NetBrain® Integrated Edition 8.0

Quick Start Guide

Version 8.03 | Last Updated 2020-08-07

Contents

1. Introduction

NetBrain Integrated Edition is a browser-based interface backed by a full-stack architecture, adopting the advanced distributed technologies to support large-scale networks with more expansion possibilities. All user data and tasks are managed in the server end, which relieves network professionals from manual CLI-digging and empowers collaboration through a shared analysis console.

Before starting to experience NetBrain Integrated Edition, you need the following preparations.

1. Sign Up.
2. Log in to Your Domain.
3. Understand User Interface.

It is highly recommended to use Google Chrome 51 or higher versions to experience the Thin Client of NetBrain Integrated Edition and zoom it at 100% to get the best view. If you need any help, please visit Online Help for more reference or contact NetBrain Support Team for further assistance.

Dynamic Mapping

- Visualizing and Documenting Your Network
- Using A-B Path to Analyze Network Traffic
- Using Data View to Decode Network Design and Troubleshoot
- Using Context-Driven Mapping and Automation
- Using Instant Qapp to Decode Network Design
- Using Dashboard to Visualize Multi-Dimensional Data

Runbook Automation

- Using Runbook to Document Map-Based Activities

Smart CLI

- Using NetBrain Smart CLI

1.1. Signing Up

1. In your web browser, navigate to **http(s)://<IP address of NetBrain Web Server>/**. For example, **`http://10.10.3.141/`**.
2. In the End User Login page, click **Sign up**.
3. In the Create Account page, enter the required information, such as email address, first name, and last name.

> **Note:** The username cannot be modified once it is created.

4. Click **Submit**. Your request will be submitted to the system administrator for approval. Afterward, you will receive a Welcome email in your registered email box.
5. Follow the instructions in the email to activate your user account.

1.2. Logging in to Your Domain

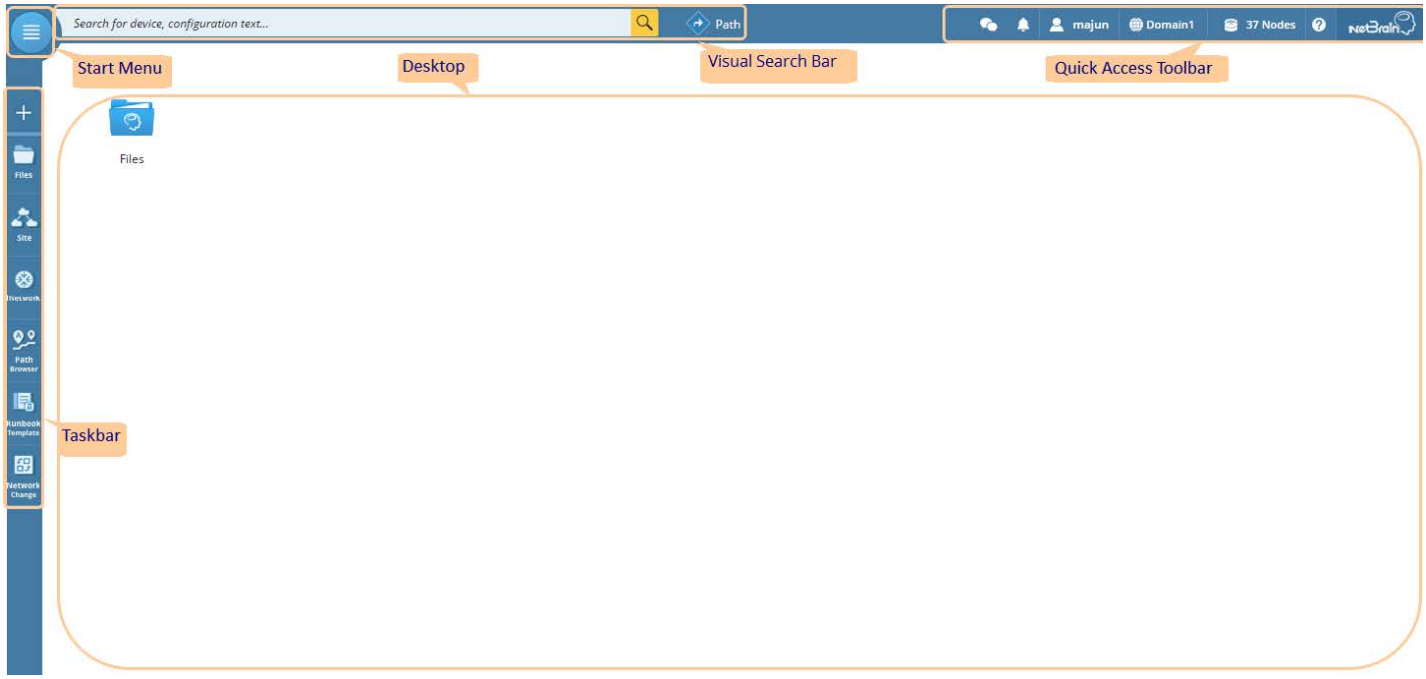
1. In your web browser, navigate to **http(s)://<Hostname or IP address of NetBrain Application Server>/**. For example, **`https://10.10.3.142/`** or **`http://10.10.3.142/`**.
2. In the login page, enter your username or email address, and password.

> **Note:** It is highly recommended to enter your username instead of email address because one email address may match multiple users.
>
> **Note:** If you are using SSO (Single Sign-On), click the hyperlink of the SSO server to redirect to the login page of your Identity Provider. After your credentials are verified, you will be directly logged in to the system and you can skip step 3.

3. Click **Log In**.

1.3. Understanding User Interface

NetBrain domain is a workspace to separate areas, branches, or departments to simplify network management for an enterprise, as a subset of a tenant. The landing page of your domain is displayed as soon as you log in.



It includes the following parts:

- Taskbar
- Start Menu
- Desktop
- Visual Search Bar
- Quick Access Toolbar

Taskbar

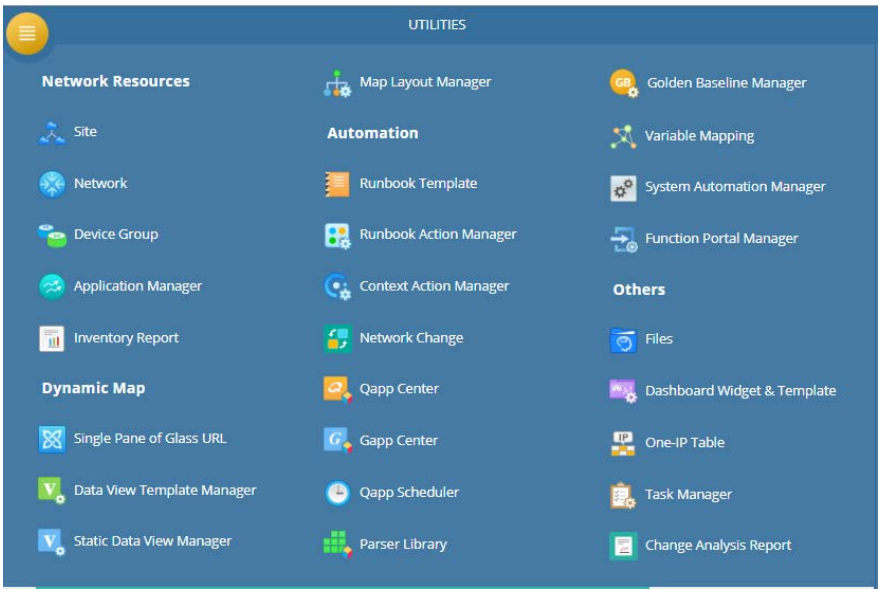
The taskbar is located at the leftmost and includes the following menus.

Icon	Description
+	Create a map, dashboard, runbook, Qapp, parser, Gapp, or network change task from scratch.
Files	Organize files and folders.

Icon	Description
Site	Browse devices by site, browse site details, and so on.
Network	Browse your network resources.
Path Browser	Browse and manage saved paths.
Runbook Template	Browse and manage runbook templates.
Network Change	Manage network changes in the system.

Start Menu

Click the icon on the top of the taskbar, and then you can access the main NetBrain functions. The start menu opens as follows:



You can click an icon to start the application, or click the icon to pin the application to your desktop.

Desktop

Desktop is your personal space to visually organize your frequently used map files, dashboard files and group them into a folder. You can also send file shortcuts or pin applications to the desktop for quick accesses.

Visual Search Bar and Path Calculation Mode

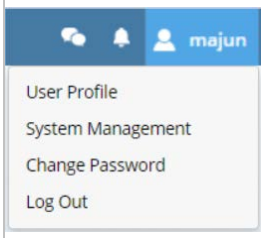
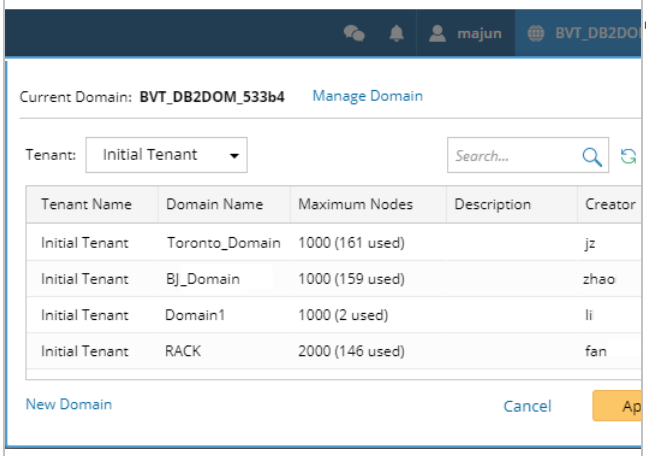
Use NetBrain's powerful search functionality to quickly find your interested objects in your domain, including devices, maps, paths, sites, and much more.

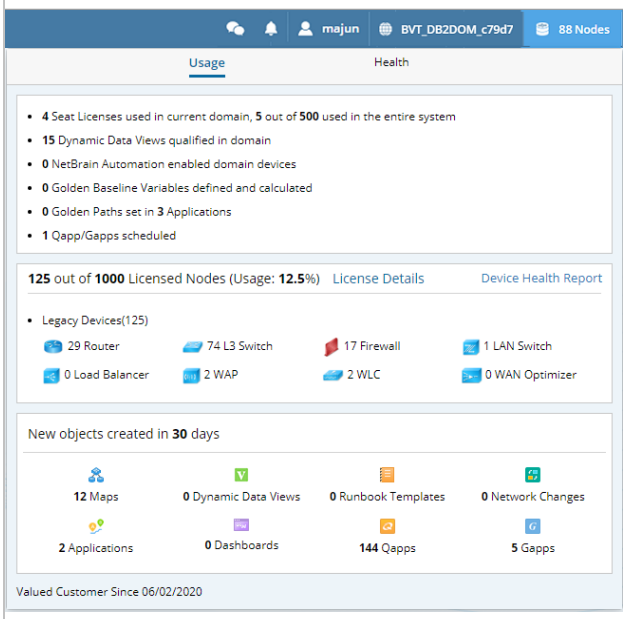
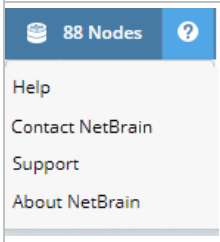
Click **Path** to switch the Visual Search Bar to path calculation mode.

Quick Access Toolbar

The quick access toolbar is located at the upper-right corner of your Thin Client.

Each icon and menu option is described as follows:

Icon	Description
	Get notifications for map and dashboard collaboration from your colleagues, such as sharing a map or dashboard, and transfer editing rights of a map or dashboard.
	Get notifications of events, such as errors and warnings in tasks and activities.
	▪ **User Profile** — maintain your personal information. ▪ **System Management** (only for system administrators) — redirect to the System Management page. ▪ **Change Password** — available only if you have the privileges to change your password. ▪ **Log Out** — the current user session will be ended by clicking it.
	▪ Go to more tenants and domains, or create your domain. The hyperlink **Manage Domain** is available only if you have the role of the domain administrator, or the privileges of domain management.

Icon	Description
	▪ Get to know the licensed node count and consumed node count by device type, as well as the licensed seat count and the newly created objects in 30 days. > **Note:** SDN licensed ports and CPU processors require additional purchase. ▪ **System Health** — monitor NetBrain servers and services. It is available only when Service Monitor Agent is installed.
	▪ **Help** — visit online help. ▪ **Contact NetBrain** — Email or call Netbrain if your request is urgent. ▪ **Support** — redirect to NetBrain Website for support. ▪ **About NetBrain** — view version number and legal notice.

2. Visualizing and Documenting Your Network

Accurate documentation is critical for maintaining a reliable and secure network. However, 80% of network teams can't keep the documentation up-to-date because the workflow is manual laboring, tedious, and time-consuming. And what's more, the materials of an enterprise network are often scattered throughout multiple sources.

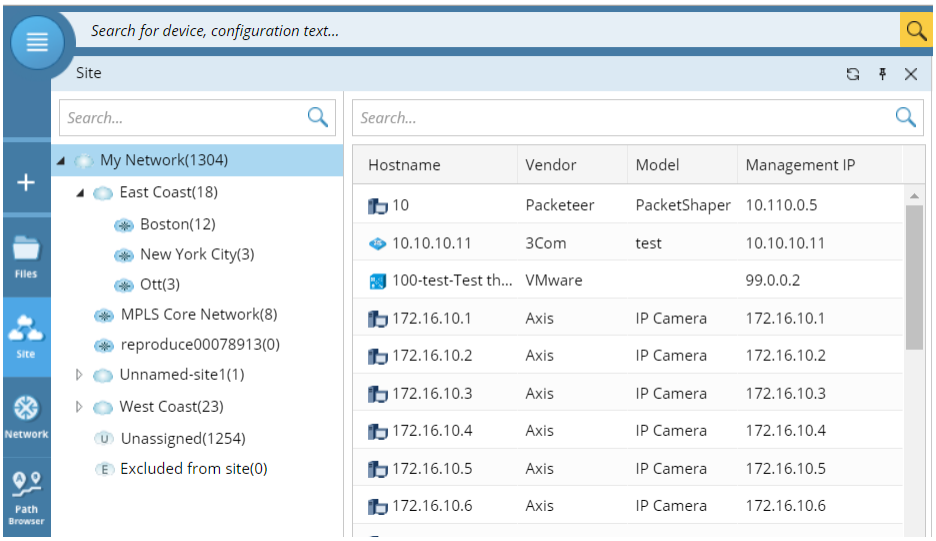
- Use map to diagram your network:
  1. Open a Site Map or Search and Map
  2. Extend Neighbors
  3. Work with Design Reader
  4. Add Notes on Devices
  5. Save the Map
  6. Export Map to Visio
  7. Export Map to Word
  8. Update the Map
- Export Inventory Report (Excel or CSV)
- Export Runbook to Word
- Export Dashboard to Word

When your live network changes, NetBrain benchmark engine will capture those changes and automatically update the backend data model. Besides, the system can be synchronized with the data from the external CMDBs to serve as a single source of truth for all asset data correlations. This ensures that the inventory information is accurate and comprehensive.

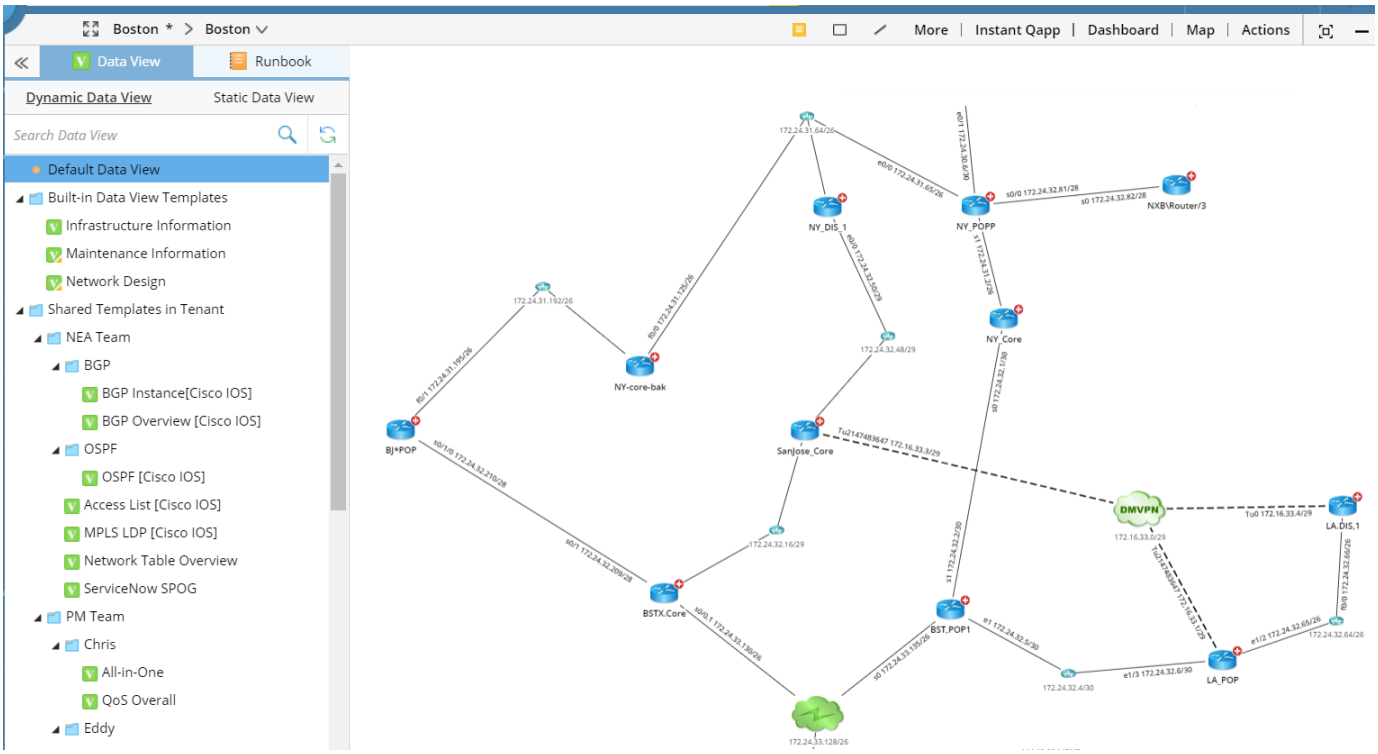
2.1. Opening a Site Map

As soon as a site is created, the corresponding site map is generated in the system.

1. Click **Site** on the taskbar to open the **Site** pane.



2. Expand the site tree, right-click the target site and select **Open Site Map** from the drop-down menu.

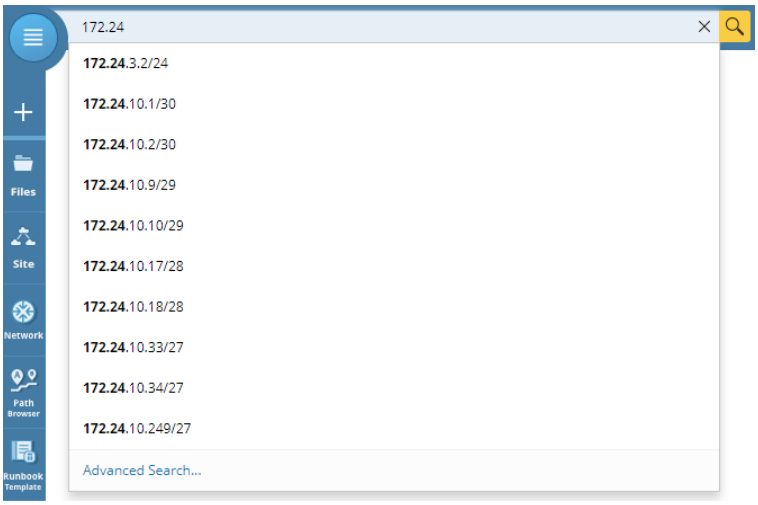


2.2. Searching and Mapping

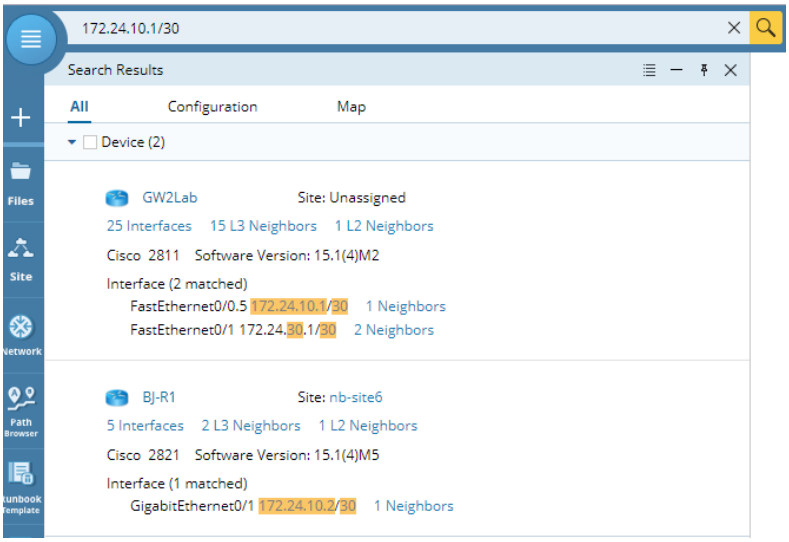
With NetBrain, your entire network becomes a searchable database, and you can search for a device by using one of the following search terms:

- IP address
- hostname
- Text string in Configuration File
- Vendor/Model information
- Device/interface/module property

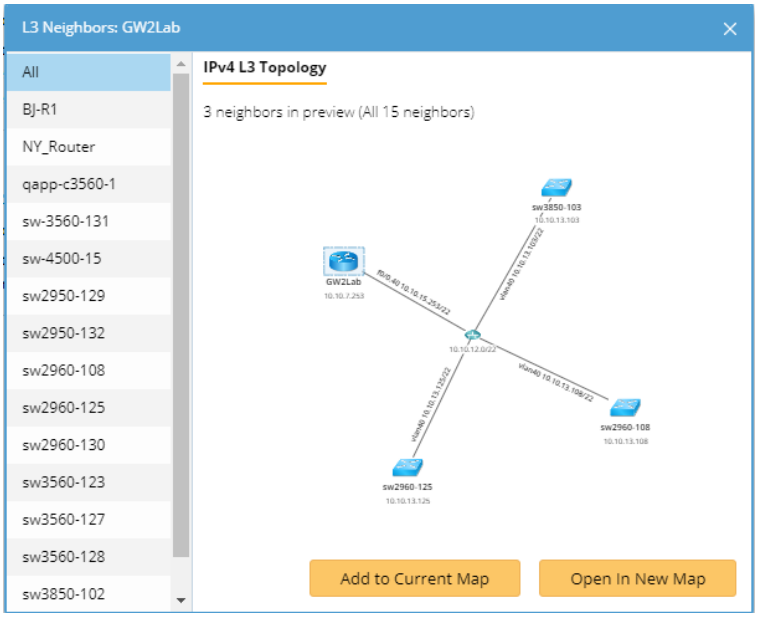
1. Enter an IP address in the search bar.



2. Press the **Enter** key or click the icon to start searching. The search results are displayed with the matched keyword highlighted.



3. Click the **X L3 Neighbors** hyperlink (for instance, **15 L3 Neighbors**). A preview map containing the searched device (for instance, **GW2Lab**) and its neighbors is displayed.



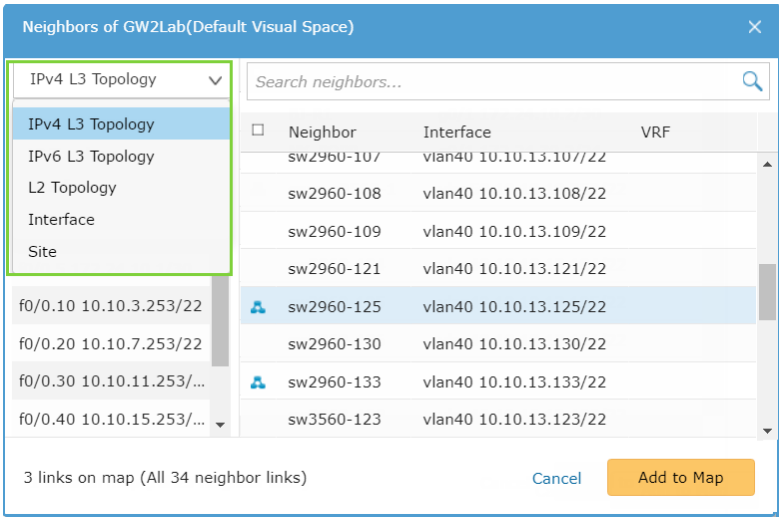
4. To display the preview map on a new map, click **Open in New Map**.

2.3. Extending Neighbors

You can draw different types of topology links and neighbor devices on the current map page by extending neighbors, including layer 2 topology, IPv4 layer 3 topology, IPv6 layer 3 topology, and Layer 3 VPN Tunnel.

1. On your map, click the ⊕ icon attached to the target device.
2. Extend and draw neighbors on the map.

1) Select a neighbor type (such as IPv4 L3 neighbor device, L2 neighbor device, or neighbor site) from the drop-down menu to filter neighbors.



2) Select an interface in the left pane. The connected neighbor devices are listed on the right side.

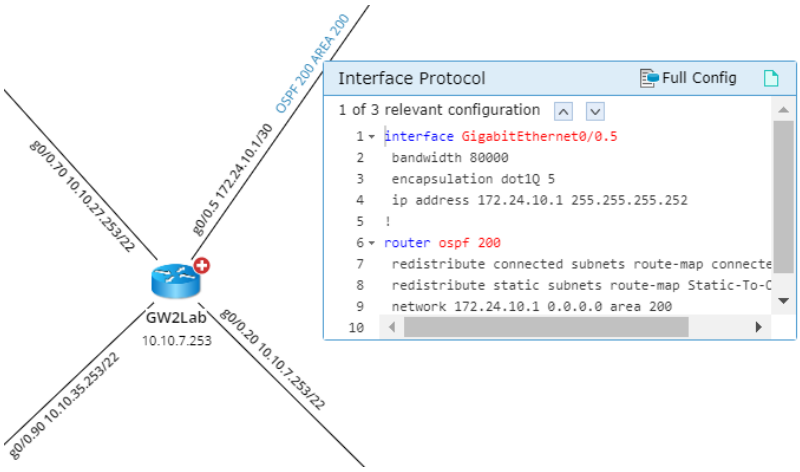
3) Select one or multiple neighbor devices, and then click **Add to Map**. You can also double-click **All Neighbors** to add all the listed neighbor devices to the map.

