Configuring Zoning for SAN Fabrics, Release 4.2.1

Table of Contents

New and changed information

The following table provides an overview of the significant changes up to this current release. The table does not provide an exhaustive list of all changes or of the new features up to this release.

Release Version	Feature	Description
Nexus Dashboard 4.2.1	There were no major changes from the previous release.	

Understanding zoning

Zoning allows you to set up access control between storage devices or user groups. If you have administrator privileges in your fabric, you can create zones to increase the network security and to prevent data loss or corruption. Zoning is enforced by examining the source-destination ID field.

When device aliases are used for zoning in Web UI, end devices must be logged into the fabric thus web GUI can configure zoning using device aliases. If end nodes are not logged in, PWWN can be used for zoning.

The following table describes the fields and icons that appear on the Nexus Dashboard **Manage > Zoning** tab.

Field	Description
Zoning Type	Provides support for regular and Inter-VSAN Routing (IVR) zone types. Click the **Regular** or **IVR** radio button to select the required zoning type.
Fabric	Specifies the fabric for which you are configuring zones. If the admin has locked the fabric, you can view a lock icon next to the fabric field.
VSAN	Specifies the VSAN for which you are configuring regular zones. This field is enabled only if you select **Regular** in the **Zoning Type** field.
Region ID	Specifies the region name for which you are configuring IVR zones. This field is enabled only if you select **IVR** in the **Zoning Type** field.
Enhanced Zoning	Configures enhanced zoning capability on the switch. Click the icon next to **VSAN** text field to view **Enhanced Zoning** window.  Enhanced zoning is supported only for the **Regular** zone. For more details, see the Configure enhanced zoning section.
Cisco Fabric Services (CFS)	Configures CFS on the switch. Click the icon next to the **Region ID** field to view CFS window.  CFS is supported only for IVR zoning. For more details, refer to the Configure CFS section.
Switch	Specifies the switch that you want to add to a zone.

In the **Zoning** area, click **Actions** to view the following items:

Field	Description
Changes	In the **Zoning** area, choose **Actions > Changes**. • **Enable smart zoning** – Enables smart zoning configuration for all the switches. • **Commit changes** – Commits the zoning configuration changes to all the switches. This field is only applicable when a zone is in the enhanced or smart mode. Before committing your changes, you can view a dialog box with the pending zone data and the VSAN ID. For more information, see the "Fabric Summary" section and the "Troubleshooting VSAN Zone Locks" section in Understanding Fabric Overview for SAN Fabrics. • **Discard Pending** – Discards the changes in progress.
Database	In the **Zoning** area, choose **Actions > Database**. • **Backup database** – Enables you to backup the current VSAN or all the VSANs. • **Restore database** – Enables you to restore the VSANs.
Clear Server Cache	Clears the cache on the server.
Discovery Sync	Synchronizes zoning modules with discovery.
View Unzoned End Devices	Displays a list of unzoned end devices of a fabric. You can view the unzoned devices in all fabrics or the current fabric.
Zone Migration	Opens the **Zone Migration** wizard for migrating Brocade SAN fabrics into Cisco MDS 9000 SAN fabrics. See Migrate SAN zones from a Brocade switch to a Cisco MDS switch for more information.

Configure enhanced zoning

Enhanced zoning performs all configurations within a single configuration session for regular zoning. When you begin a session, the switch locks the entire fabric to implement the changes.

To configure enhanced zoning:

1. Click **Manage > Zoning**.
2. In the **Zoning Type** field, choose **Regular**.
3. Click the **Enhanced Zoning** configuration icon next to the **VSAN** field to view the **Enhanced Zoning** window.

   The **Enhanced Zoning** window has the following fields.

