Maps

SL1 version 8.12.1, BETA

Table of Contents

Chapter 1

Introduction to Maps

Overview

This manual describes how to create and manage relationship maps for the various elements, also called ***nodes***, in SL1.

Navigation tips for the SL1 user interface:

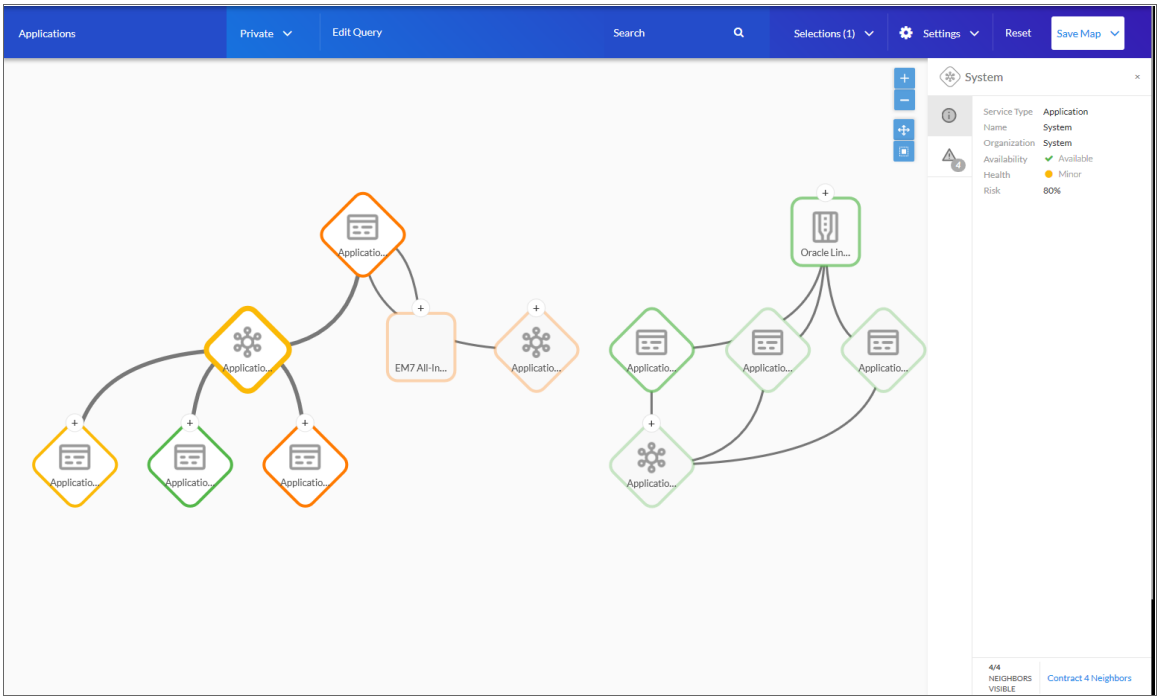
- To access a list of menu options, click the menu icon ( ).
- To view a page containing all of the menu options, click the Advanced menu icon ( ).

This chapter includes the following topics:

What is a Map?

A ***Map*** is a visual representation of the various devices and related elements, also called ***Nodes***, in your environment that have been discovered by SL1. A map displays the important details and relationships associated with those nodes.

To navigate to the **Maps** page, click the Maps icon ( ). The following is an example of a map:



A map includes the following graphical elements:

- ***Nodes***. Shapes that represent Devices, Topology Elements, Applications, Application Components, and Services defined in SL1. The shape of the node represents its type.
- ***Edges***. Lines with or without arrows that represent the relationships between nodes.

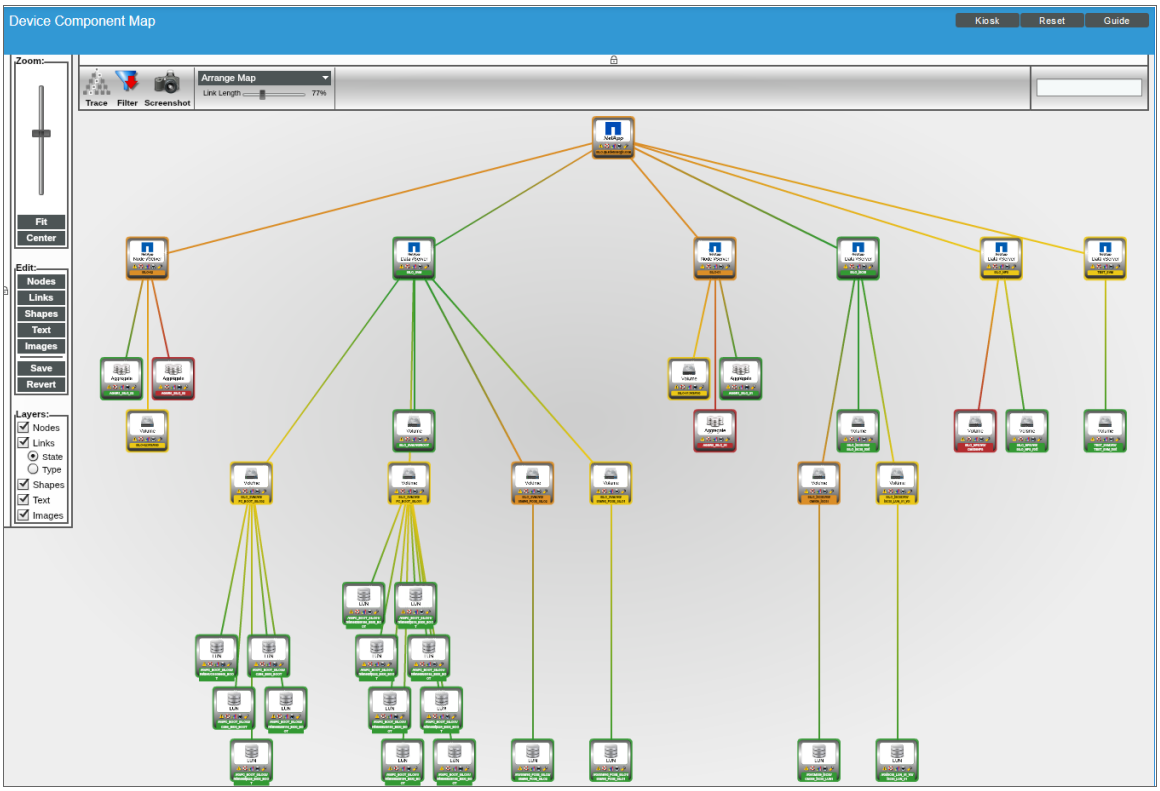
For more information, see *Viewing a Map*.

