



Display Your Network Topology

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About Topology

The **Topology** window displays a graphical view of your network. Using the discovery settings that you have configured, DNA Center discovers and maps devices to a physical topology with detailed device-level data.

The topology map provides the following key features:

- Auto visualization of Layer 2 and Layer 3 topologies on top of the physical topology for a granular view for design planning and simplified troubleshooting.
- For a Layer 2 topology, display of configured VLANs within your network. For a Layer 3 topology, display of OSPF, IS-IS, and so on, depending on what is currently configured and is in use in your network.
- Device information.

Topology Tools

The **Topology** page provides tools to help you view, filter, and manipulate the topology map.

Table 1: Main Topology Tools

Name or Icon	Description
Search	Searches for a device by device name, device type, or IP address. As you enter information into this field, the DNA Center displays matches. Select the device from the results that appear. The selected device appears in the Topology page.
Filter	<p>Allows you to filter what is shown on the topology map. For each filter, you can make additional adjustments using the Advanced options.</p> <ul style="list-style-type: none"> • Connections—Displays the devices according to the number of their connections. Starting from the left, first devices with no connections are displayed, then devices with one connection, then devices with two connections, and so on. There are no advanced options to refine the display. • Enterprise Collapsed—Displays a hierarchical layout of aggregated devices and links in your network topology. Advanced options allow you to refine the view by device family, role and branch. Aggregation options allow you to choose the degree to which specified nodes overlap on the map. • Enterprise Expanded—Displays a hierarchical layout of disaggregated devices and links in your network topology. Advanced options allow you to refine the view by device family, role and branch. Aggregation options allow you to choose the degree to which specified nodes overlap on the map. • Spiral—Displays a circular layout of the devices and links in your network topology. The topology is arranged starting from a central device (or cloud) with links and devices expanding out from this central point. Advanced options allow you to refine the view by radius and spacing.
Zoom In and Zoom Out	Minimizes and maximizes the topology map.
Legend	Defines the device icons that are used in the map.
Save	<p>Allows you to save the currently displayed layout and take these actions on previously saved layouts:</p> <ul style="list-style-type: none"> • Load a previously saved layout. • Save changes to a previously saved layout. • Set a layout as the default. • Delete a layout.
:	Displays additional topology tools that allow you to change the topology view, filter devices that are displayed, and other actions. For more information, see Table 2: Additional Topology Tools, on page 3

Table 2: Additional Topology Tools

Tool	Description
View Tools	
Color	Toggles the color of the devices between displaying them in different colors or in a single color. Note Devices are displayed in multiple colors by default.
Links	Toggles the display of links between devices.
Hosts	Toggles the display of hosts in the topology.
Center	Positions the topology in the middle of the pane.
Rotate	Toggles the orientation of the topology from landscape to portrait.
Details	Toggles the display of the number of links between devices.
Curved Links	Toggles the shape of the lines that represent the links. Lines can be either straight or curved.
Filter Tools	
Layers	Displays devices with the following attributes on the topology map: <ul style="list-style-type: none"> • Layer 2—Displays devices based on the selected VLAN or Layer 2 protocol. Choose either a VLAN or one of the Layer 2 protocols. • Layer 3—Displays devices based on the selected Layer 3 protocol. The following Layer 3 protocols are available: <ul style="list-style-type: none"> ◦ Intermediate System-to-Intermediate System (IS-IS) ◦ Open Shortest Path First (OSPF) ◦ Enhanced Interior Gateway Routing Protocol (EIGRP) ◦ Static-Route Note The default Layer 3 topology shows all Layer 3 protocols. • VRF—Displays devices that have Virtual Routing and Forwarding (VRF) tables.