Field	Description
Switch	Specifies IP address of the switch.
Mode	Displays mode of the switch, that can be one of the following: • Basic • Enhanced
Result	Displays the activation results, which can be one of the following: • Success • Failed
Config DB locked by	Displays the role name of locked configuration database.
Action	Displays the action on the switch, that can be one of the following: • No operation • Commit changes • Cleanup Click **edit** icon on last column to select required action and click check mark icon to save.
Last Action Results	Displays status of last configuration database.
Enforce full DB merge	Displays status as enabled or disabled. Click **edit** icon on last column to select required action and click check mark icon to save. Enabling it ensures that both the active and local zones are merged and are identical on all switches for a VSAN.
Read from	For enhanced zones or IVR CFS enabled zones when a change is made to zoning DB on a switch, all zone data is pushed into a pending database, until commit command is issued. This flag helps user to get data either from pending zone DB (Copy DB) or regular zone DB (Effective DB). Click **edit** icon on last column to select required action and click check mark icon to save.

Field	Description
Activation Date	Specifies date of the zoneset activated.

4. Click the **Edit** icon next to the **Read from** column to choose the required database and click the **Tick** icon to save.
5. Change the mode to basic or enhanced, if necessary.
    - To change the mode from basic to enhanced, choose **Actions > Set Mode to Enhanced** and click **Apply**.
    - To change the mode from enhanced to basic, choose **Actions > Set Mode to Basic** and click **Apply**.

View zoning audit logs

You can view audit logs specific to zoning operations in Nexus Dashboard **Manage > Zoning** page.

Zoning audit logs are retained for the duration specified in the **Zone Audit Logs Days** setting in Nexus Dashboard. By default, the audit logs are available for 90 days. Users with administrator privileges can enable zoning audit logging and configure the retention period (in days) in the **Admin > System Setting> Advance settings > Zoning > Zone Audit logs days** field.

Follow these steps to view zoning audit logs.

1. Click **Manage > Zoning**.
2. Scroll down to the **Zoning Audit Log** section.
3. In the **Filter by attributes** field, enter a column name from the table to sort and display the zoning audit log information.

These fields appear in the **Zoning Audit Log** table.

Field	Description
CreationTime	Specifies the date and time of the zoning operation and log creation.
User	Displays the user role. For example, if a user with admin role creates a ZoneSet, the **User** field displays admin.
Event Type	Displays the type of the zoning operation. For example, Create ZoneSet.
Details	Displays the additional inforamtion on the audit event. For example, ZoneSet: z1-zoneset created.
Fabric	Displays the name of the fabric associated with the zoning audit log.
VSAN	Specifies the number of VSANS configured on this Zoneset.

Configure CFS

Cisco Fabric Services (CFS) provides a common infrastructure for automatic configuration synchronization in the fabric for IVR zoning. When a CFS is configured on one switch and same properties can be transmitted on other switches. You can enable or disable IVR on the switch. Furthermore, you can enable or disable both CFS and global CFS on the selected switch.

To configure CFS:

1. Click **Manage > Zoning**.
2. In the **Zoning Type** field, choose **IVR**.
3. Click the **CFS** configuration icon next to the **Region ID** field to view the **CFS** window.

   The **CFS** window has the following fields.

   - Control
   - IVR
   - Action

Control

The following table describes the fields that appear in the **Control** tab.

Fields	Description
Switch	Specifies IP address of the switch.
IVR Status	Displays whether IVR is enabled or disabled on the switch.
Edit	Click **Edit** icon to enable or disable IVR on the switch and click tick mark to save changes.
Refresh	Click **Refresh** icon to refresh table.
Apply	Click **Apply** to save changes for each modification on the switch.
Done	Click **Done** to save all changes and to exit from CFS window.

IVR

The following table describes the fields that appear in the **IVR** tab.

Fields	Description
Switch	Specifies IP address of the switch.
CFS Status	Specifies whether CFS status is enabled or disabled.
Global CFS	Specifies whether this feature is enabled or disabled on the switch.

Fields	Description
Read from	Specifies status: • Effective DB • Copy DB
Lock Owner	Specifies switch is locked by admin.
Merge Status	Specifies fabric merge that occurred.
Region ID	Specifies the region id of the switch.
Edit	Click **Edit** icon to perform changes in Read from and Region ID column for selected row.
Apply	Click **Apply** to save changes for each modification on the switch
Refresh	Click **Refresh** icon to refresh table.
Done	Click **Done** to save all changes and to exit from CFS window.

