www.fibrechannel.org

Document feedback

Because quality is our first concern at Brocade, we have made every effort to ensure the accuracy and completeness of this document. However, if you find an error or an omission, or you think that a topic needs further development, we want to hear from you. Forward your feedback to:

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Provide the title and version number of the document and as much detail as possible about your comment, including the topic heading and page number and your suggestions for improvement.

Chapter

1

Configuring Zoning

In this chapter

This chapter provides instructions for configuring zoning using the Zoning Module. Zoning defines the communication paths in a fabric. A zone is comprised of a collection of initiator and target ports within the SAN. The ports in a zone can only communicate with other ports in that zone. However, ports can be members of more than one zone.

Overview

Zoning is a fabric management service that can be used to create logical subsets of devices within a SAN and enable partitioning of resources for management and access control purposes. Zoning allows only members of a zone to communicate within that zone. All others attempting to access from outside the zone are rejected, hence zoning also provides a security function. A zone is comprised of a collection of initiator and target ports within the SAN. The ports in a zone can only communicate with other ports in that zone. However, ports can be members of more than one zone.

Zoning provides software zoning controlled at the Node World Wide Name (nWWN) level assisted by the name server of a switch. Depending on the vendor, it also supports Domain/Port zoning and Fabric Address zoning in a fabric without any router. Zoning does not support Domain/Port zoning when the fabric is in the interop mode. Fabric Address zoning is only supported when the fabric contains only Qlogic switches. For Router Fabric, you can zone either at Port World Wide Name (pWWN) or nWWN level. However pWWN zoning is not supported between mSANs that are interconnected by an iFCP connection.

Zoning allows you to view the zone information currently active in the fabric, create and modify zones and zone sets in the software zone library, activate a zone set in order to publish the zone information in the selected fabric, deactivate the current active zone set, export zones over iFCP link, zone iSCSI devices, configure zoning policies in the selected fabric, and generate zoning report for the fabric.

Accessing Zoning

You can access the Zoning feature from the main screen of the SAN Management application in any of the following ways:

- Select **Configure > Zoning**.
- Click the **Zoning** icon on the toolbar.
- Right-click a port, switch, switch group, fabric, or mSAN in the device list and select **Zoning**.
- Right-click a port, switch, switch group, fabric, or mSAN in the physical map and select **Zoning**.

However, if you are also implementing the Virtual Fabrics feature, you may experience a small variation to the last two of these methods. When you have virtual switches configured on directors that are discovered through the SAN Management application, the **Zoning** command will not appear on the shortcut menu when you right-click a physical switch on the device list or the physical map, but will appear on the shortcut menu when you right-click a virtual switch on the device list or the physical map. Furthermore, you can only add to zones the WWNs of the ports assigned to the virtual switch and of detached ports.

Zoning Limits

Your SAN Management application imposes a limit of total zone members in a zone set. There are no limits on the number of zones, members per zone, zone sets, and number of end ports that you can configure in the Zoning Library. Limits are imposed by the firmware release and hardware product where this firmware is installed. For specific limits, always refer to the *McDATA Fabric Guidelines*, which is available through the Resource Library of the McDATA website.

For Fibre Channel Fabrics, during zone set activation, the total number of zone members in each zone and in the zone set are checked against the limits imposed by the firmware and hardware product. If the limits are exceeded, a message is displayed informing you of the exceeded limits as well as the zone set failure information. Click **OK** to close the message box, and take appropriate action to meet the limits.

For Router Fabrics, the total number of zones and the total zone members in a zone set is checked by the application before the zone set is activated on the router. An error message displays if the limits are exceeded.

Zoning Naming Conventions

The following naming rules apply for zone names and zone set names:

FC Fabrics

- Names are case sensitive.
- Names cannot begin with “SANav_” or “SMP_”. These prefixes are reserved. Any M-model switch with a zone beginning with a reserved prefix will not be discovered.
- Names cannot begin with a numeric character.
- Recommended character limit: 60 characters.
- No duplicate names are between zones or (between) zone sets within a zone library.

Router Fabrics

- Maximum length is 31 characters
- Contain only alphabetic and numeric characters (a-z, A-Z, and 0-9) and “_”
- Cannot begin with “_”

See “SAN Router Fabric Zoning” on page 8 for fabric naming conventions affecting zone set activation.

If you enter an invalid zone or zone set name, a error or warning message displays depending on the type of fabric you are trying to zone.

- For FC Fabrics, if an invalid name is entered for a zone or zone set, the application displays a warning message. If there is a naming violation according to the vendor, the Switch returns the error message for the exact information along with the zone set activation failure message.
- For Router Fabrics, if an invalid name is entered for a zone or zone set, the application displays an error message which includes the invalid information. The zone and zone set names are also checked during zone set activation and if invalid, the application displays an error message.

- For mSANs, if an invalid name is entered for a zone or zone set, the application displays a warning message. The zone and zone set names are also checked during zone set activation and if invalid, the application displays an error message that includes information about which names are invalid for which fabric (FC or Router Fabric). If there is a naming violation according to the vendor, the Switch returns the error message with the exact information along with the zone set activation failure message.

Multi-User Zone Configuration

When two users are editing the configuration for a zone library at the same time, the second user receives a warning message when the first user saves a new configuration. The message tells the second user to save his or her configuration session or to reopen the Zoning Dialog in order to obtain the latest configuration information.

If the second user chooses to save his or her changes, the **Compare/Merge Zone Configuration** dialog box appears. This dialog box lists all the zone sets and zones within the zone library in a tree format by default. The second user can also choose to see **Zones Only** or **Zone Sets Only** in the **Details View** drop-down box. the user can also select the **Differences Only** check box to see only the elements that are not common to both users.

Differences between the library as saved by the first user and the changes currently being made by the second user are highlighted:

- Red minus signs in front of zone members indicate members saved by the first user but not included by the second user.
- Green plus signs indicate members added only by the second user that do not appear in the first user's configuration.
- Unmarked members are common to both users.

The second user can choose to merge or remove any of the elements in the configuration tree; zone sets, zones, or zone members.

If the first user saves a new configuration while the **Compare/Merge Zone Configuration** dialog box is already open, the second user receives a warning message. The message tells the second user to click the **Refresh** button or to reopen the **Compare/Merge Zone Configuration** dialog box in order to obtain the latest configuration information.

- If a zone is removed from a zone set, it is removed *only* from that single zone set. However, if the zone is removed from the list of zones, it is removed from *all* zone sets.
- If a zone or zone set is merged, the resulting zone or zone set includes *all* members that were marked for addition or removal as well as all members not otherwise marked.

Removing Zoning Elements

To remove one or more elements do the following.

1. Select the elements to be removed from the final configuration.

   To select more than one element, use *Ctrl+click*.

2. Click **Remove**.

   The selected elements disappear from the tree display.

3. If you do not want to make any more changes, click **OK**.

   You receive a message that states that there are one or more items that are not yet merged.

   - If you click **Yes**, your changes will overwrite changes made by the first user.
   - Click **No** to return to the **Compare/Merge Zone Configuration** dialog box to continue making changes.

   If you click **Yes**, you receive another message that states your changes will be saved to the zone library.

4. Click **OK** to finish saving your changes.

Merging Zoning Elements

To merge one or more elements do the following.

1. Select the elements to be merged into the final configuration.

   To select more than one element, use *Ctrl+click*.

2. Click **Merge**.

   The red and green symbols for the selected elements disappear from the tree display.

   Any differing elements that were not selected remain with their red or green symbols.

3. Click **OK** to save your changes to the zone library.

   If you have selected all different elements to merge, you receive a message that states your changes will be saved to the zone library.

   Otherwise, you receive a message that states that there are one or more items that are not yet merged.

   - If you click **Yes**, your changes will overwrite changes made by the first user. Any differing elements will retain their symbols.
   - Click **No** to return to the **Compare/Merge Zone Configuration** dialog box to continue making changes.

4. Click **OK** to finish saving your changes.

Merging All Zoning Elements

To merge all of the different elements do the following.

1. Click **Merge All**.

   You receive a message that states that all changes will be merged with zones or zone sets in the server.

2. Click **Yes** to complete the merger or **No** to make further changes.

   If you click **Yes**, the **Compare/Merge Zone Configuration** dialog box reappears with all elements shown as common to both users.

   If you click **No**, you return to the **Compare/Merge Zone Configuration** dialog box to continue making changes.

