

View Prefix Path Topology

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View prefix path topology

The Path Topology tool displays a summarized topology view of all peer, transit, and origin ASN that are advertised in AS paths for a prefix at a selected time. Visualizing prefix path topology can also help with decisions related to network planning by identifying AS paths that meet a certain criteria so that, for example, the paths can be reprioritized. When My Peers are defined (**Configure > Peers > Add Peers**), the visual aid offers a quick overview and ability to easily identify and address BGP misconfigurations for the peers you are responsible for. Another added benefit, is the ease of sharing filtered views because of a stateful URL. Any type of sort or filter applied to your topology view is assigned a specific URL and can be shared.

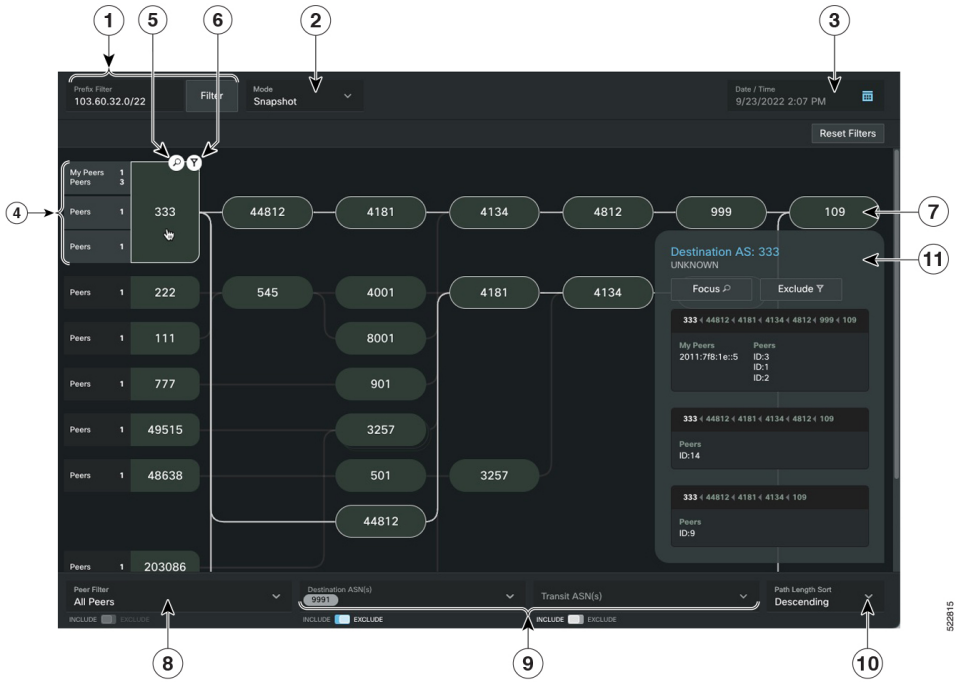
Procedure

Step 1 Choose **External Routing Analysis > Tools > Path Topology**.

Step 2 Enter a prefix and click **View**. The page displays the path topology filtered by the prefix you entered and, by default, the current time. The path is displayed from ASN destination to origin (left to right). As you highlight individual ASNs, the associated paths are highlighted.

