



# Integrating Cisco Nexus Data Broker With Cisco ACI

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## SPAN Management

Switch port Analyzer (SPAN) is an efficient and high performance traffic monitoring system. It duplicates the network traffic and routes the packets to an the analyzer for monitoring. SPAN is used for troubleshooting connectivity issues and calculating network utilization, and performance monitoring. You can add, edit, remove, and rediscover a device to SPAN using NDB.

## Adding a Device to SPAN

Complete these steps to add a device to Switch Port Analyzer (SPAN).



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**Note** Starting with Cisco NDB release 3.8, you can add multiple APIC in NDB.

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### Procedure

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- Step 1** Navigate to **ADMINISTRATION > Devices > SPAN MANAGEMENT** tab.
- Step 2** Click **Add Device**, the **Connect to Devices** dialog box appears.
- Step 3** Select **ACI** option to add a new APIC device to SPAN. To add a new NX-OS based device, select the **NXOS** option.
- Step 4** In the **Connect to Devices** dialog box, enter the following details:

Table 1: New Device Details

Field	Description
APIC IP Addresses (Applicable for adding APIC device)	
<b>APIC IP Address / HostName (Primary)</b>	Primary APIC IP address or hostname.
<b>APIC IP Address (Secondary)</b>	Secondary (backup) APIC IP address or hostname. This field is optional.
<b>APIC IP Address (Tertiary)</b>	Tertiary (backup) APIC IP address or hostname. This field is optional.
NXOS Device Details (Applicable for adding NX-OS based device)	
<b>Address</b>	IP address of the NX-OS device.
<b>Port</b>	The device communication port.
<b>Username</b>	Username for authenticating the device.
<b>Password</b>	Password for authenticating the device.

- Step 5** Click **Connect** to add the new device to SPAN. The new device is listed under the **SPAN MANAGEMENT** tab.

## Editing a SPAN Device

Complete these steps to edit details of a SPAN device:

### Procedure

- Step 1** Navigate to **ADMINISTRATION > Devices > SPAN MANAGEMENT** tab .
- Step 2** Click **Edit** for a device to edit device details. The **Edit Device** dialog box appears. You can update the following details for a device:

Field	Description
<b>Port</b>	Specify new port number for communication. This field is available only for NX-API devices.
<b>User Name</b>	Specify new user name for the device authentication.
<b>Password</b>	Specify new password for the device authentication.

- Step 3** Click **Edit Device** to apply the updated information and close the **Edit Device** dialog box.

## Rediscovering a SPAN Device

You can rediscover a device after updating device details using the Rediscover Devices feature. To rediscover a device, complete these steps:

### Procedure

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- Step 1** Navigate to **ADMINISTRATION > Devices > SPAN MANAGEMENT** tab.
  - Step 2** Select a device to rediscover from the list of devices under the **SPAN MANAGEMENT** tab.
  - Step 3** Click **Rediscover Devices**, the **Rediscover Devices** dialog box appears.
  - Step 4** Verify the selected device for rediscovering and click **Rediscover Device**.
  - Step 5** Click **Yes** in the dialog box to complete the rediscovery process.
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## Removing a Device from SPAN

You can remove a device from SPAN while retaining its configuration or you can remove a device from SPAN and delete all the corresponding device configuration from a SPAN. Complete these steps to remove a device from SPAN.

### Procedure

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- Step 1** Navigate to **ADMINISTRATION > Devices > SPAN MANAGEMENT** tab.
- Step 2** From the list of devices under the **SPAN MANAGEMENT** tab, select the device(s) to remove.
- Step 3** Click **Remove Devices**. The **Remove Devices** dialog box appears.
- Step 4** Verify the selected device(s) in the **Remove Devices** dialog box and click either of the two options:
  - **Remove Device**: Use this option to remove the device from SPAN while retaining the device configuration.
  - **Purge & Remove Device**: Use this option to remove the device and device configuration from SPAN.

The device is removed from the **SPAN MANAGEMENT** tab.

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## Viewing the SPAN Management Tab

The **SPAN Management** tab is displayed on the **Devices** screen under the **Administration** tab in the GUI.



**Note** Starting with Cisco Nexus Data Broker, release 3.8, you can configure multiple APIC devices on NDB.

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On the **SPAN Management** tab, click + **Add Device**. The **Connect to Device** window is displayed. Complete the following steps to connect to the device:

**Before you begin**

For APIC and production switches, the centralized deployment of Cisco Nexus Data Broker is mandatory.