What is a Classic Map?

A ***Classic Map*** is the same as a **View** in the classic user interface.

A ***View*** is a graphical representation of a group of devices. The **[Views]** tab (Maps > Classic Maps) allows you to view, edit, and create maps and relationships between devices and virtual infrastructure. In SL1, views are organized by device group, organization, device category, component maps, Layer-2 topology, CDP topology, LLDP topology, Layer-3 topology, or Virtual Infrastructure (VMware and virtual machines). You can also create your own maps with your most important devices, and add images, text, links, and shapes to customize your maps.

To navigate to the **Classic Maps** page, click the menu icon ( ) and select Maps > Classic Maps. The following is an example of a classic map or view:



For more information, see the ***Views*** manual.

Chapter 2

Installing SL1 Maps on the Database Server

Overview

This chapter describes how to install and run maps on a Database Server. It includes the following sections:

Downloading the SL1 Maps Images Bundle

To download the SL1 Maps images bundle:

1. Access the ScienceLogic Customer Portal.
2. Go to the **Miscellaneous Downloads** page (Downloads > Miscellaneous).
3. Click the title of the SL1 Maps image bundle for the SL1 version you are running. For example, if you are running SL1 version 8.12.0, the image bundle is labeled "sl1-maps-images-8.12.0-bundle.tar.gz".

Transferring the SL1 Maps Images Bundle to the Database Server

> **CAUTION:** This and subsequent sections use the IP address 10.2.17.188 as an example to represent the IP address of the Database Server. When completing these steps, replace 10.2.17.188 with the IP address of your own Database Server.

If you did not download the SL1 Maps images bundle directly onto the Database Server, you must transfer it to a directory on the Database Server with at least 500 MB of free space, such as `/tmp/`. Using a tool like secure copy (SCP), copy the file from the directory on your local computer to the /tmp directory on the Database Server. For example:

```
scp Downloads/sl1-maps-images-8.12.0-bundle.tar.gz em7admin@10.2.17.188:/tmp/
```

Loading the Images into Docker on the Database Server

To load the SL1 Maps images into Docker on the Database Server:

1. Start the Docker service on the Database Server. To do this, start an SSH session into the Database Server.
2. At the shell prompt, type the following:

```
sudo systemctl enable docker.service
sudo systemctl start docker.service
```

3. Load the images into Docker on the Database Server. To do so, enter the following at the shell prompt:

```
gzip -dc /tmp/sl1-maps-images-8.12.0-bundle.tar.gz | sudo docker load
```

4. The list of loaded images appears:

```
Loaded image: sciencelogic-docker.jfrog.io/responder:latest
Loaded image: sciencelogic-docker.jfrog.io/pipeline:latest
Loaded image: sciencelogic-docker.jfrog.io/queue_manager:latest
Loaded image: dgraph/dgraph:latest
Loaded image: nginx:latest
Loaded image: redis:4.0.10
```

Editing the MySQL Database and SL1 User API Passwords

The SL1 Maps service requires authentication credentials to both MySQL and the SL1 API. If the MySQL username and password value are not "root" and "em7admin", respectively, or if "em7admin" cannot be used as both the username and password to access the SL1 API, then you must update the associated "key" files in the `creds-mdb` or `creds-node-gql` directories with the current password.

> **NOTE:** If you specify an alternate SL1 username and password, that user must have access to all devices on the system.

To edit the MySQL database and the SL1 User API passwords:

1. Start an SSH session into the Database Server.
2. At the shell prompt, type the following:

```
cd /opt/insight/maps_cdb/
```

3. View the list of credentials:

```
ls -1 creds-*/*
```

You will see something like the following:

```
creds-cass/key
creds-cass/user
creds-mdb/key
creds-mdb/user
creds-node-gql/key
creds-node-gql/user
```

> **NOTE:** In the credentials, "mdb" refers to the active MySQL database and "node-gql" refers to the NodeJS GraphQL API, which requires access to the SL1 API. The file that is named "user" refers to the username, and "key" refers to the password.

4. Using the vi editor (or another text editor), edit the `creds-mdb/key` or `creds-node-gql/key` values as necessary and enter the correct password.

> **TIP:** The file **must not include** a trailing newline (`\n`) character at its end. For example, if editing in vim, be sure to use both `:set binary` and `:set noeol` before editing; otherwise, the pipeline containers will fail to read the password. This can be done at any later time as well, if passwords change or if it was forgotten at deployment.

Starting the SL1 Maps Service

After you have loaded the images into Docker on the Database Server and, if necessary, edited the MySQL database and the SL1 API passwords, you must enable and start the SL1 Maps service.

NOTE: If you are installing maps on an All-In-One Appliance, you must first create a new database on the **DB Tools** page (System > Tools > DB Tools) or with silo_mysql and run the following command:
`silo_mysql -e 'CREATE DATABASE insight_agent;'`

To start the SL1 Maps service:

1. Start an SSH session into the Database Server.
2. At the shell prompt, type the following:

```
sudo systemctl enable sl1-maps.service
sudo systemctl start sl1-maps.service
```

You can use standard systemctl commands to verify that the SL1 Maps service is running and follow its logs. For example, you can enter the following at the shell prompt:

```
sudo systemctl status sl1-maps.service
```

And you should see results like this:

```
sl1-maps.service - SL1 Maps on DB
   Loaded: loaded (/usr/lib/systemd/system/sl1-maps.service; disabled; vendor preset:
   disabled)
   Active: active (running) since Wed 2019-03-27 18:06:47 UTC; 4 days ago
Process: 11477 ExecStartPre=/opt/insight/maps_cdb/ensure-responder-proxy-certs
(code=exited, status=0/SUCCESS)
Process: 11471 ExecStartPre=/opt/insight/maps_cdb/docker-compose rm -fsv
(code=exited, status=0/SUCCESS)
Process: 11468 ExecStartPre=/opt/insight/maps_cdb/set-db-ip (code=exited,
status=0/SUCCESS)
Main PID: 11486 (docker-compose)
```

Editing the NextUI Environment File

After starting the SL1 Maps service, you must edit the NextUI environment file so that it connects to the API proxy over HTTPS. To accomplish this, you must set the `API_PROXY_HOST` value to `https://localhost` and the `RESPONDER` value to `<IP address of the local Database Server>:8443`. (For example, 10.2.17.188:8443.)

NOTE: To access the **Maps** page on an Administrator Portal on the CDB stack, perform the following steps for each Administrator Portal.