3. Click **OK** to finalize the configuration.

Administrator Zoning Privileges

You can set read only or read/write access for the following zoning components:

- Zoning Global Library (not available mSAN and Router Fabric)
- Zoning Fabric Libraries
- Zoning Activation (and deactivation)

When read/write privileges are defined for all three components, an administrator can perform all zoning-related operations provided by dialog boxes and shortcut menus. The following table summarizes the functions permitted for other privilege level settings.

TABLE 1 Administrator Zoning Privileges

Privilege Level per Zoning Components	Accessible Functions
Read only • Global Library (not available mSAN and Router Fabric) • Fabric Libraries • Activation	*Zone Library* tab • Find • Export *Active Zone Set* tab • Compare *Potential Members* list shortcut menu • All commands *Zones* list shortcut menu • Port Label • Search • Properties *Zone Sets* list shortcut menu • Properties
Read/write • Global Library (not available mSAN and Router Fabric) • Fabric Libraries Read only • Activation	All functions except activating and deactivating the active zone set.

Note the following items about setting zoning privileges:

- If no privilege level is set for any of the components, zoning is disabled at the SAN Management application main menu and the **Zoning** dialog box cannot be opened.
- If a privilege level is set for Activation without levels being set for the Global or Fabric Libraries, the **Zoning** dialog box can be opened, but it will not display the zone library. Activation privilege cannot be added without setting at least one privilege above to either Read/Write or Read Only. Information message displays when attempting to add the Zoning Activation only.
- If a privilege level is set for the Global or Fabric Libraries, or for both, without a level being set for Activation, the **Zoning** dialog box can be opened and the functions outlined in the table for read/write and read only settings for the libraries will be accessible. (Activating and deactivating active zone sets will not be possible.)
- If the FC Global Library is only set for Read or Read/Write, zoning is disabled for Router Fabric and mSAN from the main menu, toolbar, and right-click menus from both device tree and topology so that the **Zoning** dialog box cannot be launched. Privileges for the FC Fabric Global Library depends on Read, Read/Write, and Activation as listed in the table above.
- If the Fabric Libraries is only set for Read or Read/Write, the **Zoning** dialog box launches without displaying the FC Fabric Global Library. Privileges for the Fabric Libraries depends on Read, Read/Write, and Activation as listed in the table above.

To set the privilege levels, in the SAN Management application select **SAN > Users**. Then select **Security Administrator** in the **Groups** list and click **Edit**. The **Features** tab of the SAN Management application **Group** dialog box displays. Select the desired zoning component in the **Features** list and click the appropriate right arrow to move the component to the **Read/Write** or **Read Only** list.

Zoning Configuration

The application performs zoning discovery once at startup, and then once every two hours during routine discovery. If the **Zoning** dialog box is open, zoning discovery will be performed during every polling cycle. It will continue to discover at the increased speed for 30 minutes before it returns to the default value. For best results, wait for five discovery cycles after starting the Server before performing zoning.

Zoning on Virtual Switches

If virtual switches are configured for a Director, the **Zoning** option is not available when you right-click a core switch in the Physical Map. Zoning is available on the shortcut menu for a virtual switch, however. Since zoning is configured and active zone sets are stored on individual fabrics, you must enable active zone sets on individual virtual switches. You can only add WWNs to zones for the ports assigned to the virtual switch. You can also add a detached port's WWN to a zone.

When two virtual switches with existing active zone sets are connected, they will merge into a single fabric. The zone set contents will consist of zones from the zone sets from each switch. However the zone set names will not merge into one zone set name. When your SAN Management application discovers this newly formed fabric, if the virtual switch is chosen to discover zoning information, one of the merged zone set names may or may not appear on the principal switch.

NOTE
This information only applies if virtual switches are configured on Directors discovered through your SAN Management application. For more details on virtual switches and the Open VSANs feature, refer to Chapter 1 in the *Open VSANs User Manual*.

SAN Router Fabric Zoning

When you activate a zone set in a SAN Router Fabric, it activates the zone set on the SAN router regardless of the zone membership and then appends to the connected FC Fabrics according to the Zone Policies (Append or No Zone Sync) of the connected R_Ports.

After the activation, the following occurs:

- The **Active Zone Set** tab in Router Fabric displays the activated zone set with its zone members.
- The **Active Zone Set** tab in FC Fabric displays the zone set being activated from the FC Fabric scope and the SoIP_ zones being appended from the router.
- The **Active Zone Set** tab in mSAN displays the sum of both Router Fabric and FC Fabrics.

When you deactivate a zone set in Router Fabric, it deactivates the zone set being activated on the router and the SoIP_ zones append to the FC Fabrics when the connected R_Ports are still in Append Zone Mode during the deactivation. If the R_Ports are no longer in NO Zone Sync Mode during the deactivation, the SoIP_ zones are not deactivated.

Configuring Zoning for the SAN

The following procedure provides an overview of the steps you must perform to configure zoning for the SAN.

Note that for any zoning-related procedure, changes to a zone library will not be saved unless you click **OK** or **Apply** on the **Zoning** dialog box. If you click **Cancel** or the close button (X), only changes made to the active zone set will be saved. These changes are saved because they have been activated and saved on the switch.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. (FC Fabrics only) From the **Zone Library** list, select either <*Fabric_Name*> or **Global** library.

4. (FC Fabrics only) If you want to show all network objects in your fabric group in the **Potential Members** list, select **Display All**.

5. Create the desired zones. For specific instructions, refer to *Creating a New Zone*.

6. Add members to each zone. For specific instructions, refer to *Adding Members to a Zone* and *Creating a New Member in a Zone*.

7. Create a zone set. For specific instructions, refer to *Creating a Zone Set*.

8. Activate the zone set. For specific instructions, refer to *Activating a Zone Set*.

9. Set zoning policies for FC and Router fabrics, if necessary. For specific instructions, refer to *Enabling or Disabling the Default Zone for Fabrics* and *Enabling or Disabling Safe Zoning Mode for Fabrics*.

10. Click **OK** or **Apply** to save your changes.

    A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Creating a New Zone

Use this procedure to create a new zone.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Click **New Zone**.

   A new zone displays in the **Zones** list.

4. Type the desired name for the zone.

   For Router Fabrics, the Zone ID range is between 1 and 512. When the maximum number (512) is reached, you can still create a new zone. However, the null value is assigned to the new zone ID.

   For zone name requirements and limitations, refer to *Zoning Naming Conventions*.

5. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

   If the zone is empty, a warning message displays.

Adding Members to a Zone

Use this procedure to add a member to a zone when the member is listed in the **Potential Members** list of the **Zone Library** tab.

For instructions to add a member to a zone when the member is not listed in the **Potential Members** list, refer to the procedure *Creating a New Member in a Zone*.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. (FC Fabrics only) From the **Zone Library** list, select either <*Fabric_Name*> or **Global** library.

4. If you want to show all network objects in your fabric group in the **Potential Members** list, select **Display All**.

5. Select one or more zones to which you want to add members in the **Zones** list. (Press **SHIFT** or **CTRL** and click each zone name to select more than one zone.)

6. Select an option from the **Method** list.

   By default, the first time you launch the Zoning dialog box for a Zoning Scope, the Potential Members List displays valid members using the following rules:

   - If you select the World Wide Name method, the valid members display by the Attached Ports.
   - If you select the Domain/Port method, the valid members display by the ALL Product Ports (both occupied and unoccupied). This option is available for FC fabrics only.
   - If you select the Fabric Address method, the valid members display by the Attached Product Port for Qlogic switch when the fabric has Qlogic switches only.

   NOTE: Fabric Address zoning is supported only when the fabric contains Qlogic switches only. Zone set activation fails when you try to activate on a non-Qlogic-only fabric.

7. Select one or more members to add to the zone in the **Potential Members** list. (Press **SHIFT** or **CTRL** and click each member to select more than one member. To add all ports on a device, select the device.)
8. Click the right arrow between the **Potential Members** list and **Zones** list to add the selected member(s) to the zone.

   A message may display informing you that one or some of the selected potential members cannot be zoned. Click **OK** to close the message box. Reconsider your selections and make corrections as appropriate.

9. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Creating a New Member in a Zone

Use this procedure to add a member to a zone when the member is not listed in the **Potential Members** list of the **Zone Library** tab.

For instructions to add a member to a zone when the member is listed in the **Potential Members** list, refer to the procedure *Adding Members to a Zone*.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Select one or more zones to which you want to add members in the **Zones** list. (Press **SHIFT** or **CTRL** and click each zone name to select more than one zone.)
4. Click **New Member**.

   The **Add New Zone Member** dialog box displays.

