# Maps

SL1 version 8.12.0, BETA

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# 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:

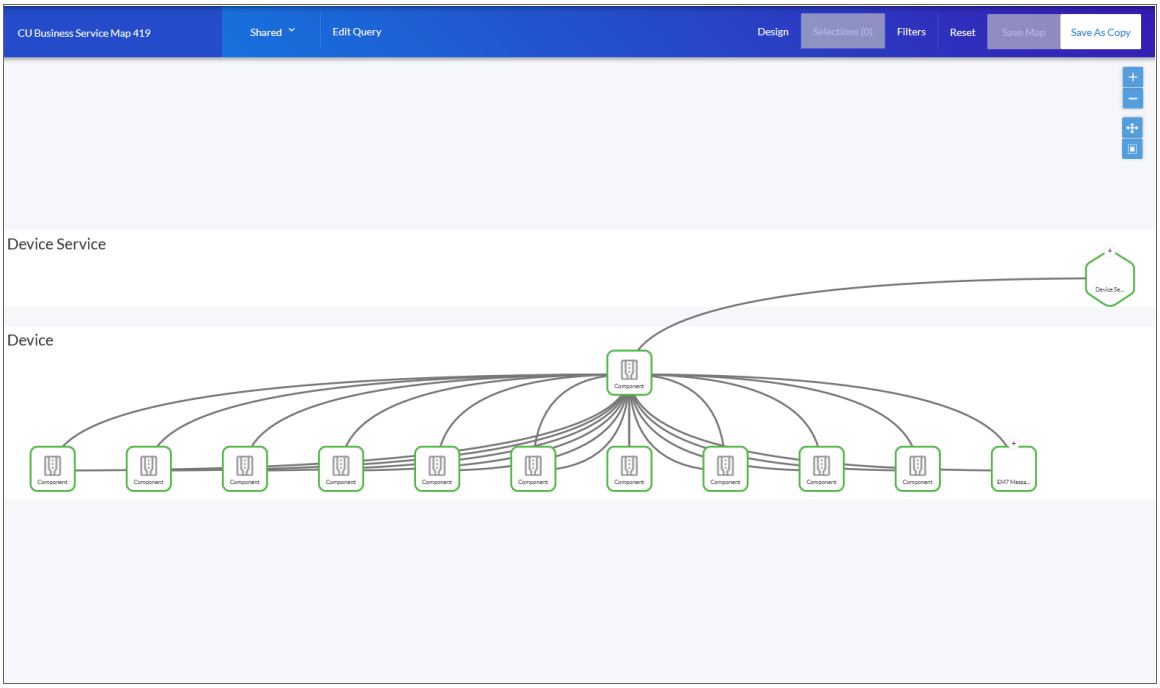
- To access a list of menu options, click the menu icon ( ).
- To view a page containing all of the menu options, click the Advanced menu icon ( ).

This chapter included 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 contains include 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.

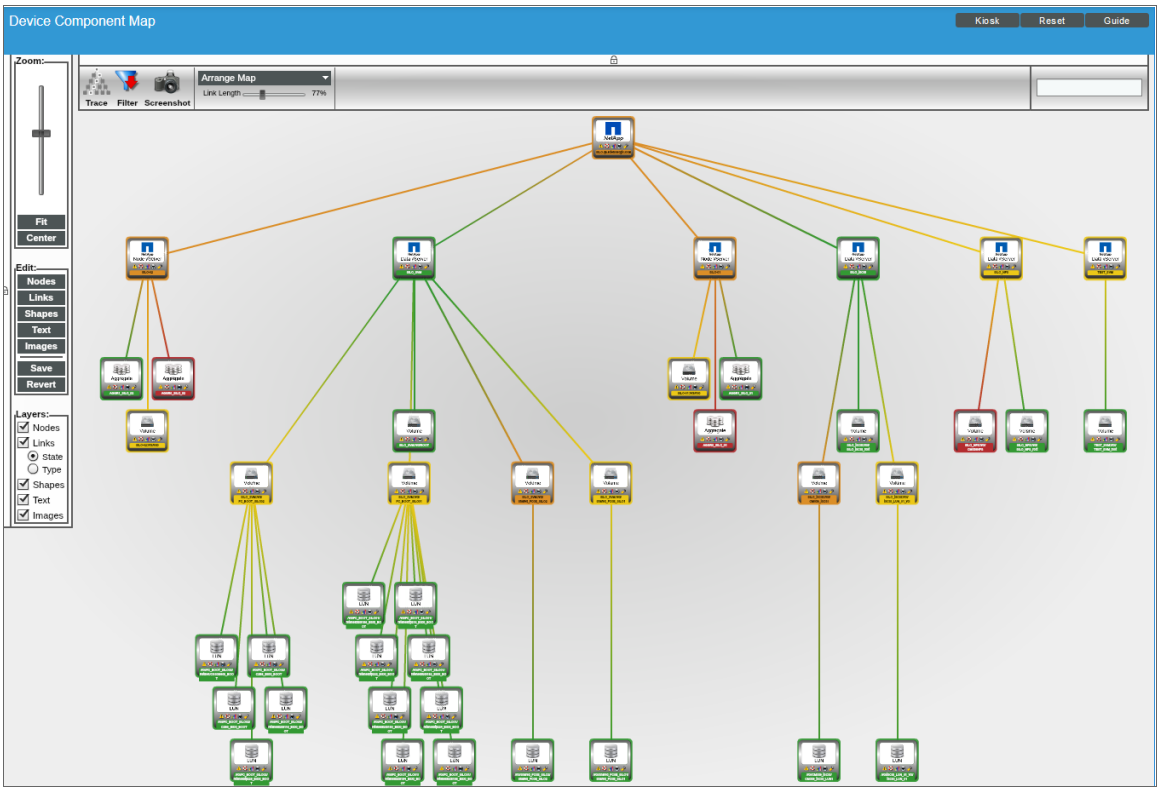
For more information, see *Viewing a Map*.