3. Repeat the above steps to extend neighbors for more devices.

2.4. Working with Design Reader

Design reader provides you with quick access to view device configurations on a map.

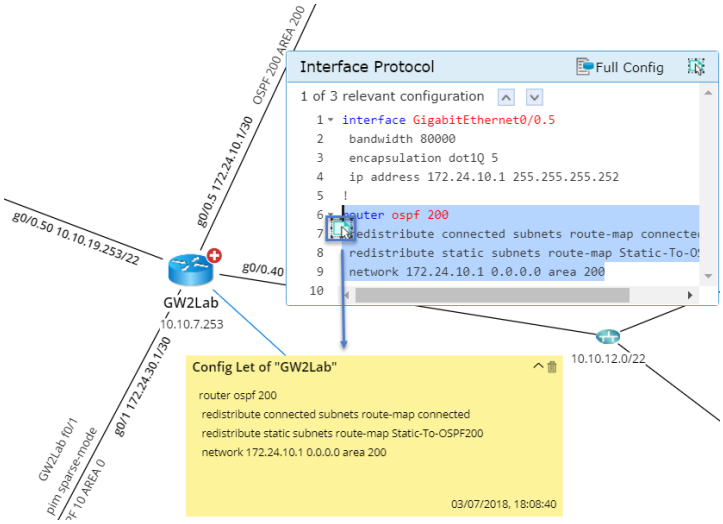
1. Rotate your wheel button forward to zoom in to display more data units. Point to a link label, for example, interface protocol. A tip box opens with the relevant configuration displayed.



2. If multiple matched results are found in the configuration file, click the icon to view more relevant configurations.

2.5. Adding Notes on Device

1. Select several lines in the configurations and click the icon to create a device note with the selected content.



> **Tip**: You can directly click the icon to create a note with the whole content in the design reader.

2. To create notes for more configurations, click **Full Config** in the design reader and repeat the previous step.

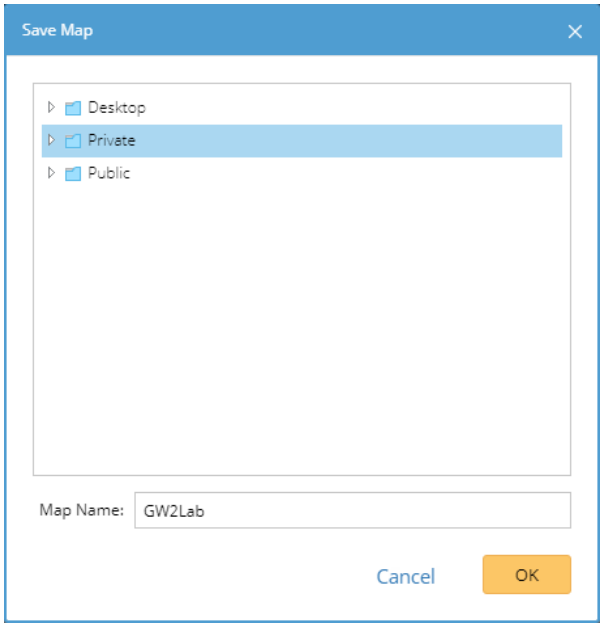
2.6. Saving a Map

An asterisk marked with the map name (Map1 *) indicates that there are unsaved changes on your map. To save your changes on a map:

1. Click the icon on the map toolbar.

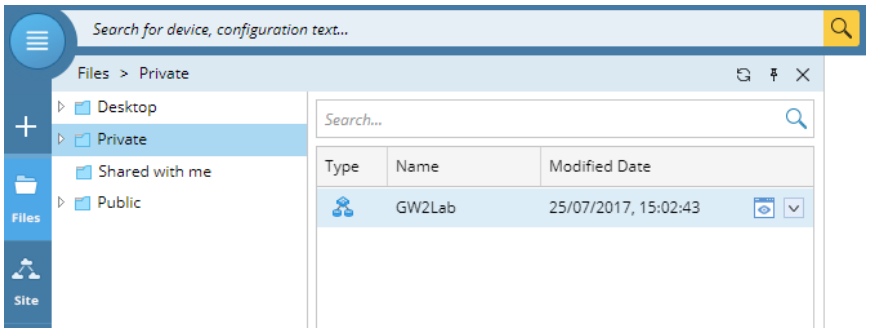
> **Tip**: You can also press the **Ctrl + S** keys on your keyboard.

2. Select a folder to save the map, and then enter the map name.



> **Tip**: The files saved under the **Private** or **Desktop** category are only visible to yourself. To make a map file visible to all users in the domain, save it under the **Public** category.

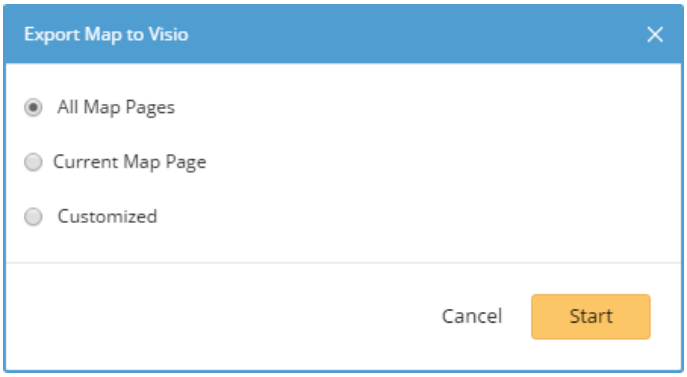
3. Click **OK**. You can view the saved map file in the **Files** pane.



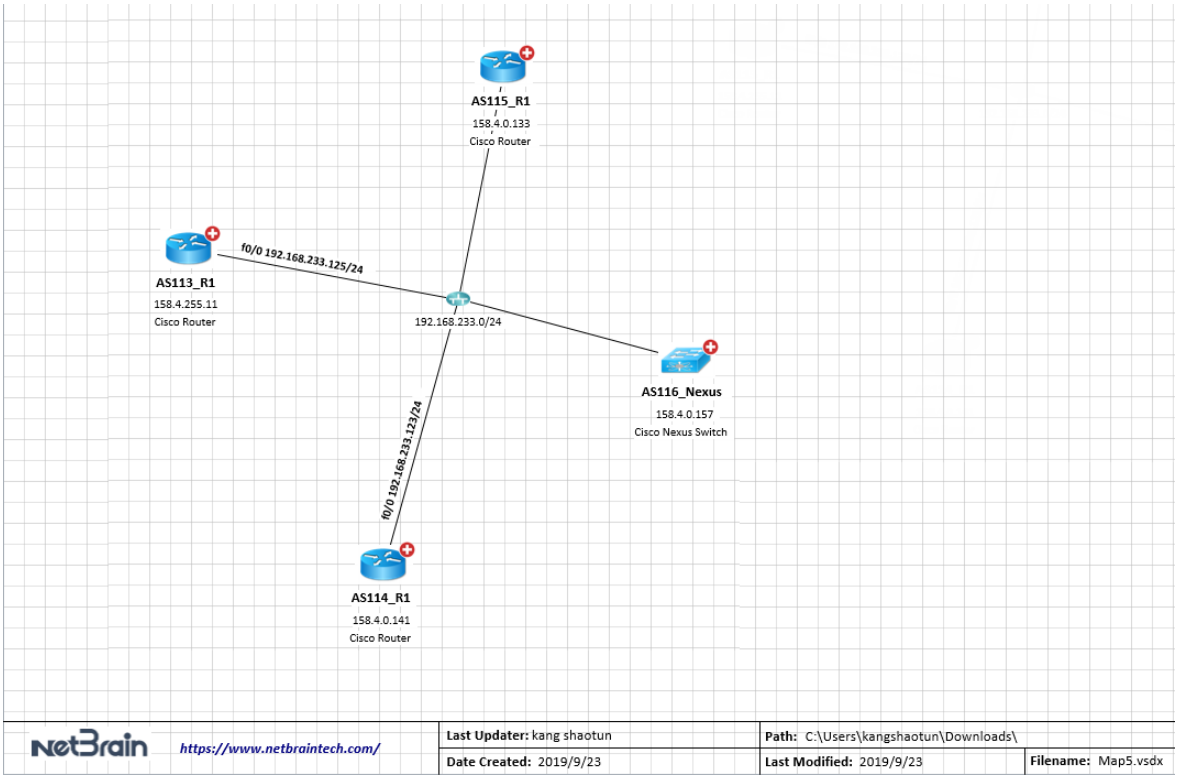
2.7. Exporting Map to Visio

1. On a map page, click **Map > Export > Visio** on the map toolbar.

2. Specify the map pages that you want to export. By default, all map pages are selected.



3. Click **Start**. Then a Visio file named after the map name is exported to your local machine.



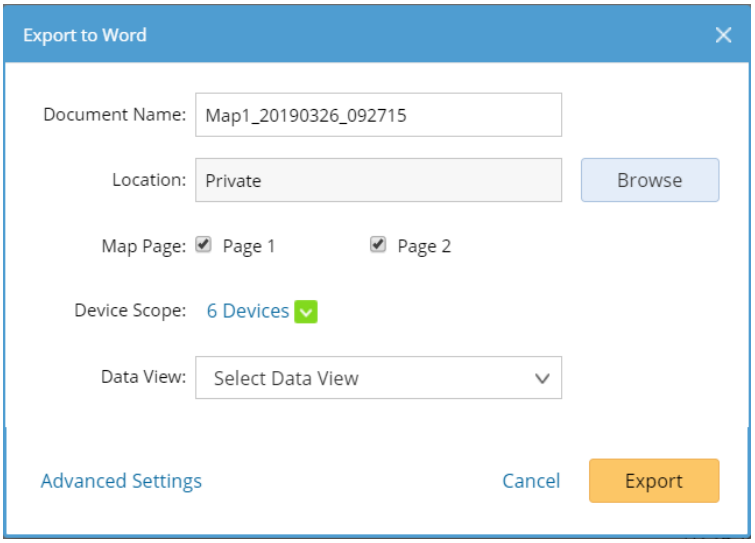
> **Tip**: The default location of the exported file is **C:\Users\<your username>\Downloads**. The exported file is in the **.vsdx** format, and you must use Microsoft Visio 2013 or higher versions to open the file.

2.8. Exporting Map to Word

The document exported from a map contains topology map, device configuration, data table and so on.

1. On a map, click **Map > Export > Word** from the map toolbar.

2. In the **Export to Word** dialog, enter a document name and select a location.



3. Click **Export**.

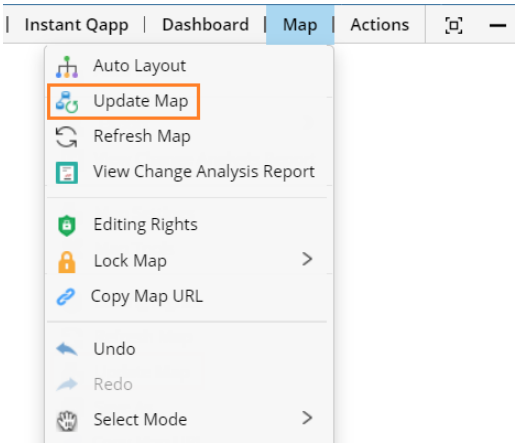
> **Tip:** Click **Advanced Settings** to customize the Word template and the content contained in the document.

4. To find the exported document, click **Files** on the taskbar and locate the folder where you save the document.

2.9. Updating a Map

After you create a map and save it for further use, there may be some changes in the live network causing your map data out of date, such as the connectivity changes of devices.

To update a map by using the data from the current baseline, click **Map > Update Map** on the map toolbar. The updated results will be saved in the map file automatically.



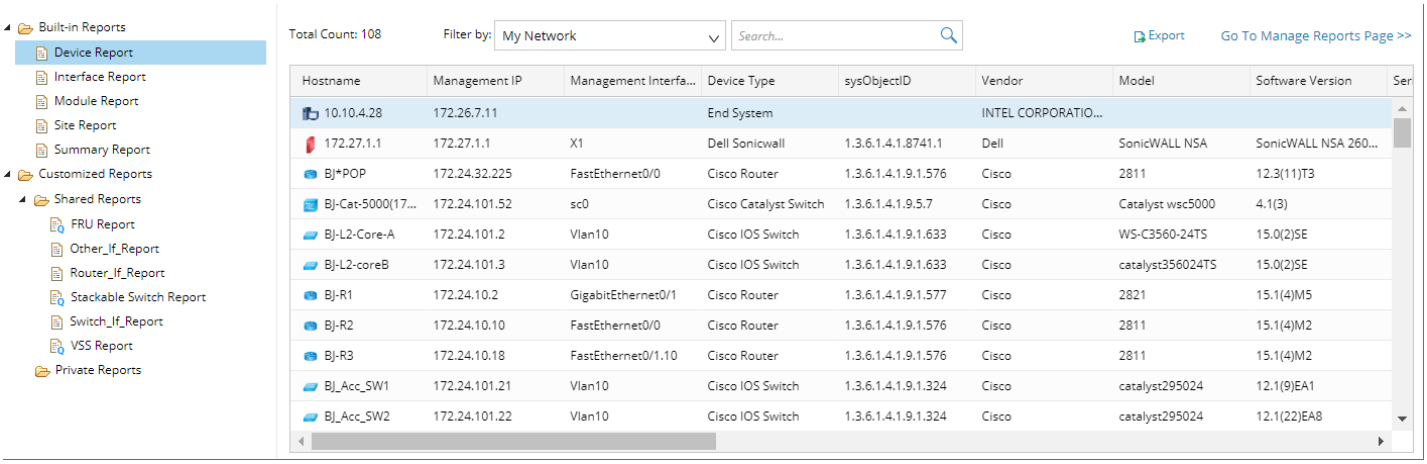
> **Note**: Only the user who has the editing rights of the map file can update it.

2.10. Exporting Inventory Report

NetBrain Inventory Report records comprehensive asset data of your network. You can either use built-in reports as templates or customize your reports by specifying device scope and asset data.

To export an inventory report, complete the following steps:

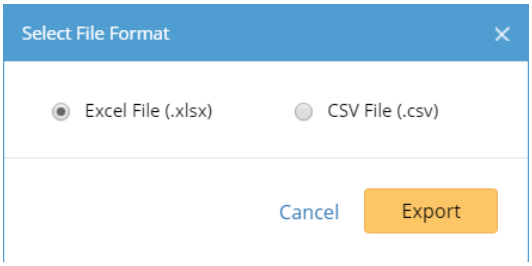
1. Click the start menu and select **Inventory Report**.



2. Select the target report in the left pane to browse asset details in the report. Its asset details are displayed in the right table.

3. Click **Export**.

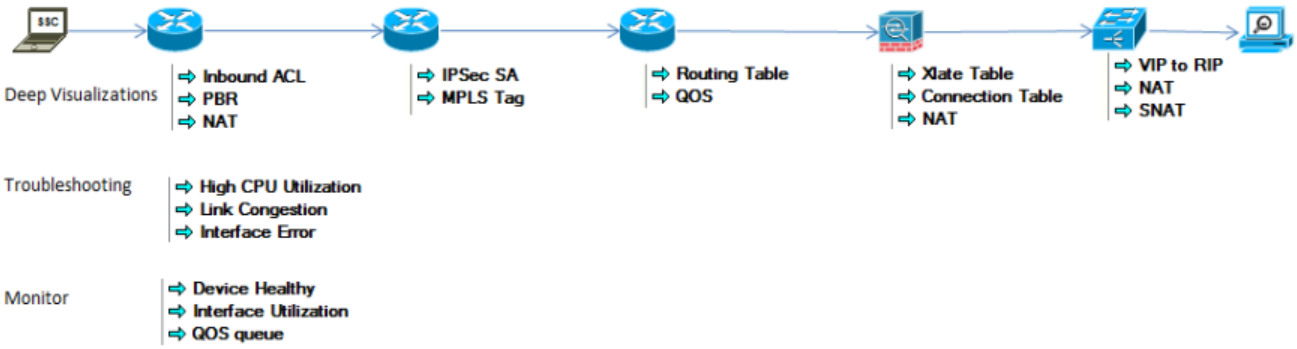
4. Select a file format (**.xlsx** or **.csv**) and then click **Export**.



> **Tip**: The default location of the exported file is **C:\Users\<your username>\Downloads**.

3. Using A-B Path to Analyze Network Traffic

Unlike traditional traffic path tools, NetBrain Dynamic Path Calculator visualizes the forwarding of packets and emulates the real packet forwarding process in your live network (including overlay and underlay networks). It looks into modern technologies, such as policy-based routing and load balancing, and provides end-to-end visibility across any network path to help diagnose and troubleshoot network traffic issues.



3.1. Calculating a Path

You can use the **Path Calculator** to instantly map an end-to-end traffic flow from one endpoint to another, or from a receiver to a source (multicast network) and then troubleshoot or monitor your network traffics based on the visualized path.

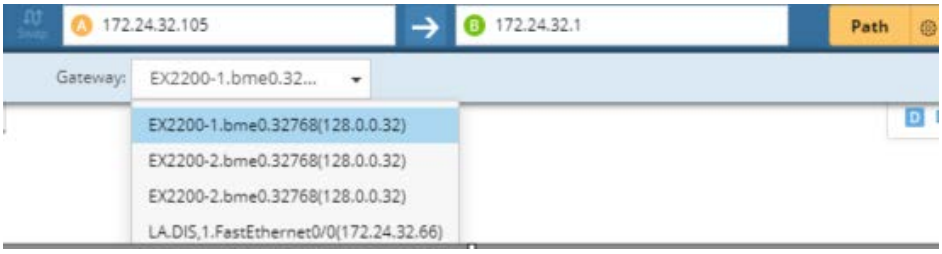
- Calculate a unicast path
- Calculate a multicast path

Calculate a Unicast Path

1. Click **Path** on the search bar.

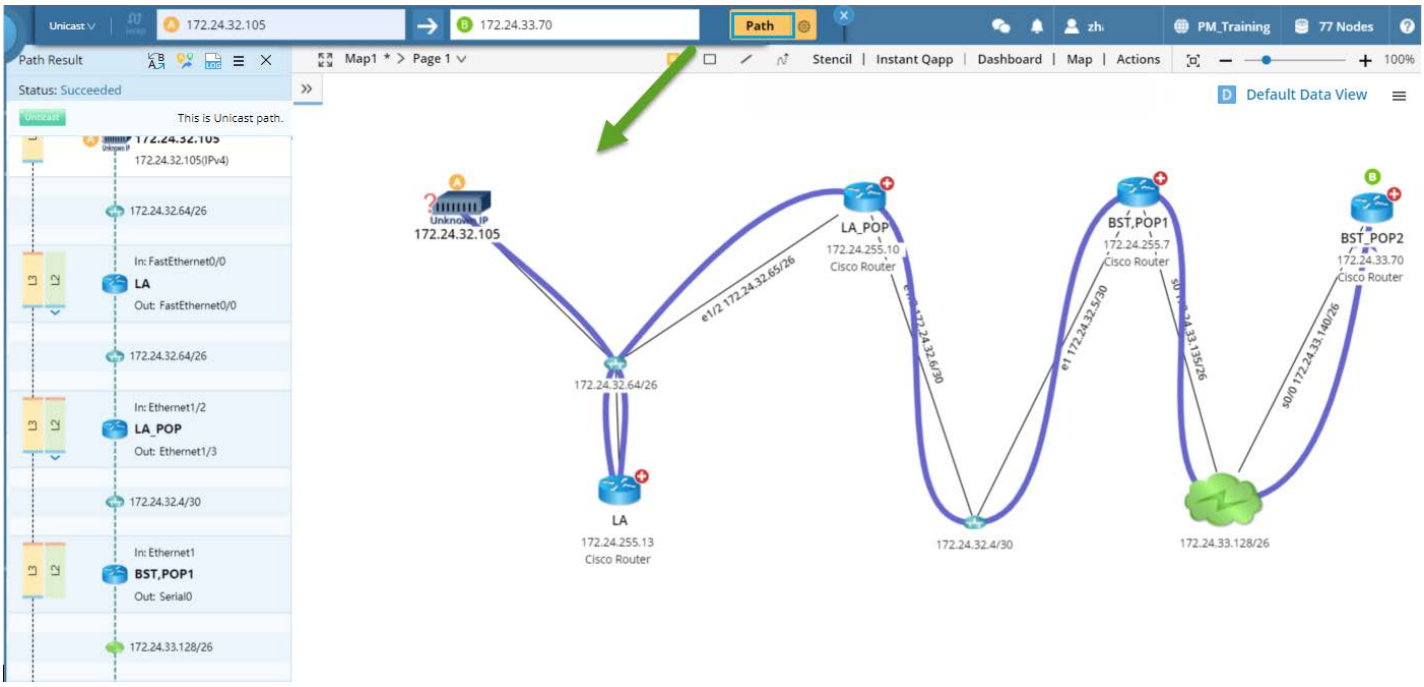
2. Keep the **Unicast** option and enter the source and the destination IP addresses (device hostnames or DNS names).
3. Click the  or the  icon to select the path direction. By default, the system calculates two-way paths.

4. If a device has multiple gateways, select the correct one from the **Gateway** list.



> **Tip**: To configure the data source, protocol, and other advanced settings for path calculation, click the icon to make changes.

5. Click **Path** to start calculating the path. A map is automatically created to diagram the path.



6. Click the ☰ icon in the **Path Result** Pane and select **Save Path** to save the path to the Path Browser.

Calculate a Multicast Path

1. Click **Path** on the search bar.

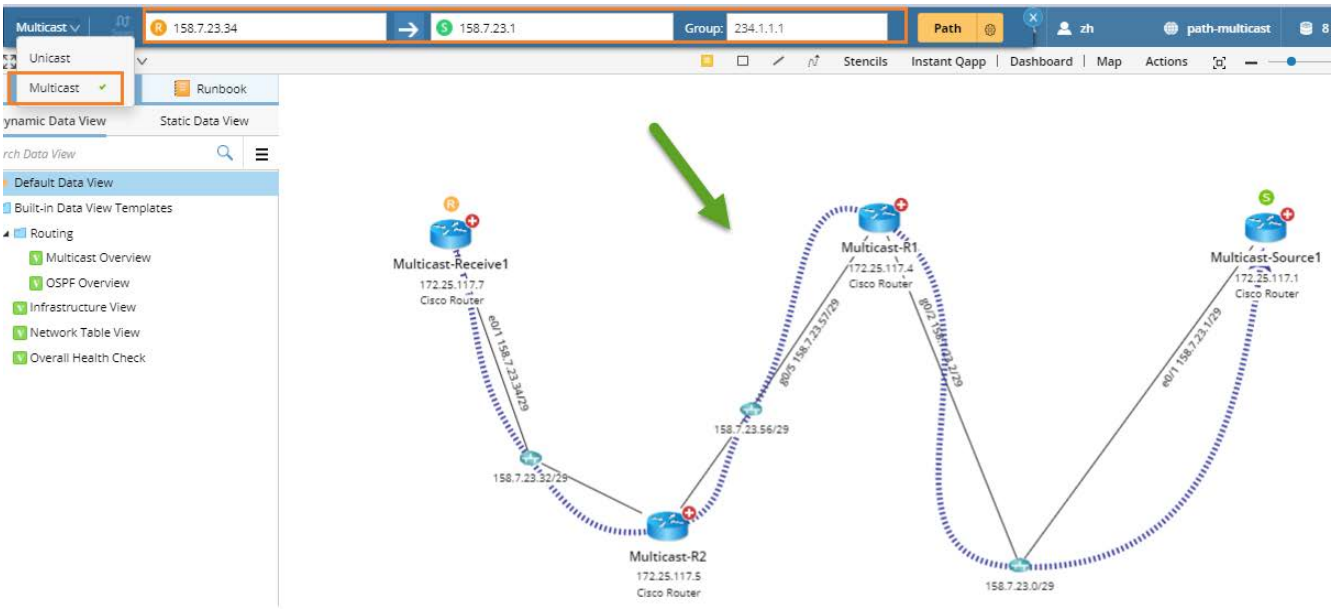
2. Click the **Unicast** option and select **Multicast** from the drop-down list.

3. Enter a Multicast Receiver IP address in the **R** field, a Multicast Source IP address in the **S** field, and a Group Value in the **Group** field.

4. Select one from the **Gateway** list if a device has multiple gateways.

> **Tip**: To configure the data source, protocol, and other advanced settings for path calculation, click the icon to make changes.

5. Click **Path** to start calculating the path. A map is automatically created to diagram the multicast path.



6. Click the ☰ icon in the **Path Result** Pane and select **Save Path** to save the path to the Path Browser.

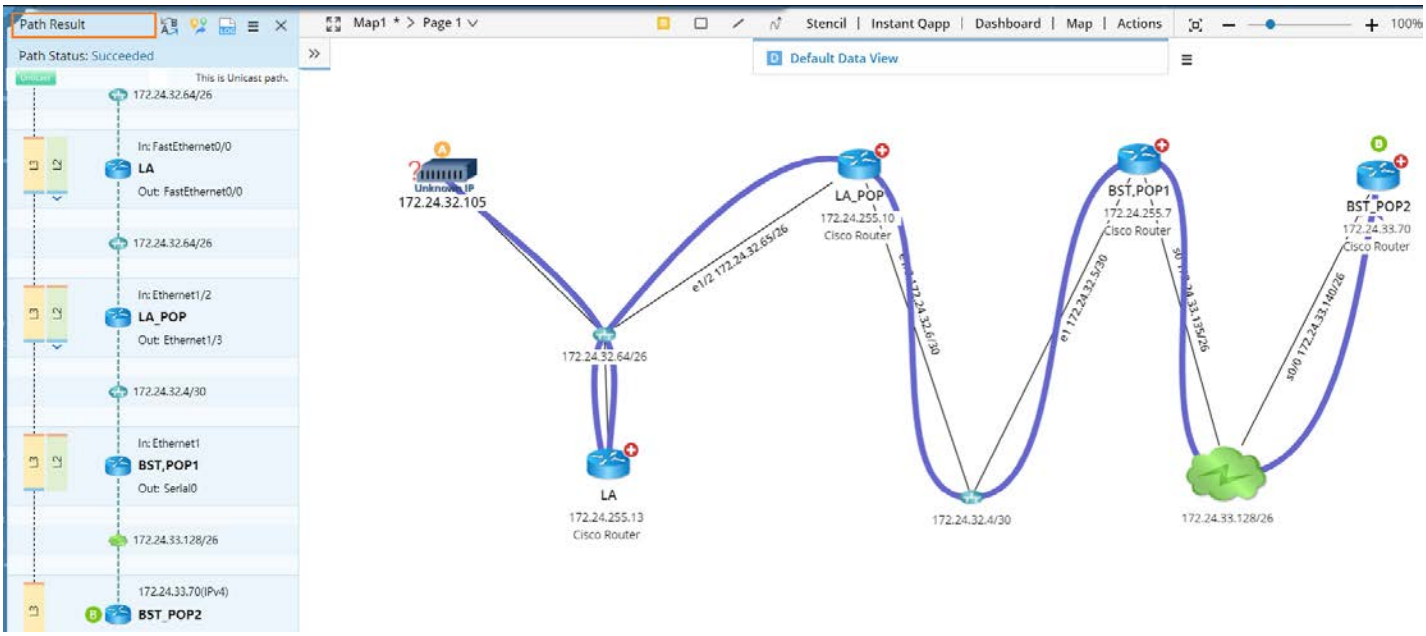
3.2. Viewing Path Results and Details

After calculating a path, you can view the status and result of the path:

- View Path Result in Path Result Pane
- View Path Result Details in Path Overview Pane

Viewing Path Result in Path Result Pane

The **Path Result** pane shows the status and the traffic information about a path hop by hop.