You can perform these operations on a switch in the IVR tab:

- To enable IVR on a switch, choose a switch, then click **Actions > Commit** and click **Apply**.

You can commit changes only if CFS is enabled on a selected switch.

- To disable IVR on a switch, choose a switch, then click **Actions > Abort** and click **Apply**.
- To clear IVR information on a switch, choose a switch, then click **Actions > Clear** and click **Apply** .
- To enable CFS on a switch, choose a switch, then click **Actions > Enable CFS** and click **Apply**.
- To enable CFS globally on a switch, choose a switch, then click **Actions > Disable Global CFS** and click **Apply**.

Action

The following table describes the fields that appear in the **Action** tab.

Actions	Description
Switch	Specifies IP address of the switch.
Active	Specifies switch active status is true or false.
Activation Time	Specifies the activation date and time.
IVR NAT Status	Specifies IVR status is enabled or disabled.
Auto Discover Topology	Specifies whether auto discover topology status is true or false
Edit	Click **Edit** icon to perform changes in IVR NAT Status and Auto Discover Topology columns for selected row.
Region ID	Specifies the region id of the switch.
Edit	Click **Edit** icon to perform changes in Read from and Region ID column for selected row.

Actions	Description
Apply	Click **Apply** to save changes for each modification on the switch
Refresh	Click **Refresh** icon to refresh table.
Done	Click **Done** to save all changes and to exit from CFS window.

Migrate SAN zones from a Brocade switch to a Cisco MDS switch

This topic describes the steps to migrate SAN zones from a Brocade switch to a Cisco MDS switch. Migrating SAN zones involves the following two steps:

- Generating and downloading the zoning configuration from the Brocade switch locally.
- Converting and applying the Brocade zoning configuration to a Cisco MDS switch.

To migrate zones from a Brocade switch to a Cisco MDS switch, perform the following steps:

1. In the Cisco Nexus Dashboard Web UI, click **Manage > Zoning**.
2. In the **Zoning** area, choose **Actions > Zone Migration**.

   The **Zone Migration** wizard opens.
3. To generate and collect the zoning configuration from the switch and to download it locally, click the **Fetch Active Zones From Brocade Switch** radio button.
4. Enter the IP address of the discovered Brocade switch in the **Brocade Switch IP Address** field and click **Fetch**.

   The system downloads a text file with the configuration from the Brocade switch onto your local drive.
5. Click the **Migrate Brocade Zones Configuration to MDS** radio button and select the configuration file that you have downloaded in the previous step.
6. In the **VSAN Index** field, enter the VSAN to which the zone must be added.

   The valid range is 1 to 4093.
7. [Optional] Check the **enable enhanced zone** and **enable enhanced Device Alias** check boxes.

   It is recommended to enable enhanced zone and enhanced device-alias modes in new deployments.
8. Click **Migrate** to generate a Cisco compatible zone configuration file.

   The system converts the Brocade switch configuration to a format compatible with Cisco MDS 9000 series switches and downloads the file to your local drive.
9. To apply the configuration changes to the desired Cisco MDS switch, execute the contents of the file generated from the previous step on the CLI console on the switch.

Working with configured zonesets

The zoneset area displays the configured zonesets and their status based on the fabric, VSAN, and switch you choose. You can create, copy, delete, edit, activate, or deactivate the zonesets on the **Manage > Zoning** page.

These fields are displayed in the **Zonesets** table.

Field	Description
Zoneset Name	Lists all the names that are configured under the selected Zoneset. Click on the zoneset name to view the summary information in a slide-in pane. Click **Edit Zoning** to edit and activate zoneset.
Modified	Displays if the zoneset is modified or not.
Activation Date	Specifies date of the zoneset activated.

Create a zoneset

Follow these steps to create a zoneset.

1. Navigate to **Manage > Zoning**.
2. In the **Zonesets** section, click **Actions > Create new zoneset**.

   The **Create Zoneset** dialog box appears.
3. Enter a valid name for the zoneset, then click **Create zoneset**.

   A zoneset is created and is listed in the **Zonesets** section.