Example

Figure 1: Path Topology

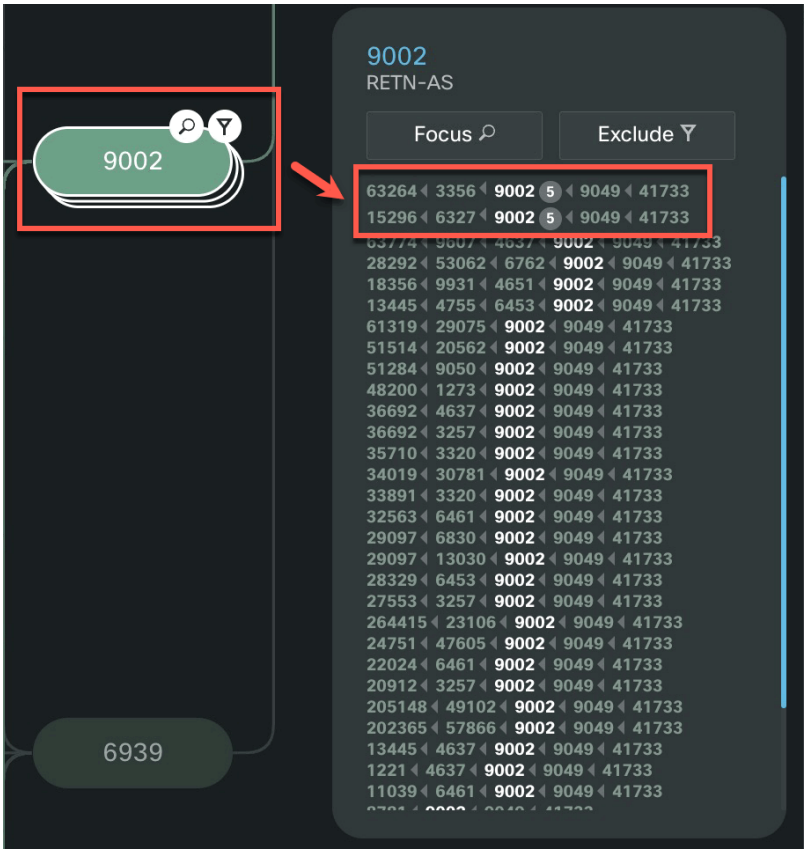


Note If you are viewing the HTML version of this guide, click on the image to view it in full-size.

Callout No.	Description
1	Path topology is filtered based on what prefix is entered here. Each time you enter a new prefix, click **Filter** to display the results
2	The **Snapshot** mode displays the ASN path topology for the displayed time in the **Date/Time** field. The **Time Comparison** mode allows you to compare changes between two timestamps. When this mode is selected, select the Baseline and Comparison dates. The Path Topology will display and indicate path, node, and peer changes that have occurred since the baseline date to the comparison date. For more information, see Compare Path Topology changes, on page 4.
3	Displays the prefix path topology view at the selected date and time. Click this area to configure other dates and times you want to view.
4	Summarizes the number of peers that advertise a given path with the same destination ASN. In this example, there are 3 paths. To find more details about the peers and paths click the destination ASN.

Callout No.	Description
5	Click to visually focus on paths that only include the selected ASN. All other paths, where this ASN is not included, will be removed from the topology.
6	Click to visually exclude paths that include the selected ASN. All paths that include this ASN will be removed from the topology.
7	The origin ASN.
8	Allows you to choose whether to only view the topology for AS paths advertised by peers that belong to your organization (My Peers) or for those advertised by all peers. The My Peers view allows you to easily view what AS paths your peers are advertising for a prefix which can help with routing configuration decisions.
9	Allows you to select multiple destination or transit ASNs to visually exclude or focus on in the path topology.
10	Allows you to visually sort paths according to the number of hops (path length) either in descending or ascending order.
11	This window appears when an ASN is clicked on. It displays the ASN name and raw path data (indicating path stuffing (also known as ASN path prepending) count where applicable, see ASN Path Stuffing Example). If a destination ASN is selected, it also displays the peers advertising this path. From this window, you can also do the following: • Choose to visually focus or exclude the ASN from the path topology. • Click the ASN link to display the ASN Details page where you can get more ASN information.

Figure 2: ASN Path Stuffing (ASN Path Prepending) Example



A stacked ASN node indicates that the ASN has been inserted into a path multiple times.

Compare Path Topology changes

The Path Topology tool provides you insight to help troubleshoot issues that might have occurred with routing traffic for the prefix during a specified time (for example, bandwidth or latency issues due to AS path changes). Suppose a network outage occurs and you want to investigate what changed. You can view the changes in the ASN node topology and peer path by comparing the topology before and after the time at which the problem was observed.

Follow these steps to view path topology changes:

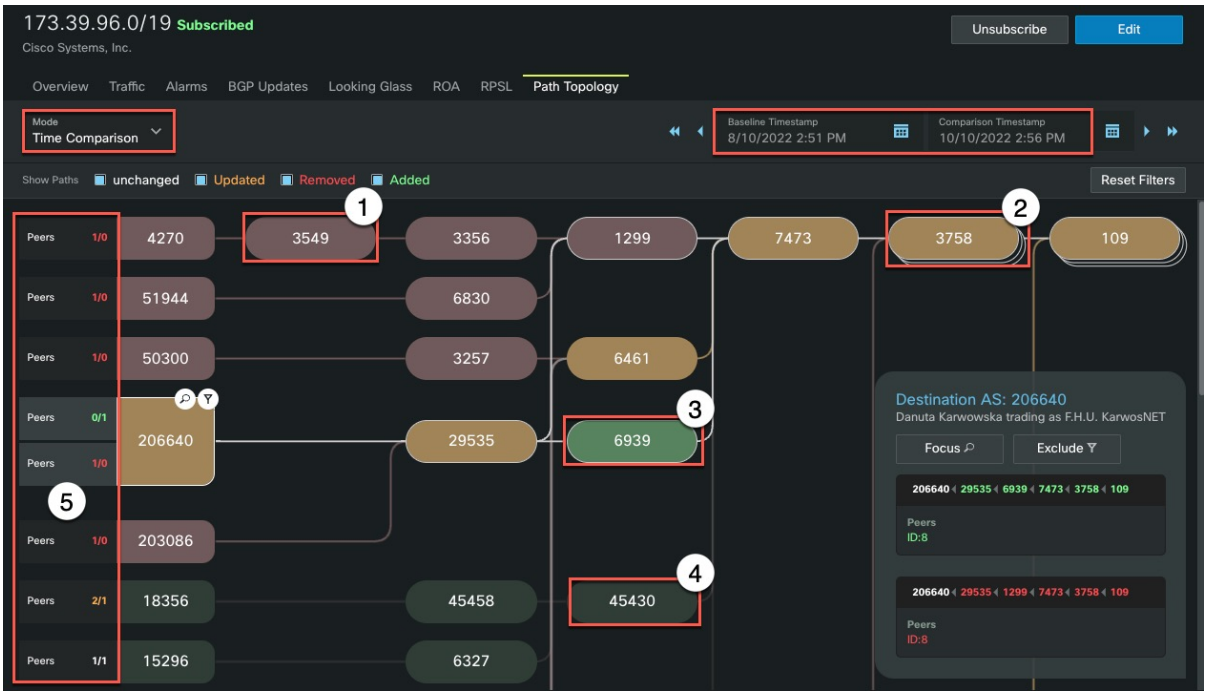
Procedure

Step 1 In the **Path Topology** window, select **Time Comparison** from the **Mode** drop-down list.

Step 2 Click the **Baseline Timestamp** field and select the date and time you want to use as a reference for path topology changes. You can use the single arrow or double arrows to adjust the time to advance or move back 1 minute or 5 minutes.

Step 3 Click the **Comparison Timestamp** field and select the date and time you want to use to compare with the baseline timestamp.

In Time Comparison mode, topology changes are highlighted using different ASN node colors and path changes are highlighted using different peer text colors (showing peer In counts/IDs). See the following example and descriptions of what each color might indicate:



Note
Click the image to view it in full-size.

Callout No.	Description
AS Node Changes	
1	**Removed AS Node (red)**—Indicates that the advertised AS paths that had the AS Node at that hop in them have been withdrawn after the baseline timestamp.

2	**Updated AS Node (yellow/brown)**—Indicates that the ASN at that hop was present in one or more other AS paths at both the timestamps, however, there were some changes:
	• **Path Count Changes**—Some new AS paths advertised have this AS node/hop and/or some old AS paths advertised with the AS node/hop have been withdrawn some time after the baseline timestamp
	• **Path Stuffing Changes**—This AS node/hop was either:
	  • Stuffed in one or more AS paths before and not stuffed now
	  • Stuffed in one or more AS paths now and not stuffed before
	  • Stuffed in one or more AS paths now and before, but the count changed

Callout No.	Description
3	**Added AS Node (green)**—Indicates that the AS Node at that hop is present in one or more new AS paths advertised after the baseline timestamp, but was not previously present during the baseline time.
4	**Unchanged AS Node (dark green/gray)**—Indicates that the AS Node at that hop is present in one or more other AS paths advertised at both timestamps.
Peer Count Changes The change in the count of peers advertising a path is annotated with text next to the peer ASN that terminated that AS path. The syntax of the peer change is ***before_peer_count*/*after_peer_count***.	
5	• **0/*n* (green)**—Indicates that no peers were advertising this path at the baseline time but ***n*** peers were advertising the path at the comparison time • ***n*/0 (red)**—Indicates that ***n*** peers were advertising this path at the baseline time, but peers were no longer advertising the path at the comparison time. • ***b*/*a* (yellow)**—Indicates that ***b*** peers were advertising this path at the baseline time and ***a*** peers were advertising the path at the comparison time • ***n*/*n* (white):** —Indicates that there were no changes in the number of peers advertising the path after the baseline time, but before or equal to the comparison time.