**Procedure**

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- Step 1** Choose **ACI** device to add an APIC device.
- Step 2** In the **APIC IP Addresses** panel, add the **APIC IP Address (Primary)**, **APIC IP address (Secondary)**, and **APIC IP address (Tertiary)**.
- Step 3** In the **User Details** panel, add **Username** and **Password**.
- Step 4** After an ACI device has been added, the ACI radio button is disabled. Then you can add a NXOS production switch. Click **NXOS** in the first step to add a NXOS production switch.
- The NX-API feature has to be enabled for the NXOS production switch to be added. To add a NXOS production switch in the **SPAN Management** tab, one NX-API device should already exist. This is a pre-requisite.
- Step 5** Click **Connect**.
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The NXOS production switch is displayed with the **Type** as **PS** in the **SPAN Management** tab. The **APIC IP Address (Primary)**, **APIC IP address (Secondary)**, and **APIC IP address (Tertiary)** do not apply to the NXOS production switch. Therefore, those fields are blank. You can also edit the credentials of the NXOS production switch. Once the production switch is added, it is displayed in the Configuration tab in green. In the Port Configuration window, you can configure SPAN Destination in the production Nexus switches that are NX-API enabled.

## Viewing the SPAN Destination Tab

When you click **Port Definition** tab in the GUI, the **Port Definition** screen is displayed. Select the switch from the drop-down list to configure the ports.

On the **Port Definition** screen, the following two tabs are displayed:

- Port Configuration
- SPAN Destination

On the **SPAN Destination** tab, the following details are displayed:

- SPAN Destination Name
- SPAN Destinations
- Node Connector
- Monitor Port Type
- Description

# Adding SPAN Destination

When you configure a port as an edge SPAN port and the port is connected to the API side, you can select the APIC device, pod, node, and port from the ACI side and set the port as SPAN destination. SPAN destination can now be configured on the Cisco Nexus 9000 or Cisco Nexus 3000 Series production switches.



**Note** For APIC SPAN destination, when you configure a port as an Edge SPAN port and the port is connected to the API side, you can select the pod, the node, and the port from the ACI side and set the port as SPAN destination. For production switch SPAN destination, when you configure a port as an Edge SPAN port and the port is connected to the production switch side, you can select the node and the port from the production switch side and set the port as SPAN destination.

You can add SPAN destination only after either an APIC or the production switch has been successfully added to the network.

## Procedure

- Step 1** Select the switch for which you want to configure the port details on the **Port Configuration** screen.
- Step 2** Click **Configure** under **Action**.  
The **Configure Ports** window is displayed.
- Step 3** In the **Configure Ports** window, configure the port type from the **Select a port type** drop-down list by selecting one of the following options:
  - **Add Monitoring Device**
  - **Edge Port-SPAN**
  - **Edge Port-TAP**
  - **Production Port**

**Monitoring Device**—Creates a monitoring device for capturing traffic and configures the corresponding delivery port.

**Edge Port-SPAN**—Creates an edge port for incoming traffic connected to an upstream switch that is configured as a SPAN destination.

**Edge Port-TAP**—Creates an edge port for incoming traffic connected to a physical TAP port.

**Production Port**—Creates a production port for the ingress and egress traffic.

When you select the port type, the title of the window changes to **Manage Configure Ports**.
- Step 4** In **Manage Configure Ports** window, the details of the selected node are displayed.
- Step 5** In the **Destination** panel, if the APIC device is added, it is listed in the drop-down list. Select the **Node Type** as **APIC** from the drop-down list.  
The **SPAN Destination** and **Copy Device** tabs are displayed.
- Step 6** When you click the **SPAN Destination** tab, the **Select SPAN Destination** window is displayed. From the Select APIC Node select an APIC node.

- Step 7** From the **Select Node** drop-down list, select an APIC device.
- Step 8** Select corresponding leaf switch, node and port from the **Select Pod** drop-down list, **Select Node** drop-down list, and **Select Port** drop-down list to configure the SPAN Destination.
- Step 9** Click **Apply**.  
The port is now configured as SPAN destination part and it is displayed on the Port Definition screen.
- Step 10** (Optional) In the **Configure Ports** dialog box, under **Destination** section, specify MTU for the SPAN Destination in the **MTU** text-field. You can configure MTU range between 1 and 9216.
- Step 11** Click **Submit**.

## Creating Copy Devices Using Copy Sessions (BETA)

When you configure a port as an edge-SPAN port, you can create copy devices using Copy Sessions (BETA) functionality.



**Note** You can add SPAN destination and copy devices only after an APIC device has been successfully added to the network.