Path Status

There are three types of path result status:

- **Succeeded:** all full paths are calculated successfully.
- **Failed:** all full paths are calculated unsuccessfully.

Traffic Information

The traffic information in the **Path Result** pane includes:

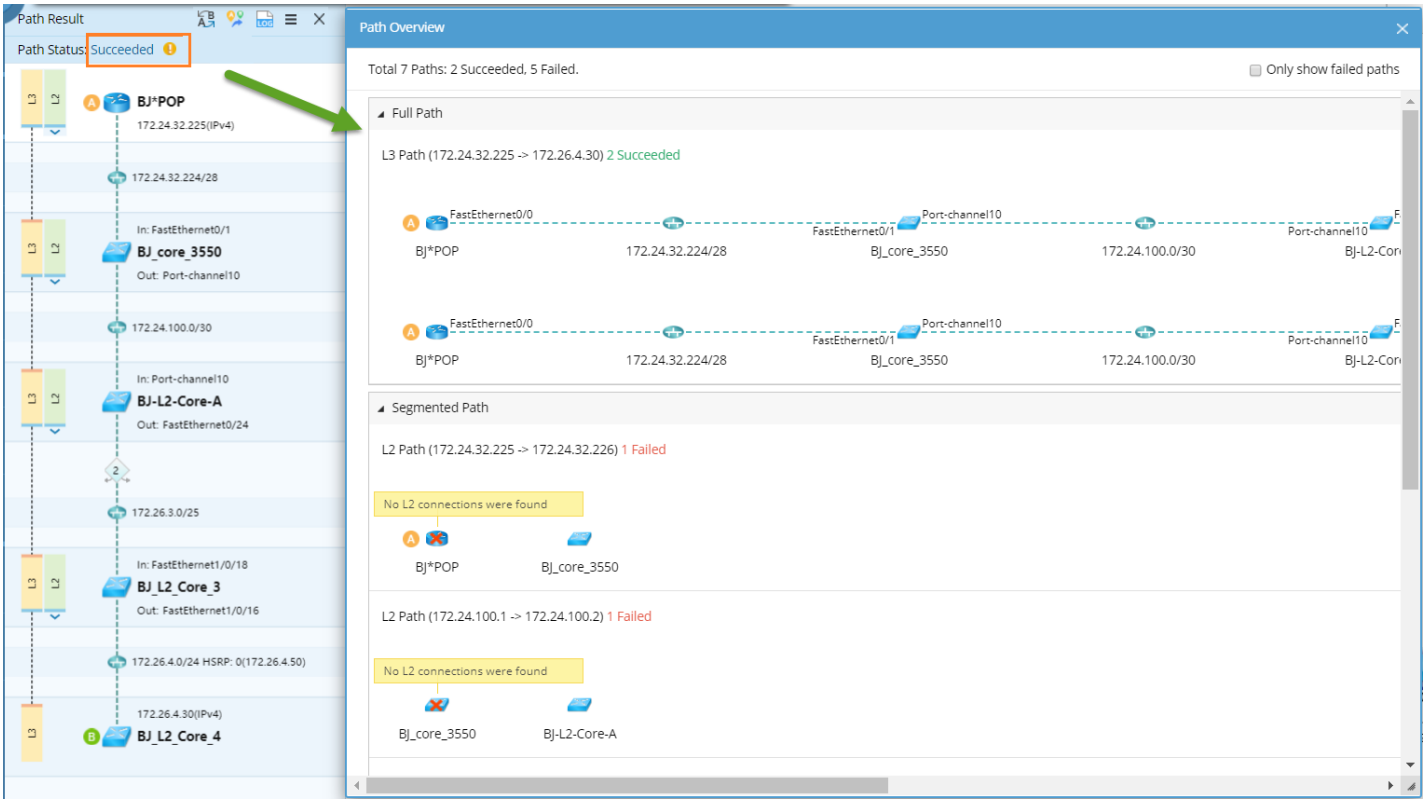
- The traffic flow diagram of a path from the source to the destination.
- Path types (including L2 Path, L3 Path, and Overlay Path). A Path may contain several types of paths at a hop. To view the result of a path type, click it to display the corresponding path on the map.
- Incoming and outgoing traffic interfaces at each hop.

Viewing Path Result Details in Path Overview Pane

The **Path Overview** pane shows the details of path results based on the following categories:

- **Full Path**: A full path means a complete path from the source to the destination.

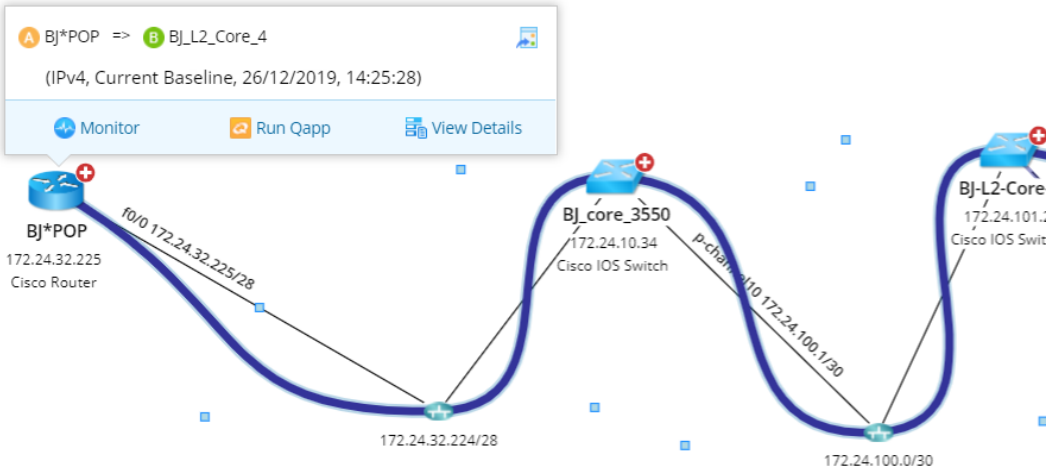
- **Segmented Path**: A segmented path means the path between the outgoing interface of a device and the incoming interface of the next-hop (L2 or L3) device.



3.3. Running Qapp on a Path

You can run a Qapp against a path to monitor live data of devices along the path or troubleshoot network problems, such as a slow application or routing problems.

1. Select the path on the map and then click **Run Qapp** on the floating tip box.

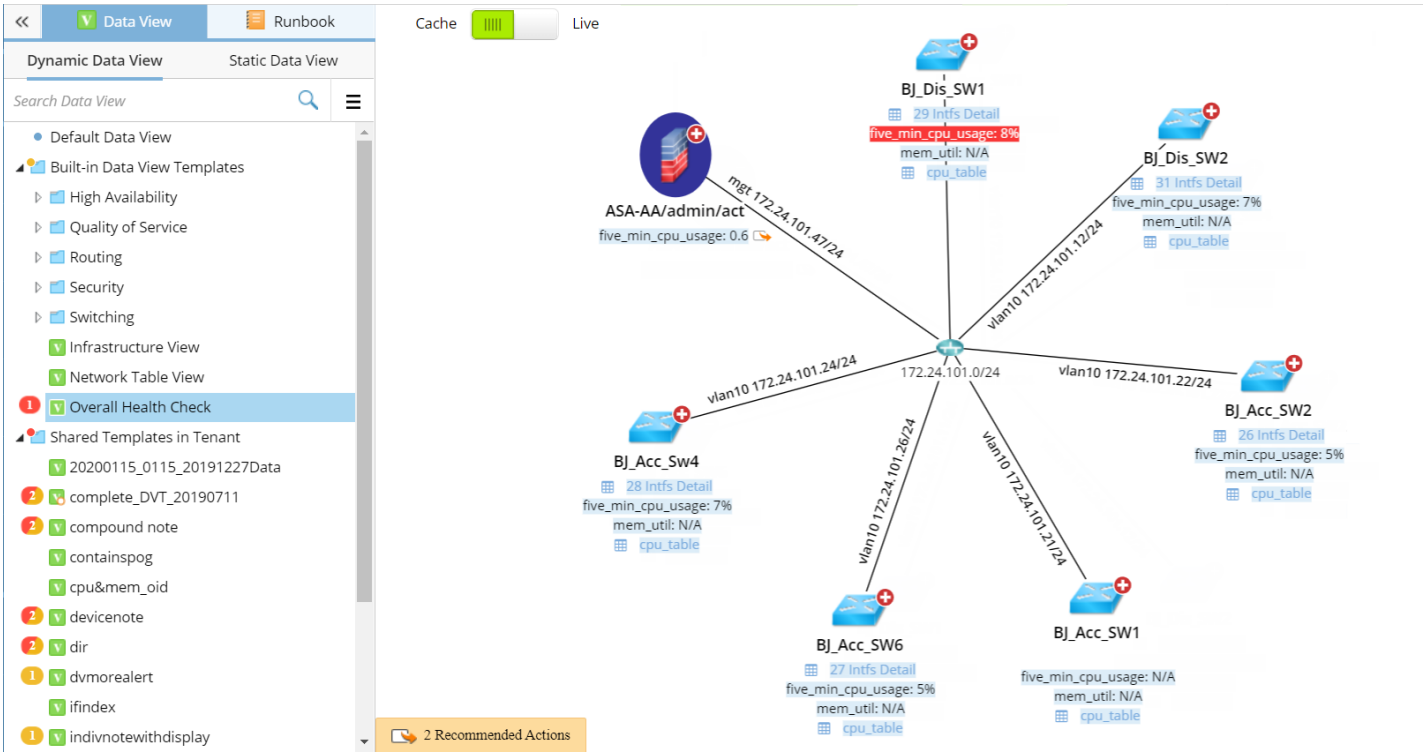


> **Tip**: To monitor the path performance, click **Monitor** and run the **Overall Health Monitor** Qapp.

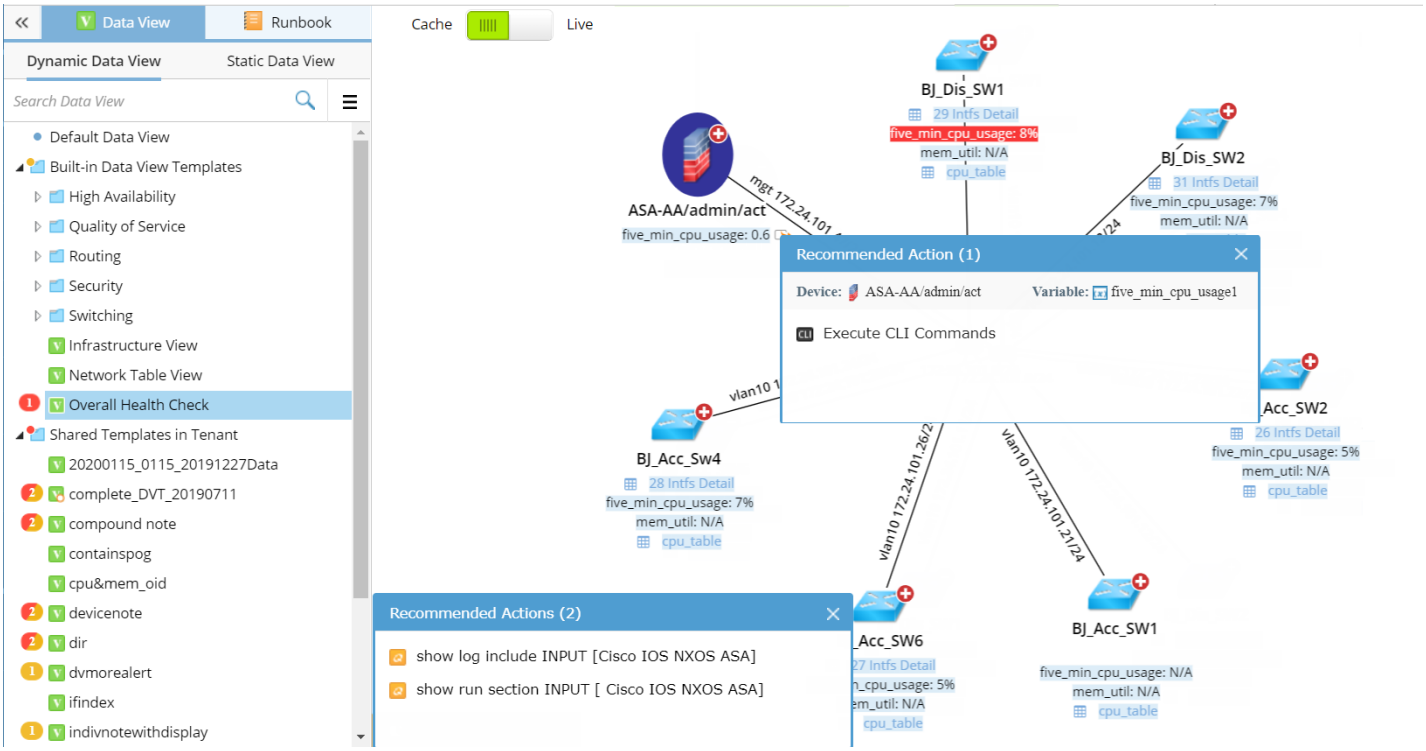
2. Select a Qapp, and click **OK**.
3. Configure data source and Qapp input if required, and then click **Run**. See Running a Qapp for more details.

4. Using Data View to Decode Network Design and Troubleshoot

Data View represents a data structure to organize and visualize network information, which can be used to decode a network design or troubleshoot a network issue. By integrating with third-party systems, dynamic map powered by Data View can serve as the single pane of glass for all your network data.



Through a dynamic data view, the system compares cached or live network data with Golden Baseline to address anomalies. Alerts can be both visualized on a map and messaged to users through system notifications and emails. Then users can leverage the recommended actions to further drill down to troubleshoot for proper remediation. Actions and results will be documented in Runbooks and can be used to collaborate with colleagues and other teams.

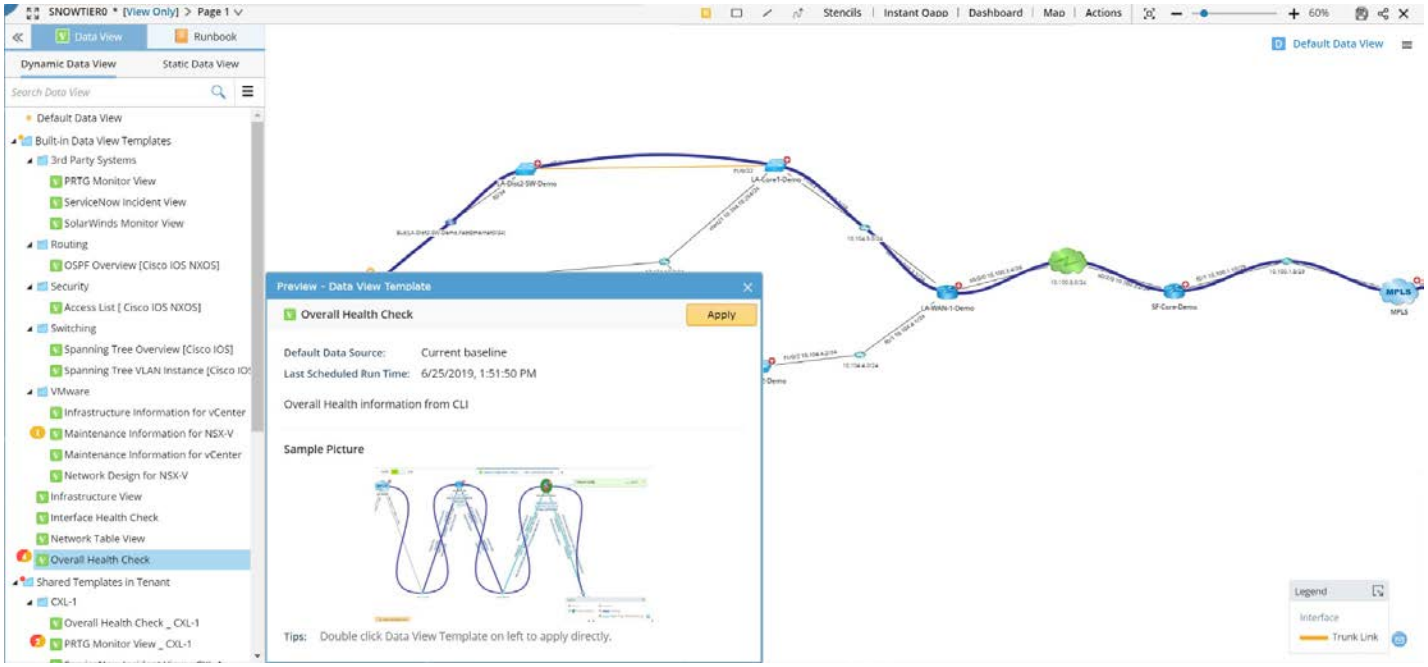


Reference Flow

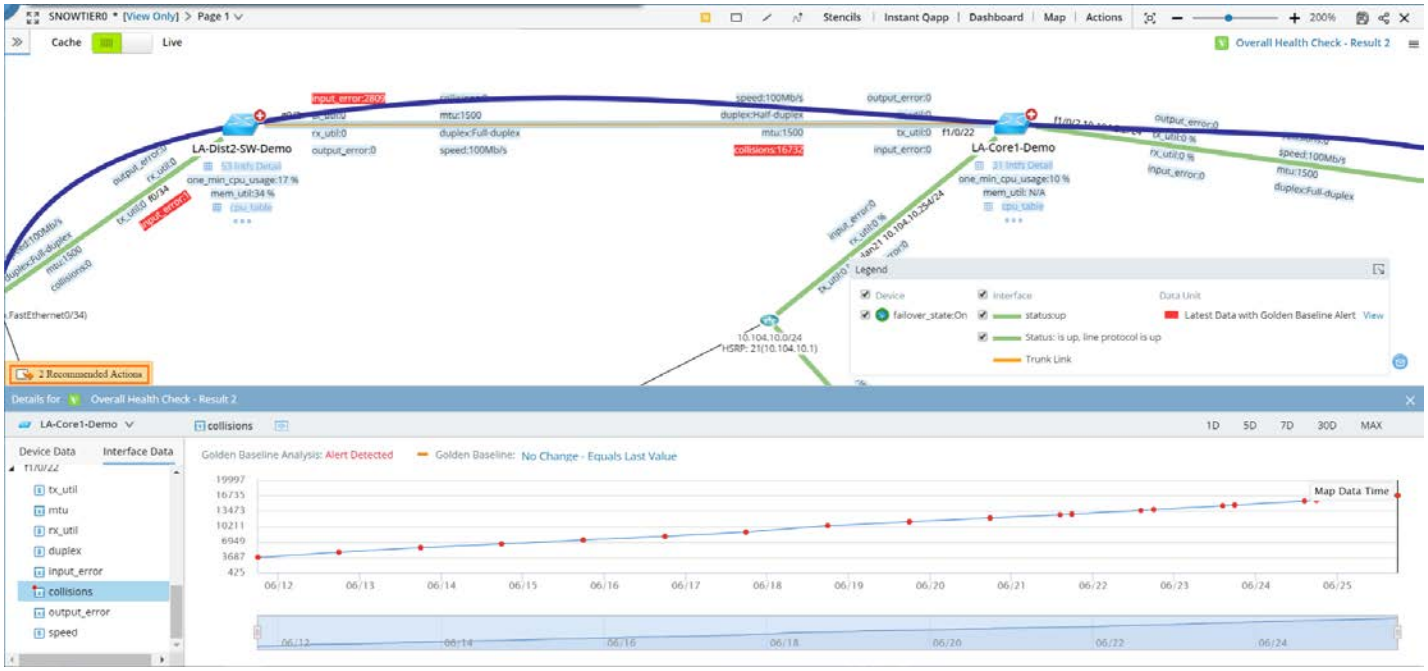
4.1. Applying a Data View Template

Example: Apply the data view of **Overall Health Check** to troubleshoot a slow application.

1. On a map page, click **Overall Health Check** in the **Dynamic Data View** pane to preview it and then click **Apply**.

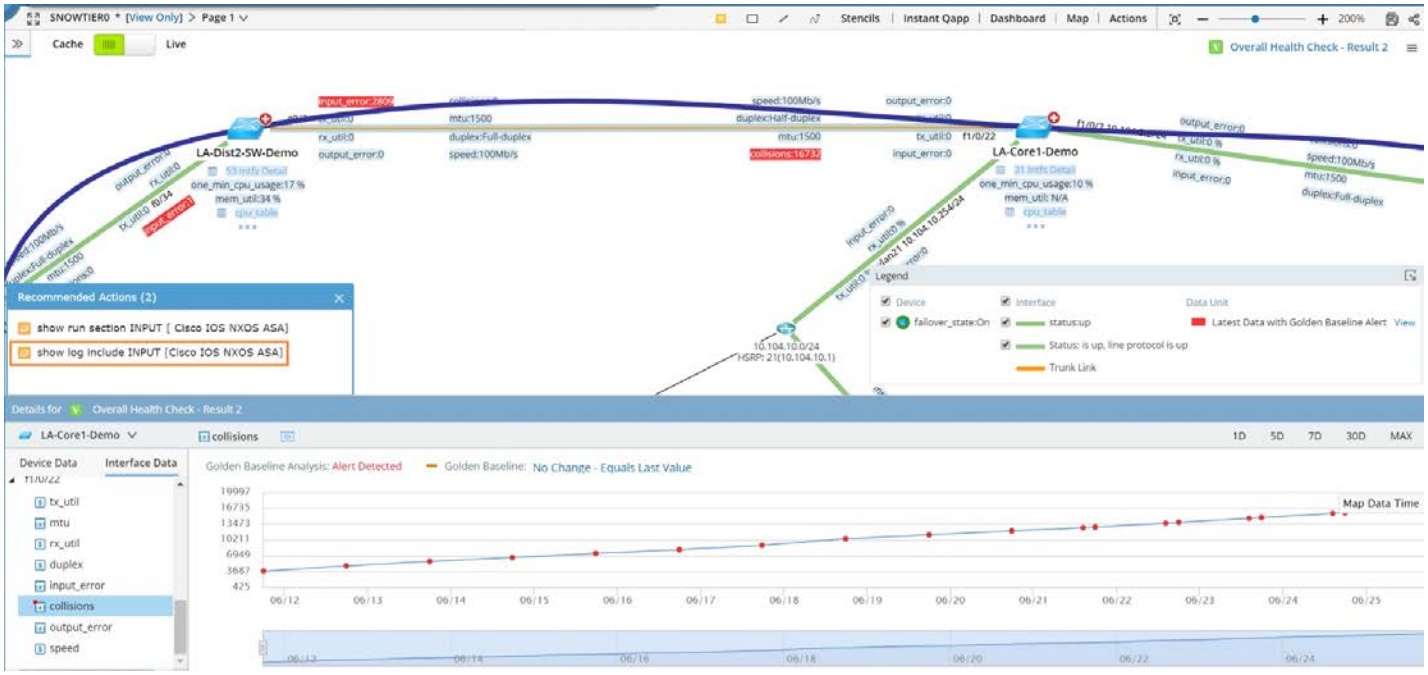


2. Take an overview to understand the network design and operation status, and look into the alerts. Click an alerting metric to view its historical data in the **Details** pane.

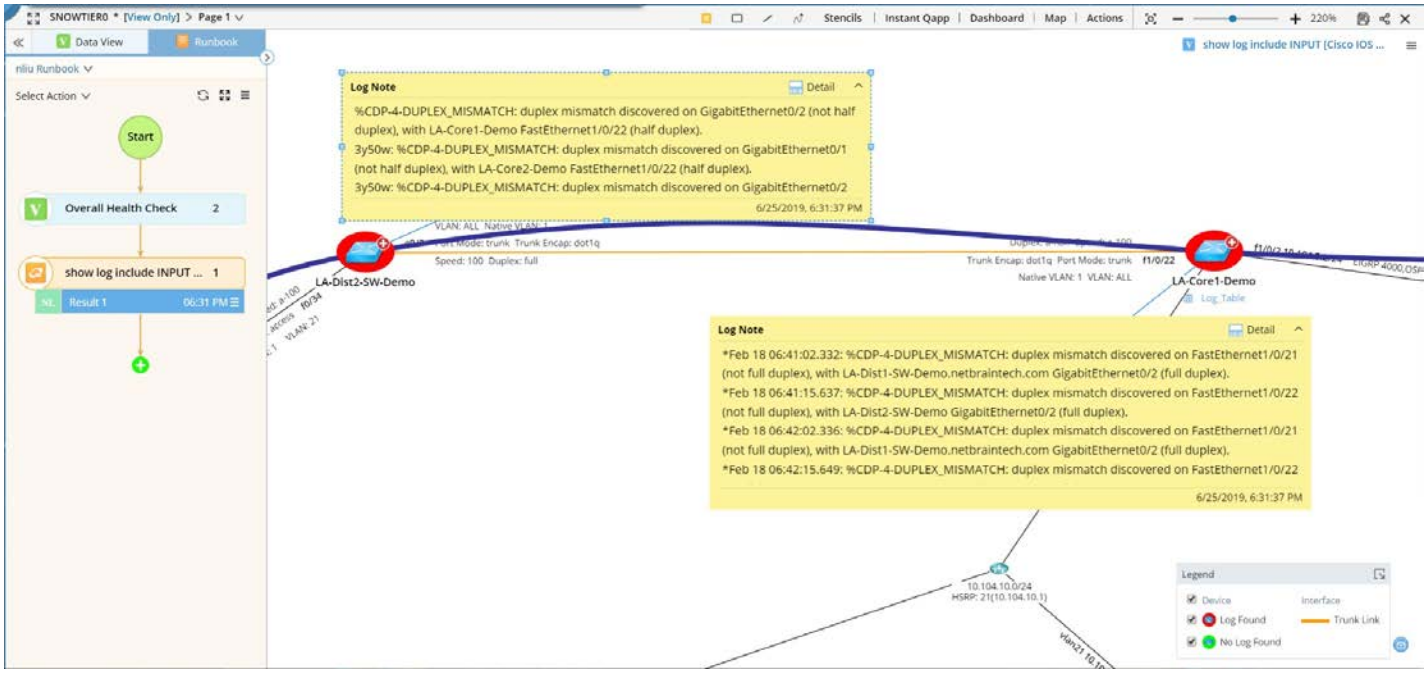


> **Tip:** See Detail Pane for more information about historical data analysis.