Rename a zoneset

Follow these steps to rename a zoneset.

1. Navigate to **Manage > Zoning**.
2. Choose the radio button next to the zoneset that you want to rename in the **Zoneset Name** column.
3. Choose **Actions > Rename zoneset**.

   A dialog box appears with **Existing name** and **Name** fields.
4. Enter a new name in the **Name** field.
5. Click **Rename**.

   The renamed zoneset is displayed in the **Zonesets** section.

Copy or clone a zoneset

Follow these steps to copy or clone a zoneset.

1. Choose a zoneset from the table and click **Actions > Copy / Clone zoneset** or click the ellipsis icon in the last column.

   The **Clone or Copy zoneset** dialog box displays the **Copy** and **Clone** options.

2. Choose one of these options.
   - **Copy**: Creates a new zoneset that consists copies of the zones in the initial zoneset.
     - You can prepend or append a string to identify the copied zoneset. Enter a valid string in the **Tag** field, and choose the **Prepend names** or **Append names** radio button.
   - **Clone**: Creates a new zoneset with a new name consisting of the same zones as the source zoneset.
     - In the **New Zoneset Name** field, enter a valid name for the new zoneset.
   - Click **Apply** to clone or copy the zoneset.

     The cloned or the copied zoneset appears in the **Zoneset** area.

Edit zones and members

Follow these steps to edit a zone name.

1. Choose the radio button next to the **Zoneset Name** for the zoneset that you want to edit.
2. Choose **Actions > Edit zones & members** or click the **ellipsis** icon.

   The **Zoneset *name*** page appears.

3. In the **Zone Name** column, check the check box next to zone name that you want to edit.
4. Choose the **Actions** drop-down list to perform **Enable smart zoning**, **clone zone**, **Rename zone**, **Rmove from zoneset**, and **Delete zones (s)** actions. For more information, see Create zones.
5. Choose the **Actions** drop-down list to perform **Add exiting members**, **Create new member**, and **Remove members from zone(s)** actions in the **Members** area.

Activate or deactivate a zoneset

Follow these steps to activate or deactivate a zoneset.

1. Choose the radio button next to the deactivated **Zoneset Name** and click **Activate** to activate a zoneset.

   The **Zoneset Differences** page displays the changes made to the zoneset since it was activated previously.

2. Click **Activate**.
3. Choose the radio button next to the **Zoneset Name** that you want to deactivate and click **Actions > Deactivate** to deactivate a zoneset.

   A confirmation dialog box appears.

4. Click **Yes** to deactivate the zoneset.

Delete a zoneset

Follow these steps to delete a zoneset.

1. Choose the zoneset radio button next to the **Zoneset Name** that you want to delete.
2. Choose **Actions > Delete zoneset**.

   A warning dialog box appears to alert you about the delete action.

3. Click **Yes** to delete the zoneset.

Create zones

You can create, copy, clone, rename, and delete zones. A zone displays a true or false value only when the VSAN has smart zone enabled. You can also add or remove zones from a zoneset and enable or disable the smart zoning in the zone table.

Follow these steps to create zones.

1. Navigate to **Manage > Zoning**.
2. In the **Zonesets** area, choose a zoneset.
3. Click **Actions > Edit zones & members**.

   The table displays the fields that appear on the **Zones** tab.

Field	Description
Filter by Attribute	You can search by specifying the required zone name, zoneset, and members.
Add to zoneset	You can choose a zone name and click **Add to zoneset.**
Actions	You can choose a zone name and an action to perform on the zone name.
Refresh	Click the **Refresh** icon to refresh the zone table.
Zone Name	Displays the name of the zone. You can search by specifying the zone name. You can click the **Topology** icon next to the zone name to view the **Zone Topology**. The topology is displayed in hierarchical left-right layout by default. In the topology view, hover on the nodes to see the tool tip. Click on the switch to view the switch summary. Click the **Launch** icon to view Switch Overview.  You cannot save any changes made to topology layout from this page. Choose a zone name to view the members of the zoneset. The **Status** column displays if the zone member is online or offline.