### Procedure

- Step 1** Select the switch for which you want to configure the port details using the **Port Configuration** screen.
- Step 2** Click **Configure** under **Action**.

The **Configure Ports** window is displayed.

- Step 3** In the **Configure Ports** window, configure the port type from the **Select a port type** drop-down list by selecting one of the following options:

- **Add Monitoring Device**
- **Edge Port-SPAN**
- **Edge Port-TAP**
- **Production Port**

**Monitoring Device**—Creates a monitoring device for capturing traffic and configures the corresponding delivery port.

**Edge Port-SPAN**—Creates an edge port for incoming traffic connected to an upstream switch that is configured as a SPAN destination.

**Edge Port-TAP**—Creates an edge port for incoming traffic connected to a physical TAP port.

**Production Port**—Creates a production port for the ingress and egress traffic.

When you select the port type, the title of the window changes to **Manage Configure Ports**.

- Step 4** In **Manage Configure Ports** window, the details of the selected node are displayed.

- Step 5** In the **Destination** panel, if the APIC device is added, it is listed in the drop-down list. Select the **Node Type** as **APIC** from the drop-down list.
- The **SPAN Destination** and **Copy Device** tabs are displayed. See *Adding SPAN Destination* section for adding SPAN destination.
- Step 6** When you click the **Copy Device** tab in the same window, the **Create Copy Device (BETA)** window is displayed.
- Step 7** In the General panel, enter the name of the device in the **Name** field. The values for the fields, **Device Type** and **Physical Domain** are hard-coded.
- Step 8** In the Device Interface panel, enter the details in the following fields: **Name**, **Pod**, **Node**, and **Port**. The value for the field, **Path Type** is hard-coded.
- Step 9** In the Cluster panel, enter the details in the following fields, **Name** and **VLAN Encap**. The value for the field, **Interface** is hard-coded.
- Step 10** Click **Submit** to save the settings.
- The name and the path of the copy device is displayed in the destination panel.
- Step 11** When you click **Submit** in **Manage Configure Ports** window, the device is displayed in the **Destination** column in the **Port Configuration** screen. When you hover over the device name in the GUI, the name of the **Copy Device** is displayed.
- Step 12** Once the **Copy Device** is added, it is displayed in the **APIC Copy Session (BETA)** screen under the **Copy Device** tab.
- The following fields are displayed under the **Copy Device** tab: **Cluster Name**, **Managed**, **Device Type**, and **Service Type**.
- Step 13** In the **APIC Copy Session (BETA)** screen, the **Service Graph** tab is displayed. When you click **+Add Service Graph**, the **Add Service Graph (BETA)** window is displayed.
- Step 14** Add name for the service graph in the **Name** field.
- Step 15** Select the copy device for the service graph in the **Copy Device** field.
- The copy devices that are created by Cisco Nexus Data Broker are listed in the **Copy Device** field.
- Step 16** Click **Submit** to save the settings.
- Once the service graph is added, it is displayed in the **APIC Copy Session (BETA)** screen under the **Service Graph** tab. The fields that are displayed on the tab are **Name**, **Copy Device**, **Function Nodes**, and **Action**. The parameters that can be edited for the service graph are **Name** and **Copy Device** only. You can click **Remove** under **Action** column in the **APIC Copy Session (BETA)** screen to remove the service graph.
- Note** By default, the copy device and the service graph get created under the common tenant.

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## Adding SPAN Sessions

On the SPAN Sessions tab, the following fields are displayed:

- SPAN Session
- Filter

- Devices
- SPAN Source
- SPAN Destination

You can add a SPAN session in ACI. Complete the following steps to add a SPAN session.



**Note** Starting with Cisco NDB release 3.8, a new column named, **Status**, is added on the SPAN Session tab that displays the status of each session. The status of a SPAN session depends on Operational status of the session in APIC and status of the connection attached to it (if a connection is attached to the session).



**Note** You can create a maximum of 4 SPAN sessions on a switch.

### Procedure

- Step 1** Navigate to **ADMINISTRATION > Devices > SPAN MANAGEMENT** tab.
- Step 2** Click **Add SPAN Session** to add a SPAN session. The **Add SPAN Session** window is displayed.
- Step 3** In the **Add SPAN Session** window, add a session name in the **SPAN Session Name** field.
- Step 4** Under **SPAN Sources**, select **ACI** as device type from the **Select Device Type** option list.
- Step 5** Select an APIC node from the drop-down list on which the SPAN session is to be configured.
- Step 6** Click **Apply SPAN Source**.
- Step 7** In the **SPAN SOURCES** pane, click + **Apply SPAN Source**. In the pane, click + **Apply Leaf Ports** to add a leaf port to capture the traffic from multiple leaf ports. Or optionally, you can click +**Apply EPG/AAEP** to add an EPG source. Enter the values in the following fields:
- If + **Apply Leaf Ports** is clicked.
    - In the **Apply Leaf Ports** window, select a pod using the drop-down list in the **POD** field.
    - Select a node using the drop-down list in the **Node** field.
    - Select a port using the drop-down list in the **Port** field.
  - Click **Apply Leaf Ports**.
  - In the **SPAN SOURCES** pane, select a direction from the **Incoming**, **Outgoing**, or **Both** options.
 