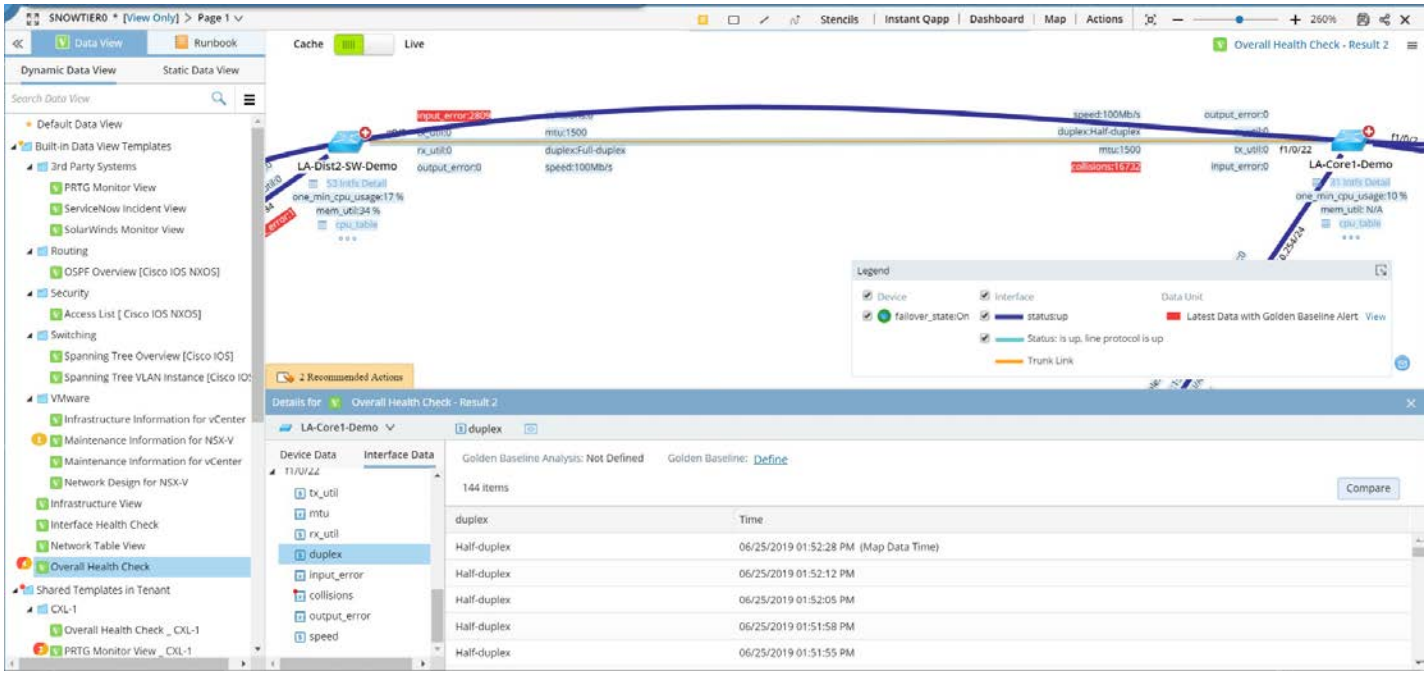
3. Click **2 Recommended Actions** and select **show log include INPUT [Cisco IOS NXOS ASA]** to run a Qapp for further analysis.



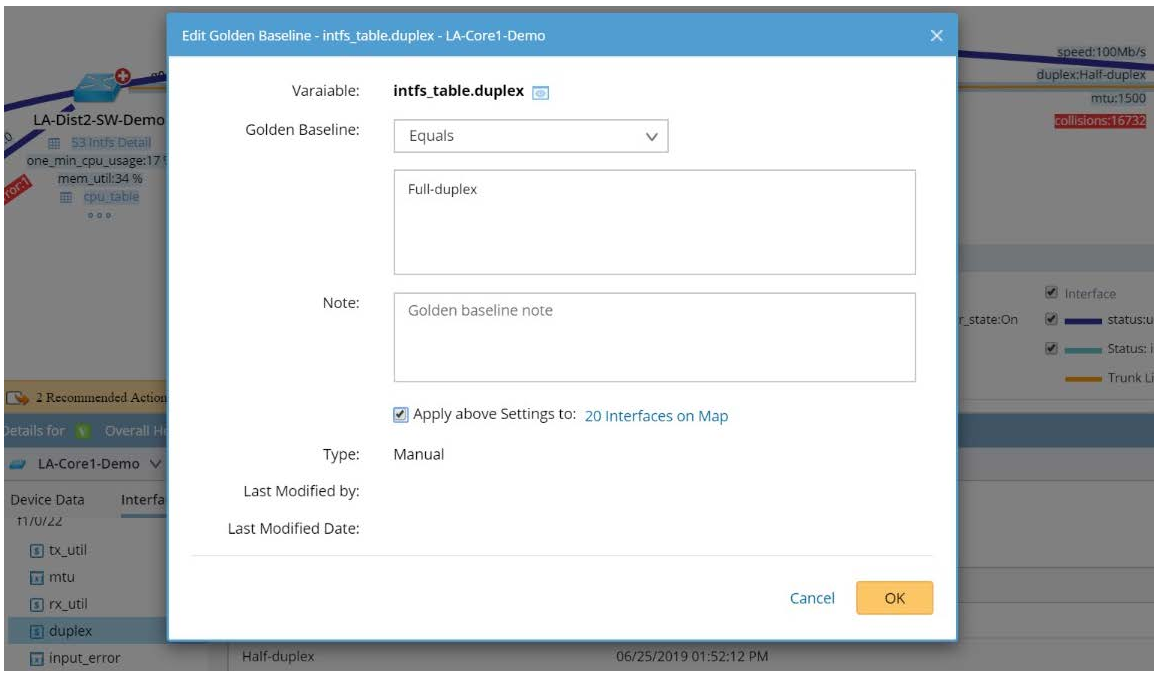
4. View the running result to address the root cause of the alert. In this case, the alert is caused by a duplex mismatch.



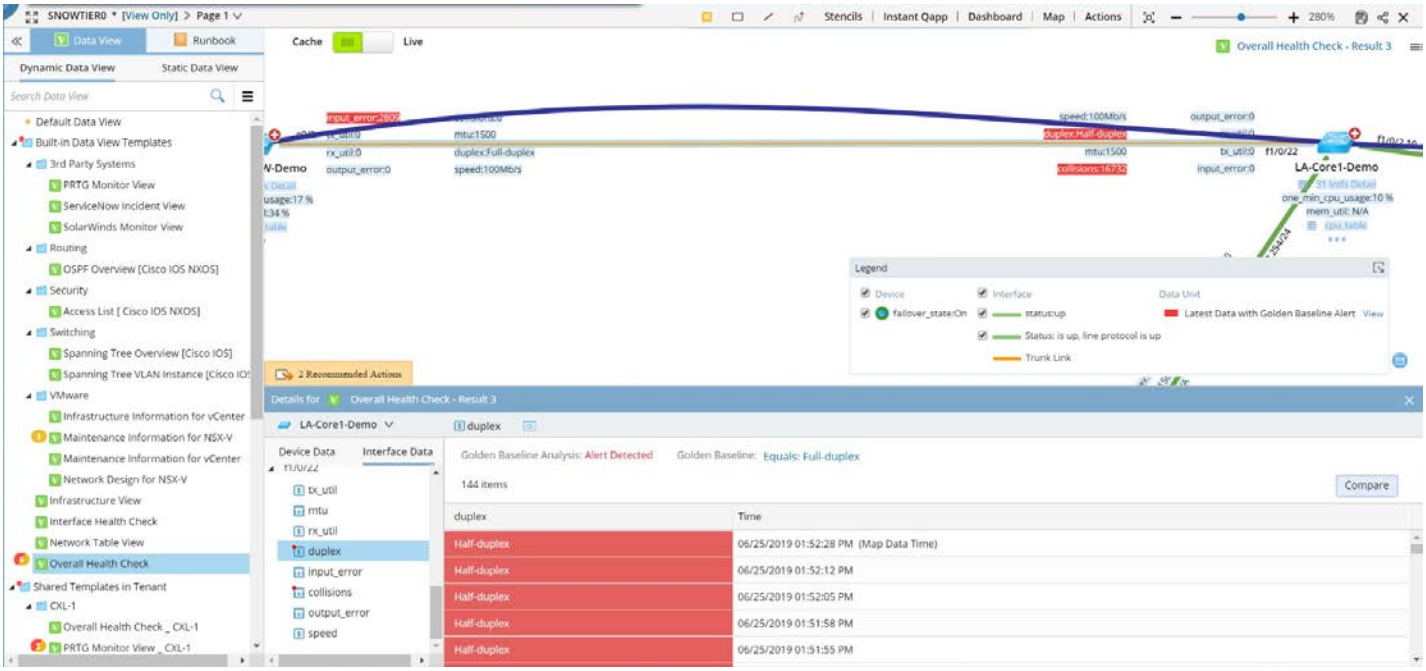
5. Go back to the **Details** pane and select the **duplex** variable.



6. Click **Define** to modify the rule as `intfs_table.duplex Equals Full-duplex` and re-apply the data view to proactively identify the anomaly.



With the enhanced Golden Baseline rule, your colleagues will track the issue easily.

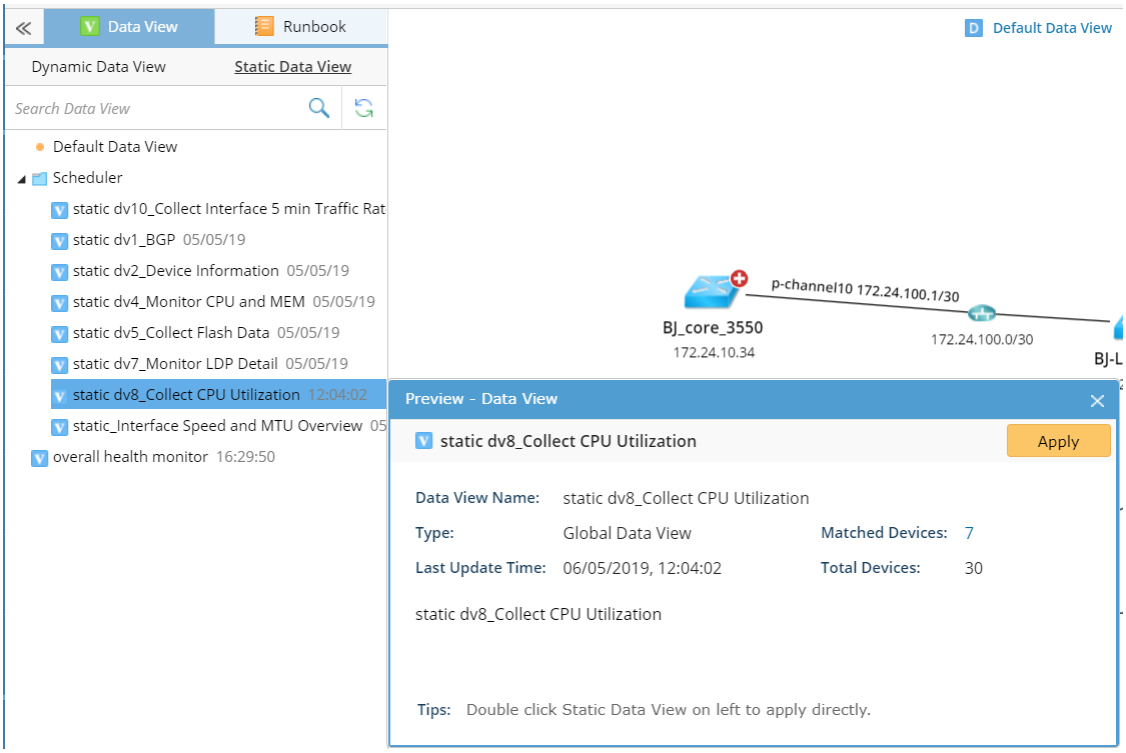


4.2. Applying Data Views

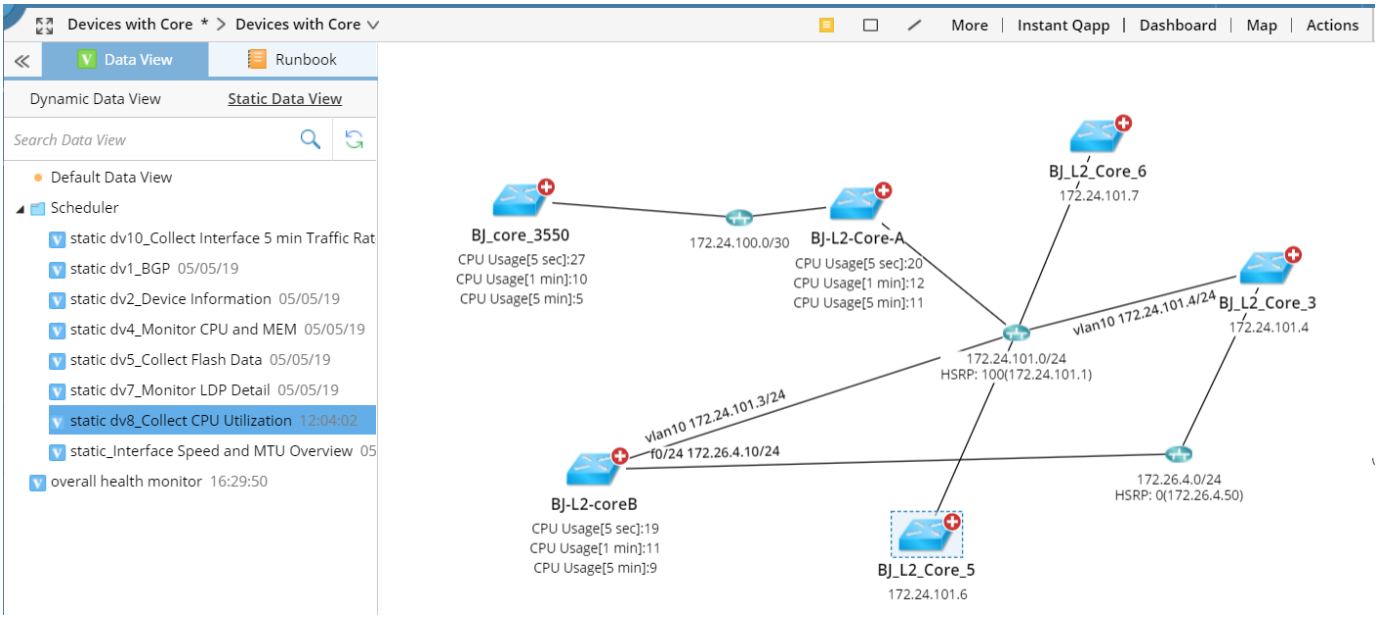
Static Data View is a snapshot of the device data at a particular moment. It can be generated by running the scheduled Qapps or Gapps, or saved from a dynamic data view. You can apply a static data view to decode network design.

1. Open a map page, click the **Static Data View** tab in the Data View pane.

2. Click **static dv8_Collect CPU Utilization** to preview it.



3. Click **Apply**.



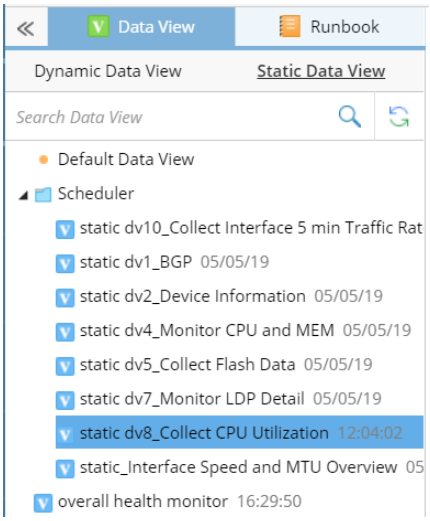
> **Tip:** You can also directly double-click the target data view to apply it to the map page.
>
> **Tip:** To clear applied data views, right-click the blank area on the map and select **Data View > Clear All** from the drop-down menu.

4.3. Editing Data Views

You can manually add, edit, and remove data units in data views. Many types of data units can be added to data views, such as hyperlinks, rich texts, and attachments.

Example: Add an STP table to the Static Data View **static dv8_Collect CPU Utilization**.

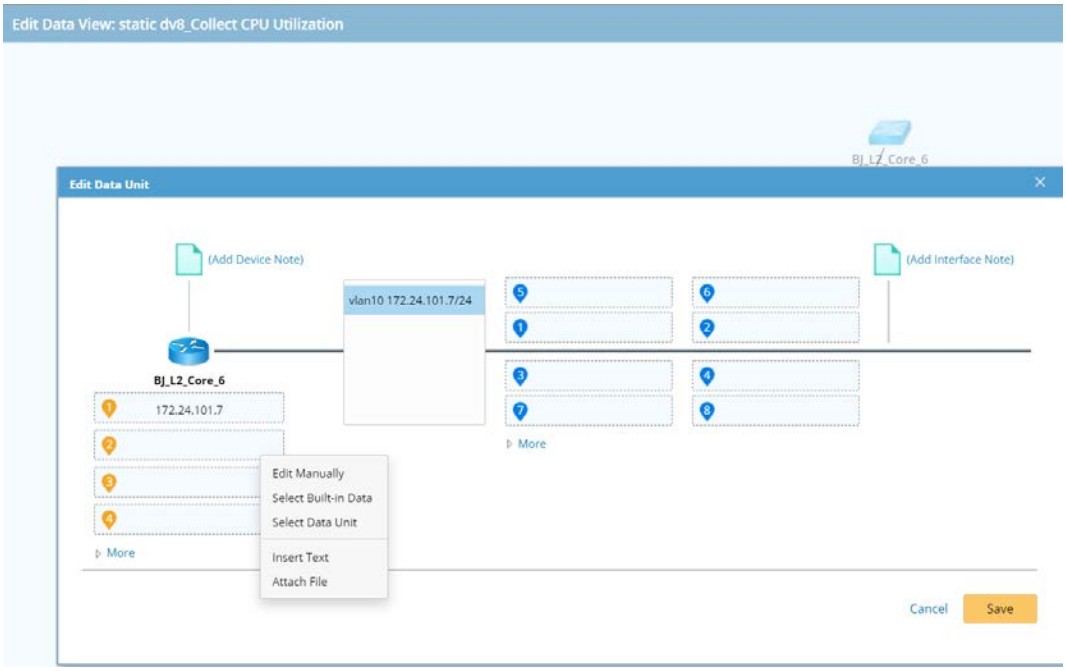
1. On the **Static Data View** tab of the **Data View** pane, double-click **static dv8_Collect CPU Utilization** to apply it to a map.



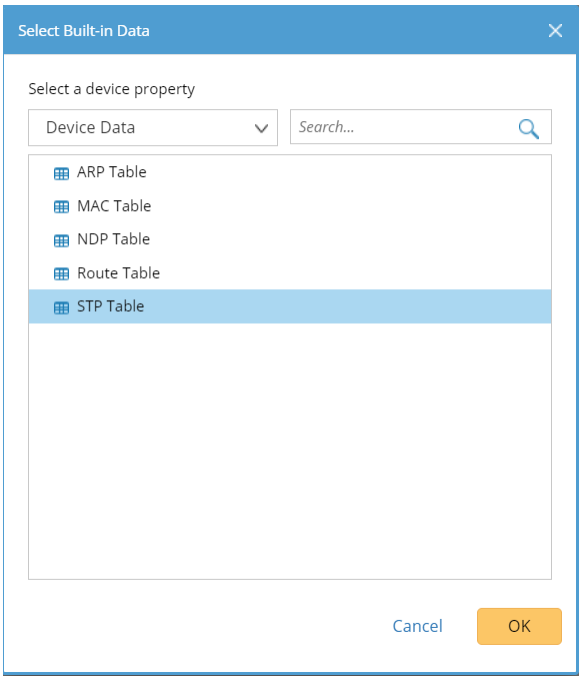
2. Click the ☰ icon at the upper-right corner of the map and click **Edit**.

3. In the editing mode, click the device **BJ_L2_Core_6**. The existing device data units are displayed in the corresponding positions.

1) Point to a blank device position and click the icon to select **Select Built-in Data** from the drop-down menu.



2) Select **Device Data** from the drop-down list and select **STP Table** from the available table types. Click **OK**.

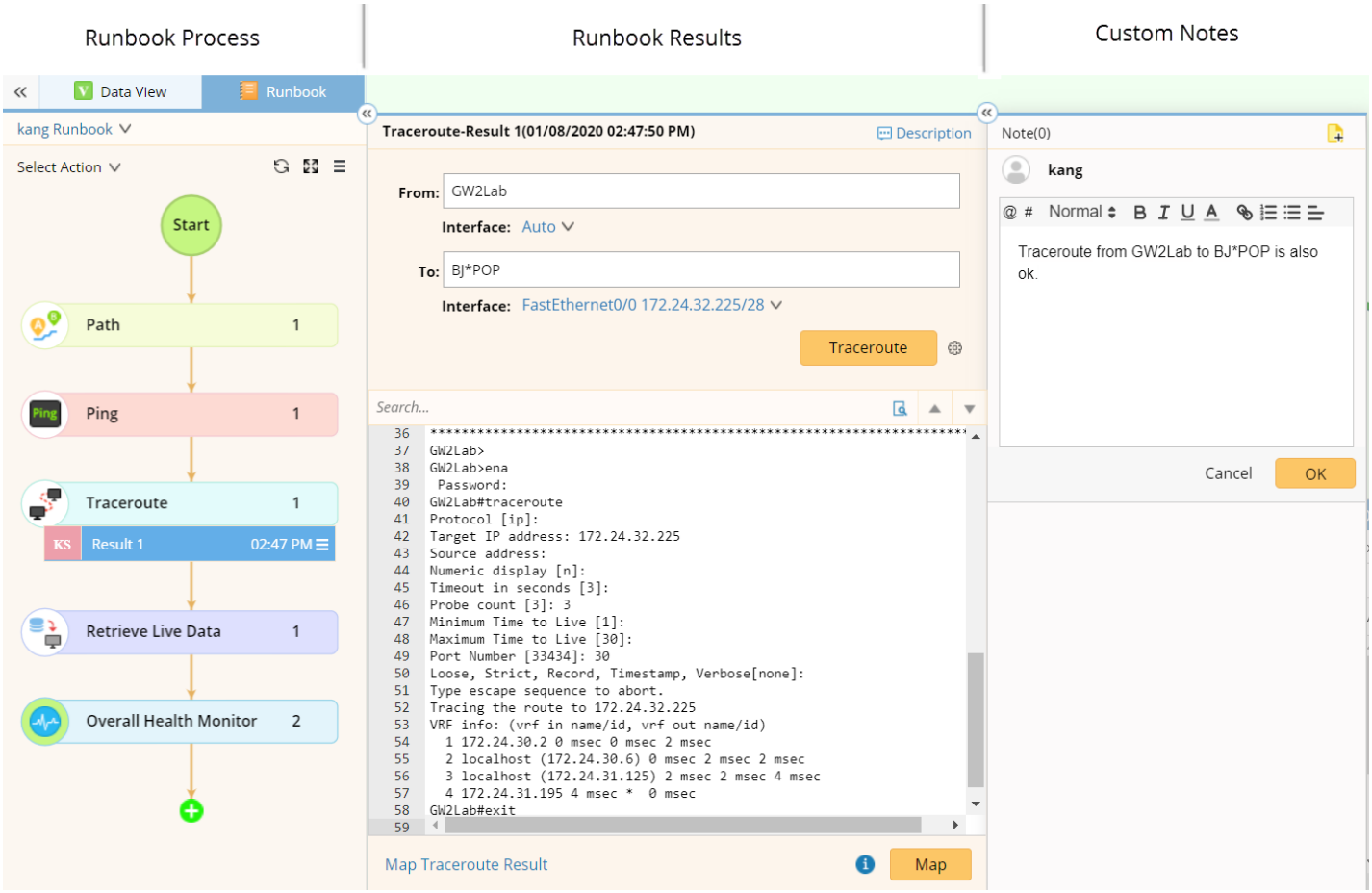


4. Click **Save**. Then click **OK**.

5. Click the icon on the upper-right corner to exit the editing mode. The newly added data unit is displayed on the map.

5. Using Runbook to Document Map-Based Activities

NetBrain Runbook represents an automated workflow. It provides a visual way to codify a network troubleshooting process into an executable, reusable, and documentable workflow, to elevate collaboration efficiency.