Field	Description
In Zoneset	Specifies whether a zone is part of a zoneset. Displays **true** if the zone is part of a zoneset. Otherwise, displays **false**. You can search by choosing true or false from the **In Zoneset** drop-down list.
Members	Specifies the zone members of the zone. You can search by specifying the member.

4. To create a zone, choose **Actions > Create new zone**.
   a. In the **Create new zone**, enter a valid name for the Zone, and click **Create**.
   b. Click **Create new zone**.
   c. Check the checkbox next to **Smart Zoning**, to enable smart zoning for new zone.

      A zone is created and is listed in the **Zones** area.
5. To enable a smart zone, check the checkbox next to **Zone Name** that you want to have smart zoning enabled, and choose **Actions > Enable smart zoning**.

   You can view smart zone column only if smart zoning is enabled for VSAN.
6. To disable a smart zone, check the checkbox next to **Zone Name**, and choose **Actions > Disable smart zoning**.
7. To Clone Zones, choose **Configure > Manage > Zoning > Zones**, choose the **Zone** radio button, and click the **Clone Zone** icon.

   The **Clone Zone** page is displayed.
   a. In the Name field, enter a valid name for the new zoneset.
   b. Click **Clone** to clone the zone.

      The cloned zones appear in the **Zones** area.
8. To rename a zone from a zoneset, check the checkbox next to the **Zone Name**, and choose **Actions > Rename zone**.

   In the **Name** field, enter the new name for the zone, and click **Rename**.
9. To remove a zone from a zoneset, check the checkbox next to **Zone Name**, and choose **Actions > Remove from zoneset**.

   The zone is removed from the Zoneset. A green tick mark disappears next to the Zone name to indicate that the zone is removed from the zoneset.
10. To delete a zone from a zoneset, check the checkbox next to **Zone Name** you want to delete, and choose **Actions > Delete zone(s)**.

    You can choose multiple zones to delete more than one zone at a time.

You cannot delete a zone that is a member of the zoneset. Remove the zone from the zoneset to delete it.

Create FC aliases

The FC aliases feature is supported for regular zones. It is used to associate with one or more pWWNs to a required name. When you add a zone member, you can add an FC alias or delete existing FC aliases.

The **FC Aliases** tab displays these fields:

- FC Alias—Specifies the name of FC Alias.
- Member—Specifies members associated with FC Alias.

To create an FC alias:

1. Navigate to **Manage > Zoning**.
2. In the **Zonesets** area, choose a zoneset.
3. Click **Actions > Edit zones & members**.

   The **Zoneset** window is displayed.
4. Click the **FC Aliases** tab to view the **FC Aliases** area.
5. Click **Actions > Create new FC Alias**.

   The **Create new FC Alias** window is displayed.
6. Enter a valid name in a text field and click **Create FC Alias**.

   An FC alias is created and is listed in the FC Aliases area.
7. To delete a new FC alias, select the required check box next to the **FC Alias** column, then click **Actions > Delete FC Alias**.

Create zoneset members

The **Members** area displays the zone members and their status based on the zoneset and zone. Enter the required field name in the **Filter by attributes** text field to view member details.

You can add or remove members, add existing members, and add existing FC aliases to members.

Follow these steps to create a new zoneset member.

1. Navigate to **Manage > Zoning**.
2. In the **Zonesets** area, choose a zoneset.
3. Click **Actions > Edit zones & members**.

   The **Zoneset** page is displayed.

4. Choose a zone name to view the list of zone members. The zone member information is displayed in the **Members** area.

   The table displays the fields that appear on the **Members** area.

Field	Description
Zone/FC Alias	Displays the name of the zone member. You can search by specifying the zone name.
Member	Displays the member name for the zone.
Switch	Specifies the switch that the zone member is linked. You can search by specifying the switch.
Interface	Specifies the interface that the zone member is attached to. You can search by specifying the interface.
Status	Specifies the status of zone.
Zoned By	Displays the type of zoning. You can search by type of zoning such as WWN, FCID, FC Alias, or iSCSI, FWWN, Device Alias, IP Subnet and many more.
FCID	Specifies the FCID associated with the zone member. You can search by specifying the FCID associated with the zone member.
pWWN	Specifies the pWWN of the switch. You can search by specifying the WWN of the switch.