To edit the nextui.env file:

1. Start an SSH session into the Database Server.
2. Using vi or another text editor, edit the `/opt/em7/nextui/nextui.env` file. To do so, enter the following at the shell prompt:

   ```
   sudo vi /opt/em7/nextui/nextui.env
   ```

3. In the NextUI environment file, edit the `API_PROXY_HOST` value to `https://localhost`. When you are done, it will look like this:

   ```
   API_PROXY_HOST=https://localhost
   ```

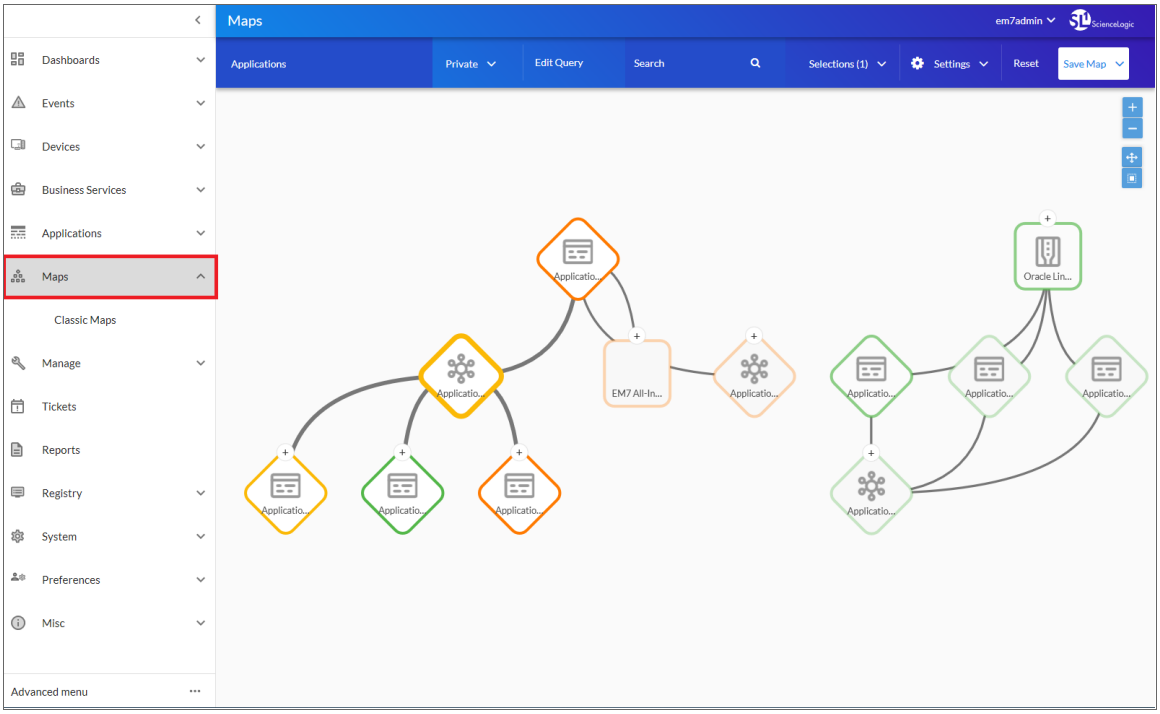
4. In the NextUI environment file, add the following line at the bottom:

   ```
   RESPONDER=<IP address of the local Database Server>:8443
   ```

5. Restart the NextUI service. To do this, type the following at the shell prompt:

   ```
   sudo systemctl restart nextui.service
   ```

6. If all of the preceding steps have been successful, when you log in to SL1, you will be able to *view* and *create maps* from the **Maps** page.



Chapter 3

Viewing and Configuring Maps

Overview

This manaul describes how to view and work with relationship maps for the various nodes in SL1.

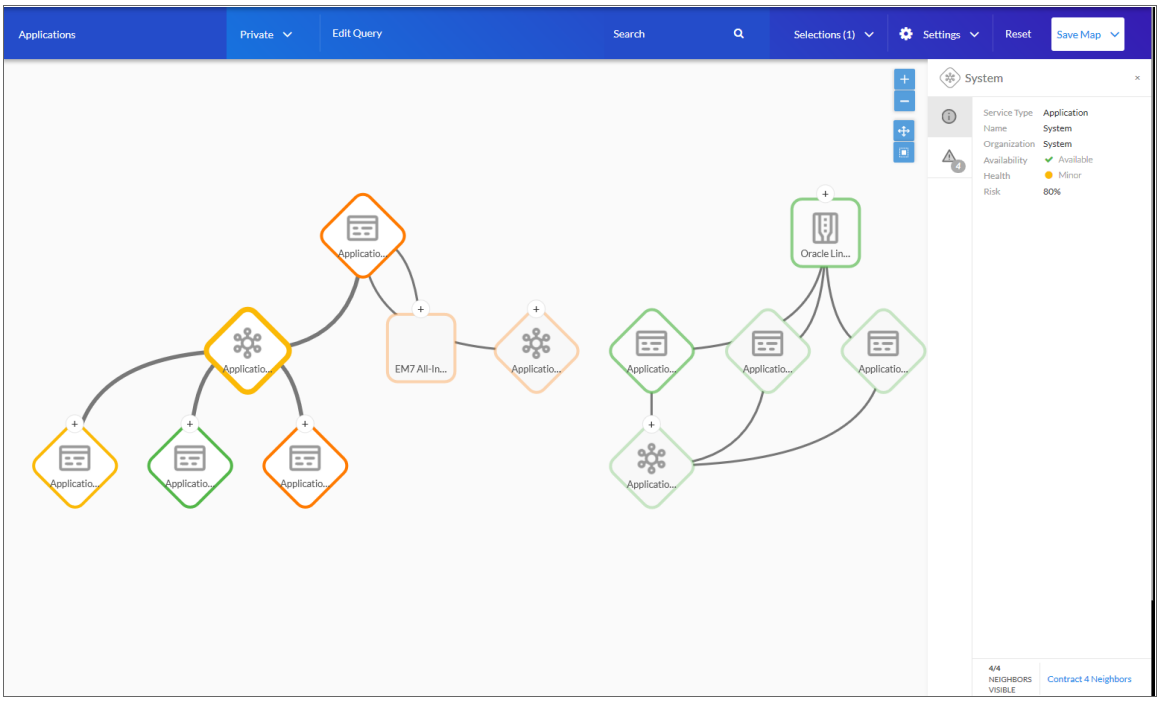
Navigation tips for the SL1 user interface:

- To access a list of menu options, click the menu icon ( ).
- To view a page containing all of the menu options, click the Advanced menu icon ( ).