Besides, tribal leaders can digitize their knowledge into a runbook template to streamline best practices for the entire team. The three primary scenarios of using a runbook are illustrated as follows:

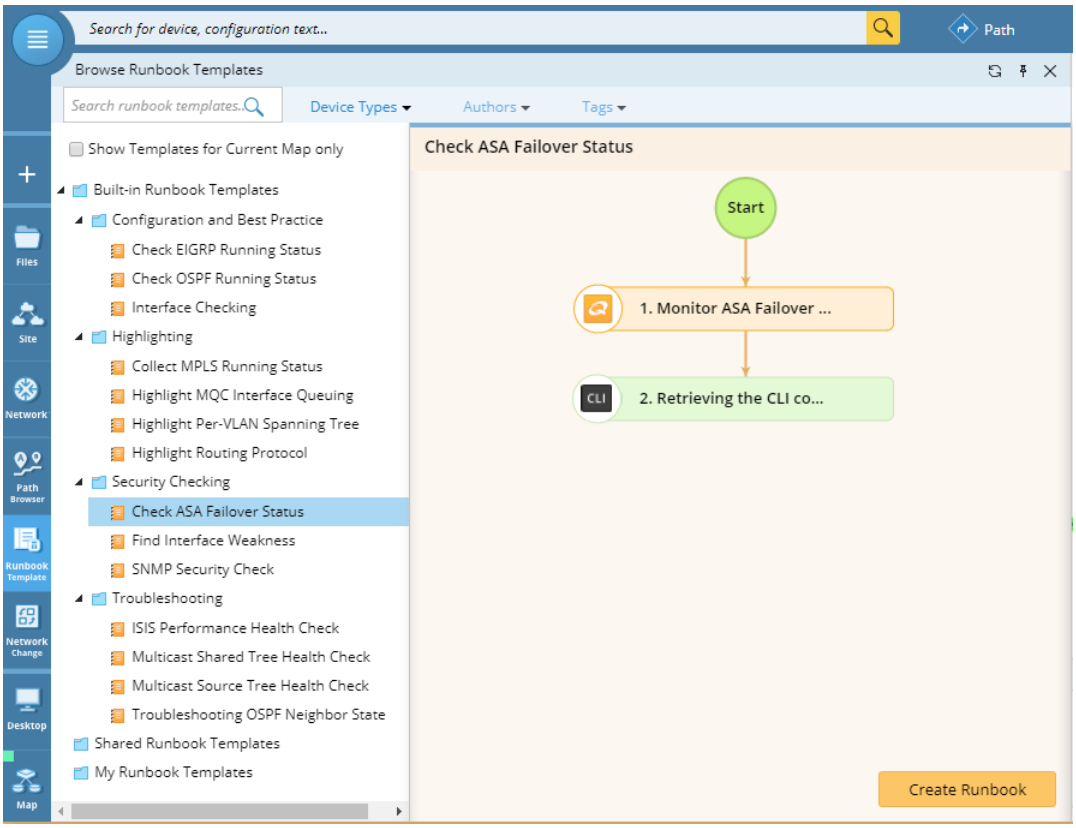
- **Record Activities and Process**
  For example, end users run Qapps, execute CLI commands, or use Ping/Traceroute to troubleshoot a problematic area. These actions are instantly recorded in a Personal Runbook, and each action can be annotated with thoughts or analysis to document the diagnosis process.
  Example: Execute a Runbook to Troubleshoot A/B Path Issue
- **Share Knowledge and Know-How**
  For example, to proactively take measures for network problems that might re-occur, power users create a Runbook Template and continue to improve it, to share best practices and know-how with junior engineers.
- **Re-executable to Maximize Data Value**
  For example, Tier 1 engineers execute CLI commands to troubleshoot problematic devices on a map,

document the diagnosis and escalate the issue by mentioning next-level users in the runbook. Tier 2 engineers re-execute the runbook, and continue to add a Compare node to evaluate data changes between the two CLI outputs, and then escalate to Tier 3. Each Tier can continue to build on top of what has been done previously by checking analysis results and notes.

5.1. Executing a Runbook Template

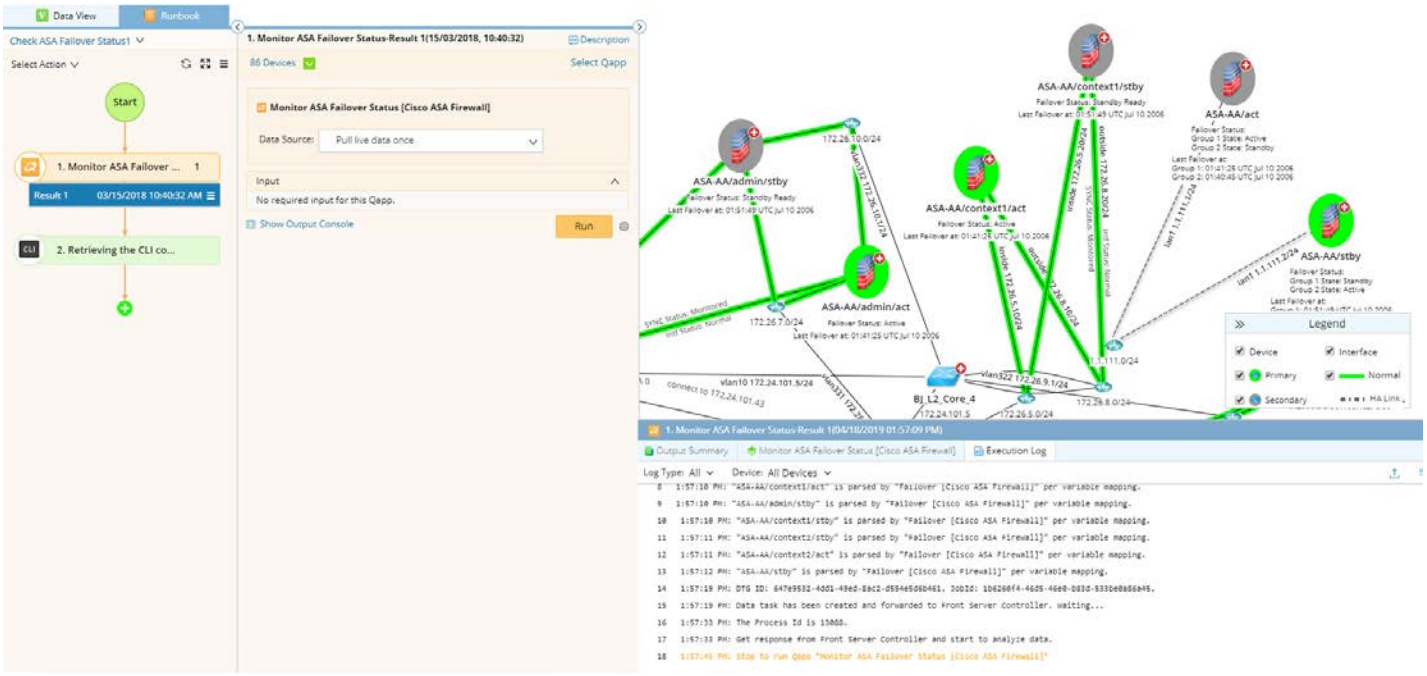
Example: Use the built-in runbook template **Check ASA Failover Status** to monitor the problem areas and display off-normal status on a map.

1. On a map with Cisco ASA firewalls, click **Runbook Template** on the taskbar.
2. In the runbook template tree, select **Security Checking > Check ASA Failover Status**, and click **Create Runbook**.

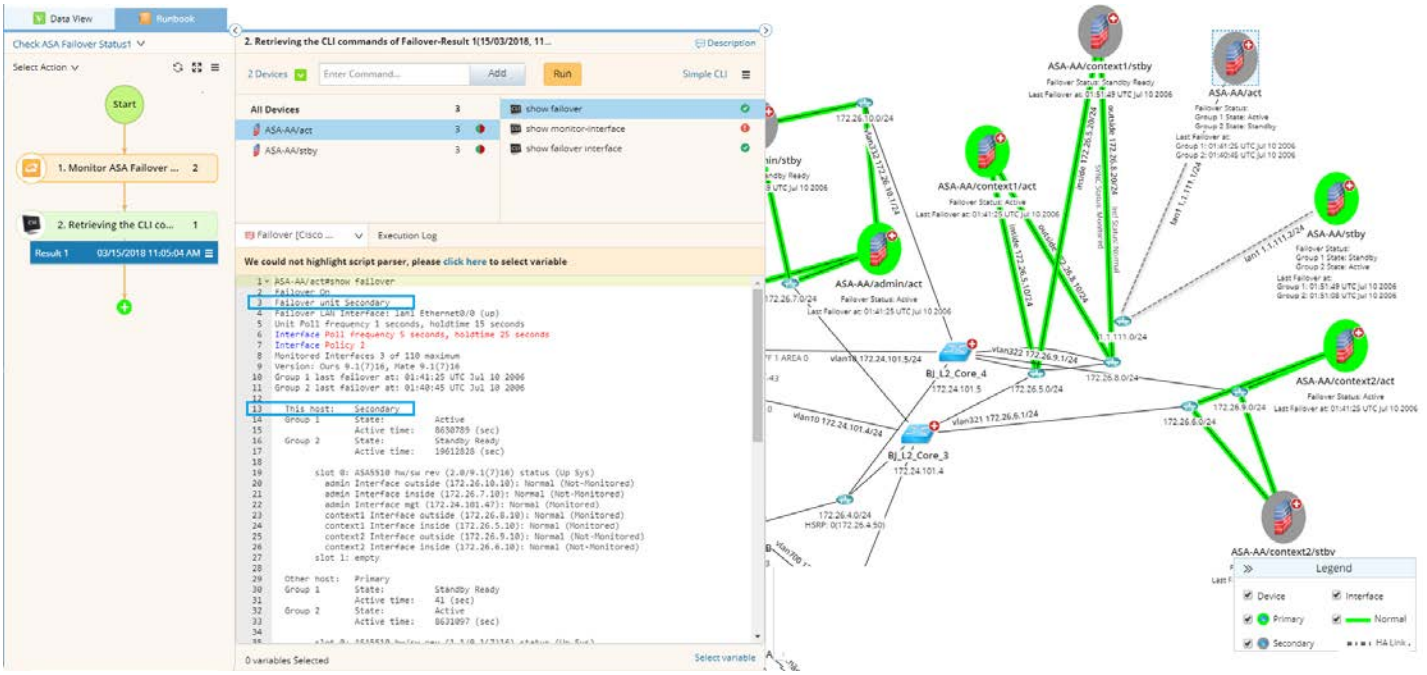


3. In the **Monitor ASA Failover Status** Qapp node, add target devices, select **Pull live data once** in the **Data Source** area and click **Run**. The active and standby status of ASA firewalls is displayed on the map. According to the legend, the **ASA-AA/act** firewall becomes secondary but the **ASA-AA/stby** firewall becomes primary. You can click **Show Output Console > Execution Log** to view the detailed log regarding how the Qapp retrieves data

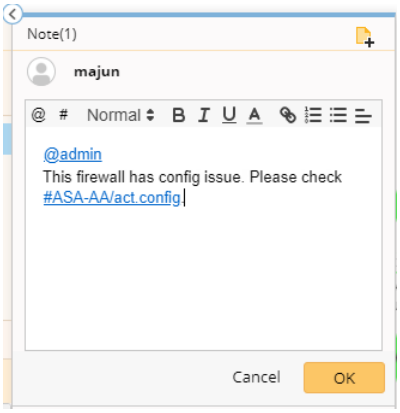
from target devices.



4. In the **Retrieving CLI commands** node, select **ASA-AA/act** and **ASA-AA/stby** as target devices, and click **Run**. From the output result, the status issue is verified.



5. (Optional) Click the icon to add notes to mention other users to further check configurations.

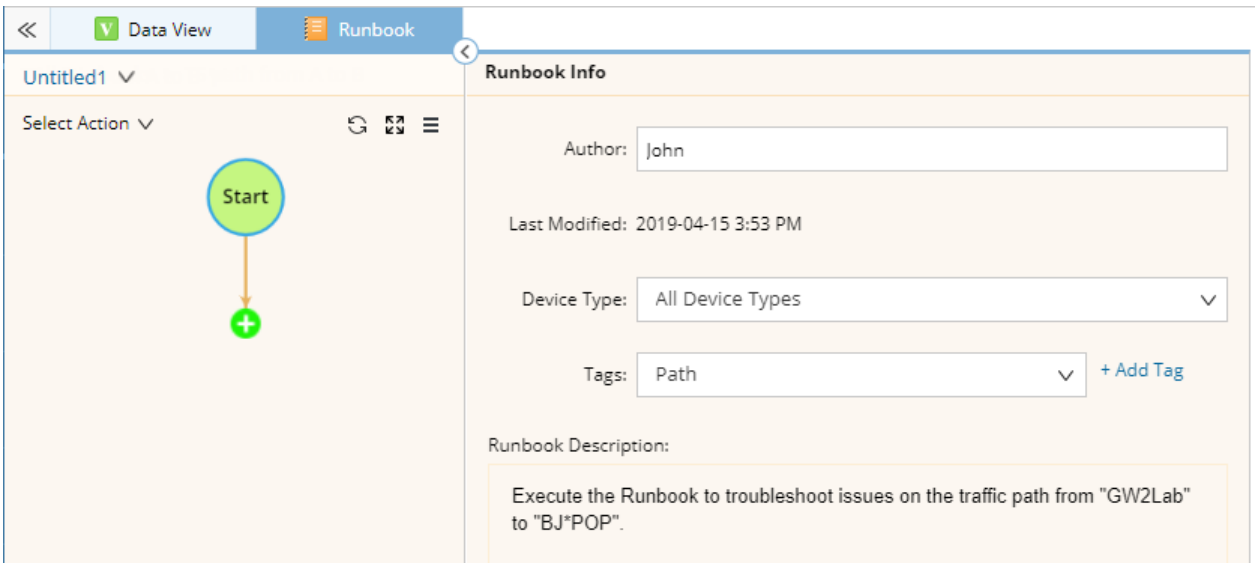


5.2. Creating a Runbook

Example: Create a runbook to troubleshoot issues on a traffic path, and escalate to admin.

1. Click the icon on the taskbar and select **New Runbook**. The **Runbook** pane opens on the current map.

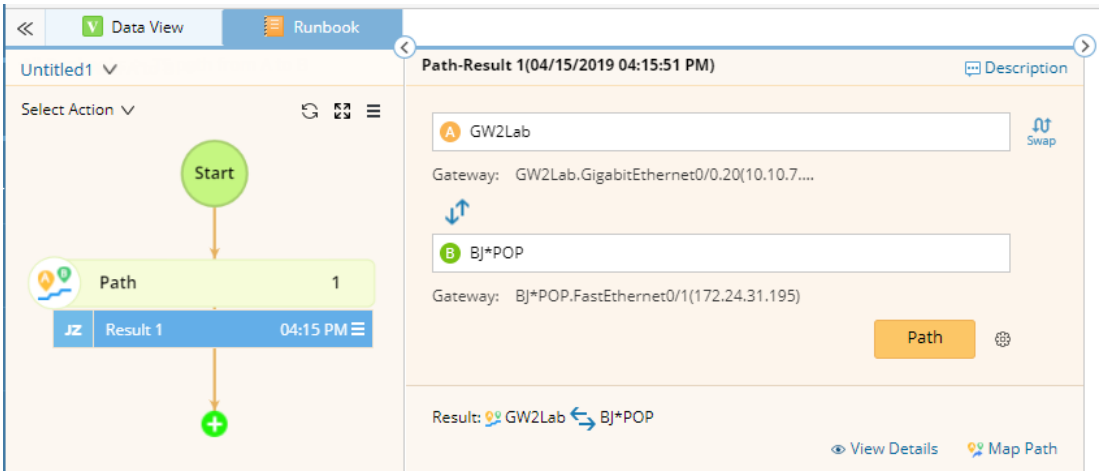
2. In the **Start** node, specify the required information.



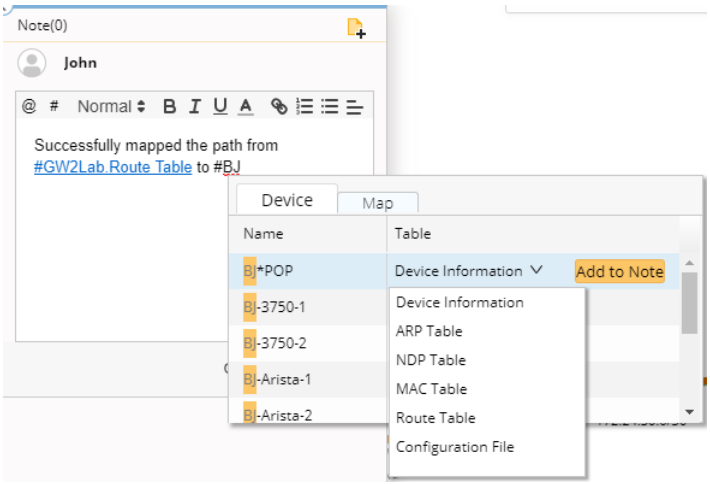
> **Tip:** When you save the runbook as a template, both device types and tags can be used to filter runbook templates.

3. Add the **Path** action node.
   1) Click **Select Action** or the icon, and then double-click **Path**.

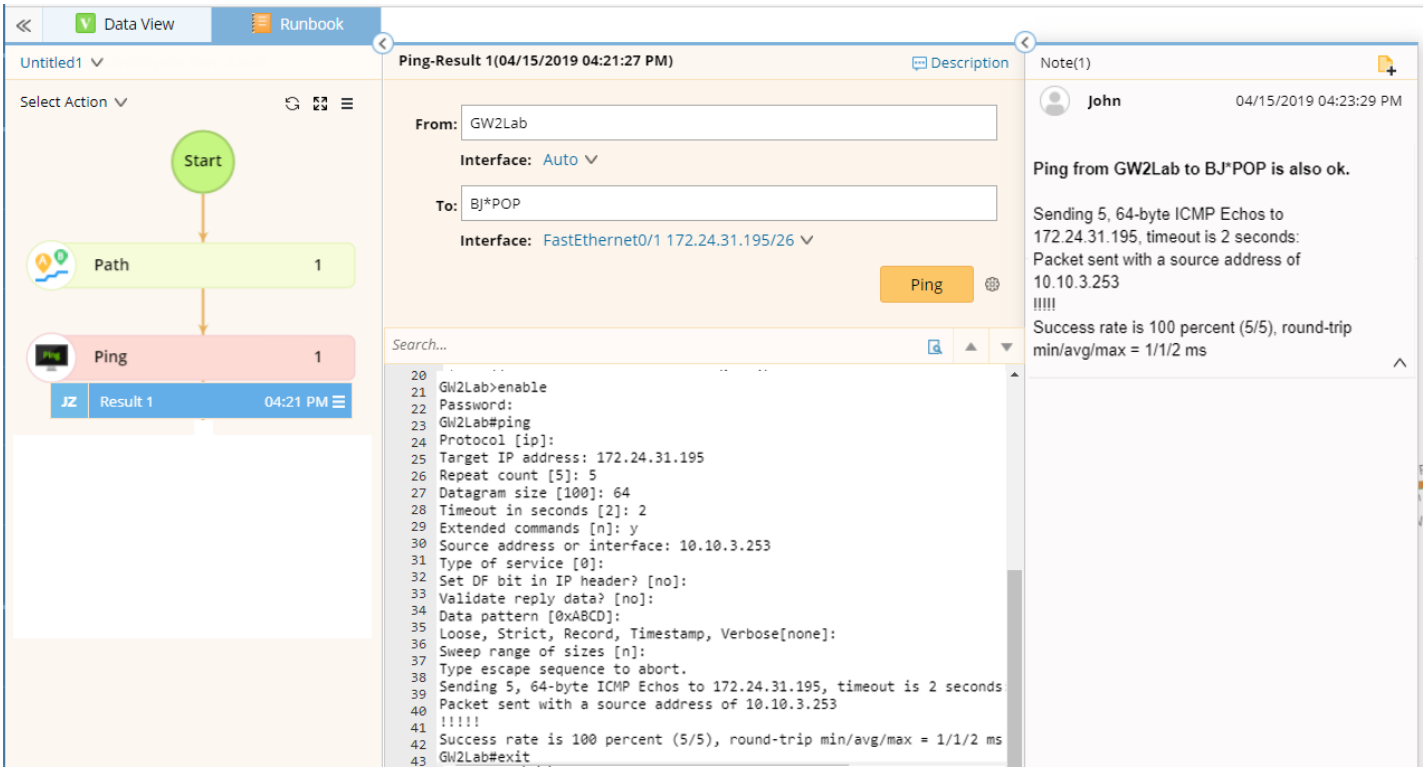
2) In the **Path** node, specify two endpoints, and click **Path**.



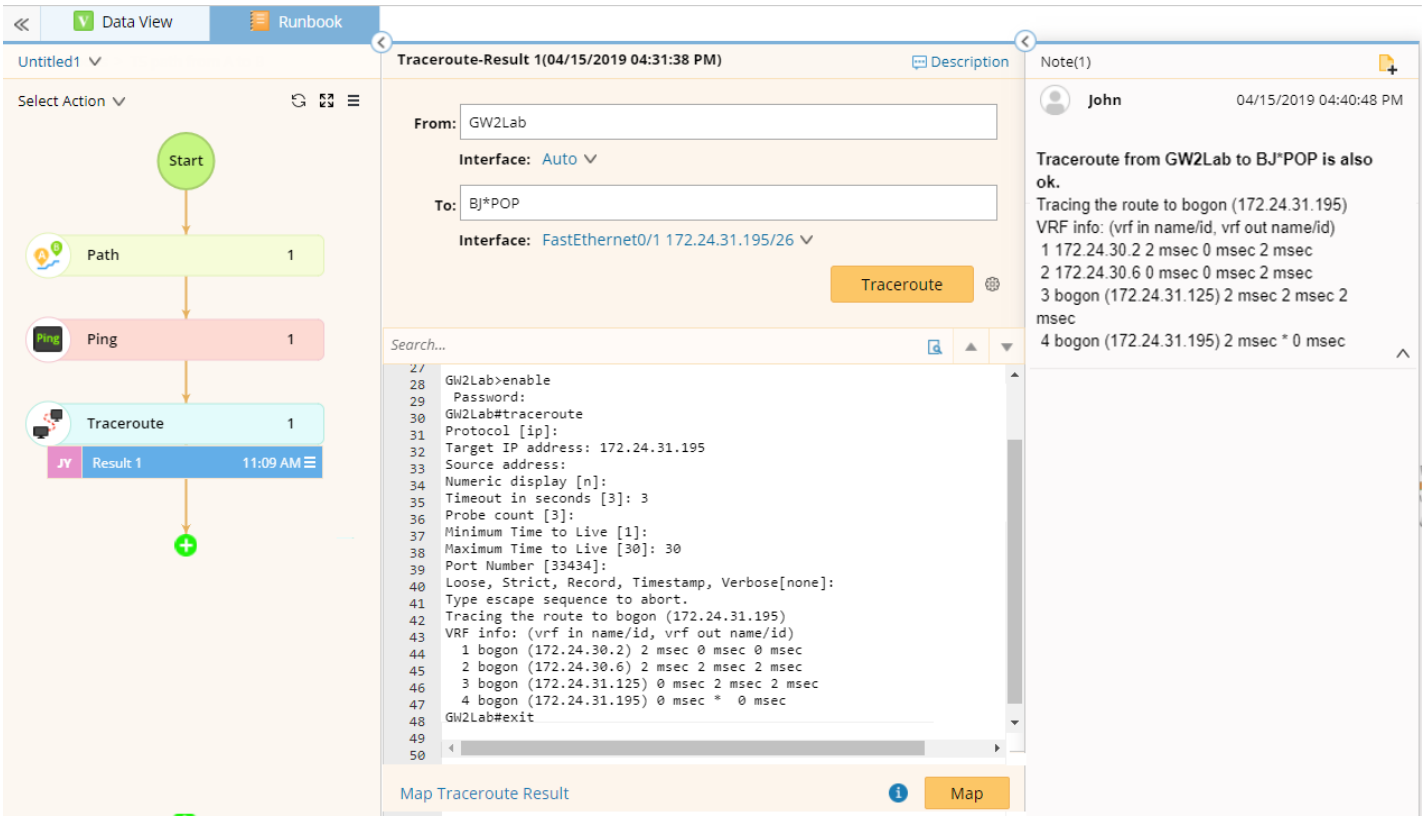
3) After the path is diagrammed on the map, click the icon to add a note. To mention a device, enter **#** and further select a device asset. A link will be generated for other users to quickly access the required information.



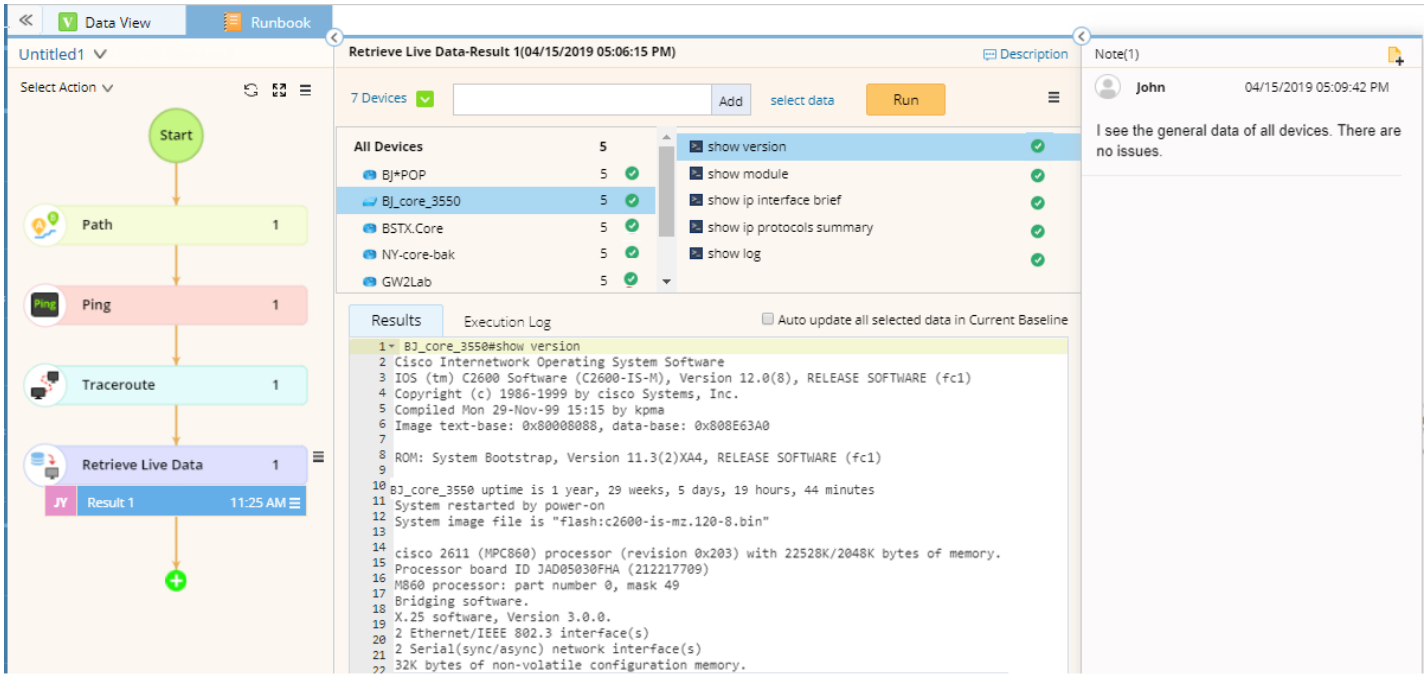
4. Add the **Ping** node and execute the action. Make a note to record the result.