Tool	Description
Device Tags	Displays the available device tags. Clicking a device tag highlights the devices that have this tag. You can create and apply a tag to devices by selecting the device, clicking Tag Device , and creating and applying the tag to a device.
Action Tools	
Aggregation	Enables or disables device aggregation. Aggregating devices means grouping devices together. You can group devices in any way that makes sense to you. You can save the layout for future reference by clicking the Save icon. This grouping does not effect the physical configuration on the devices. Aggregation is enabled by default.
Multiselect	Allows you to select multiple devices by dragging the mouse over the desired devices or shift-clicking on devices. You can also select multiple groups of devices by clicking shift and dragging the mouse over a group of devices. After selecting the group of devices, you can aggregate or tag them. If you aggregate devices of different product families, the DNA Center shows them as generic devices (without a device type) and the number of devices. Multiselect is off by default.
Full Capture	Downloads a screen shot of your topology.
View Capture	Downloads a screen shot of the current topology view.

Display Device Data

You can display data for a specific device in the **Topology** window. Displaying device data is helpful when troubleshooting network connectivity issues between devices.



Note

The device data that is accessible in the **Topology** window is also accessible in the **Device Inventory** window.

The following device data is available:

- Location (This information is displayed if the selected device icon has a location marker background. Click the **Location** link to display the topology of the devices that share that location marker.)
- Type
- Device role (For information about changing a device's role, see [Change Device Role \(Device Inventory\)](#).)
- IP address

- MAC address
- OS (operating system)
- Software version
- Ports
 - Gigabit Ethernet ports
 - 10-Gigabit Ethernet ports
 - Management ports
- VLAN (if it exists)
- Number of connections
- List of connected devices (Each connected device shows its device type icon and the number of connections. Clicking on a connected device displays the details for that device.)
- Tags

Before You Begin

Make sure that you have devices in your inventory. If not, discover devices using the Discovery function.

Procedure

- Step 1** From the DNA Center home page, click **Topology**.
- Note** If you have added location markers for your devices from the **Device Inventory** window, the Topology map view appears.
- Step 2** Click a location marker to display the topology for that location.
- Step 3** To display data for a specific device, click that device in the **Topology** window.
- Step 4** To display a list of aggregated devices:
- a) In the **Topology** window, click an **aggregated devices** icon.
 - b) In the **Device Details** pane, click the device name to view the corresponding device data.
 - c) Click the **Node List** link to return to the list of aggregated devices.
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Aggregate and Disaggregate Devices

The following topics describe how to aggregate and disaggregate devices:

- [Aggregate Devices, on page 6](#)
- [Disaggregate Devices, on page 6](#)
- [Change the Aggregated Devices Label, on page 6](#)

Aggregate Devices

Before You Begin


- Make sure that you have devices in your inventory. If not, discover devices using the Discovery function.
- Determine how the devices within your network configuration should be visually grouped and organized.

Procedure

Step 1 From the DNA Center home page, click **Topology**.

Step 2 Drag and drop a device icon onto another device icon.
The two devices are aggregated.

Note

To aggregate multiple devices, click  and then **Multiselect**. Use the mouse to select multiple devices and click **Aggregate**.

Disaggregate Devices

Before You Begin

- Make sure that you have devices in your inventory. If not, discover devices using the Discovery function.
- Determine how the devices within your network configuration should be visually grouped and organized.

Procedure

Step 1 From the DNA Center home page, click **Topology**.

Step 2 Click a group of aggregated devices.
A list of the aggregated devices is displayed.

Step 3 Click **Disaggregate All** to ungroup the aggregated devices.

Change the Aggregated Devices Label

The default label for aggregated devices is the number of devices and the device type (*number_devicetypes*). However, you can change this default label to one that is meaningful in the context of your network topology.

Before You Begin

- Make sure that you have devices in your inventory. If not, discover devices using the Discovery function.

- Determine how the devices within your network configuration should be visually grouped and organized.