This chapter includes the following topics:

Viewing a Map

To view a map, click the Maps icon ( ) and click the name of the map from the **Maps** page. The **Map** window for that map appears:



Navigation Bar

The blue navigation bar at the top of the **Map** window includes the following:

- ***Map Name***. The name of the current map. You can change the name by clicking on it and entering a new name.
- ***Private/Public/Share***. Select the visibility for a map that you created. The default for a new map is *Private*. Your options include:
    - ***Private***. The map is viewable only to you.
    - ***Public***. The map can be shared with users in all organizations that are using SL1.
    - ***Specific Organizations***. The map can be viewed only by the organizations that you search for and select from this menu.
- **[Edit Query]**. Click this button to edit the "seed query" (the initial search that the map creator used to find nodes for the map). For more information, see *Editing a Query for a Map*.

- ***Search***. Type some or all of a node name in this field to search for specific nodes on the current map. Nodes that do *not* match the search criteria are grayed out in the map.
- **[Selections]**. After you select one or more nodes, you can click this button to show the details of that node or nodes in a **Properties** pane to the right of the map appear. For more information, see *Viewing Node Details*.

> **NOTE:** The number in parentheses after ***Selections*** on the button shows how many items are currently selected. If you selected two or more nodes before clicking the **[Selections]** button, click the **[Go Back]** button above the **Properties** pane. From the list that appears on the **Properties** pane, select the node you want to view.

- ***Settings***. Click this dropdown to select from the following options:
  - ***Design***. Opens the **Design** pane, where you can edit the appearance of the map. For more information, see *Changing the Design of Map*.
  - ***Filters***. Opens the **Filters** pane, which lets you select and deselect filters that affect which nodes and edges appear in your map. For more information, see *Changing the Filters for a Map*.
- **[Reset]**. Click this button to revert any unsaved changes you have made to your map.
- **[Save Map]**. Click this button to save any changes you have made to your map. The button is grayed out if no changes have been made or if you have already saved your changes. If you click the drop-down arrow, you can select *Save As Copy* to make a copy of the current map.

Viewing Pane

Under the blue navigation bar is the ***viewing pane*** for the map. Use the following buttons to manipulate the map on the viewing pane:

 : Zoom in on the map.

 : Zoom out on the map.

 : Fit all elements of a map into the viewing pane.

 : Center all selected elements of a map in the viewing pane.

The viewing pane displays the following two types of graphical elements:

1. ***Nodes*** that represent Devices, Topology Elements, Applications, Application Components, and Services defined in SL1. The shape of the node represents its type, and the color of the outline specifies the current state of the node:

    - *Devices* are represented by squares:

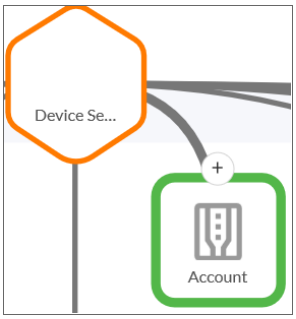
    - *Applications* and *Application Components* are represented by diamonds:

    - *Services* , such as business services, IT services, or device services, are represented by hexagons:

TIP: If a node has a plus sign (+) on it, then the node has multiple "neighbors" that are not currently being shown. Double-click that node to show or "expand" its neighbors.

NOTE: When you select a node, the border for the node icon thickens and brightens, and any nodes directly connected to that node are also highlighted. Any nodes *not* directly connected to the selected node appear in a less bright color than their usual color. Also, if you enable history tracking, any nodes that you previously selected will also have a slightly brighter border. For more information about history tracking, see *Changing the Design of a Map*.

2. ***Edges***, lines that represent the relationships and hierarchies between nodes:

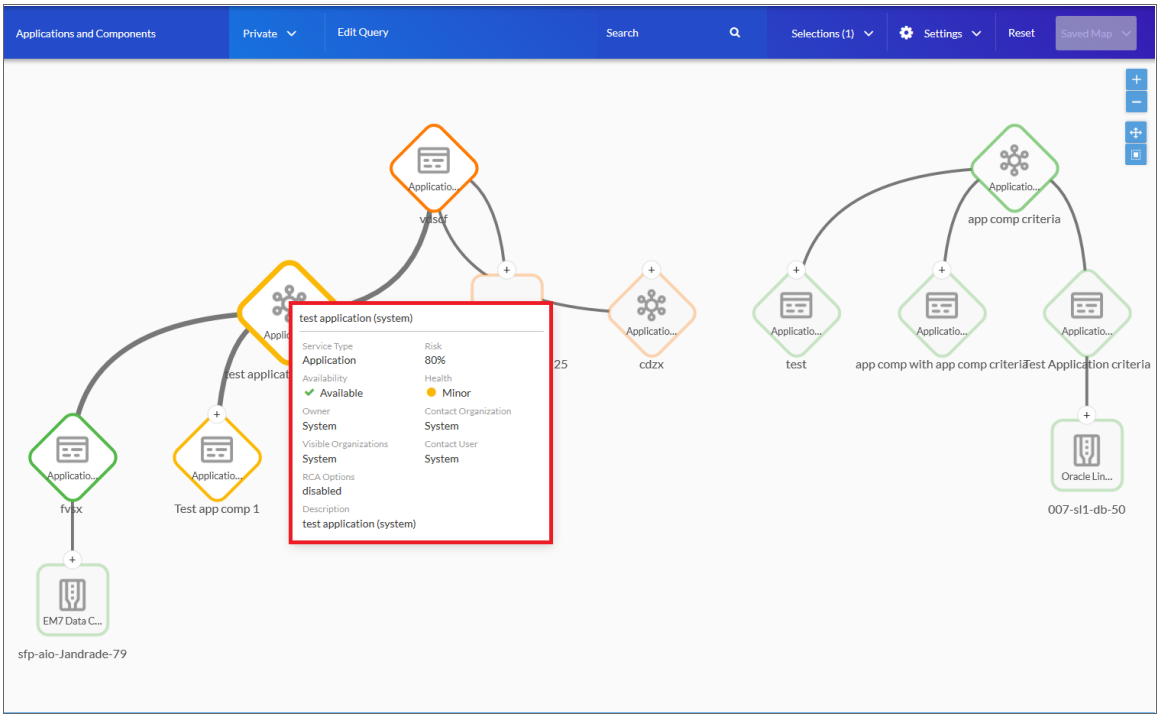


NOTE: SL1 automatically updates the map as new nodes are discovered. SL1 also updates the map with the latest status and event information.