5. Select the option from the **Method** list that you want to use to create the new member. (WWN is the only possible method for Router fabrics.)

6. Enter the WWN, nickname, domain and port numbers, or fabric address—whichever is appropriate for the method you chose in step 5.

   If you enter a WWN that has been used by a discovered device, a message displays informing you of this and instructing you to enter a port WWN. Click **OK** to close the message box and key in an appropriate WWN.

   When you choose the WWN method, the **Assign Nickname** field is available; you may define a nickname for the new member. If a nickname was previously assigned, the nickname appears in the field and a message displays asking whether you want to overwrite the existing name. Click **Yes** to continue and assign a new nickname, or **No** to decline and close the message box.

7. Click **OK** to save your changes and close the **Add New Zone Member** dialog box.

   OR

   Click **Apply** to save your changes and keep the **Add New Zone Member** dialog box open so you can add more new members. Repeat steps 5, 6 and 7 as many times as needed, and proceed to step 8 when appropriate.

8. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Creating a Zone Set

Use this procedure to create a new zone set.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Click **New Set**.

   A new set displays in the **Zone Sets** list.

4. Type the desired name for the zone set.

   For zone name requirements and limitations, refer to *Zoning Naming Conventions*.

5. Press **Enter**.

   Depending on the characters included in the name you enter, a message may display informing you the name contains characters that are not accepted by some switch vendors, and asking whether you want to proceed. Click **Yes** to continue, or **No** to cancel the zone creation.

6. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Adding Zones to Zone Sets

Use this procedure to add one or more zones to a zone set.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Select one or more zone sets to which you want to add zones in the **Zone Sets** list. (Press **SHIFT** or **CTRL** and click each zone set name to select more than one zone set.)

4. Select one or more zones to add to the zone set(s) in the **Zones** list. (Press **SHIFT** or **CTRL** and click each zone name to select more than one zone.)

5. Click the right arrow between the **Zones** list and **Zone Sets** list to add the zone(s) to the zone set(s).

6. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Activating a Zone Set

For FC Fabrics and Router Fabrics, when a zone set is active, its members can communicate with one another. Only one zone set can be active at any given time.

For mSANs, active zone set refers to all the active zone sets in all the fabrics in the mSAN.

When you initiate activation of a zone set, a number of checks are performed on the zone set. These checks are performed before the **Activate Zone Set** dialog box is displayed, and look for the following problems:

- Zone and zone set name violations
- Total zone and zone member limit violations
- Zoning configuration violations

For Fibre Channel Fabrics, during zone set activation, the total number of zone members in each zone and in the zone set are checked against the limits imposed by the firmware and hardware product. If the limits are exceeded, a message is displayed informing you of the exceeded limits as well as the zone set failure information. Click **OK** to close the message box, and take appropriate action to meet the limits.

NOTE
For Fibre Channel fabrics, zones with members added by FC Address must be in fabrics that contain Qlogic switches only. Otherwise zone set activation fails.

For Router Fabrics, the total number of zones and the total zone members in a zone set is checked by the application before the zone set is activated on the router. An error message displays if the limits

When a zone set is activated, only the selected zone set's data is sent to the fabric; zone libraries are never sent to the fabric.

NOTE
Only one Server should be run at a time (actual servers performing discovery) or log on conflicts may occur. Also, activation speeds may differ depending on the hardware vendor and type of zoning used.

There are several conditions that could cause the **Activate** button to be unavailable. They include the following:

- If you do not have access privileges to activate zone sets, the **Activate** button on the **Zone Library** tab will be unavailable. You will not be able to activate a zone set unless your access privileges are redefined.
- The fabric is not manageable. For an mSAN fabric, it will be disabled if one of the FC Fabrics is not managed.
- The user has no Read/Write or Activate privilege for the selected fabric and the selected zone library (for FC Fabric only).
- The selected fabric is not supported by EFCM (for example, a fabric with only Cisco switches).
- The selected fabric is no longer discovered.
- The SNMP Community string for Write is inconsistent with the string in the SNMP Agent for the router.
- The zoning scope consists of routers with firmware version 5.0.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Select the zone set you want to activate in the **Zone Sets** list.

4. Click **Activate**.

   The SAN Management application begins performing various checks. Note the following events that may occur:

   — For FC fabrics, and depending on the characters included in the name you gave to this zone set, a message may display informing you the name contains characters that are not accepted by some switch vendors and asking whether you want to proceed. Click **Yes** to continue and proceed to the **Activate Zone Set** dialog box, or click **No** to cancel the activation and consider your naming options.

   — For FC fabrics, when the total number of zones and zone members defined exceeds the limit recommended for the system firmware, a warning message displays informing you of this fact and asking whether you want to proceed. Consider carefully whether you want to continue with the zone set activation. The limits are set to ensure stable fabrics; if you proceed, you may undermine the stability of your fabric. Click **Yes** to continue and proceed to the **Activate Zone Set** dialog box, or click **No** to cancel the activation. (You can then click **Cancel** to close the **Activate Zone Set** dialog box, reduce the number of zones or zone members on the **Zone Library** tab, and then return to this procedure to activate the zone set. For specific information about limits based on system hardware and firmware, refer to *Zoning Limits*.)

   — For Router fabrics and mSANs, a table may display listing configuration violations found in the zone set, such as limits being surpassed, invalid or mismatched zone IDs, or inappropriate attempts at exporting over iFCP links. Click **OK** to close the message box. Such errors halt the activation process; you must correct the configuration violations before you can activate the zone set.

   — When the checks find no violations, the **Activate Zone Set** dialog box displays.

   — For exporting a zone over an iFCP link in the Router fabric or mSAN, a warning message may appear that any modification to a remote device (adding to a zone, removing from a zone, and so forth) will not be performed during activation.

5. Review the information in this dialog box and make sure the selected zone set is the one you want to activate. Also, select or clear the **Generate a report** and **Store a Copy** check boxes as desired. For Router fabrics, select or clear the **Save to flash** check box as desired.

6. Click **OK** to activate the zone set.

   A message box displays informing you that the zones and zone sets you change will be saved in the zone library and asking whether you want to proceed. Click **Yes** to confirm the activation, or **No** to cancel the activation.

   When you click **Yes**, a busy window displays indicating the activation is in progress. A status field informs you whether the activation succeeded or failed. When it succeeds, icons for the active zone set and its zones display green. When it fails, the message includes the reason for the failure.

7. Click **OK** to continue. The **Activate Zone Set** dialog box is closed and the **Zone Library** tab displays.
8. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Configuring Zone iSCSI Devices

One set of LUN mapping and masking parameters can be configured for each target node in a zone. Note that this configuration data is not saved as part of the zone set data and is not maintained by your SAN Management application. If a zone is removed from the fabric, the LUN mapping configuration is deleted; adding the zone back to the fabric will require you to reconfigure the LUN mapping data.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.
2. Select an FC fabric or Router fabric from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.
3. (FC Fabrics only) From the **Zone Library** list, select either <*Fabric_Name*> or the **Global** library.
4. Create a zone and add the Fibre Channel target and iSCSI initiator to the zone.

   For specific instructions, refer to the procedures *Creating a New Zone* and *Adding Members to a Zone*.
5. Click the **Active Zone Set** tab. In the **Zone Set** tree, select the target node, and then click **iSCSI LUNs**.

   The **iSCSU LUN Mapping/Masking** dialog box displays.
6. Select the LUN mapping/masking parameter values that are appropriate for the iSCSI initiator with which the target node will communicate. These are as follows:

   — **Visible** - Select if the LUN is to be visible to the iSCSI initiator; do not select if the LUN should be masked.

   — **VLUN** - Type the virtual LUN number (0 - 255). The first VLUN number must be 0 (zero) and the numbering must continue consecutively. Duplicate VLUN numbers are not allowed.

   Refer to the Zoning online help for descriptions of the other fields on this dialog box.
7. Click **Activate**.

   The **iSCSI Change Confirmation and Status** dialog box displays.
8. Review the information displayed.

   Make sure **SAN Router Names** lists the correct routers to be affected by the configuration.

   Make sure the values listed in **Detailed Changes** are correct.
9. Perform one of the following actions based on the way you want to proceed:

- Click **OK** to confirm activation of the iSCSI configuration changes. The activation process begins, the confirmation dialog box remains open, and the label on the **Cancel** button changes to **Close**. After the **Status** field reports whether the activation succeeded or failed, click **Close** to exit the confirmation dialog box. Then click OK on the **iSCSI LUN Mapping/Masking** dialog box to close this box.
- Click **Cancel** to stop activation of the changes and close the confirmation dialog box. Then click **Cancel** on the **iSCSI LUN Mapping/Masking** dialog box to close this box.