Procedure

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- Step 1** From the DNA Center home page, click **Topology**.
 - Step 2** Click an **aggregated devices** icon.
A list of the aggregated devices is displayed. At the top of the list is the aggregated devices label.
 - Step 3** Click the aggregated devices label to open an edit field where you can change the label.
 - Step 4** Change the label, and then click outside of the edit field to save your changes.
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Configure the Topology Structure

You can choose from three default topology layouts. You can also modify the overall size of the topology graph, the spacing that separates individual elements, and more.

Before You Begin

Make sure that you have devices in your inventory. If not, discover devices using the Discovery function.

Procedure

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- Step 1** From the DNA Center **Home** page, click **Topology**.
 - Step 2** From the **Topology** toolbar, click .
 - Step 3** From the **Select View** drop down list, choose a view option. Available options are **Connections**, **Enterprise Collapsed**, **Enterprise Expanded**, or **Spiral**.
 - Step 4** Click the **Show Advanced Options** button to configure how each filter is displayed. Click the **Hide Advanced Options** button to return to the basic view.

Filter	Basic View	Advanced View
Connections	<p>Arranges the device icons from left to right based on the number of connections, from least to most.</p> <p>Note Aggregated devices are disaggregated in this view.</p>	<p>Connections—Use the slider to adjust the amount of space between the connections.</p> <p>Node overlap—Use the slider to adjust the amount of space between the nodes.</p> <p>centralizeY—When checked, the device icons are centered along the Y axis. When unchecked, the device icons are aligned to the Y axis.</p> <p>Note Choose x or y from the drop-down list next to each slider to change how the device icons are displayed, horizontally or vertically.</p>


Filter	Basic View	Advanced View
Enterprise Collapsed and Enterprise Expanded	<p>Arranges the device icons into a structured hierarchical view, from top to bottom.</p> <p>The Enterprise Collapsed option shows aggregated devices and the Enterprise Expanded shows the devices disaggregated.</p>	<p>ADVANCED VIEW</p> <ul style="list-style-type: none"> • Family Type—Use the slider to adjust the amount of space between the device icons based on their device types. • Device Role—Use the slider to adjust the amount of space between the device icons based on their device roles. • Branch— Use the slider to adjust the amount of space between the branches. <p>AGGREGATION</p> <ul style="list-style-type: none"> • Node overlap—Use the slider to adjust the amount of space between the nodes. • Check the check boxes corresponding to the device types that you want displayed.
Spiral	<p>Arranges the device icons from a central device with other devices connected to it.</p>	<p>AGGREGATION</p> <ul style="list-style-type: none"> • Radius—Use the slider to adjust the number of devices from the center to the outer edge of the spiral. • Spacing—Use the slider to adjust the space between devices.

Save a Topology Layout

Before You Begin

Make sure that you have devices in your inventory. If not, discover devices using the Discovery function.

Procedure


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- Step 1** From the DNA Center home page, click **Topology**.
- Step 2** From the **Topology** toolbar, click .
- Step 3** In the **Topology Title** field, enter a name for the topology and click **Save as New**.
- Step 4** Click **OK**.
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Open a Saved Topology Layout

Before You Begin

Make sure that you have devices in your inventory. If not, discover devices using the Discovery function.

Procedure

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- Step 1** From the DNA Center home page, click **Topology**.
 - Step 2** From the **Topology** toolbar, click .
 - Step 3** Click the **Folder** icon next to the topology layout that you want to open.
 - Step 4** Click **OK**.
The topology layout opens in the **Topology** window.
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Change Device Role (Topology Layout)

During the scan, each discovered device is automatically assigned a device role. The device role is used for identifying and grouping devices according to their responsibilities and placement within the network.

A device can have one of the following roles within the DNA Center:

- **Unknown**—Device role is unknown.
- **Access**—Device performs the tasks required for the access layer or first tier/edge.
- **Border Router**—Device performs the tasks required for a border router.
- **Distribution**—Device performs tasks required for the distribution layer.
- **Core**—Device performs tasks required for the core.

You can change the device role when you select a device and display the device data.