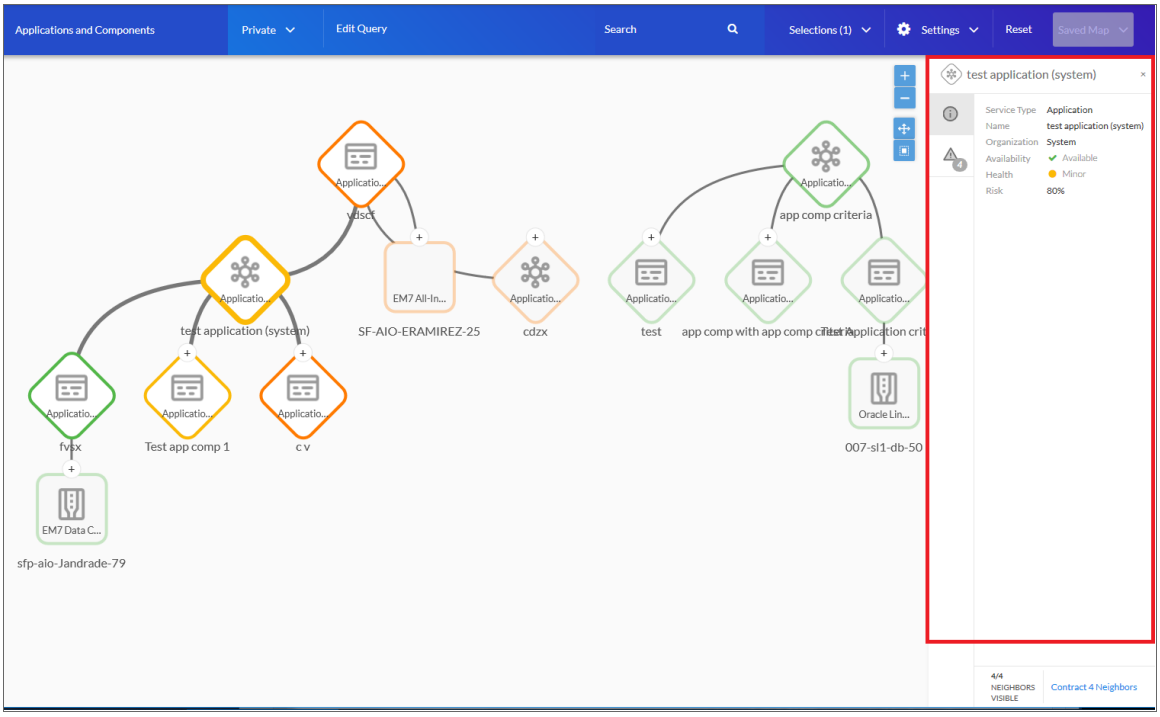
You can reposition the components of a map, change the design of a map, and filter the contents of a map. For more information, see *Changing the Appearance of a Map*.

Viewing Node Properties

You can hover over a node in a map to view a pop-up **Properties** pane with details, or ***metadata***, for that node:



If select a node and click the **[Selections]** button, the metadata displays in a **Properties** pane to the right of the map:



The following items appear in the **Properties** pane to the right of the map:

- ***Name of the node***. Displays the name of the node. If the node is a device, you can click the name of the node to open the **Device Investigator** page for that device.

> WARNING: To avoid losing any edits you made to the map, click the **[Save Map]** button before clicking the device name and leaving the **Map** window.

- **[Properties]** ***tab*** ( ). Displays the name, state, organization, and other "metadata" for the selected node, including any Custom Attributes you created for the node. For a Service node or an Application node, the latest Availability, Health, and Risk values appear on this tab. The pop-up **Properties** pane displays a similar set of metadata.
- **[Events]** ***tab*** ( ). Displays a list of each event associated with the node.
- ***Neighbors Visible.*** Indicates how many out of the total number of neighbors are visible, such as "1/2 Neighbors Visible".
- ***Expand/Contract # Neighbors***. Clicking this link expands or contracts the neighbors of the selected node. Alternatively, double-clicking the node will expand and contract the neighbors of the node.

TIP: To close the **Properties** pane, click the Close icon ( ) at the top right of the pane.

Repositioning Nodes on a Map

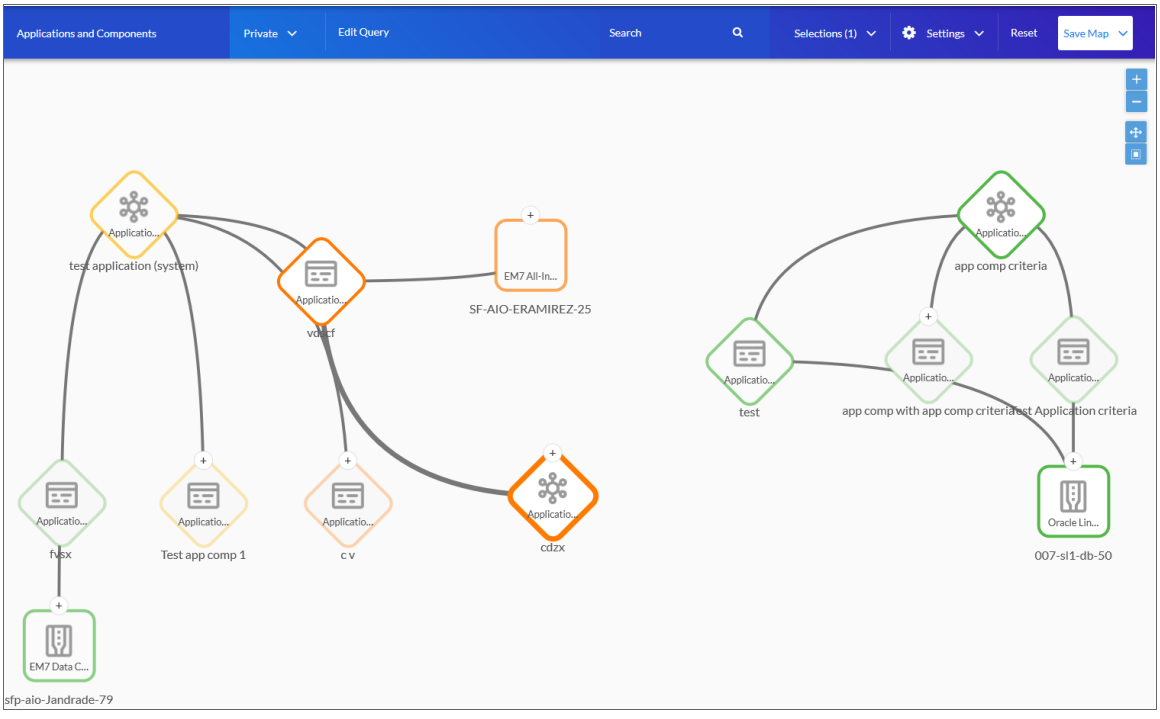
You can drag and drop nodes to reposition them on the map to make viewing and managing them easier. When you reposition a node, it retains its links to other nodes.