10. Click **OK** or **Apply** to save your changes.

    A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Enabling or Disabling the Default Zone for Fabrics

Use this procedure to enable or disable the default zone for FC and Router fabrics.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric or Router fabric from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. (FC Fabrics only) From the **Zone Library** list, select either <*Fabric_Name*> or the **Global** library.

4. Click **Zoning Policies**.

   The **Zoning Policies** dialog box displays.

   NOTE: The format and content of this dialog box vary slightly with the firmware level installed on your switch or director, the target selected in the **Zoning Scope** list, and whether safe zoning mode is enabled. If safe zoning mode is enabled, the **Default Zone** button is disabled. If you want to enable the default zone, you need to disable the safe zoning mode.

5. Make sure the appropriate fabric is named on the **Zoning Policies** dialog box.

6. Perform one of the following actions based on the task you want to complete:

   - To enable the default zone, click **Enable**, and then click **OK**.
   - To disable the default zone, click **Disable**, and then click **OK**.

   The **Zoning Policies** dialog box closes and the **Zone Library** tab displays.

7. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Enabling or Disabling Safe Zoning Mode for Fabrics

Use this procedure to enable or disable Safe Zoning Mode for FC and Router fabrics.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric or Router fabric from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Click **Zoning Policies**.

   The **Zoning Policies** dialog box displays.

   NOTE: The format and content of this dialog box vary slightly with the firmware level installed on your switch or director and the target selected in the **Zoning Scope** list.

4. Make sure the appropriate fabric is named on the **Zoning Policies** dialog box.

5. Perform one of the following actions based on the task you want to complete:

   — To enable safe zoning mode, click the **Enable** check box to add a check mark to the box.

   — To disable safe zoning mode, click the **Enable** check box to remove the check mark from the box.

6. Click **OK** to save your changes and close the **Zoning Policies** dialog box.

   If the default zone is enabled when you attempt to enable safe zoning mode, a message box displays informing you that default zone must be disabled for safe zoning mode to be enabled, and asking whether you want to continue.

   — If you click **Yes,** the default zone is disabled, safe zoning mode is enabled, the **Zoning Policies** dialog box closes, and the **Zone Library** tab displays.

   — If you click **No**, the default zone is not disabled, safe zoning mode is not enabled, and the **Zoning Policies** dialog box displays. Click **Cancel** to close the dialog box and return to the **Zone Library** tab.

7. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Removing a Member from a Zone

The following procedure explains one way to remove one or more members from a zone. For alternative instructions that make use of a shortcut menu, refer to *Removing Zone Members* in Chapter 2.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Click the plus sign (+) by the appropriate zone in the **Zones** list to expand the listing and show the zone's members.

4. Select one or more members to be removed from the zone. (Press **SHIFT** or **CTRL** and click each member name to select more than one member.)

5. Click the left arrow between the **Potential Members** list and the **Zones** list to remove the selected member(s) from the zone.

   When successful, the selected member is removed from the **Zones** list and appears in the **Potential Members** list. Note that the member is not deleted, only removed from the zone.

6. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Removing a Zone from a Zone Set

The following procedure explains one way to remove one or more zones from a zone set. For alternative instructions that make use of a shortcut menu, refer to "Removing a Zone from a Zone Set" on page 39.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Click the plus sign (+) by the appropriate zone set in the **Zone Sets** list to expand the listing and show the zone set members.

4. Select one or more zones to be removed from the zone set. (Press **SHIFT** or **CTRL** and click each zone name to select more than one zone.)

5. Click the left arrow between the **Zones** list and the **Zone Sets** list to remove the selected zone(s) from the zone set.

   When successful, the selected zone is removed from the **Zone Set** list and appears in the **Zones** list. Note that the zone is not deleted, only removed from the zone set.

6. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Deactivating a Zone Set

Use this procedure to deactivate the active zone set.

There are several conditions that could cause the **Deactivate** button to be unavailable. They include the following:

- There is no active zone set in the selected fabric.
- The fabric is not manageable. For an mSAN fabric, it will be disabled if one of the FC Fabrics is not managed.
- The user has no Read/Write or Activate privilege for the selected fabric and the selected zone library (for FC Fabric only).
- The selected fabric is not supported by EFCM (for example, a fabric with only Cisco switches).
- The selected fabric is no longer discovered.
- The zoning scope consists of routers with firmware version 5.0.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Click **Deactivate**.

   The **Deactivate Zone Set** dialog box displays.

4. Review the information in this dialog box and make sure you want to deactivate this zone set.

   NOTE: If you want to fully disable zoning, check the default zone setting. If the default zone is enabled and the active zone set is deactivated, members of the default zone may still be able to communicate with each other. To fully disable zoning, you must also disable the default zone.

5. Click the check box at the bottom of the dialog box to generate a report with the deactivation, if desired. If not, proceed to Step 6. The **Store a Copy** check box is not available for deactivation.

   For more information about using stored copies of zone sets, refer to *Replacing a Zone Set from History*.

6. Click **OK** to deactivate the zone set.

   If the active zone set has never been saved to the zone library, a message displays informing you of this fact, warning you that it will be lost on deactivation, and asking whether you want to proceed. Click **Yes** to continue or **No** to cancel the deactivation.

   When the deactivation process is finished, a message displays informing you whether it succeeded or failed. Perform the appropriate action based on the content of the message:

   — If deactivation succeeded, proceed to Step 7.

   — If the deactivation failed, the message includes the reason for the failure. Click **OK** to close the message box and proceed to Step 7.

7. Click **OK** to continue.

   The **Deactivate Zone Set** dialog box is closed and the **Zone Library** tab displays.

   If the deactivation succeeded, the icons for the zone set and its zones no longer display as green.

   If the deactivation failed, the icons for the zone set and its zones still display as green.

8. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

1 Deactivating a Zone Set

Chapter

Zoning Administration

2

In this chapter

This chapter provides instructions for performing administrative functions with zoning. You can rename, duplicate, delete, and perform other tasks on zone members, zones, and zone sets.

Assigning Zone Properties

You can use the **Zone Properties** dialog box to assign the following properties values:

- Zone name
- Zone ID
- Minimum Guaranteed Bandwidth
- Maximum Allowed Bandwidth

A new zone name can be assigned to any zone in an FC fabric, Router fabric, or mSAN. The zone ID and bandwidth properties only apply to Router fabrics and mSANs.

Note that specifying a new zone name on the **Zone Properties** dialog box provides the same result as using the Rename command on a shortcut menu. For information about this command, refer to the procedure *Renaming a Zone*.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. (FC Fabrics only) From the **Zone Library** list, select either <*Fabric_Name*> or the **Global** library.

4. In the **Zones** list, right-click the zone whose properties you want to assign and select **Properties**.

   The **Zone Properties** dialog box displays.

5. Type the new value for the desired property.

   If you select an incorrect zone ID or key in an incorrect bandwidth value, a message displays informing you of this. Click **OK** to reset the value in the **Zone Properties** dialog box. Type a correct value or proceed to Step 5.

6. Click **Cancel** to exit the **Zone Properties** dialog box.

7. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Comparing Zone Sets

You can compare zone sets against one another to identify any and all differences between the two sets. You can compare the active zone set with any zone set in the zone library, or you can compare any two zone sets in the zone library for the selected fabric.

Note that for mSANs, when the active zone set is compared to a zone set in the zone library, it compares the aggregate zone set, which contains all the active zones from all the fabrics in the mSAN to any zone set in the zone library.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Perform one of the following actions based on the kind of comparison you want to do:

   — To compare the active zone set to any zone set in the zone library, click the **Active Zone Set** tab, then click **Compare**.

   — To compare any zone set with any other zone set in the zone library, right-click one of the zone sets in the **Zone Sets** list and select **Compare With**.

   The **Select a Zone Set** dialog box displays.

   The **Select a Zone Set** dialog box lists all the existing zone sets in the selected zone library and the active zone set for the selected zoning scope.

4. Select the zone set to which you want to compare the previously selected zone set (the base zone set) and click **OK**.

   When the two zone sets have the same zones and zone members, a message box displays informing you that the two sets are identical.

   When the two zone sets have different zones or zone members, the **Compare Zone Sets** dialog box displays.

