



## Overview

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## About Cisco Extensible Network Controller

Cisco Extensible Network Controller (XNC) is a software platform that serves as an interface between the network elements (southbound) and third-party applications (northbound). Cisco XNC, which is a JVM-based application that runs on a Java Virtual Machine (JVM), is based on a highly available, scalable, and extensible architecture. Cisco XNC is built for extensibility using the Open Services Gateway initiative (OSGi) framework.

Cisco XNC can support multiple protocol plugins in the southbound direction. In Release 1.7, Cisco Plug-in for OpenFlow 1.0 and the Cisco One Platform Kit (onePK) 1.3.0 are supported.

Cisco XNC provides the following:

- Multiprotocol capability with the Cisco Plug-in for OpenFlow.
- Functionality to support network visibility and programmability, such as network topology discovery, network device management, forwarding rules programming, and access to detailed network statistics.
- A Service Abstraction Layer (SAL) that enables modular southbound interface support, such as OpenFlow.
- Consistent management access through the GUI or through Java or Representational State Transfer (REST) northbound APIs.
- Security features, such as role-based access control (RBAC), and integration with an external Active Directory using RADIUS or TACACS for authentication, authorization, and accounting (AAA) functions.
- Troubleshooting tools, such as analytics gathering and diagnostic packet injection.
- Cisco advanced features such as Topology Independent Forwarding (TIF), which enables the administrator to customize the path a data flow takes through the network.

- Cisco network applications such as Network Slicing that allows logical partitioning of the network using flow specification, and Cisco Monitor Manager, which provides visibility into the network traffic.
- High-availability clustering to provide scalability and high availability.
- The Cisco Open Network Environment Platform Kit (Cisco onePK) version 1.3.0 is supported in Release 1.7 of Cisco XNC. The Cisco onePK plug-in communicates with the onePK agent.
- Support for onePK devices in the network and the ability to install TIF rules on onePK devices.
- A command line interface (CLI) framework for Cisco XNC.
- The Virtual Patch Panel Application (Port-to-Port Forwarding application) provides port-to-port traffic management within a switch or across the network without any need for physical connection changes or rewiring.
- Access to the Cisco XNC northbound API content from the application menu bar that enables you to view the API definitions and related calls.

## Cisco XNC GUI Overview

The Cisco XNC GUI contains the following areas and panes:

- A menu bar across the top of the window that provides access to the main categories of information in Cisco XNC.
- A topology map on the right that displays a visual representation of your network.
- Several panes with additional views and information about the selected category.



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**Note**

Depending on the Cisco XNC applications that you have installed, the items on the menu bar might vary.

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The menu bar contains the following items:

- The **Devices** tab—Provides access to the Cisco XNC network elements.
- The **Flows** tab—Provides access to flow entries and flow details.
- The **Troubleshoot** tab—Provides information about flows, ports, and policies for troubleshooting purposes.
- The **TIF Manager** tab—Provides access to paths and policies for Topology Independent Forwarding (TIF).
- The **Network Properties** tab—Provides access to property templates.
- The **Slicing** list—Provides access to different slices, and lists the current slice that you are in. If no slices have been configured, or you have not selected a configured slice, the **default** drop-down list is displayed.



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**Note**

You must have an administrative role to add, modify, or review the slices list.

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- The **Online help** button—Provides access to the online help for the current page.

- A **Save** button—Enables you to save any additions or changes you make in the Cisco XNC application.
- A **Northbound API** button—Enables you to view northbound API content in a new browser tab, and displays the content and calls.
- The administrative management (**Admin**) drop-down list—Provides access to different administrative tasks, such as managing users, slices, network clusters, or viewing the OSGi components list.




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**Note** The **Admin** drop-down list—Displays the username that you used when you logged into Cisco XNC.

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### Topology Tools

The left side of the **Topology** pane contains a group of tools that allow you to manipulate the content of the topology pane. Hovering over a tool displays its function. From the top of the pane to the bottom, the tools are as follows:

- **Select node mode**—Enables you to select one or more elements in the topology diagram. To select one or more elements, click on the first element and then drag your mouse across the diagram. The elements selected are highlighted with a circle around each one.
- **Move mode**—Moves the entire topology diagram, a single topology element, or a node group. To move an element or a node group, click it and drag it.
- **Zoom in**—Increases the size of the topology diagram.




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**Note** You can also increase the size of the topology diagram by scrolling up with your mouse wheel.

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- **Zoom out**—Decreases the size of the topology diagram.




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**Note** You can also decrease the size of the topology diagram by scrolling down with your mouse wheel.

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- **Zoom by selection**—Zooms in on a specific topology element. To zoom by selection, click the tool, and then click and drag your mouse across the element that you want to zoom in on. The zoom element display resets after a few seconds.
- **Fit stage**—Resets the topology diagram in that pane.
- **Topology Settings**—Choose the preferred **Display Icons as dots** setting. Click the radio button for the preference that you desire.
- **Tool tips**—Displays information about each tool or about nodes in the topology. To display tool tip information, hover over a tool or over a node in the diagram to display node information.

### Pane Resizing

You can resize the panes in the GUI display by clicking the pane resize grippers as follows:

- To increase or decrease the height of either of the left or right bottom pane, click the pane resize grippers at the top of the pane, and then drag up or down with your mouse.
- To collapse either the lower right or lower left pane, hover over the pane resize grippers at the top of the pane until a double-ended arrow is displayed, and then click your mouse once.
- To restore a collapsed pane, hover over the pane resize grippers at the bottom of the pane until a double-ended arrow is displayed, and then click your mouse once.
- To increase or decrease the width of the two left panes at the same time, click the pane resize grippers at the top of the pane, and then drag left or right with your mouse.

## Using the Topology Diagram

The topology diagram displays a graphical view of your network. After a device or link has been recognized by Cisco Extensible Network Controller (XNC), it is visible in the topology diagram. On all tabs in Cisco XNC, you can perform the following tasks:

- Hover over a switch to view the node name, the source ports, and the destination ports.
- Hover over a link to view the source and destination ports of that link.
- Hover over a tool to view the tool tip.
- Use the + (zoom in) or - (zoom out) tools, or move your mouse wheel up or down to change the zoom level.
- Click and drag a switch to move it to a different location.
- Click and drag a node group to move it to a different location.
- Click and drag the background to move the entire topology to a different location.

Certain tabs also allow advanced tasks.

## Saving Configuration Changes

You should periodically save the configuration changes that you make in Cisco XNC.



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**Note**

Any unsaved configuration changes will be lost if you stop the Cisco XNC application.

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On the Cisco XNC menu bar, click the **Save** button.