5. In the **Members** area, click **Actions > Create new member**.
6. In the **Create and add a new member** dialog box, choose the appropriate Zone. **Show only common options** are displayed by default.

   Click **Show all options** to display all Zone by options.

   The new member name is based on the Zone by option type you choose. For example, when you choose the **WWN** option, the name in the text field is for WWN zone. Similarly, when you choose the **Domain & Port** option, the Domain ID number and Switch Interface name.

7. Enter a valid name in the text field and click **Create Member**.

   The **Create Member** option allows you to add a member to a zone that does not exist in the fabric, currently. This feature can be utilized when the device discovery did not discover all the devices. With the Available to add feature, you can add a discovered device to the zone.

8. To remove a zone member, check the checkbox next to **Zone** you want to remove and then click **Actions > Remove Member from zone(s)**.

   You can choose multiple zones in an instance to remove.

9. To add existing member, choose **Actions > Add existing members**.

   The table displays the fields that appear on the **Add existing members** page.

Field	Description
Zone By	The **Zone by** feature determines if the device must be added to the zone using the device WWN or device alias. If you choose **Zone By: End Ports**, the devices are added to the zones by WWN. Similarly, for **Zone By: Device Alias** and **Zone By: FC Alias** the devices are added to the zones by Device Alias and FC Alias respectively. Based on the Zone by option you choose, the devices are displayed.
Member Name	Displays the name of the zone. You can search by specifying the zone name.
Type	Specifies the switch is storage or host.
Switch	Specifies the switch that the zone member is linked. You can search by specifying the switch.
Interface	Specifies the interface that the zone member is attached to. You can search by specifying the interface.
pWWN	Specifies the pWWN of the switch. You can search by specifying the pWWN of the switch.
VSAN	Specifies the VSAN the zone member is in.

10. Choose the appropriate **Zone by** option and the required **Member Name**.
11. Click **Add members**.

You can choose multiple zones at a time. When you do so, a dialog box appears with a list of all the currently chosen zones in the zone table.

About Active Zones

The following sections provide information on Active Zones.

View regular zones information

You can view all the regular zones that are configured in the Nexus Dashboard. Click **Analyze > Active Zones**, then click the **Regular Zones** tab.

The following table describes the fields that appear in the **Regular Zones** window.

Field	Description
Zone	Specifies the name of the zone.
Fabric	Specifies the name of the fabric.
VSANS	Specifies the number of VSANS configured on this Zone.
Zone Sets	Specifies the name of zone set to which the zone belongs.
Zone	Displays the zone under which this member is present. Click the **Topology** icon next to the zone name to view **Zone Topology**. The topology is displayed in hierarchical left-right layout by default. In the topology view, hover on the nodes to see tool tip. Click on switch to view the switch summary. Click **Launch** icon to view the **Switch Overview** window. You cannot save any changes made to topology layout from this screen.
Switch Interface/WWN	Specifies the switch interface or WWN of the switch that the zone member is attached to.
PWWN	Specifies the associated pWWN to the switch.
Member Name	Displays the name of the zone member.
Zoned By	Displays the type of zoning. You can search by type of zoning such as WWN, FCID, fcAlias, or iSCSI.

View IVR zones information

You can view all the IVR zones configured in the Nexus Dashboard. Click **Analyze > Active Zones**, then click the **IVR Zones** tab.

The following table describes the fields that appear in the **IVR Zones** window.

Field	Description
Fabric	Specifies the fabric name.
VSANS	Specifies the number of VSANS configured on this Zone.

Field	Description
Zone Sets	Specifies the name of Zone set to which the zone belongs.
Zone	Displays the zone under which this member is present.
Switch Interface/WWN	Specifies the switch interface or WWN of the switch that the zone member is attached to.
PWWN	Specifies the associated pWWN to the switch.
Member Name	Displays the name of the zone member.
Zoned By	Displays the type of zoning. You can search by type of zoning such as WWN, FCID, fcAlias, or iSCSI.

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