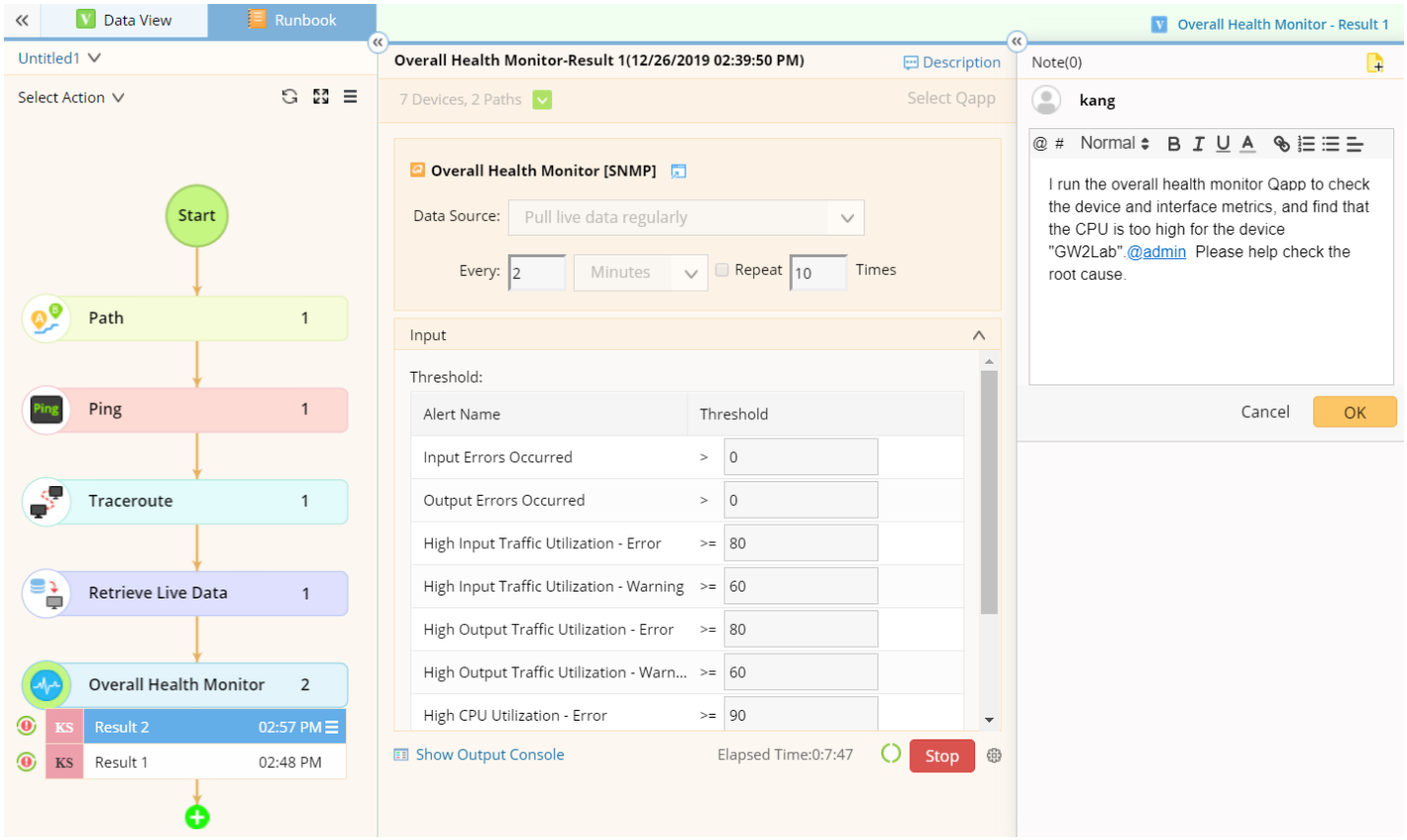
5. Add the **Traceroute** node and execute the action. Make a note to record the result.



6. Add the **Retrieve Live Data** node, click the ≡ icon to load CLI commands via template, and then click **Run**.



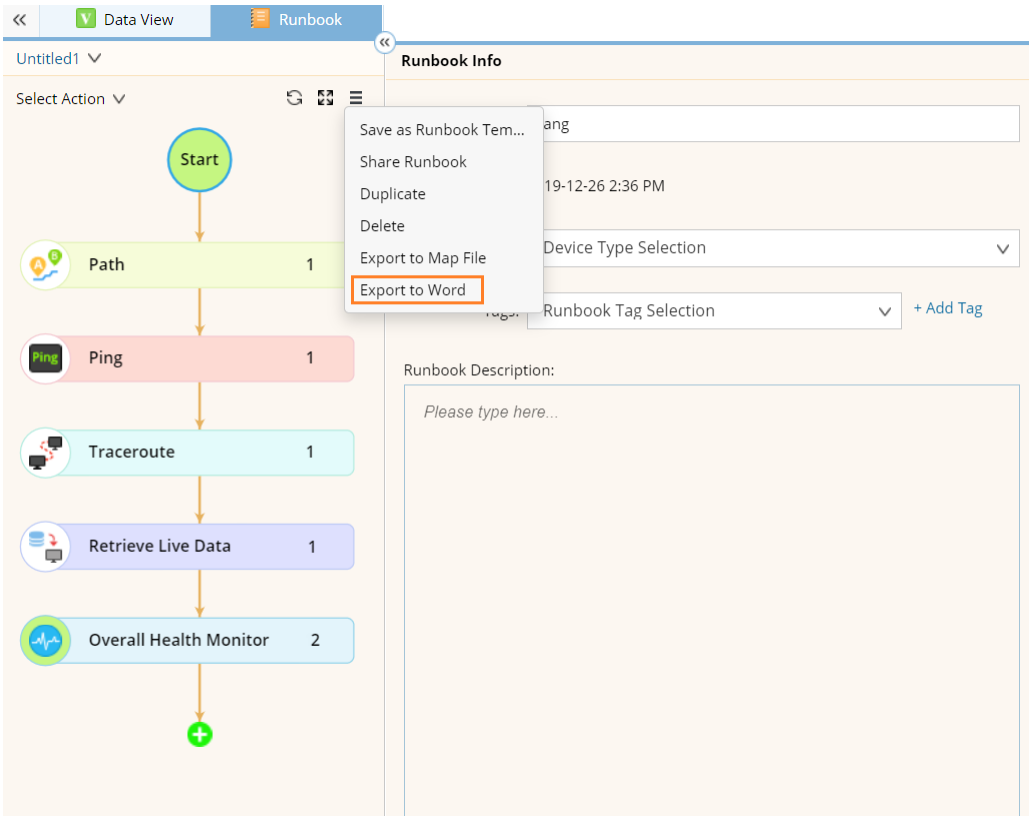
7. Add the **Overall Health Monitor** node, and then click **Run**. See Running a Qapp for more reference. After running the Qapp, make a note to describe the issue and enter **@** to mention admin for escalation.



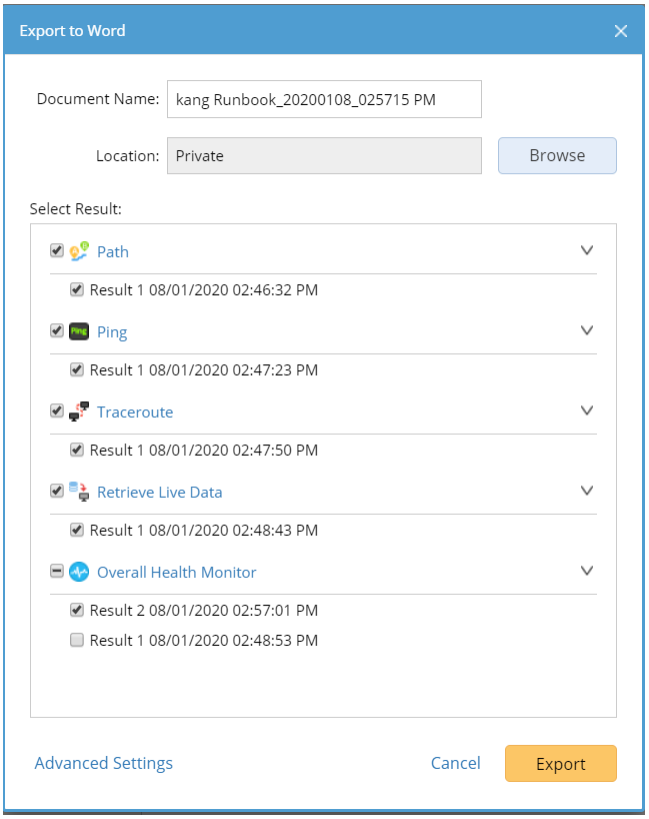
5.3. Exporting Runbook to Word

The document exported from a runbook contains actions and execution results.

1. In the **Runbook** pane, click the ≡ icon to select **Export to Word**.



2. In the **Export to Word** dialog, enter a document name and select a location. By default, all nodes and their latest results are checked.



3. Click **Export**.

> **Tip:** Click **Advanced Settings** to customize the Word template and the content settings in the document.

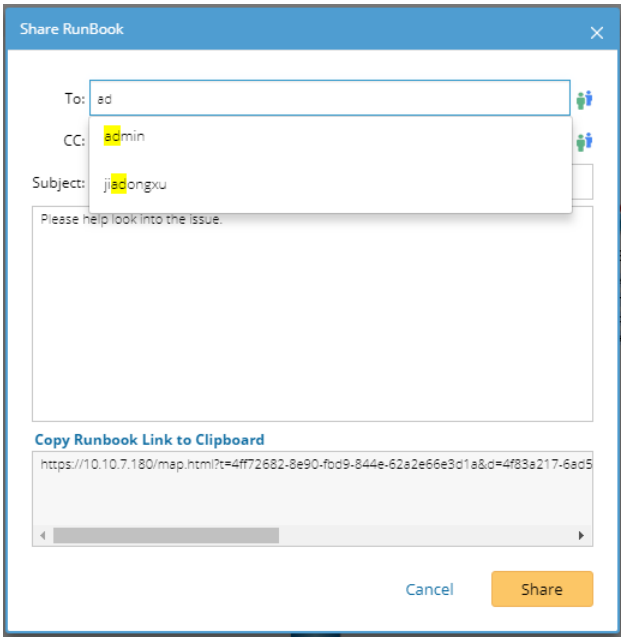
5.4. Sharing a Runbook

Besides mentioning other users, you can escalate network problems to upper-level engineers by sharing a runbook.

Every runbook has a unique URL in the system. With the URL, you can share a runbook with more users in the same domain, or even external users who do not have system accounts. They will receive both system notifications and email notifications.

1. In the **Runbook** pane, click the ≡ icon to select **Share Runbook**.

2. In the **Share Runbook** dialog, specify the users that you want to share the runbook with.



   1) Enter a username and then select the matched user account from the populated drop-down list, or directly enter an email address.

      > **Note:** To complete an email address, you can enter a comma, semicolon, or press the **Enter** key, **Tab** key, or **Space** key.
      >
      > **Note:** Users in the **To** field will receive both a system notification and an email; users in the **CC** field will only receive an email.

   2) Type a message if required.

3. Click **Share**.

5.5. Running Overall Health Monitor

Example: Run **Overall Health Monitor** on core devices to get key performance metrics using SNMP.

1. On a map, select **Overall Health Monitor** from the right-click menu, or click **Actions > Overall Health Monitor** from the map toolbar. The Runbook pane opens with an **Overall Health Monitor** action node added.

2. Before running the Qapp, you can select to configure the following settings:

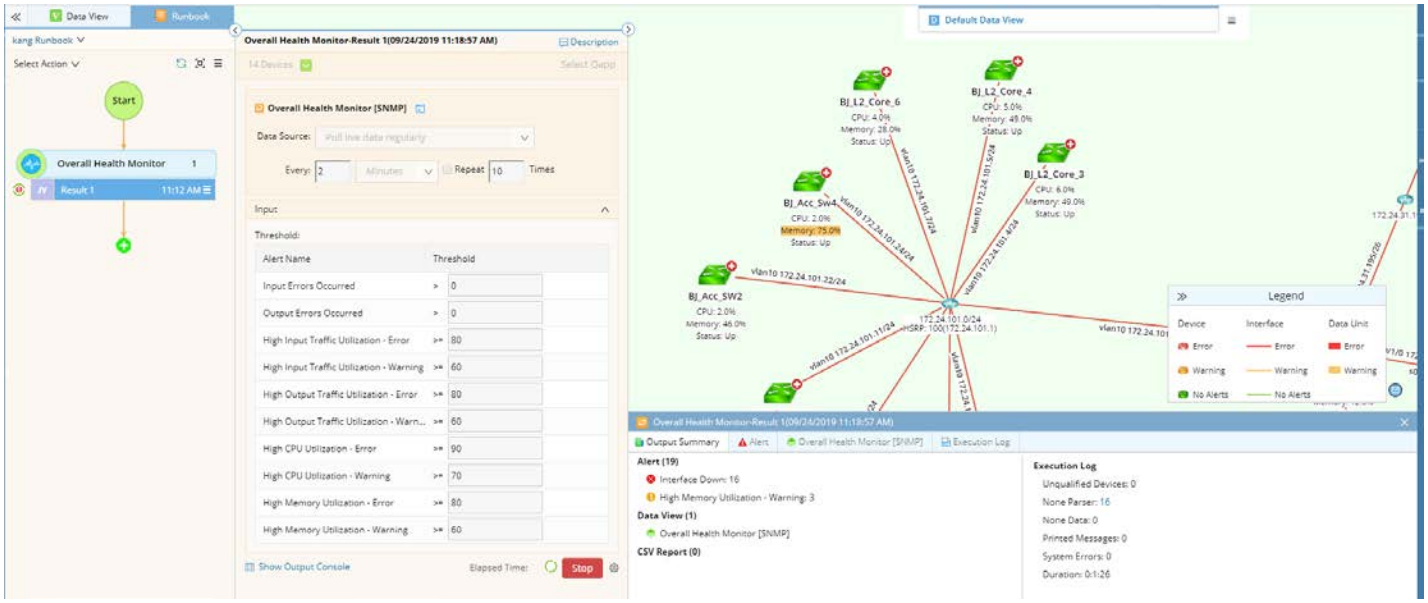
   1) Click the icon to customize target devices. By default, all devices and paths on the current map and are auto-populated.

   2) Select **Pull Live data regularly** as the data source to run the monitor.

3) Customize Qapp input, including threshold values of variables.

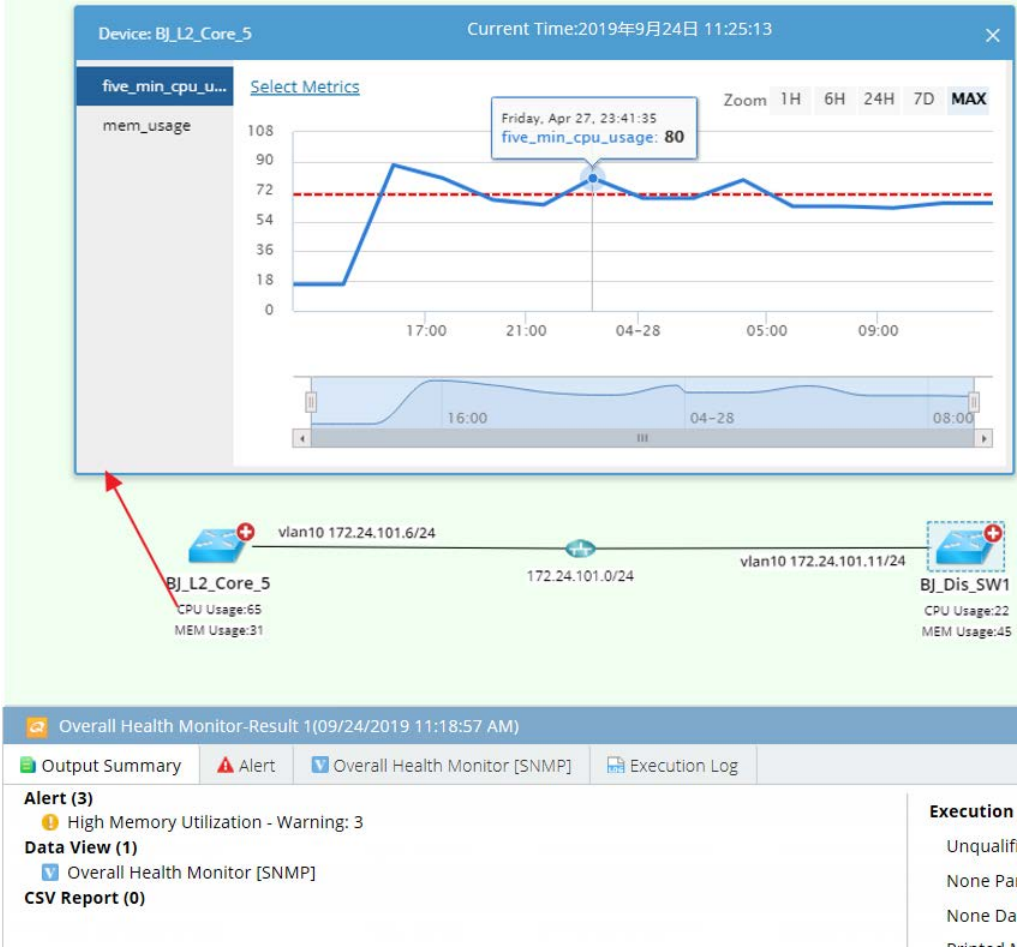
4) To share alerts with more users via email, click the icon.

3. Click **Run** and view the result. The captured alerts will be displayed in the Output Console.



> **Tip:** To save an action node and its input for reuse, point to it and click the ≡ icon to select **Save as Favorite**.

4. Click a numeric value on the map. A floating chart prompts as follows, displaying the monitoring metrics of this device during a period.



During the monitor process, the color of devices and interfaces may change, indicating the corresponding status described as follows:

Device Icon	Description
	The value of the predefined device variable **dev_status** is **Up**.
	The value of the predefined device variable **dev_status** is **Down**.
Link Icon	**Description**
	The value of the predefined interface variable **intf_status** is **Up**.
	The defined interface variable **intf_status** is **Down**.
Data Unit Icon	**Description**
	The data unit reaches the predefined threshold of an error alert.
	The data unit reaches the predefined threshold of a warning alert.

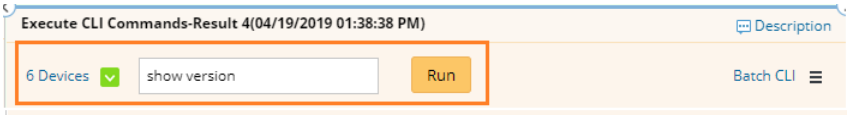
5.6. Executing CLI Commands

CLI automation is used to retrieve device data by executing specified CLI commands. This automation action is highly customizable, and you can execute different commands on different devices, not limited to the existing devices on a map.

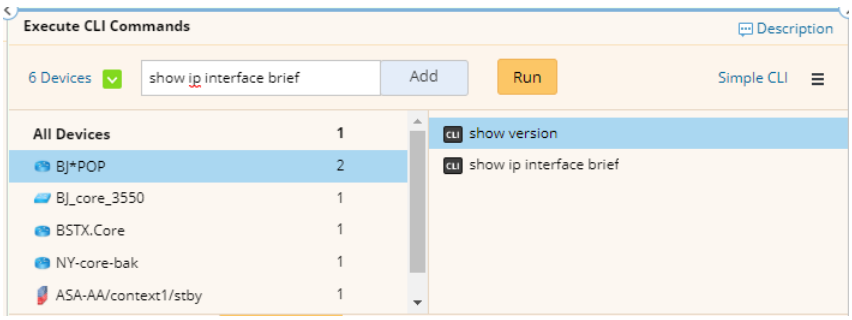
1. On a map, select **Execute CLI Commands** from the right-click menu. The Runbook pane is opened with the **Execute CLI Command** node added.

2. Select target devices. By default, this action applies to all existing devices on the map. To customize target devices, click the icon.

3. Use either of the following ways to add CLI commands.
   - **Single Command (Simple CLI)** — enter a CLI command and click **Run**. By default, the **Simple CLI** mode is selected, which means only one CLI command can be executed at one time on each target device.

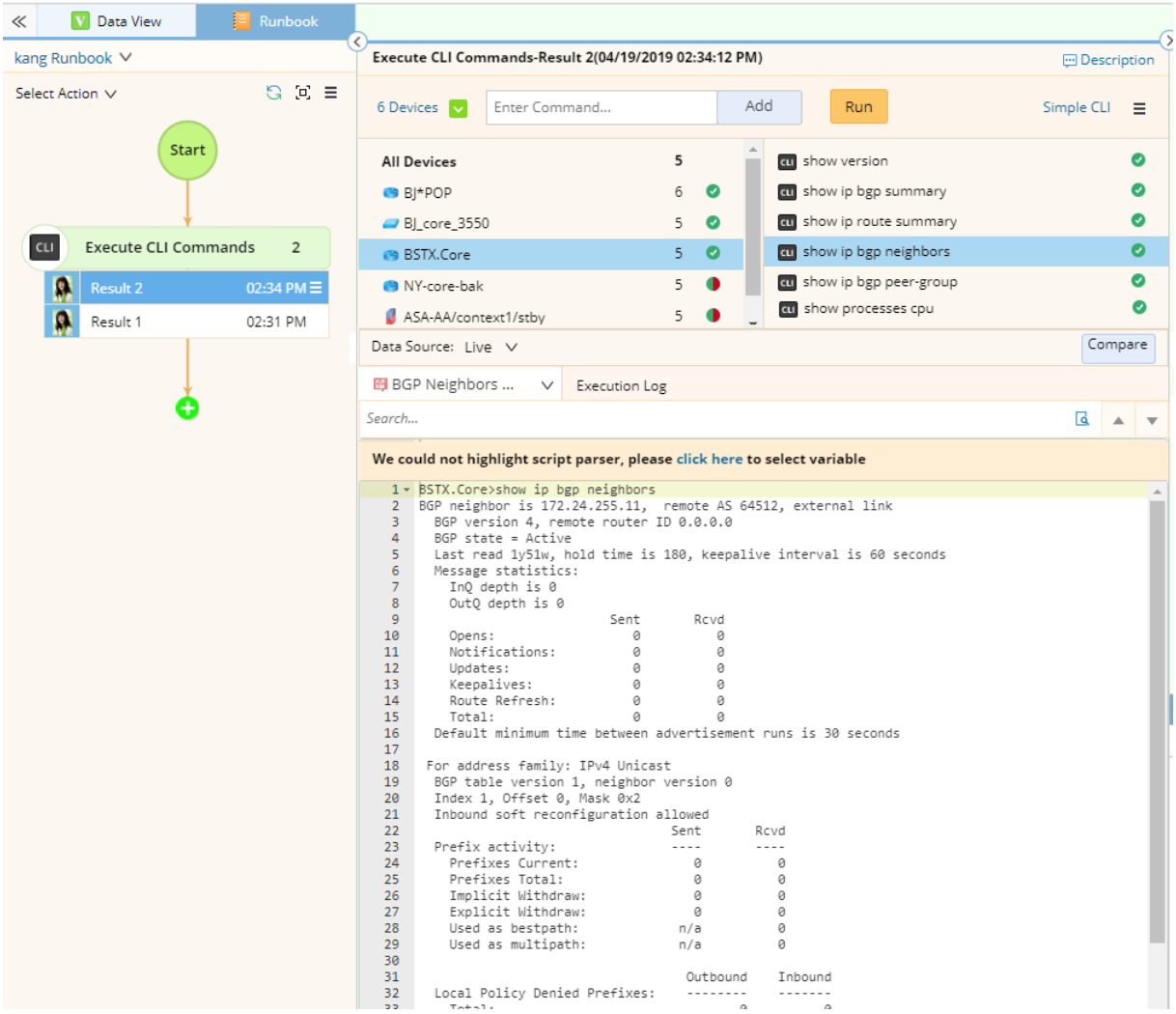


   - **Multiple Commands (Batch CLI)** — enter the CLI command and click **Add** repeatedly to add multiple CLI commands. By default, all the commands in the list will be executed for all target devices. To add a CLI command for a specific device, select the device in the device list, enter the command, and click **Add**.



> **Tip:** To add commands by using templates, click the icon and select **Load CLI Templates**. You can also create your own command template. See CLI Template for more details.

4. After the execution is finished, select a device and a CLI command to view its output.



6. Using Context-driven Mapping and Automation

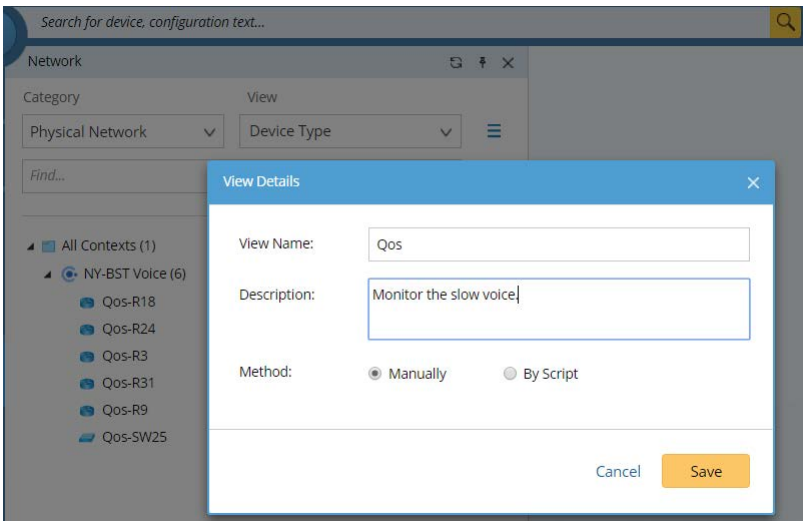
Context is corresponding to a specific network situation. For example, a network design (such as QoS policy), a network technology (such as BGP MPLS VPN), a specific application (such as video conference), and management (such as site and core network). Each context is associated with context maps and context actions (runbook template that is the most relevant to the selected devices). With the context, you can quickly understand the network design and troubleshoot.