You can also rearrange a map in the following ways:

- ***To move the entire map***, click in any spot in the background, hold down the mouse button, and drag the mouse to the new location.
- ***To zoom in and out***, use the wheel of your mouse or two fingers on a Trackpad. You can also click the Zoom In ( ) and Zoom Out ( ) icons.
- ***To move a node***, drag and drop the node to the new location.

To save the new layout:

1. Click the **[Settings]** button and select *Design*. The **Design** pane appears.
2. Click the **[Map]** tab on the **Design** pane and select the ***Fixed Current Nodes in Place*** toggle.
3. Click the **[Save Map]** button. The next time you open the map, the nodes will display in the same layout.



Chapter 4

Creating Maps

Overview

This manual describes how to create and edit relationship maps for the various nodes in SL1.

Navigation tips for the SL1 user interface:

- To access a list of menu options, click the menu icon ( ).
- To view a page containing all of the menu options, click the Advanced menu icon ( ).

This chapter includes the following topics:

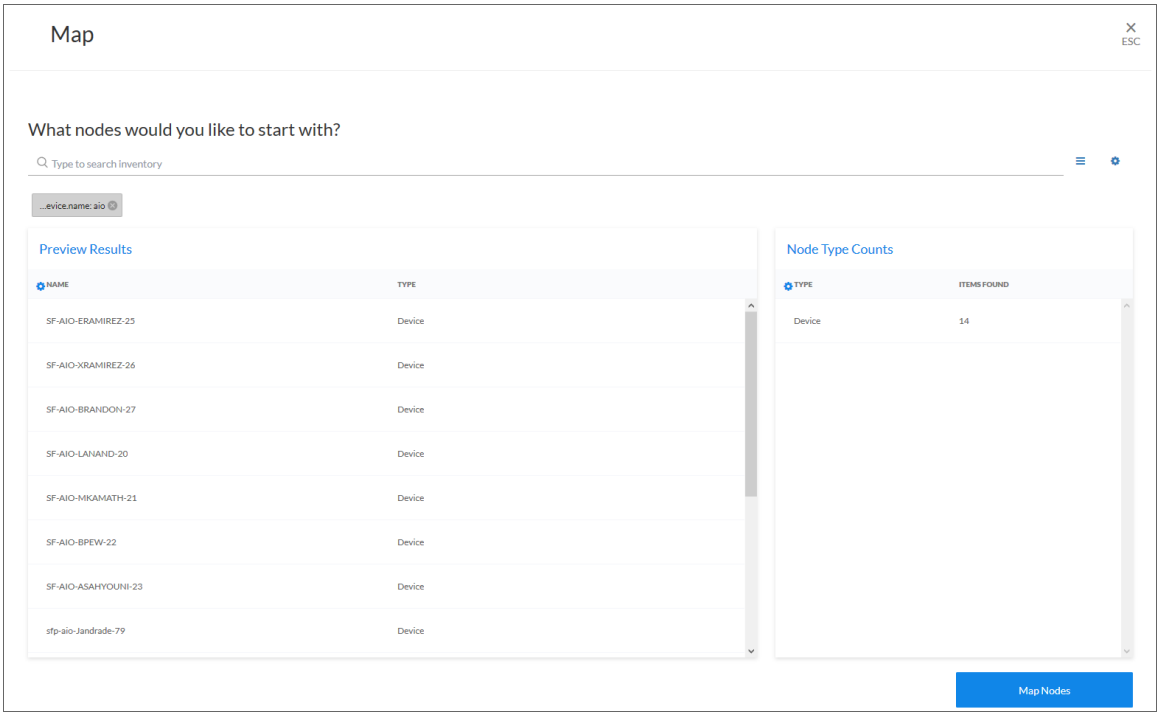
Creating a Map

Depending on the permissions assigned to users, some users will be able to create and edit maps and select the default layout. Meanwhile, other users will only be able to view and filter existing maps and update the layout of existing maps. If you do not see the **[Create Map]** button at the top right of the **Maps** page, then you do not have the permissions needed to create a map.

TIP: To create a copy of an existing map, select the map you want to copy from the **Maps** page, click the **[Actions]** button (⋯), and select *Duplicate*. If you are already in a **Map** window for a map, you can click the ***Save Map*** drop-down and select *Save As Copy*.

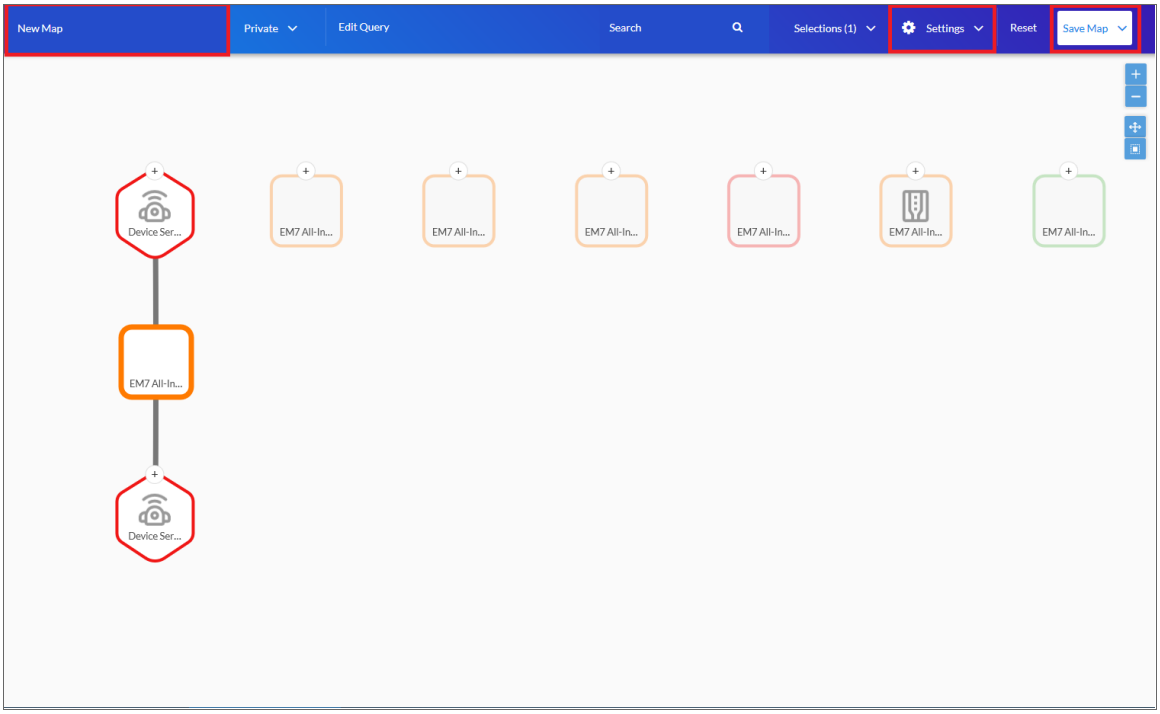
To create a map:

1. To go to the **Maps** page, click the Maps icon ( ).
2. Click the **[Create Map]** button. A New **Map** window appears.
3. In the ***Search*** field, type search criteria for nodes using a "seed query" in Basic or Advanced mode. The search bar lets you search through Devices, Topology Elements, Applications, Application Components, and Services.



TIP: If you are looking for a very specific set of nodes, click the gear icon ( ) to the right of the **Search** field and select *Advanced*. In this mode you can create an advanced search using AND or OR for multiple search criteria. For more information, see the "Advanced Search" chapter in the ***Introduction to SL1*** manual.

4. After you define a seed query, click the **[Map Nodes]** button. The nodes that match your seed query appear in the map.



TIP: If a node has a plus sign (+) on it, then the node has multiple "neighbors" that are not currently being shown. Double-click that node to show or "expand" its neighbors.

5. Click the map name (*New Map*) in the upper-left corner and type a new name.
6. Update the appearance of the map by clicking the ***Settings***drop-down and selecting *Design*. For more information, see *Changing the Appearance of a Map*.
7. Click the **[Save Map]** button to save the map.

Editing a Query for a Map

If a map does not display the nodes and relationships you need, you can edit the "seed query" for a map by changing the nodes used by the map.

To edit a seed query:

1. Select the map from the **Maps** page and click the **[Edit Query]** button on the Map page. The **Edit Map** window appears.
2. In the ***Search*** field, type new search criteria in Basic or Advanced mode. The search bar lets you search Devices, Topology Elements, Applications, Application Components, and Services.

> **TIP:** If you are looking for a very specific set of nodes, click the gear icon ( ) to the right of the **Search** field and select *Advanced*. In this mode you can create an advanced search using AND or OR for multiple search criteria. For more information, see the "Advanced Search" chapter in the ***Introduction to SL1*** manual.

3. After you update your seed query, click the **[Map Nodes]** button to display the **Map Screen**. The nodes that match your seed query appear in the map.
4. Click the **[Save Map]** button to save the map.

Changing the Appearance of a Map

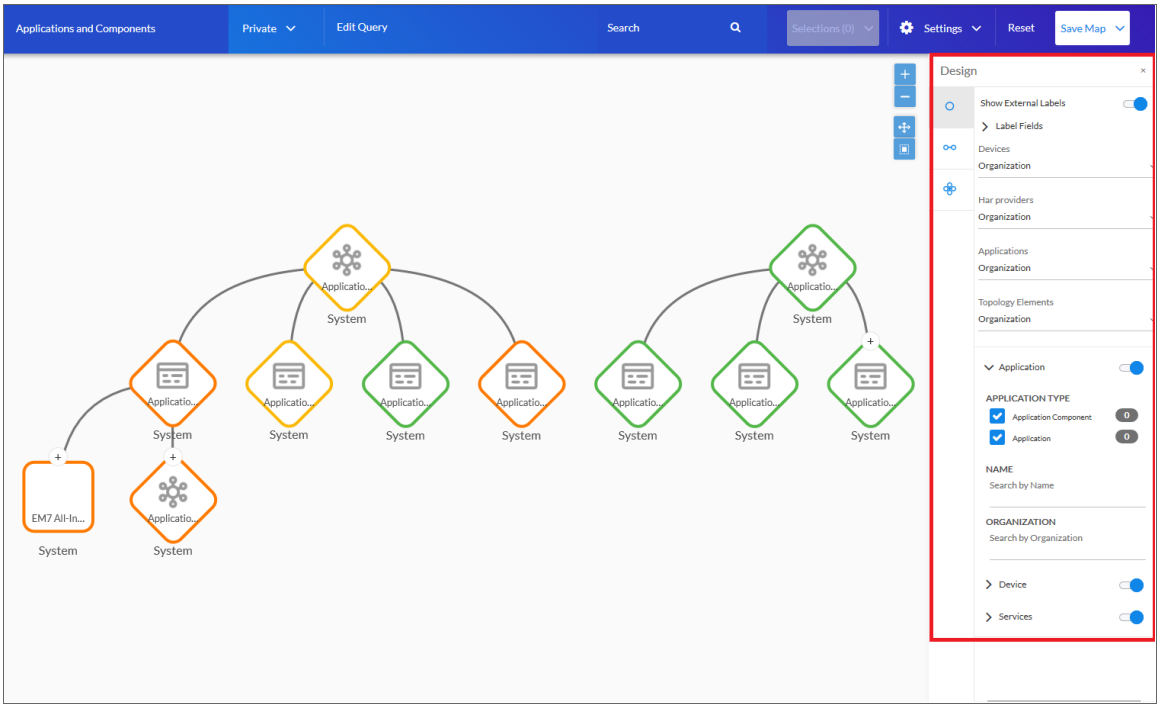
You can use the **Design** pane and the **Filters** pane on a **Map** window to change the appearance of a map.

Changing the Design of a Map

To use the **Design** pane for a map:

1. Select the map from the **Maps** page. The **Map** window appears.

2. Click the ***Settings*** drop-down and select *Design*. The **Design** pane appears to the right of the map:



The **Design** pane contains three tabs: **[Nodes]**, **[Edges]**, and **[Map]**.

3. On the **[Nodes]** tab ( ), you can edit the following options related to nodes:

   - ***Show External Labels***. Toggle this option to show or hide a user-defined label field for the node. If you enable this option, the external label appears *under* the node icon in the map.
   - ***Label Fields***. If you selected the ***Show External Labels*** toggle, you can expand this section and edit the type of label that displays under each node type: devices, services (also called "Har providers" in the user interface), applications, and topology elements. For example, you could edit the external labels to display the organization name under each node.
   - ***Application***. You can toggle off applications to hide applications in the map. You can also expand this section to filter the map by Application Type, Name, and Organization.
   - ***Device***. You can toggle off devices to hide devices in the map. You can also expand this section to filter the map by Category, Class, Sub-class, Status, Name, and Organization.
   - ***Services***. You can toggle off services to hide services in the map. You can also expand this section to filter the map by Service Type, Name, Organization, Availability, Health, and Risk.