5. Review the comparison information.

   - If no plus or minus sign is displayed next to the zone or zone member, the two zone sets are identical.
   - A plus (+) sign indicates that a zone or zone member has been added to the base zone set.
   - A minus (-) sign indicates that a zone or zone member has been removed from the base zone set.

   By default, the dialog box shows both what the two zone sets have in common and what is different between the zone sets. To view only the differences, click the **Changes Only** check box.

6. Click **Close** to dismiss the **Compare Zone Sets** dialog box.

7. Click **OK** or **Cancel** to close the **Zoning** dialog box.

   If you have made any changes in addition to comparing zone sets, a message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Managing Zone Set Comparison Alerts

You can turn off the automatic zone set comparison function if you no longer want to see two of the alert messages that the comparison can produce. When a zone set is successfully activated, the comparison function can display an alert icon if either of two conditions exist.

The messages in question are “The active zone set does not exist in the zone library” and “The active zone set does not match <zone set> in the zone library.” To turn off the icons and the messages, complete the following steps:

1. After successfully activating a zone set, click the **Active Zone Set** tab.
2. Select the check box labelled **Turn off the comparison alerts between the active zone set and the zone library**.

   Any existing alert icons and messages are cleared and further comparisons are prevented.

   The check box selection defaults to the last setting per user.

Copying a Zone to a Library

As with a save operation, when you copy a zone a comparison is automatically performed to ensure there are no conflicts between the zone being copied and existing zones in the destination zone library.

NOTE
If you are migrating from the most recent version of the SAN Management application, select Global from the Zone Library list. If you are migrating from an earlier version of the SAN Management application, the Global Zone Library does not exist. In that case, use the fabric library as the default.

The specific items compared are as follows:

- For FC fabrics, the zone names and contents are compared.
- For Router fabrics and mSANs, the zone ID of the zone being copied is compared to the IDs of all existing zones, in addition to zone names and contents being compared.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.
2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Right-click the zone in the **Zones** list, select **Copy Into**, and then select the destination zone library to which you want to copy the zone.

   Press **SHIFT** or **CTRL** and click each zone to select more than one zone.

   When successful, the zone you want to copy is compared to the zones in the destination zone library. If no conflicts are found, the selected zone is copied. However, note the following exceptions:

   - If the destination library contains a zone that is identical (in ID, name, and contents) to the one being saved, a message informs you that a copy will overwrite the zone in the destination library and asks whether you want to proceed. Click **Yes** to continue and overwrite the existing zone with the one being copied, or, click **No** to cancel the copy operation.
   - If the destination library contains a zone with the same name as the one being copied but different contents, a message displays informing you of this, warning you that continuing will overwrite the existing zone, and asking whether you want to proceed. Click **Detail** for a list of differences between the zones, click **Yes** to overwrite the existing zone, or click **No** to cancel the copy operation.
   - If the destination library contains a zone with a different name or zone ID, a message displays informing you of the conflict and asking whether you want to overwrite the zone with the name conflict and assign it the next available zone ID. Click **Detail** for a list of differences between the zones, click **Yes** to overwrite the existing zone, or click **No** to cancel the copy operation.

4. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Copying a Zone Set to a Library

When you copy a zone set a comparison is automatically performed to ensure there are no conflicts between the zone set being copied and existing zone sets in the zone library. The specific items compared are as follows:

- For FC fabrics, the zone set name and its zones and their contents are compared.
- For Router fabrics and mSANs, the zone IDs of the zones in the zone set being copied are compared to the IDs of all existing zones, in addition to zone set names and contents being compared.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Right-click the zone in the **Zones** list, select **Copy Into**, and then select the destination zone library to which you want to copy the zone.

   Press **SHIFT** or **CTRL** and click each zone to select more than one zone.

   When successful, the zone set you want to copy is compared to the zone sets in the destination zone library. If no conflicts are found, the selected zone set is copied. However, note the following exceptions:

   - If the destination library contains a zone set that is identical (in name) to the one being saved, a message informs you that a copy will overwrite the zone set in the destination library and asks whether you want to proceed. Click **Yes** to continue and overwrite the existing zone set with the one being copied, or, click **No** to cancel the copy operation.
   - If the destination library contains a zone set with the same name as the one being copied but different contents, a message is displayed informing you of this, warning you that continuing will overwrite the existing zone, and asking whether you want to proceed. Click **Detail** for a list of differences between the zones, click **Yes** to overwrite the existing zone, or click **No** to cancel the copy operation.
   - If the destination library contains a zone with a different name or zone ID, a message displays informing you of the conflict and asking whether you want to overwrite the zone with the name conflict and assign it the next available zone ID. Click **Detail** for a list of differences between the zones, click **Yes** to overwrite the existing zone, or click **No** to cancel the copy operation.

4. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Deleting a Fabric and its Zone Library

Use this procedure to delete a fabric and its associated zone library. Note that you can only delete a fabric that is no longer being discovered. Furthermore, you cannot delete the Global Library.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected fabric.

   The name of the library for the fabric displays in the **Zone Library** field.

3. Click **Delete**.

   A message box displays asking you to confirm the deletion.

4. Click **Yes** to delete the selected fabric and its fabric library.

   The message box closes and, when successful, the fabric is removed from the **Potential Members** list and the library is removed from the **Zone Library** list.

5. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Deleting a Zone

Use this procedure to delete a zone.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Select the zone or zones in the **Zones** list you want to delete, then right-click and select **Delete**.

   A message box displays asking you to confirm the deletion.

4. Click **Yes** to delete the selected zone.

   The message box closes and, if successful, the zone or zones are removed from the **Zones** list.

   NOTE: If you select "**Don't show me this again.**" on the confirmation message box, the next time you delete a zone, the zone is deleted without requesting confirmation from you. If you delete something in error, click **Cancel** on the **Zoning** dialog box to restore it.

5. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Deleting a Zone Set

Use this procedure to delete a zone set.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Select the zone set or zone sets in the **Zone Sets** list you want to delete, then right-click and select **Delete**.

   A message box displays asking you to confirm the deletion.

4. Click **Yes** to delete the selected zone set.

   The message box closes and, when successful, the zone set or zone sets are removed from the **Zone Sets** list.

   NOTE: If you select "**Don't show me this again.**" on the confirmation message box, the next time you delete a zone set, it will be deleted without requesting confirmation from you. If you delete something in error, click **Cancel** on the **Zoning** dialog box to restore it.

5. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Duplicating a Zone

When you duplicate a zone, you make a copy of it in the same zone library. The first time a zone is duplicated, the duplicate is automatically given the name *<zonelabel>_copy*. On subsequent times, a sequential number is assigned to the zone name, such as *<zonelabel>_copy_1*, *<zonelabel>_copy_2,* and *<zonelabel>_copy_3*.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Select the zone or zones in the **Zones** list you want to duplicate, then right-click and select **Duplicate**.

   The duplicated zone or zones display in the **Zones** list.

4. Type a new name for the zone, if desired. If not, proceed to Step 5.

   If you key in a new name, press **Enter** to save the name.

   Depending on the characters included in the name you enter, a message may display informing you the name contains characters that are not accepted by some switch vendors, and asking whether you want to proceed. Click **Yes** to continue, or **No** to cancel the renaming. (For zone name requirements and limitations, refer to *Zoning Naming Conventions*.)

5. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Duplicating a Zone Set

When you duplicate a zone set, you make a copy of it in the same zone library. The first time a zone set is duplicated, the duplicate is automatically given the name <*zonesetlabel*>*_copy*. On subsequent times, a sequential number is assigned to the zone name, such as <*zonesetlabel*>*_copy_1*, <*zonesetlabel*>*_copy_2,* and <*zonesetlabel*>*_copy_3*.

Note that these naming conventions apply both to duplicate and deep duplicate operations.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Select the zone set or zone sets in the **Zone Sets** list you want to duplicate, then right-click and select one of the following options:

   — **Duplicate** - to duplicate the zone set or sets

   — **Deep Duplicate** - to duplicate the zone set or sets *and* all included zones

   The duplicated zone set or sets display in the **Zone Sets** list.

4. Type a new name for the zone set if desired. If not, proceed to Step 5.

   If you key in a new name, press **Enter** to save the name.

   Depending on the characters included in the name you enter, a message may display informing you the name contains characters that are not accepted by some switch vendors, and asking whether you want to proceed. Click **Yes** to continue, or **No** to cancel the renaming. (For zone set name requirements and limitations, refer to *Zoning Naming Conventions*.)

5. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Enabling User ID Access to a Product

If a product requires you to log in before zoning or other functions are allowed, you can set the User ID and Password in the **Address Properties** dialog box.

1. Select **Discover > Setup**.

   The **Discover Setup** dialog box displays.

2. On the **Out-of-Band** tab, click **Add**.

   The **Address Properties** dialog box displays.

3. Click the **Product Type and Access** tab.

4. Select **Switch** from the **Product Type** drop-down list.

5. Type your user ID in the **User ID** field and a password in the **Password** and **Retype Password** fields.

   — For a device, the user ID and password is the Telnet user name and password. The default passwords for a device are saved in the application.

   — For an EFC Manager, the user ID and password are the login and password for the EFC Manager.

   — If you have not changed the default password for the EFC Manager or switch, the application will automatically log on using the default password.

   This allows access to the product, if needed, for zoning or other functions. If you add this address to the **Selected Subnets** table on the **Discover Setup** dialog box, the User ID and Password are used for the entire subnet. If you add this address to the **Selected Individual Addresses** table on the **Discover Setup** dialog box, they are only used for the specific IP address.

   NOTE: There are many zoneable product models that do not require a User ID and Password to perform zoning. Some use the community strings or other methods.

   NOTE: Running multiple servers that contact the same device will result in numerous product state events.

6. Click **OK** to save your changes and close the **Address Properties** dialog box.

Exporting Zone Sets

You can export zone sets as an XML file and then import them into another Server's zone set library, or to a different zone set library on the current Server.

NOTE
You can only export one zone set at a time.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric or Router fabric from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Select the zone set you want to export in the **Zone Sets** list.

4. Click **Export**.

   The **Export Zone Set** dialog box displays.

5. Browse to the folder to which you want to export the zone set.

6. Type a name for the file in the **File name** field.

7. Click **Export Zone Set**.

   The file is saved to the location you specified and the **Export Zone Set** dialog box is closed.

8. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Exporting Zones Over iFCP

Note that for devices in a local mSAN to be visible to a remote mSAN and vice versa, the zones containing the devices must be exported over an iFCP link. The exporting is performed by adding the zones with identical zone IDs under the same iFCP link on the **Zone Sets** lists of both the local and remote mSANs. The router zones may have different names, but if the zone IDs do not match, the zones are not exported over the iFCP link; an information message is displayed informing you that the local zone needs the same ID as that of a remote zone before it can be exported over the iFCP link. When performed correctly, the zones merge during zone set activation. An exported zone can be unexported by removing it from the iFCP link.

In addition to the requirement for identical zone IDs, note the following configuration requirements:

- A zone cannot be exported over two or more iFCP links to the same remote mSAN.
- A device cannot be exported over two or more iFCP links to the same mSAN.
- A fabric port cannot be exported over an iFCP link. Stated another way, an F or FL_port cannot be added to a zone that is exported over an iFCP link.

If any of these export operations are performed and then followed by an attempt to activate the zone set, the activation fails and the configuration violation is identified in an activation failure message.

NOTE
You can only export one zone set at a time.

The two routers must be connected via an iFCP link

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an mSAN or router fabric from the **Zoning Scope** list.
3. Create a zone and assign it the iFCP link under the zone set.
4. Click **Activate** to activate that zone set.
5. Select a second mSAN or router fabric from the **Zoning Scope** list.
6. Create a zone with the same zone ID as the first zone and assign it the iFCP link under the zone set.

   The zone name can be different, but the zone ID must be the same.

7. Click **Activate** to activate that zone set.

   When attempting to export the zone set and add it under an iFCP link, various messages may display to inform you of the condition of the export operation. Click **OK** to close any of the message boxes. If the condition reports an error, particularly a mismatch in zone IDs, correct the mismatch and retry the export operation.

8. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Importing a Zone Set

Use this procedure to import a zone set (xml file) into a selected zone library.

When importing a zone set, the set and its zones are compared with all the existing zone sets and zones in the destination library to ensure there are no conflicts. Consequently, the results of the comparison determine whether the zone set is automatically imported or you are prompted to overwrite an existing zone set with the zone set being imported.

The specific items compared are the same as those when an active zone set is saved to a selected zone library.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Click **Import**.

   The **Import** dialog box displays.

4. Browse the **Look in** field and find the file you want to import.

5. Click **Import**.

   The zone set you want to import is compared to zone sets in the destination zone library. If no zone name or zone ID conflicts are found, the zone set is successfully imported and the **Import** dialog box closes. However, note the following exceptions:

   — If the destination library contains a zone set that is identical to the one being imported, a message is displayed informing you of this and asking whether you want to proceed. Click **Yes** to continue and overwrite the existing zone set with the one being imported, or click **No** to cancel the import operation.

   — If the destination library contains a zone set with the same name as the one being imported but different contents, a message is displayed informing you of this, warning you that continuing will overwrite the existing zone set, and asking whether you want to proceed. Click **Yes** to overwrite the existing zone set, or click **No** to cancel the import operation.

6. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Finding a Member in One or More Zones

Use this procedure to locate all instances of a member in the **Zones** list on the **Zone Library** tab.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. If you want to show all network objects in your fabric group in the **Potential Members** list, select **Display All**.

4. Select the device or port you want to find in the **Potential Members** list.

   Press **SHIFT** or **CTRL** and click each zone to select more than one zone.

5. Click **Find >** between the **Potential Members** list and **Zones** list.

   — If the member is found, all instances of the zone member found are highlighted in the **Zones** list.

   — If the member is not found, a message displays informing you of this. Click **OK** to close the message box.

Finding a Zone Member in the Potential Member List

Use this procedure to locate a zone member in the **Potential Members** list on the **Zone Library** tab.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Select the zone member in the **Zones** list that you want to find in the **Potential Member** list.

   Press **SHIFT** or **CTRL** and click each zone to select more than one zone.

4. Click **Find <** between the **Potential Members list and the Zones** list.

   — If the member is found, it is highlighted in the **Potential Members** list.

   — If the member is not found, a message displays informing you of this. Click **OK** to close the message box.

   — If there are no ports listed in the **Potential Members** list, a message displays informing you that additional action is required. Right-click within the list panel and select **Port Display** from the shortcut menu to display ports.

Finding Zones in a Zone Set

Use this procedure to locate all instances of a zone in the **Zone Sets** list on the **Zone Library** tab.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Select the zone you want to find in the **Zones** list.

   Press **SHIFT** or **CTRL** and click each zone to select more than one zone.

4. Click **Find >** between the **Zones** list and the **Zone Sets** list.

   — If the zone is found, all instances of the zone are highlighted in the **Zone Sets** list.

   — If the zone is not found, a message displays informing you of this. Click **OK** to close the message box.

Finding a Zone Set Member in the Zones List

Use this procedure to locate a zone set member in the **Zones** list on the **Zone Library** tab.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Select the zone set member (i.e., the zone) in the **Zone Sets** list that you want to find in the **Zones** list.

   Press **SHIFT** or **CTRL** and click each zone to select more than one zone.

4. Click **Find <** between the **Zones** list and the **Zone Sets** list.

   — If the zone is found, it is highlighted in the **Zones** list.

   — If the zone is not found, a message displays informing you of this. Click **OK** to close the message box.

Listing Zone Members

Use this procedure to identify the zone in the active zone set of the fabric to which an individual port belongs and the other zone members in that zone.

Note that the procedure is performed from the main view of the SAN Management application.

1. On the product device list of the SAN Management application, expand the list of products to show the ports.
2. Right-click a port and select **List Zone Members** from the shortcut menu.

   If **List Zone Members** is not included on the shortcut menu, the port cannot be zoned. Keep in mind that only attached device ports can be zoned. If desired, select another port.

   If the port is not a member of a zone, a message displays informing you of this. Click **OK** to close the message.

   If the port is a member of a zone, the **List Zone Members** dialog box displays. The fabric's nickname, the port's name, and all zone members display.
3. Click **Close** to exit the **List Zone Members** dialog box.

Removing Zone Members

The following procedure explains one way to remove one or more members from a zone or zones. For alternative instructions that make use of arrow buttons on the **Zone Library** tab, refer to *Removing a Member from a Zone* in Chapter 1.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.
2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.
3. Right-click the name of the zone member you want to remove in the **Zones** list and select one of the following options from the shortcut menu that displays:

   — **Remove** - to remove the zone member from the selected zone.

   — **Remove All** - to remove the zone member from all zones to which it belongs.