6.1. Predefining a Network Context

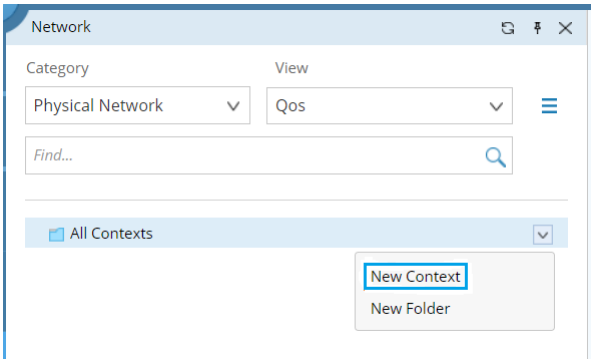
Example: Create a voice context for one of the main voice flows in your company.

1. Click **Network** on the taskbar.
2. Under the **Physical Network** category, click the **View** drop-down list, then right-click the **All Views** to create a new view type **QoS**.

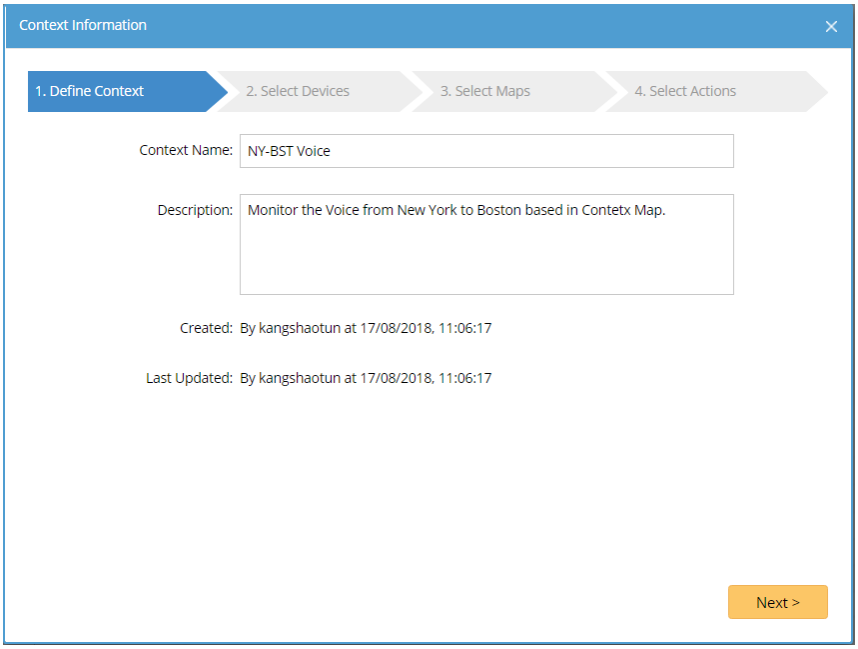
> **Note:** Built-in resources are accessible to all users but can only be modified and deleted by NetBrain Engineers with authenticated credentials (username/password). To customize a built-in category or view, you can submit a ticket to NetBrain.



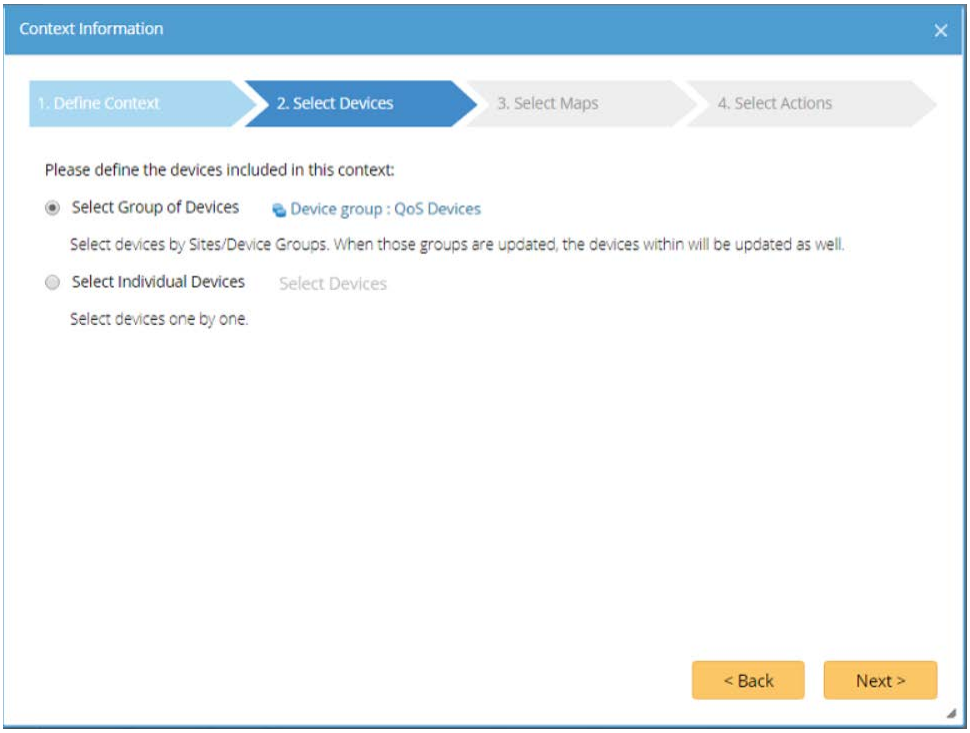
3. In the **QoS** View, right-click the **All Contexts** node to select **New Context** from the drop-down menu.



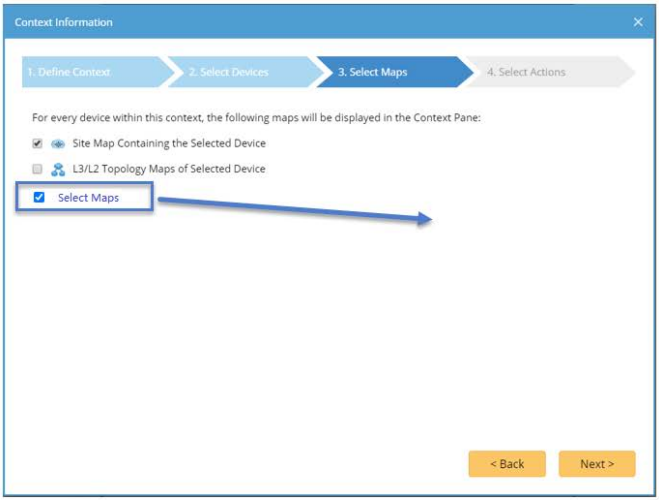
4. In the pop-up **Context Information** dialog, proceed with the following steps to define the context information.
   1) Define the name and description of the context. Click **Next**.

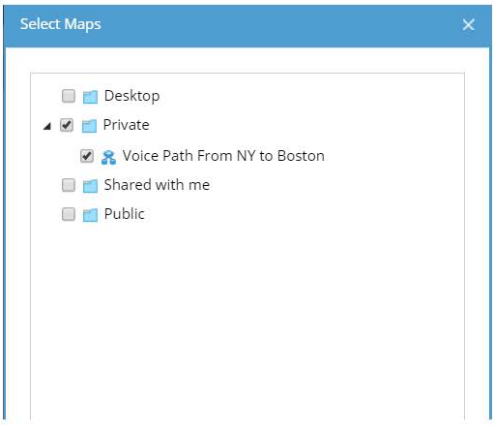


2) Select devices either one by one or from a predefined group. In this case, you can predefine a QoS device group and then add the included devices. Then click **Next**.



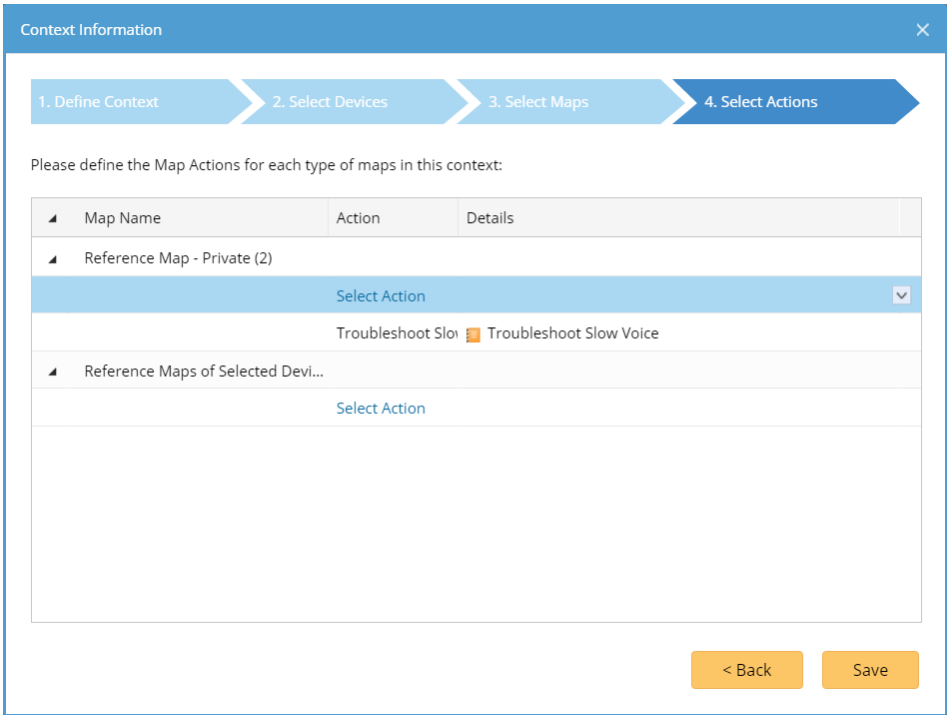
3) Select context maps. The optional maps contain site maps and Layer 3 or Layer 2 topology maps relevant to the target devices. You can also select a predefined map as needed. In this case, you can calculate the voice flow path from NYC to Boston and add it as a context map. Click **Next**.





4) Select context actions. In this example, select the runbook template **Troubleshoot Slow Voice** (to monitor QoS interface parameters and highlight QoS configuration and QoS Interface Queuing Strategy). Then click

Save.



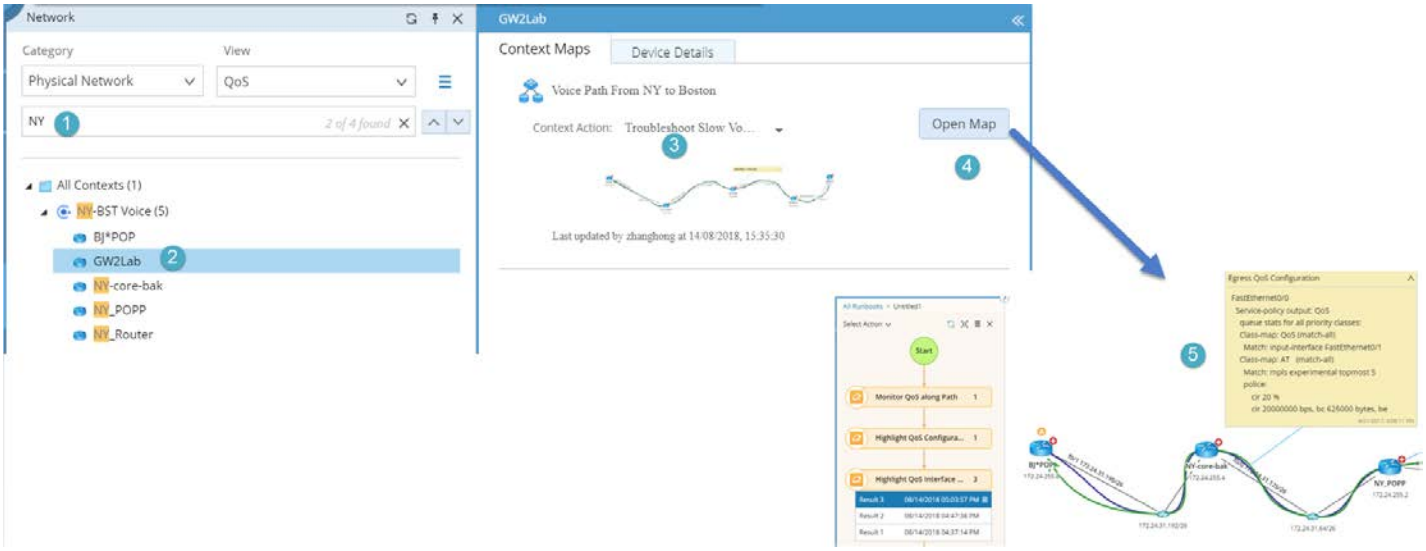
> **Tip**: You can predefine context actions in the Context Action Manager.

6.2. Using Context to Understand Network Design and Troubleshoot

Example: Troubleshoot network design and troubleshoot slow voice based on the predefined context.

1. Click **Network** on the taskbar, then find the **NY-BST Voice** context under the **QoS** view.
2. Click the target device, and view its context maps.
3. Point to the **Voice Path From NY to Boston** context map and select the action **Troubleshoot Slow Voice** from the drop-down list.

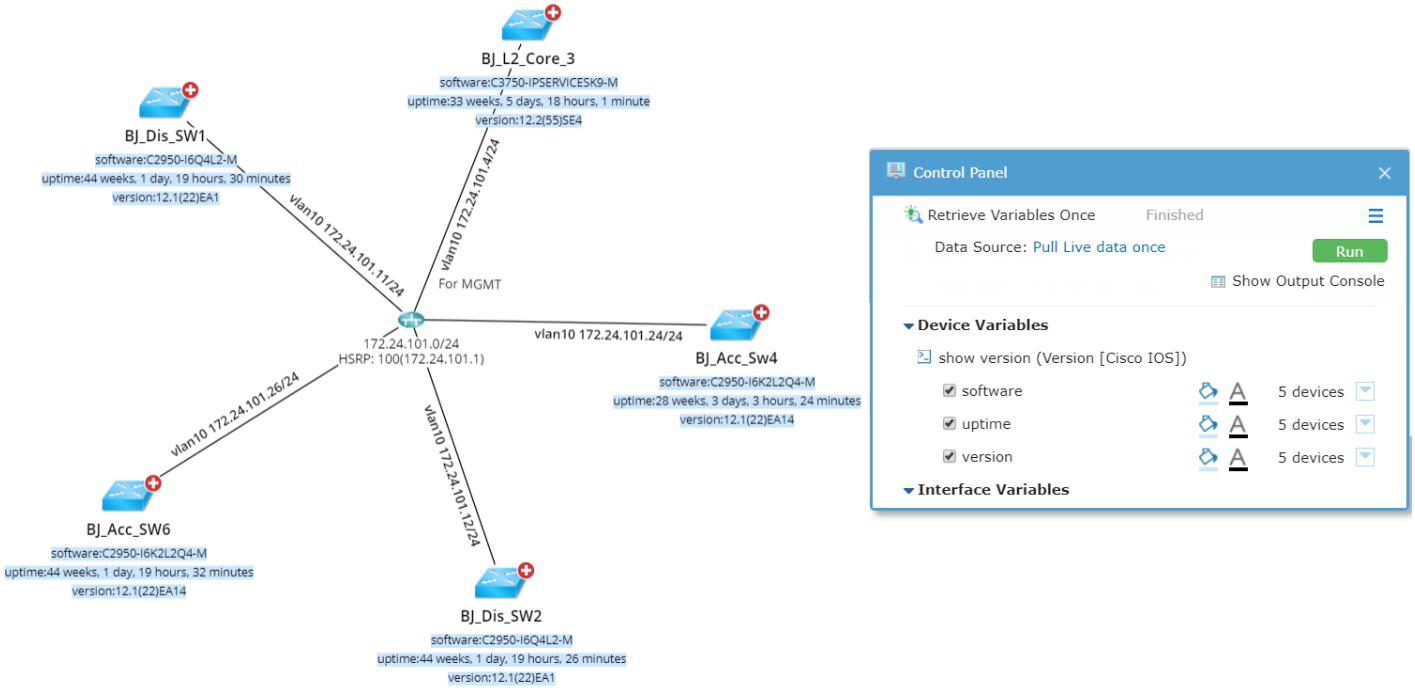
4. Click **Open Map**. You can execute the runbook to monitor the QoS parameters and troubleshoot the slow voice.



7. Using Instant Qapp to Decode Network Design

Instant Qapp is the fastest way to decode network design in a live network and overlay the discovered data on top of any maps. With Instant Qapp, a dynamic map becomes the single pane of glass for any network data.

Example: Visualize parser variables on a map.

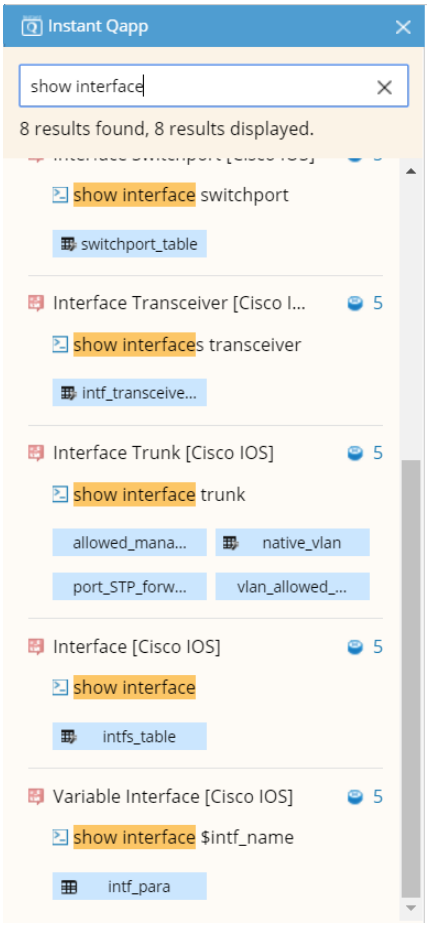


7.1. Searching for CLI Commands and Mapping Matched Results

Example: Search for the `show interface` command to display and monitor related data.

1. On the map page, click **Instant Qapp** on the map toolbar.

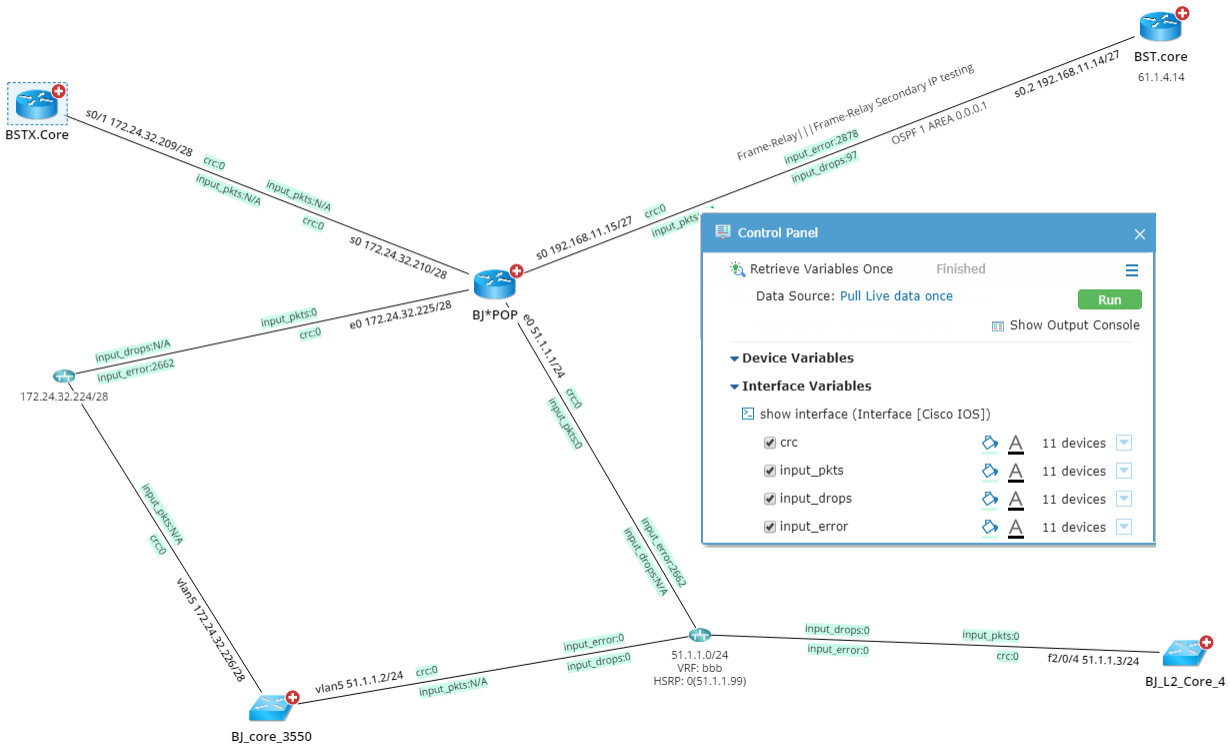
2. In the search bar, enter the `show interface` command keyword and press the **Enter** key.



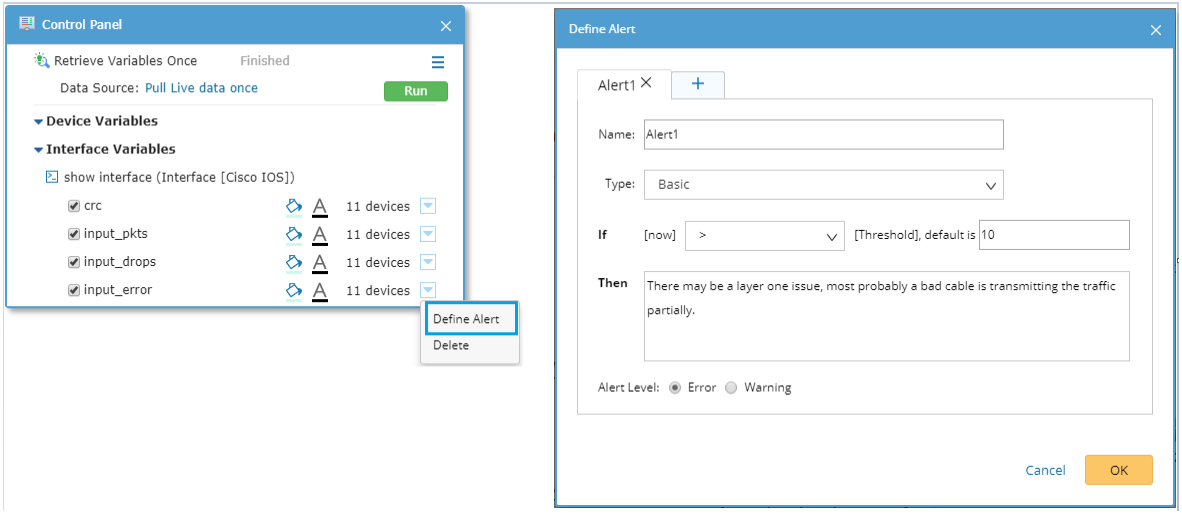
3. Click the **intfs_table** table to expand it.

4. Check the circles at the upper-right corner to select multiple variables.

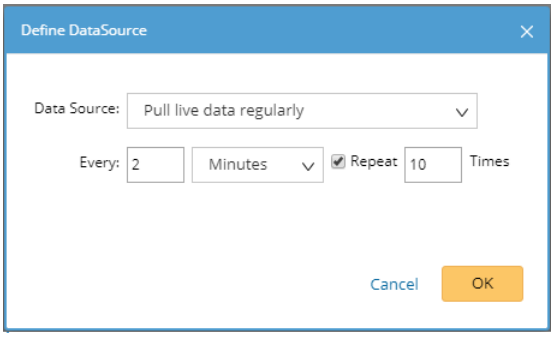
5. Drag the selected variables to the map. The system starts to retrieve live data, and the results are displayed on the map.



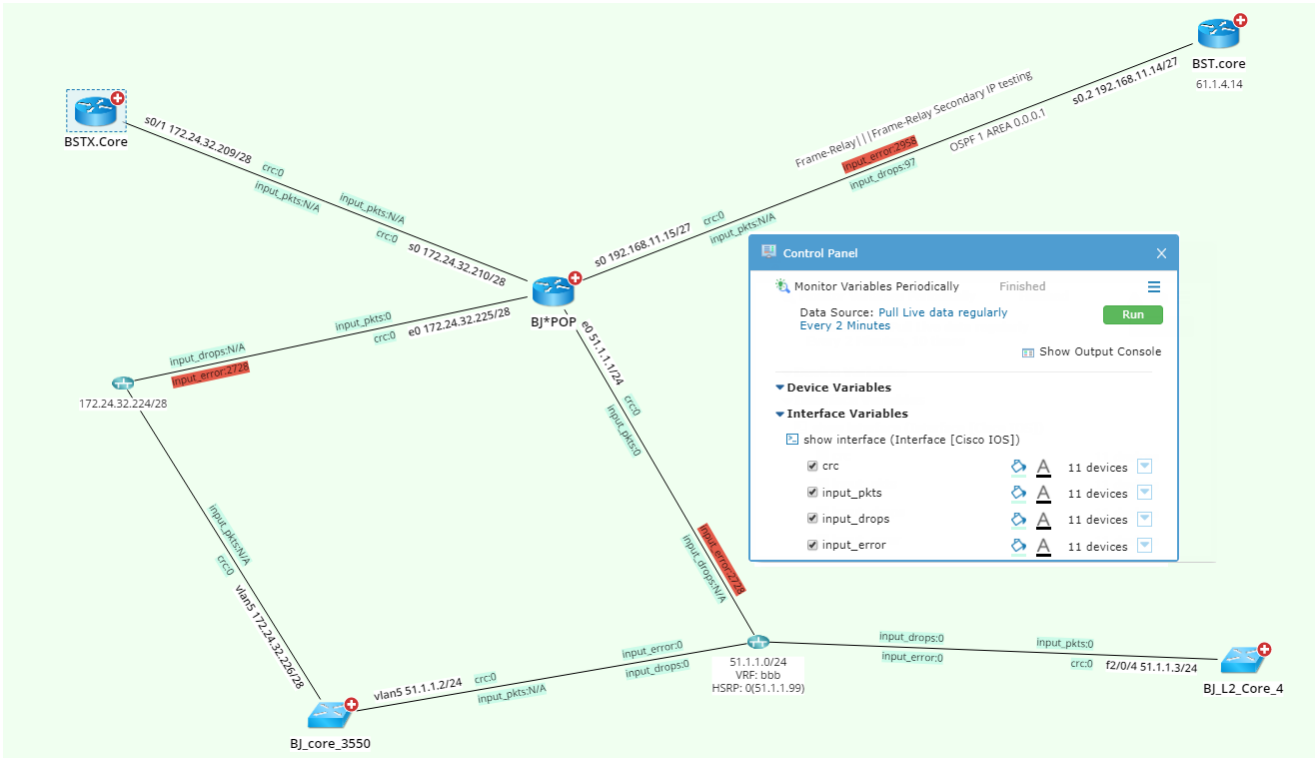
6. Select the **input_error** variable on the Control Panel and define an alert condition for it.