4. On the **[Edges]** tab ( ), you can edit the following options related to edges:

   - ***Labels***. Lets you show or hide the labels for the type of relation next to the edge.
   - ***Arrowheads***. Lets you show or hide arrows to represent the direction of the relationships.
   - ***Curved Edges***. Lets you show curved lines or straight lines connecting nodes.

NOTE: You can edit a variety of display options related to edges below the ***Curved Edges*** toggle. These options are the same as the options on the **[Edges]** tab of the **Filters** pane.

5. On the **[Maps]** tab ( ), you can edit the following options related to maps in general:

    - ***Map Description***. Type a description of the map. When you save this map, this description appears in the ***Description*** column of the **[Maps]** tab.
    - ***Map Layout Option***. Select the layout for your map from the following options:

        - *Hierarchical*. This top-to-bottom layout works best for a map that flows in a single direction. You can further customize this layout by clicking ***Customize Layout***. These options include:

            - ***Direction***. Select the direction in which you want your hierarchy to flow. Your options include *Top to Bottom*, *Bottom to Top*, *Left to Right*, and *Right to Left*.
            - ***Layout Algorithm***. Select or deselect *Arrange via Edge Direction*.
            - ***Node Spacing***. Increase this value to create more white space to the left and right of each node. Decrease to lessen the white space between nodes. The default is 100.

        - *Tiered Hierarchical*. This layout explicitly calls out the different tiers of a hierarchy in a map using labels.
        - *Force Atlas*. This is a force-directed layout close to other algorithms used for network spatialization that integrates different techniques that include the Barnes Hut simulation. You can further customize this layout by clicking ***Customize Layout***. These options include:

            - ***Gravitational Constant***. Increase or decrease this value to adjust the gravitational constant. The default is 7.
            - ***Slowdown***. Increase or decrease this value to adjust slowdown (damping) on the map. The default is 100.
            - ***LinLog Mode (large datasets)***. Select this option to enable lin-log mode. The default is unselected.

    - ***Fixed Current Nodes in Place***. When this option is toggled off, all nodes can be dragged. When it is toggled on, only **new** nodes can be dragged.
    - ***History Tracking***. When this option is enabled, SL1 tracks the click path of opened or expanded nodes. History tracking provides context for the actions that you and other users have taken in the maps in SL1. If you enable history tracking, any nodes that you previously selected will have a slightly brighter border than usual. Click the **[Clear History]** button to clear the click path history.

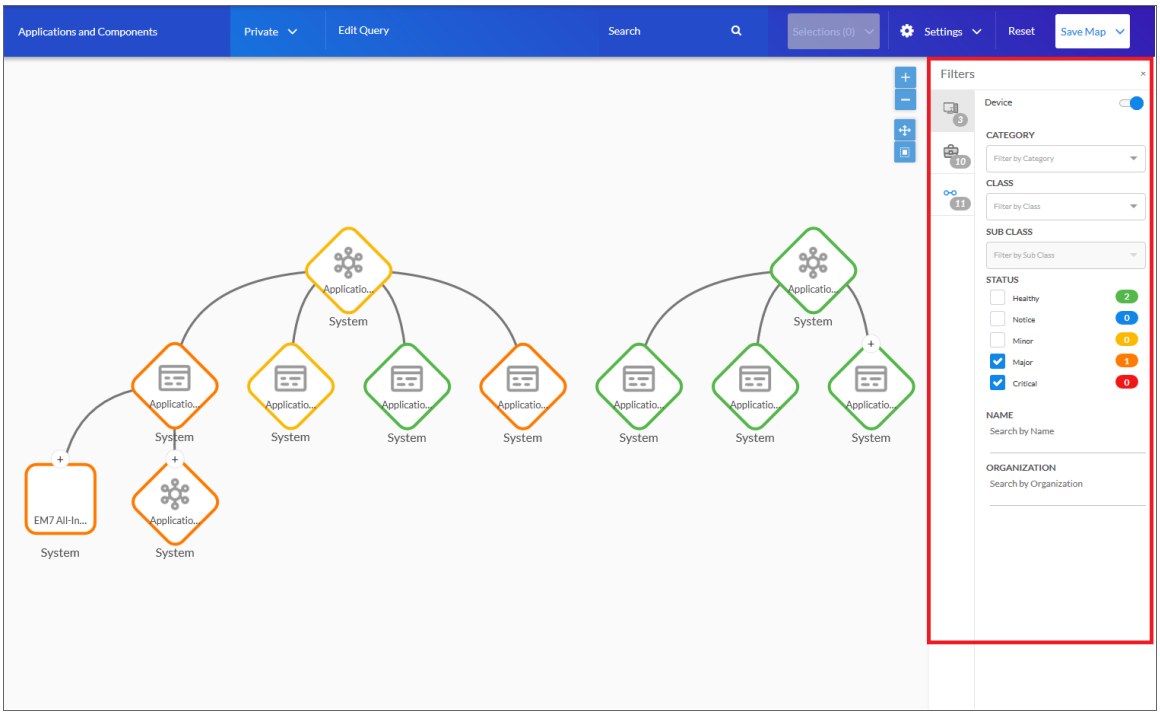
6. Click the **[Save Map]** button to save the map.

NOTE: For more information on map layouts, see http://visjs.org/docs/network/index.html and https://en.wikipedia.org/wiki/Force-directed_graph_drawing.

Changing the Filters for a Map

To use the **Filters** pane for a map:

1. Select the map from the **Maps** page. The **Map** window appears.
2. Click the ***Settings*** drop-down and select *Filters*. The **Filter** pane appears to the right of the map:



NOTE: The **Filters** pane contains three tabs: **[Devices]**, **[Services]**, and **[Edges]**. The counts for each node type display in a badge on each tab.

3. On the **[Devices]** tab (

), you can toggle off devices to hide devices in the map. You can also expand this section to filter the map by Category, Class, Sub-class, Status, Name, and Organization.
4. On the **[Services]** tab (

), you can toggle off services to hide services in the map. You can also expand this section to filter the map by Service Type, Name, Organization, Availability, Health, and Risk.
5. On the **[Edges]** tab (

), you can edit a variety of display options related to edges. These options are the same as the options on the **[Edges]** tab of the **Design** pane.
6. Click the **[Save Map]** button to save the map.

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