Note

You can also change the device role from the **Device Inventory** window.

Before You Begin

Make sure that you have devices in your inventory. If not, discover devices using the Discovery function.

Procedure

- Step 1** From the DNA Center home page, click **Topology**.
- Step 2** In the **Topology** window, click a device to select it.
- Step 3** Choose a role from the **Role** drop-down list. Valid roles are **Access**, **Core**, **Distribution**, and **Border Router**.
- Step 4** (Optional) Select additional devices and change their device roles.
- Step 5** Click  on the **Topology** toolbar.
- Step 6** (Optional) Select a filter from the drop-down list. Valid options are **Connections**, **Enterprise Collapsed**, **Enterprise Expanded** and **Spiral**.
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Search for Devices and Hosts

You use the DNA Center search function to locate specific devices or hosts within your network. This function allows you to search the network using any string value. To locate a specific device or host quickly, use any of the following values in the search field:

- Device or host name
- Aggregation label
- IP address
- Device role
- Device type



Note The search function supports fragmented results. For example, if you enter **12** in the search field, you will get results for devices with IP addresses or device names that contain 1 and 2 (.12, .120, .102, 10.20, 1-switch2, etc).

Before You Begin

Make sure that you have devices in your inventory. If not, discover devices using the Discovery function.

Procedure

- Step 1** From the DNA Center **Home** page, click **Topology**.
- Note** If you added location markers for your devices from the **Device Inventory** window, the Topology map view appears. Click a location marker on the map to display the Topology for that location.
- Step 2** From the **Topology** toolbar, enter a keyword in the **Search Topology** field. As you begin typing, DNA Center displays a list of possible matches to your entry.
- Note** You can click the **x** in the search field to clear the search keyword field and the results.

- Step 3** Click on a device from the search results to highlight that device and its links in the **Topology** window. Click on the device again to display detailed data for that device.
- Step 4** Proceed with any provisioning or troubleshooting tasks on the located devices or hosts.
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What to Do Next

Search using other string values for other devices or hosts within your network, or perform other tasks including the following:

- Viewing the data for specific devices
- Applying tags to devices within your network
- Host a meeting using the topology co-editor to collaborate with other users in real-time on the network

Add or Remove a Device Tag in Topology

In the **Topology** window, you can add device tags to associate devices that share a common attribute. For example, you can create a tag and use it to group devices based upon a platform ID, Cisco IOS releases, or location. Similarly, you can remove tags from devices.





Note Applying a tag to a host is not supported.

Before You Begin

- Make sure that you have devices in your inventory. If not, discover devices using the Discovery function.

Procedure

- Step 1** From the DNA Center home page, click **Topology**.
- Step 2** Click the device or devices you want to tag. To select more than one device, click the **Multiselect** icon.
Note To deselect devices, click outside of the selected device.
The **Device Information** dialog box appears.
- Step 3** Click **Tag Devices**.
- Step 4** In the **Available Device Tags** column, click a tag to apply it to the selected device or devices. If the tag that you want does not exist, create it by clicking , entering the name of the tag in the **Device Tag Name** field and pressing **Enter**.
- Step 5** Click  to close the dialog box.
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Display Devices with Tags

To display tagged devices in the **Topology** window, perform the following steps.

Before You Begin

- Make sure that you have devices in your inventory. If not, discover devices using the Discovery function.
- Make sure that you have created tags and applied them either through the **Device Inventory** window or the **Topology** window.

Procedure

- Step 1** From the DNA Center home page, click **Topology**.
- Step 2** From the Topology toolbar, click the **Tags**.
- Step 3** To identify the devices associated with a tag, click the tag. To return the devices to their normal display, click the tag again.
Tags are color-coded. When you click a tag, a circle of the same color is drawn around its associated devices.
- Note** You can click more than one tag at a time. The tag that you choose to display first is the innermost circle around the device, followed by the next tag as the next circle, and so on.
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