7. Click the **Data Source** field to select **Pull live data regularly**, specify the frequency, and then click **OK**.

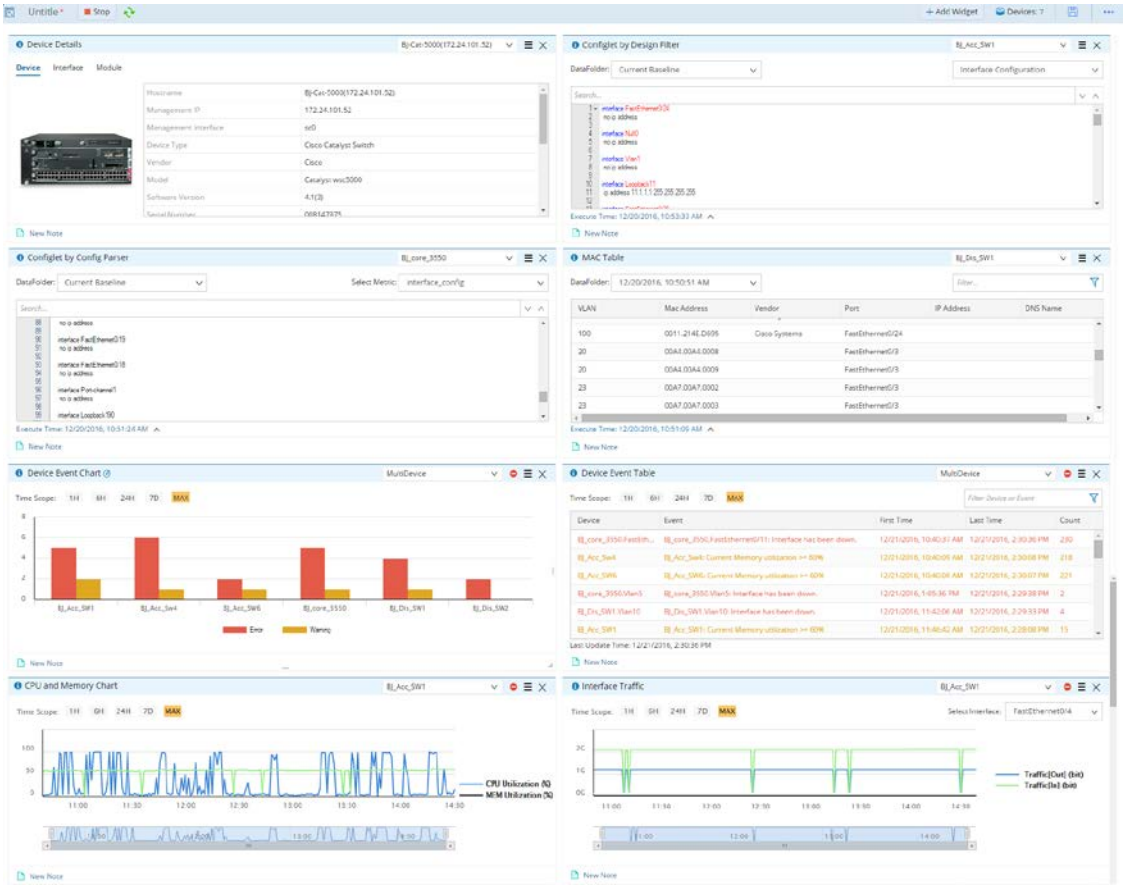


8. Click **Run** to monitor these variables periodically. When the value of the **input_error** variable of an interface reaches the threshold, the variable will be highlighted on the map.



8. Using Dashboard to Visualize Multi-Dimensional Data

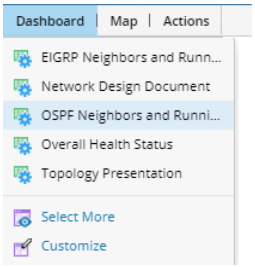
In some monitoring or troubleshooting scenarios, you may want to browse the configuration files, data tables, performance statistics, and other data synchronously at a glance. Dashboard organizes and displays multi-dimensional data for diversified scenarios on a single screen. Dashboard is highly customizable and interactive, integrating real-time data, tables, and charts.



8.1. Creating a Dashboard from Template

Example: Create a dashboard from the **OSPF Neighbors and Running Status [Cisco IOS]** template.

1. On the map page, click **Dashboard** from the map toolbar and select **OSPF Neighbors and Running Status [Cisco IOS]** from the drop-down list.



   A new dashboard is created targeting all devices on the map. The **Map** Widget immediately loads the map contents. The **ConfigLet by Config Parser** Widget immediately presents the OSPF configlet of a single device with the data in Current Baseline.

2. At the upper-left corner, click **Run** to retrieve live data for other widgets that are associated with a Qapp.
3. Adjust your dashboard with more settings based on your needs, such as adding widgets, updating device scope, and unlinking widgets.
4. Click the icon to save the dashboard.

8.2. Exporting Dashboard to Word

1. In a dashboard, click the icon in the dashboard toolbar and select **Export to Word** from the drop-down menu.
2. Specify the document name and the storage location.
3. From the **Template** drop-down list, select a document template. To customize the information displayed on the cover page, such as title and company name, click the icon.
4. Click the icon in the export toolbar to set the data size limit for the configuration file and data tables, such as route table, MAC table, and NCT table.
5. Specify the widgets you want to export.
7. Click **Export**.
8. After the document is generated, click the hyperlink in the prompt message to navigate to the document storage location. Then right-click the target file to download it.

9. Using NetBrain Smart CLI

NetBrain Smart CLI is an SSH and Telnet client for the Windows platform. You can use it as a standalone tool to execute CLI commands or integrate it with NetBrain IE to automatically log in to devices, execute CLI commands and send CLI results to your NetBrain IE for documentation and troubleshooting.

> **Note:** Before using NetBrain Smart CLI, you need to install Smart CLI on Windows first.

User Flow

The following is a recommended flow for using Smart CLI along with NetBrain IE:

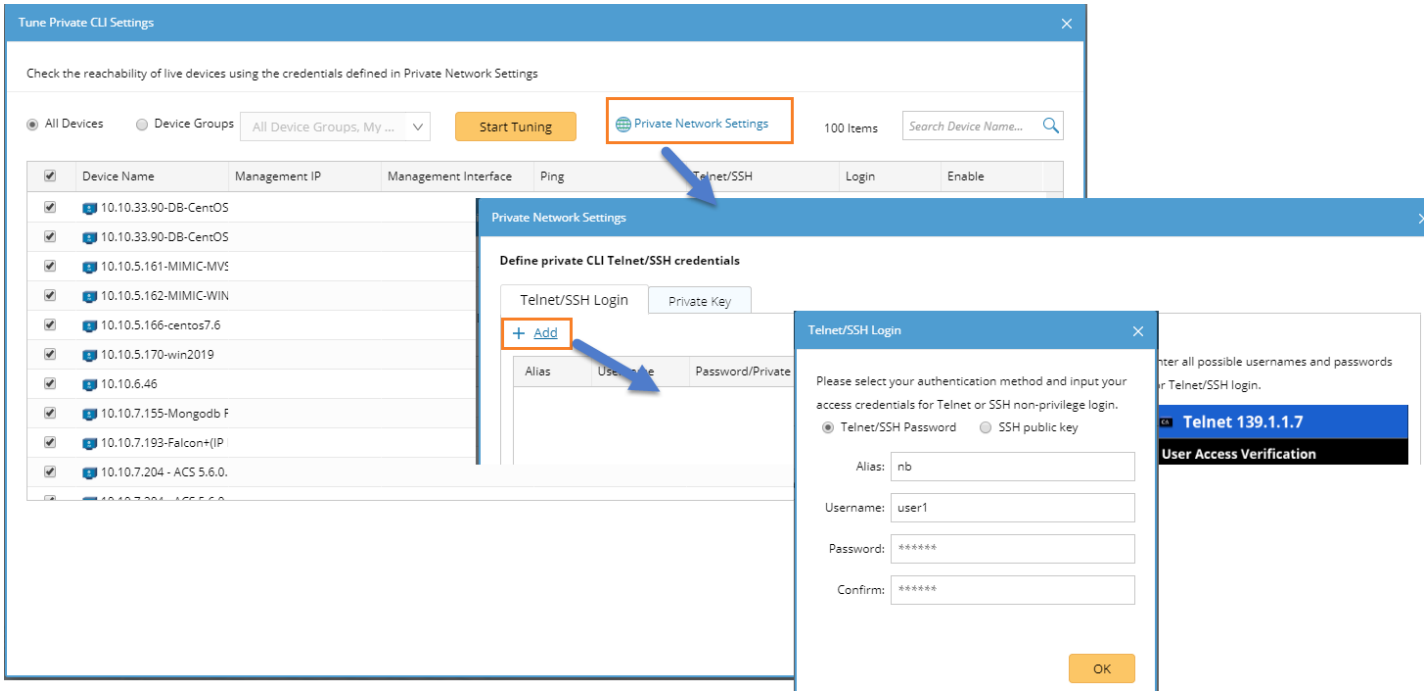
1. Connect to Devices from NetBrain Map.
2. Execute CLI Commands in Smart CLI Window.
3. Save CLI Results to NetBrain Runbook.
4. Compare CLI Results with Historical Data to View Changes.

9.1. Connecting to a Device from NetBrain Map

When you use the Smart CLI to connect a device from a map, it will automatically log in to the device with the credentials of the device configured in your NetBrain IE.

Proceed with the following steps to launch the Smart CLI to log in to a device:

1. Configure and tune private CLI settings. Click the start menu and select **Private CLI Settings**, then add private Telnet/SSH login credentials and tune the target devices.



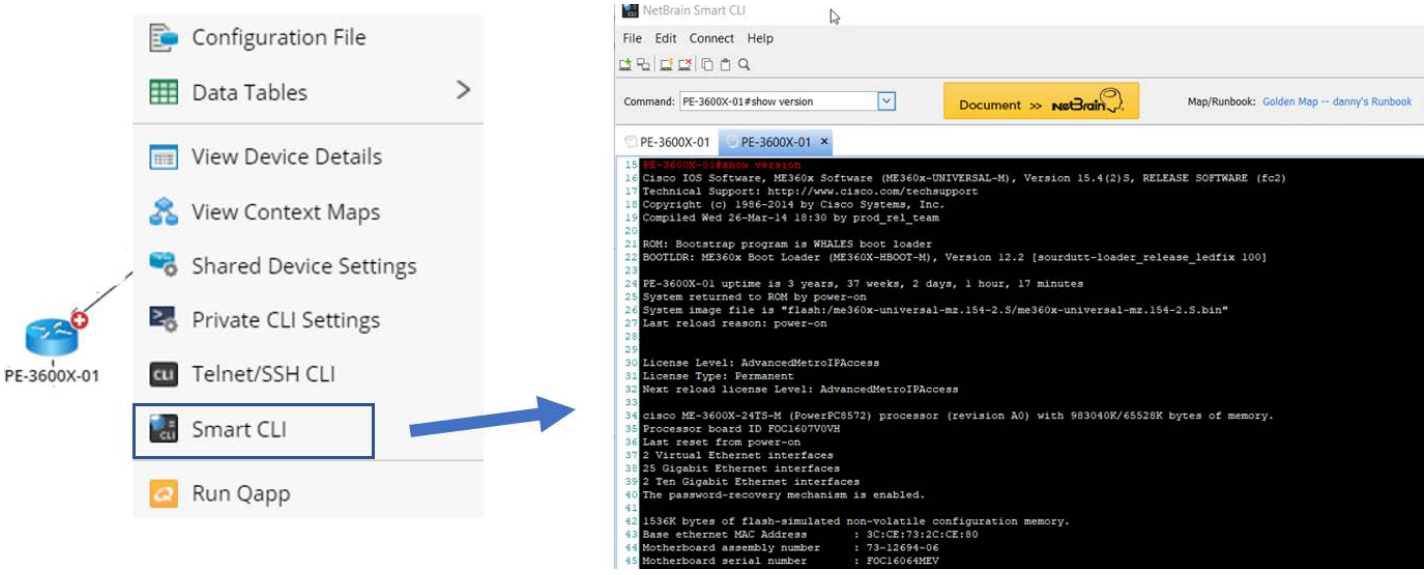
2. On a map, right-click the device that you want to access and select **Smart CLI**.

3. Click **OK** in the popped **NetBrain Smart CLI** dialog.

4. Enter your username and password to log in to the NetBrain IE system. The Smart CLI window pops up and logs into the device automatically.

> **Note:** SSO accounts cannot be used for the login to an IE system from the Smart CLI client.

4. Enter CLI commands in the **NetBrain Smart CLI** window.

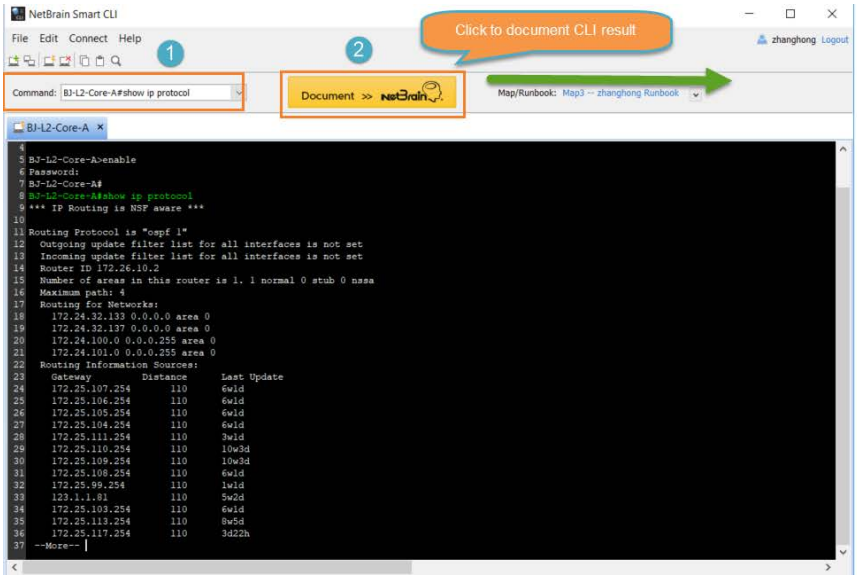


9.2. Saving CLI Command Results to Runbook

Proceed with the following steps to save a CLI command result of a device to your NetBrain domain:

1. Click the tab of the connection that you want to document in the Smart CLI window.

2. Click the **Command** drop-down list and select the command that you want to save the result.



3. Select the Map/Runbook that you want to save the CLI command result to if no Map/Runbook is specified.

4. Click Document >> NetBrain.

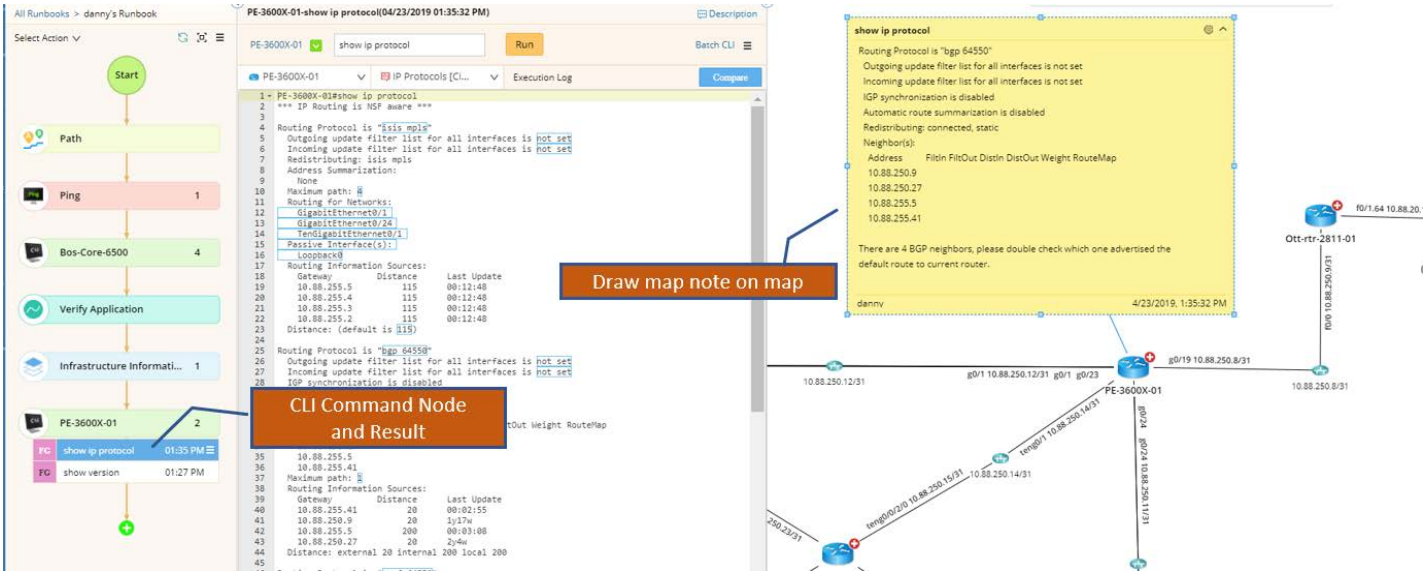
    1) In the **Document in NetBrain** window, view the device, divider (used to divide the command and device), command and command result, and manually modify them if necessary.

    2) Add a note and enable the **Show note on map** checkbox. The note will be attached to the device on a map.

    3) Click **Document in NetBrain**. An information dialog will pop up. Please read the information carefully and then click **Continue**. If you do not want this message to pop up again, check **Do not show this message again** checkbox.

Your NetBrain domain will automatically create an **Execute Command** node in the specified runbook to save the CLI command result and a note will be attached to the device on the specified map if you have added a note in the

Smart CLI window.



9.3. Comparing with Historical Data to Detect Changes

You can compare the current CLI result with historical results and Golden Baseline stored in your NetBrain system to view changes and historical details.

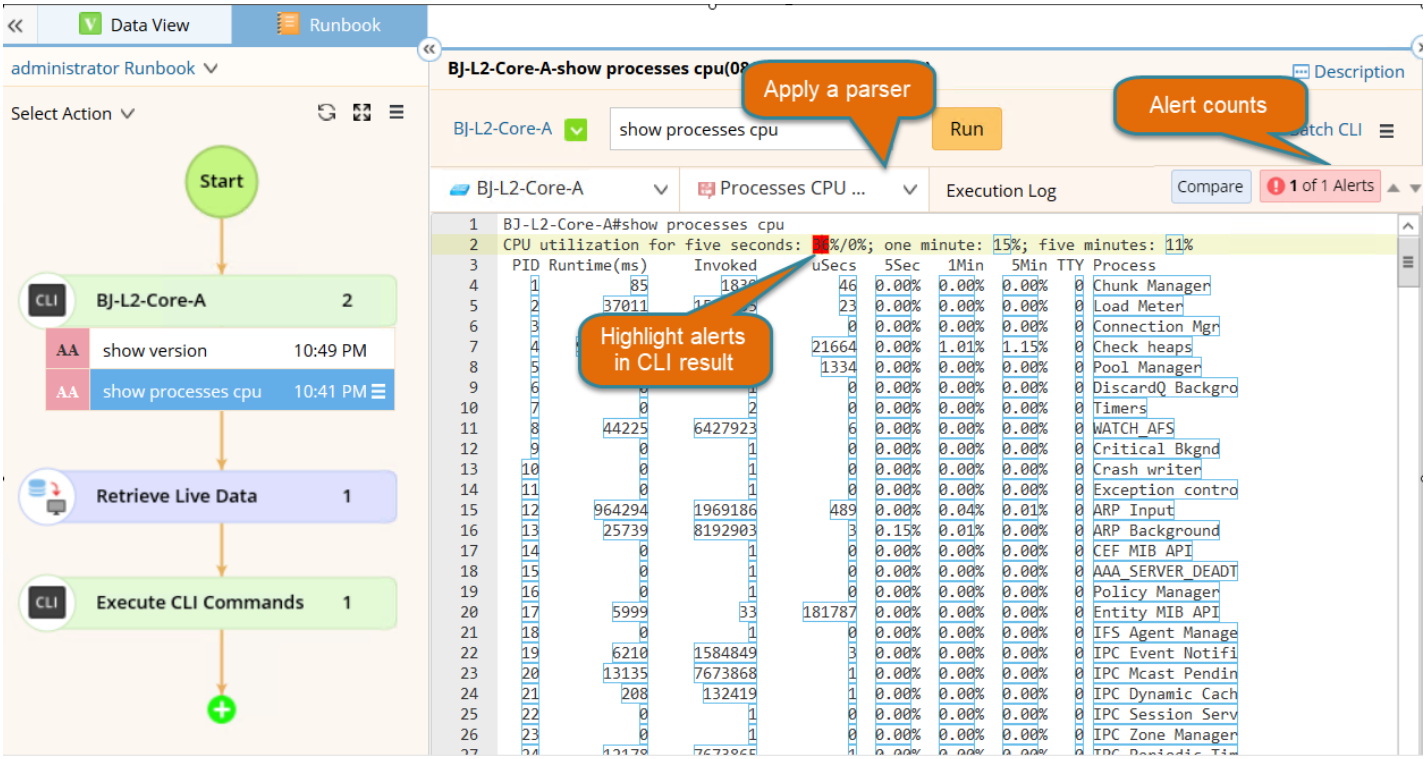
- Comparing with Golden Baseline
- Comparing Historical Results

Comparing with Golden Baseline

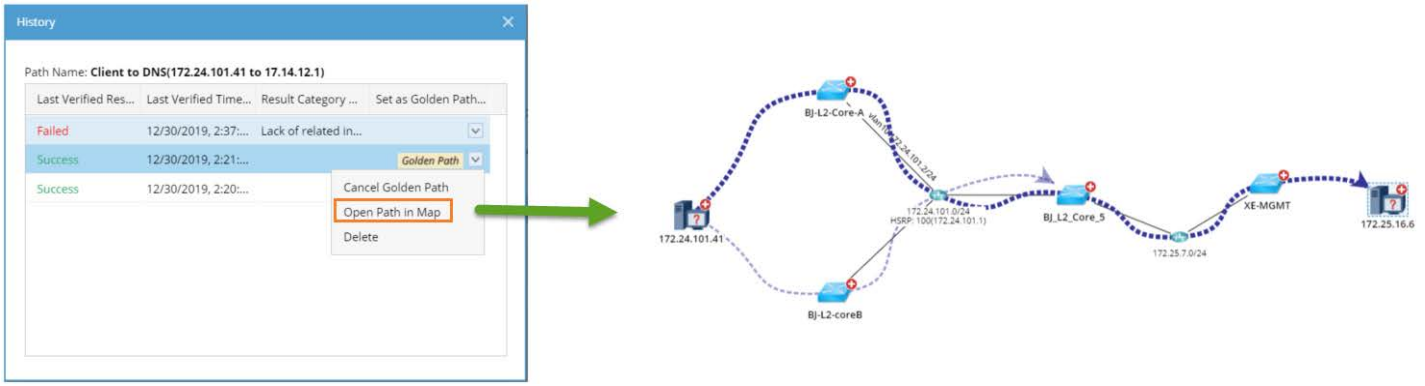
Proceed with the steps below to compare the current CLI command result with Golden Baseline to view the changes and view the historical details.

1. Apply a parser in the CLI Command node. The system automatically compares the data retrieved by the parser with Golden Baseline and generates alerts and highlights for any data unit that deviates from the Golden

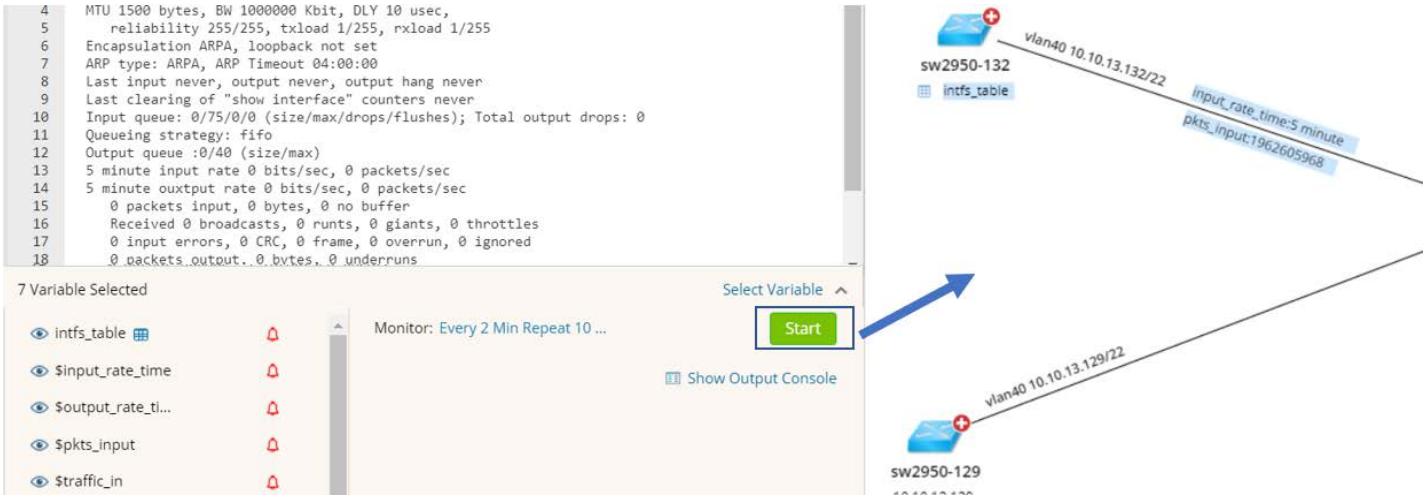
Baseline in the result pane.



2. Click a variable in the result pane to open the Data Details pane and view the historical data of the variable over a period.



3. Select variables, define alerts, and click **Start** to periodically display the live variable values on the map.



Comparing Historical Results

Compare any two historical CLI results to view what has changed:

1. Click **Compare** in the CLI command node.

2. Select the time point for comparison. The system will compare the differences between the command results at the two-time points. The differences are highlighted.