   When successful, the zone member is removed from the **Zones** list.
4. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Removing a Zone from a Zone Set

The following procedure explains one way to remove a zone from a zone set. For alternative instructions that make use of arrow buttons on the **Zone Library** tab, refer to "Removing a Zone from a Zone Set" on page 19.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Right-click the name of the zone you want to remove in the **Zone Sets** list and select **Remove**.

   When successful, the zone is removed from the **Zone Sets** list.

4. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Renaming a Zone

Use this procedure to assign a new name to a zone.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Right-click the name of the zone you want to change in the **Zones** list and select **Rename**.

4. Type the new name for the zone.

   For zone name requirements and limitations, refer to *Zoning Naming Conventions* in Chapter 1.

5. Press **Enter** to save the new name.

   For FC Fabrics, if an invalid name is entered for a zone or zone set, the application displays a warning message. If there is a naming violation according to the vendor, the Switch returns the error message for the exact information along with the zone set activation failure message.

   For Router Fabrics, if an invalid name is entered for a zone or zone set, the application displays an error massage which includes the invalid information. The zone and zone set names are also checked during zone set activation and if invalid, the application displays an error message.

For mSANs, if an invalid name is entered for a zone or zone set, the application displays a warning message. The zone and zone set names are also checked during zone set activation and if invalid, the application displays an error message that includes information about which names are invalid for which fabric (FC or Router Fabric). If there is a naming violation according to the vendor, the Switch returns the error message with the exact information along with the zone set activation failure message.

6. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Renaming a Zone Set

Use this procedure to assign a new name to a zone set.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Right-click the name of the zone set you want to change in the **Zone Sets** list and select **Rename**.

4. Type the new name for the zone set.

   For zone set name requirements and limitations, refer to *Zoning Naming Conventions*.

5. Press **Enter** to save the new name.

   Depending on the characters included in the name you enter, a message may display informing you the name contains characters that are not accepted by some switch vendors, and asking whether you want to proceed. Click **Yes** to continue, or **No** to cancel the renaming and consider your options.

6. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Replacing a Zone Set from History

Because a zone set file is saved every time a zone set is activated, over time it is possible to accumulate a number of versions of a particular zone set. These historical versions can be viewed on a dialog box with the date and time that each one was activated. Furthermore, you can use the following procedure to replace a current version of a zone set with one of the historical versions.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Right-click the zone set you want to replace in the **Zone Sets** list and select **Replace from History**.

   The **Replace Zone Set from History** dialog box displays with a list of previous versions of the zone set identified by the date and time each version was activated.

   OR

   If the zone set has never been activated before, there are no previous versions to list. Consequently, a message box displays instead of the **Replace Zone Set from History** dialog box, informing you there is no activation history for the zone set. Click **OK** to dismiss the message box and return to the **Zoning** dialog box.

4. Select the zone set you want as the replacement for the current zone set and click **OK**.

5. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Replacing Zone Members

A zone member can be replaced in a specific, selected zone, or, if it is the member of more than one zone, it can be replaced in all the zones to which it belongs.

1. Select **Configure > Zoning**.

   The **Zone Library** tab of the **Zoning** dialog box displays.

2. Select an FC fabric, Router fabric, or mSAN from the **Zoning Scope** list.

   This identifies the target entity for all subsequent zoning actions and displays the zoning library for the selected entity.

3. Right-click the zone member you want to replace in the **Zones** list and select one of the following options from the shortcut menu that displays:

   — **Replace** - to replace the zone member in a selected zone

   — **Replace All** - to replace all instances of the selected zone member

   When you select **Replace**, the **Replace Zone Member** dialog box displays. When you select **Replace All**, the same dialog box displays, but with the title **Replace Zone Member (all instances)**.

4. Select the option from the **Method** list that you want to use to identify the replacement zone member.

5. Enter the WWN, nickname, domain and port numbers, or fabric address—whichever is appropriate for the method you chose in step 4.

   When you choose the WWN method, the **Assign Nickname** field is available; you may define a nickname for the replacement zone member. If a nickname was previously assigned to the potential member, a message displays informing you of this and asking whether you want to overwrite the existing nickname. Click **Yes** to continue and assign a new nickname, or **No** to decline and dismiss the message box.

6. Click **OK**.

   If you have entered more than one port name or zoning method, a message displays informing you of the error. Click **OK** to close the message, correct your entry, and click **OK** again.

   If no entry error was made, the new zone member replaces the old zone member in the **Zones** list and the **Replace Zone Member** dialog box closes.

7. Click **OK** or **Apply** to save your changes.

   A message displays informing you that any zones or zone sets you have changed will be saved in the zone library, and warning you to make sure no other user is making changes to the same areas.

Chapter

FICON CUP Zoning

3

In this chapter

This chapter provides information about FICON CUP Zoning and how to enable it and use it.

FICON CUP Zoning Overview

McDATA implements FICON CUP zoning, or FCZ, an enhancement to the FICON Management Server (FMS) feature. The FCZ feature modifies the behavior of the FICON Management Server (FMS).

FICON CUP zoning is available for the M4700F switch, and McDATA directors except for the Mi10K director.

The feature allows switches and directors within the same zone to see each other. However, the devices attached to each switch or director are filtered so that they are not visible to other switches or directors. The FCZ feature enhances the usability of zoning information in a FICON management server environment.

FICON CUP and Open Systems Use of Zoning

In Fibre Channel environments, the mechanism used to control a server's view and access to storage is Name Server based zoning. In FICON environments, traditional zoning is ineffective because access to the storage is defined at the host and, therefore, it is unnecessary for the server to query the fabric. Consequently, the zoning information is not required and, therefore, not utilized.

By enhancing the CUP implementation to utilize the zoning information, the switch alters the view of the hardware provided by the CUP to the host. Thus, when the host requests information regarding the ports or the control units attached to the ports, the CUP filters the response based on the zone information and reflects the status of the ports outside the zone as not installed.

FCZ is targeted at environments deploying SANs in a shared/utility model with multiple hosts requiring access to the CUP entities in the fabric.

It provides the following features:

- Provides each host with the ability to manage the ports allocated to the host by zone membership but denies access to the ports allocated to the other hosts
- Allows you to control access to the CUP so that only the authorized hosts are allowed to manage the visible network
- Hides other hosts attached to the system that are outside their zone (or zones)
- Manages ports shared between hosts

How FICON CUP Zoning Works

The supporting mechanism for CUP partitioning is the *port visibility matrix* or PVM that is constructed from the zoning data. The zoning information is mapped to the port addresses so that each entry in the table describes the list of port addresses visible to the port address corresponding to the entry. When requests are received from the host, the port visibility entry limits the scope of the request to the devices attached to the visible port addresses.

When zone updates occur, the CUP translates the zoning data into port visibility masks for each port address. The zoning influence can be overridden by the control host designation, which results in a port visibility mask that allows the designated host to see all of the port addresses. Upon receiving a request from a host, the CUP extracts the port visibility mask for that host by indexing the port visibility table with the host's port address. The resulting mask is used to limit the response to the host to only those devices corresponding to the visible port addresses.

When the FCZ feature is installed, the management interfaces enable you to define the set of *control hosts*. The control hosts are defined by configuring the list of node WWNs of the designated hosts. A maximum of eight control hosts can be defined for the switch. An empty control host list is allowed and implies that none of the attached hosts have control host privileges.

Login Status and FICON CUP Zoning

A partition is dynamic relative to the login status of the devices. This means that you can define a zone for a set of devices that are on a set of fixed ports, but until the devices log in, the partition is unpopulated and the ports associated with the zone cannot be manipulated. This behavior is reflected in the management of the port visibility matrix since it represents the active status of the partition.

Once a WWN has been associated with a port address, the WWN remains associated with port address until another device logs in on that port. Thus, after the initial login, the port address is reflected in the PVM according to the zoning data and remains initialized until another device logs in on that port.

Using FICON CUP Zoning

FICON CUP zoning does not provide tools to use; rather, it affects how zoning behaves. When host applications issue commands for configuring the network, gathering statistics, or controlling communication, the CUP in the target switch selectively provides the information about the switch hardware and the attached devices. In doing so, the switch virtualizes the CUP providing the ability to allow in-band management of FICON SANs to be isolated or partitioned between hosts.

FICON CUP Installation and Configuration

To run FICON CUP zoning, perform the following tasks:

1. Install and activate the FICON Management System optional feature key.
2. Install the FICON CUP optional feature key.

   To install and activate the FICON CUP optional feature key, see *Installing FICON CUP Zoning* below.
3. Activate the FICON CUP optional feature key.