The selected Span source is displayed in the **Span Source** field.
  - If +**Apply EPG / AAEP** is clicked.
 

**Note** Starting with Cisco NDB Release 3.7, you can now add multiple EPGs in the same SPAN session.
  - To add EPG source, select a tenant from the **Tenant** drop-down list in the **Add EPG** window.
 

**Note**

    - All EPG interfaces work only when all the ports are within the same leaf switch.
    - If an EPG is spread across multiple switches, select the corresponding SPAN destination on all the leaf switches.



- i) Select a profile using the drop-down list in the **Profile** field.
- j) Select EPG associated with the tenant using the **EPG** drop-down list.

The selected **SPAN Source** is displayed.

- k) Select EPG or AAEP member from the **EPG Members** drop-down list.
- l) Click **+Add**.
- m) Click **Apply EPG/AAEP**.

**Note** If the EPG is selected, by default, Cisco Nexus Data Broker listens for the changes in the statically or dynamically configured interfaces of the selected EPG. If there is any change, it is applied to the SPAN session. The web socket connection is not secured with the certificates. To disable the event listening, add **enableWebSocketHandle=false** in the **config.ini** file under **xnc/configuration** folder.

**Note** When new EPG members are added in APIC, if there is no SPAN destination on the leaf switch that matches the newly added EPG member as part of the configured SPAN session, NDB ignores this event and the new EPG member are not shown in NDB.

**Step 8** In the **SPAN Destination** field, select SPAN destination.

If you install ACI SPAN session, it lists the SPAN destination that is created in ACI.

If you install NXOS SPAN session, it lists the SPAN destination that is created in NXOS.

**Note** Ensure that each leaf switch in the SPAN source has at least one corresponding SPAN destination.

**Note** Starting with Cisco NDB Release 3.7, addition of multiple SPAN Destinations in the same SPAN session is supported.

**Step 9** (Optional) Select a connection in the **Select Connections** field.

**Note** Starting with Cisco NDB Release 3.7, attaching a connection to the SPAN session is optional.

**Step 10** (Optional) In the **Action** pane, select a priority for the SPAN session.

**Step 11** (Optional) Select a rule using the drop-down list in the **Rule Filter** field.

**Step 12** (Optional) Select a destination device to which the traffic is sent.

**Step 13** Do one of the following:

- Click **Save SPAN Session** to save the session without installing it on ACI.
- Click **Install SPAN Session** to save and install the session on ACI.

**Note** Starting with Cisco NDB release 3.8, you can install a saved SPAN session on ACI using the **Toggle Install** button. Select the saved SPAN session that you want to install and click **Toggle Install** button to install the session on ACI. You can also uninstall a SPAN session without removing it from NDB using the **Toggle Install** button. The SPAN session is uninstalled from ACI but remains saved on the NDB for future use.

**Step 14** Click **OK**.

As a result, a SPAN session is set up in ACI. It also sets up a connection automatically on the Cisco Nexus Data Broker with the same SPAN session name and this connection redirects the traffic from that source port to the monitoring device.

**Note** Each leaf can have a maximum of 4 SPAN sessions.

You can set up additional SPAN sessions. You can append a new SPAN session to the existing connection. In that case, you can select the new SPAN session in the Add SPAN Session window, use the same connection that is previously created, select new SPAN sources from different leaf ports, select the SPAN destination, and add the SPAN session.

It creates a new session in ACI, but it appends an existing connection to include the new traffic on the Cisco Nexus Data Broker side.

You can edit or clone the existing SPAN sessions. If you want to remove a SPAN session, click the session and click **Remove SPAN Session(s)**. A message box is displayed asking you to confirm, **Remove the following sessions?**, if you want to remove the displayed SPAN session. Click **Remove SPAN Sessions** to confirm. If the SPAN session is using an existing connection, the connection is updated automatically with the changes. If it is the last connection associated with the SPAN session, the connection is deleted.

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