   To install and activate the FICON CUP optional feature key, see *Activating FICON CUP Zoning* below.
4. Set up zones as you would normally.
5. Set up access using the **Allow/Prohibit Matrix** dialog box.

   To use the **Allow/Prohibit Matrix** dialog box, see *Using Allow/Prohibit Within Zones* below.

Installing FICON CUP Zoning

To install and activate the FICON CUP optional feature key, follow these steps.

1. Open the Element Manager.
2. Select **Configure > Features**.
3. In the **New Feature Key** field, type the key code for the FICON CUP Zoning feature.
4. Click **Update**.
5. The new feature displays in the **Features** panel.
6. Click on the FICON CUP Zoning feature in the **Features** panel to display a feature description in the **Details** panel.
7. Verify that the feature will install.
8. Click **OK** to confirm and enable the new feature.

NOTE
To uninstall the FICON CUP Zoning feature, enter a new key that does not contain the FICON CUP Zoning feature. Uninstalling FICON CUP Zoning requires the feature to be disabled.

Activating FICON CUP Zoning

Once the FCZ feature key has been added to the system, enable it to make it active.

1. Open the Element Manager.
2. Select **Configure > FICON Management Server > Zoning**.

   The **Configure FICON Management Server Zoning** dialog box displays.
3. Select the **Enable Zoning** option.
4. Click **Activate**.

Using Allow/Prohibit Within Zones

The allow/prohibit operations configured using the **Configure Addresses** dialog box affect port-to-port connectivity and are applied in addition to the zoning information. Therefore, configure the allow/prohibit permissions in your SAN Management application to reflect the zoning configuration. Each member of a common zone should be configured to allow access to all other members of the zone and members from different zones should be configured to be prohibited access to members in other zones.

Appendix

Reference A

This appendix provides troubleshooting information, MySQL database information, as well as vendor-specific zoning information.

Zoning Issues and Solutions

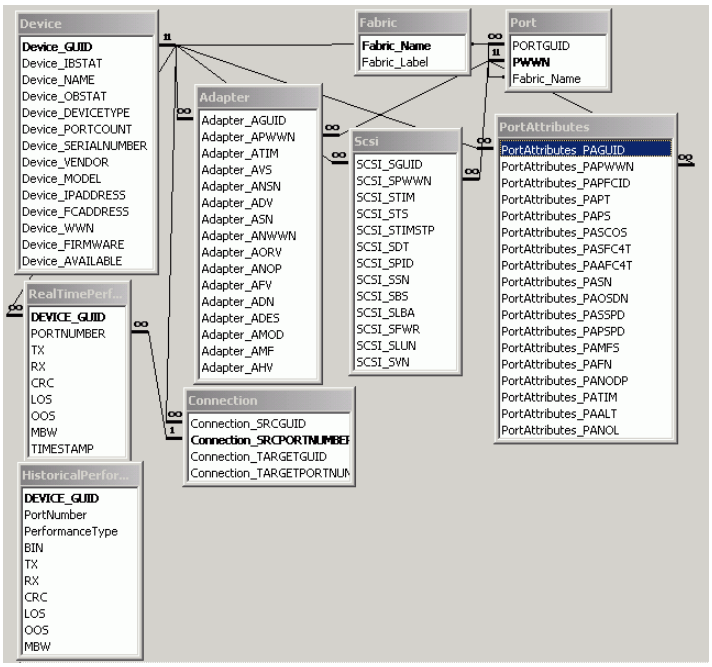
The following section states some possible issues and recommended solutions for zoning errors.

TABLE 2 Zoning Issues

Problem	Resolution
Cannot perform zoning on a new switch.	You must use telnet (or the *Product Type and Access* tab in the *Add Properties* dialog box) to change the default password on the new switch before you can use the SAN Management application to perform zoning.
When configuring a large zone set a switch displays offline during discovery.	If a large zone set is configured in a fabric, switches may temporarily display as being offline during discovery. Wait for the next discovery cycle and click the *Refresh* button on the toolbar.
When activating a large zone set on a two-switch fabric on UNIX platforms, an error message displays stating “Failed to perform the requested zoning action: Failed to zone due to exception COM.mcdata.efcmecc.EfcmUnavailableException.”	Although the error message states that the requested zoning action failed, the zone set will be correctly activated. Wait for the next zoning polling to occur. This issue only occurs on UNIX systems.
Zoning activation message displays for a long time, but zone set is not activated.	Telnet zoning can take a long time. To improve speed, open the *Discover > Setup* dialog box and add the EFC Manager IP address for McDATA and IBM switches to the *Selected Individual Addresses* list.

MySQL Database Fields

When you export data to a MySQL database, the zoning information is displayed in database tables. Refer to the figure below to determine relationships of database tables.



ZONE Table

TABLE 3 ZONE Table

Field	Definition	Format	Size
ID	Zone set ID	Varchar	255
ZONELIBRARYID	ID of zone library to which the zone set belongs.	Varchar	255
NAME	Name of the zone set	Varchar	255
EXPORTTIME	The exported time.	Varchar	128

ZONELIBRARY Table

TABLE 4 ZONELIBRARY Table

Field	Definition	Format	Size
ID	Library ID	Varchar	255
FABRICNAME	Name of the fabric to which the library belongs.	Varchar	128
TYPE	'Discovered' or EFCM	Varchar	128
ACTIVEZONESETID	ID of the active zone set, if any	Varchar	255
EXPORTTIME	The exported time.	Varchar	128

ZONEMEMBER Table

TABLE 5 ZONEMEMBER Table

Field	Definition	Format	Size
ID	Zone member ID	Int unsigned	11
ZONEID	ID of the zone to which the member belongs.	Varchar	255
MEMBERTYPE	The type of zone member (WWN, Domain/Port, or Fabric Address).	Varchar	128
EXPORTTIME	The exported time.	Varchar	128

ZONEMEMBERDOMAINPORT Table

TABLE 6 ZONEMEMBERDOMAININPORT Table

Field	Definition	Format	Size
ID	Zone member ID	Int unsigned	11
DOMAIN	The Domain number.	Int unsigned	6
PORT	The Port number.	Int unsigned	6
EXPORTTIME	The exported time.	Varchar	128

ZONEMEMBERFABRICADDRESS Table

TABLE 7 ZONEMEMBERFABRICADDRESS Table

Field	Definition	Format	Size
ID	Zone member ID	Int unsigned	11
FABRICADDRESS	The Fabric address.	Varchar	128
EXPORTTIME	The exported time.	Varchar	128

ZONEMEMBERWWN Table

TABLE 8 ZONEMEMBERWWN Table

Field	Definition	Format	Size
ID	ID of the member in the Zone Member table	Int unsigned	11
WWN	World-wide name	Varchar	128
EXPORTTIME	The exported time.	Varchar	128

ZONESET Table

TABLE 9 ZONESET Table

Field	Definition	Format	Size
ID	Zone set ID	Varchar	255
ZONELIBRARYID	ID of zone library to which the zone set belongs	Varchar	255
NAME	Name of the zone set	Varchar	255
EXPORTTIME	The exported time.	Varchar	128

ZONESETZONES Table

TABLE 10 ZONESETZONES Table

Field	Definition	Format	Size
ZONESETID	ID of the zone set	Varchar	255
ZONEID	ID of the zone	Varchar	255
EXPORTTIME	The exported time.	Varchar	128

Vendor-Specific Zoning Information

Refer to the following sections for information on zoning with third-party products.

Zoning with QLogic Switches

Zoning with QLogic Switches

If you are configuring zoning on QLogic switches using the SAN Management application, note the following points:

- If you are running a fabric with a QLogic switch and the QLogic switch is not the principal switch, the auto-save feature must be turned off. Storing zone libraries on a non-principal QLogic switch is redundant and will eventually cause a failure due to exceeding zone member limits.
- If you add a reserved fabric or WWN address to a zone on a QLogic fabric and activate the zone set, the application will initially indicate that the zone has been configured properly and a zoning mismatch message will display on the **Zoning** dialog box after the next discovery pass.
- Inactive zones in partially-activated QLogic zone sets may not display in the **Zoning** dialog box. The application may mistakenly indicate that a zone is set correctly. This error will occur when you set a zone with an invalid member or a member that exceeds the QLogic zone member or zone set limit.
- If you add a reserved fabric, invalid WWN address or invalid domain/port value to a zone on a QLogic fabric and activate the zone set, the application will initially indicate that the zone has been configured properly and a zoning mismatch message will display on the **Zoning** dialog box after the next discovery pass.

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