# 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 might be 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 it 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, enter 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 will display:

```
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, enter 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.

To do this:

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

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

   You can use standard systemctl commands to verify 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.)

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
```

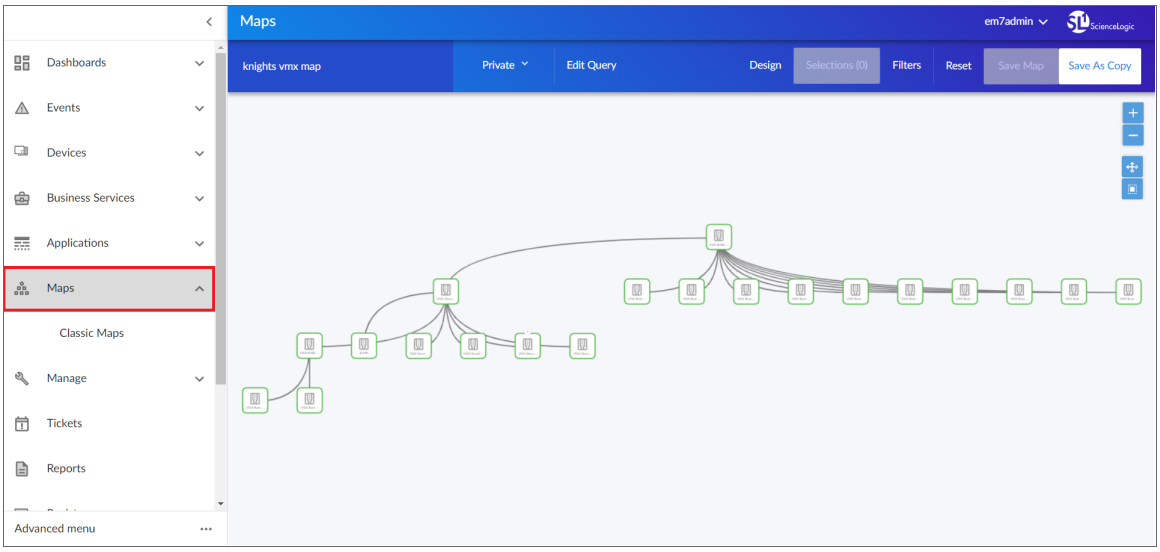
4. In the NextUI environment file, add the following line at the bottom:

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

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

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

6. If all of the preceding steps have been successful, then 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.

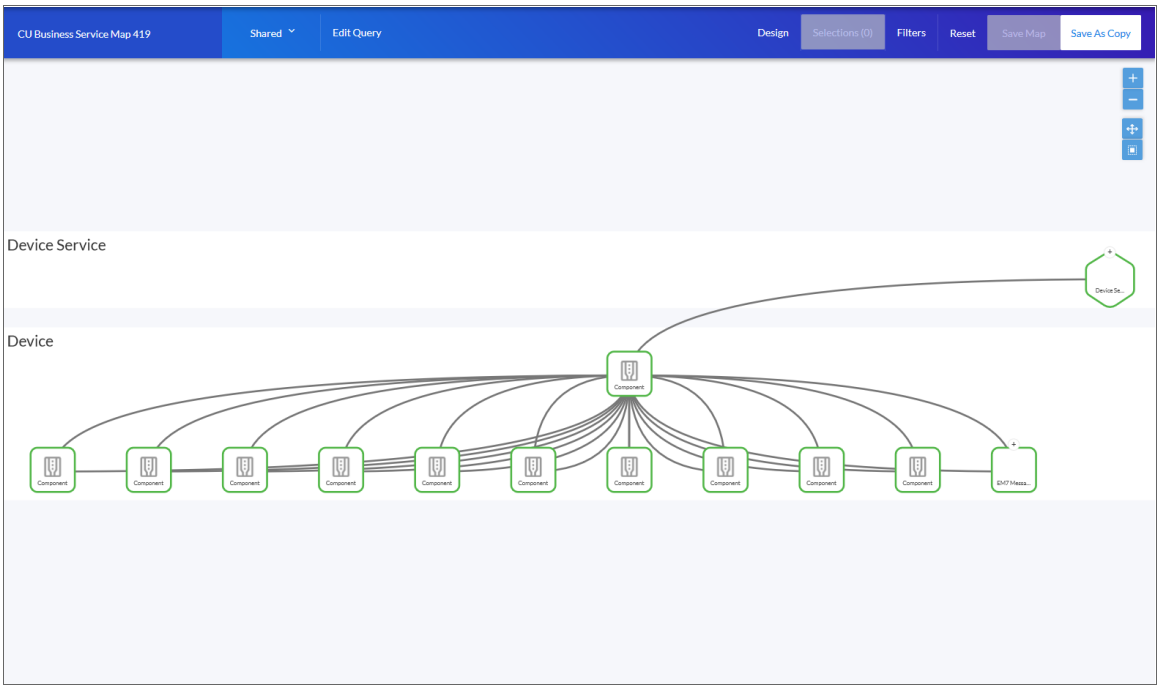
Navigation tips for the SL1 user interface:

- 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:




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/Shared with All/Specific Organizations***. Select the visibility for this map. If you want to share a map with one or more organizations, you can select those organizations from this menu. The default for a new map is *Private*.
- **[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*.
- **[Design]**. Click this button to show the **Design** pane, where you can edit the appearance of the map.
- **[Selections]**. If you select a node or an edge, the details of that node or edge appear in the **Selections** pane. Click this button to show the **Selections** pane. The number in parentheses after ***Selections*** shows how many items are currently selected.
- **[Filters]**. Click this button to show the **Filters** pane, which lets you select and deselect filters that affect which nodes and edges appear in your 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.
- **[Save As Copy]**. Click this button to make a copy of the current map.

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.

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

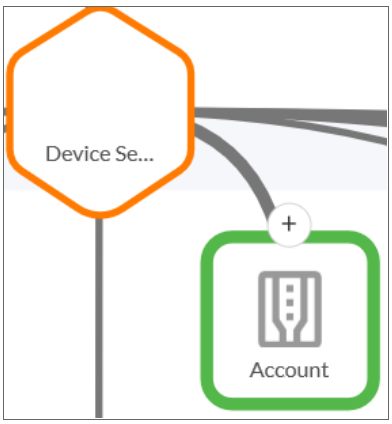
The viewing pane also contains the following two types of graphical elements:

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:

2. ***Edges***, lines that represent the relationships and hierarchies between nodes. The color of the edge specifies the current state of the connection. The state reflects the event of the highest severity for the connection:

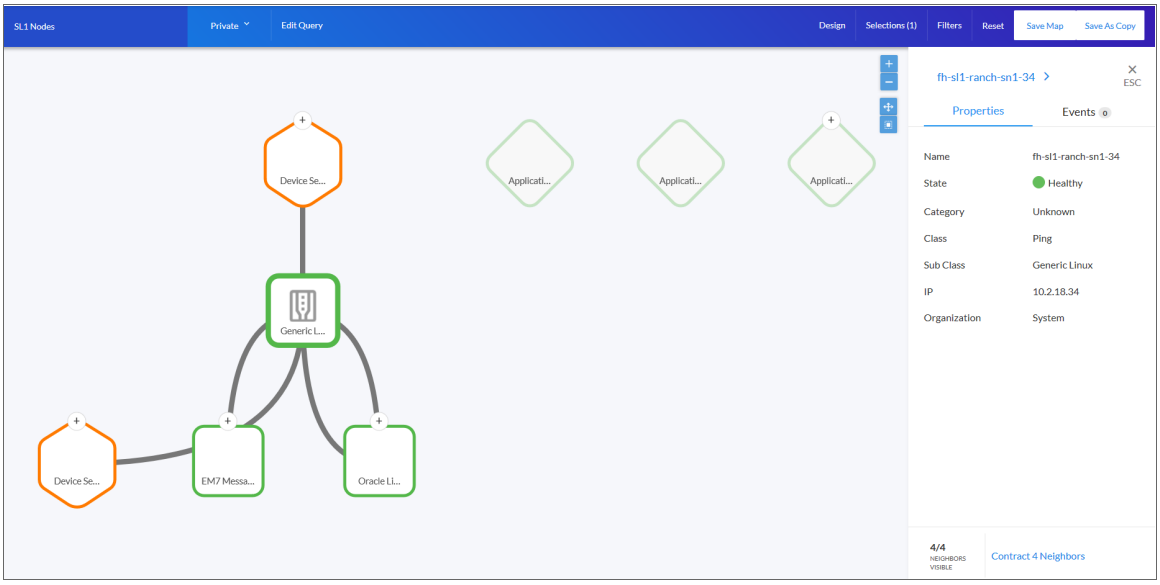



**NOTE:** SL1 automatically updates the map as new nodes are discovered. SL1 also updates the map with the latest status and event information.

When a map appears, you can view and reposition the components. For more information, see *Changing the Appearance of a Map*.

## Viewing Node Details

To view the details of a node, click the node to highlight it. The details of that node appear in the **Selections** pane on the right:



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

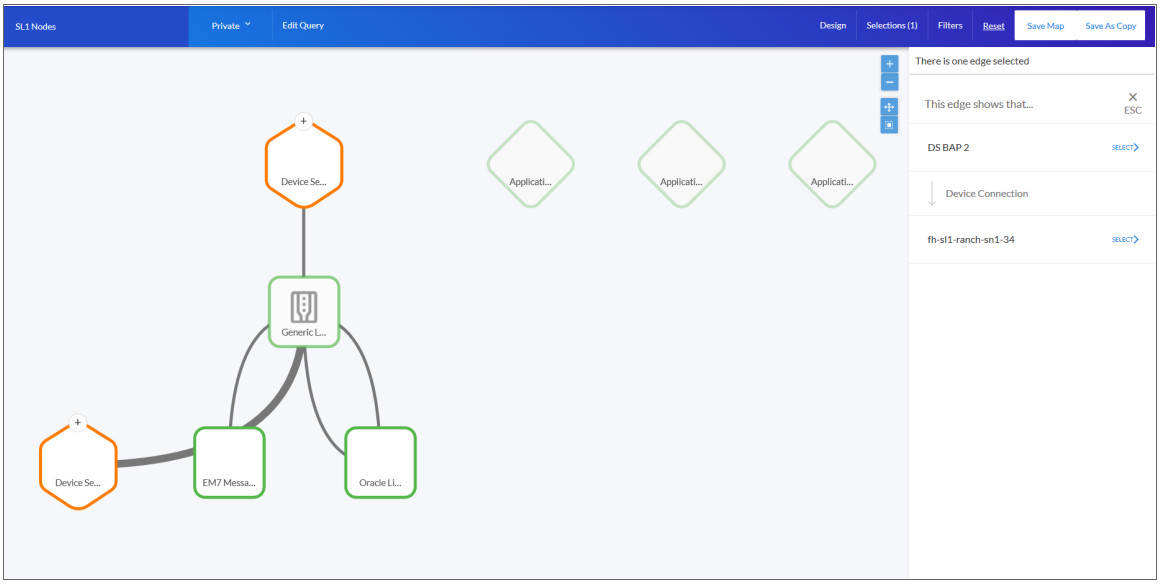
The following information appears in the **Selections** pane:

- ***Name of the node***. Clicking on the name of the node at the top of the **Selections** pane displays the **Device Investigator** page for that node (device).
- ***Properties***. Displays the name, state or health, organization, and other metadata for the selected node.
- ***Events***. Displays a list of each event associated with the node.
- ***Neighbors Visible.*** Indicates how many out of the total number of neighbors are visible.
- ***Expand/Contract # Neighbors***. Clicking this link expands or contracts the neighbors of the selected node. Alternatively, double-clicking the node will also expand and contract its neighbors.



# Viewing Edge Details

To view the details of an edge, click the edge to highlight it. The details of that edge appear in the **Selections** pane on the right:




The **Selections** pane displays a hierarchy of the nodes connected by the edge, from top to bottom. The pane also displays the type of relationship represented by the selected edge, such as a "device" connection or an "ad hoc" connection.

Clicking the name of one of the nodes or the **Select** text opens the **Properties** pane for the node. Click the Go Back button to return to the Edge view on the **Selections** pane.

# Working with Maps

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.

Use the following buttons to manipulate the map on the viewing pane:

 : Zoom in on the map.

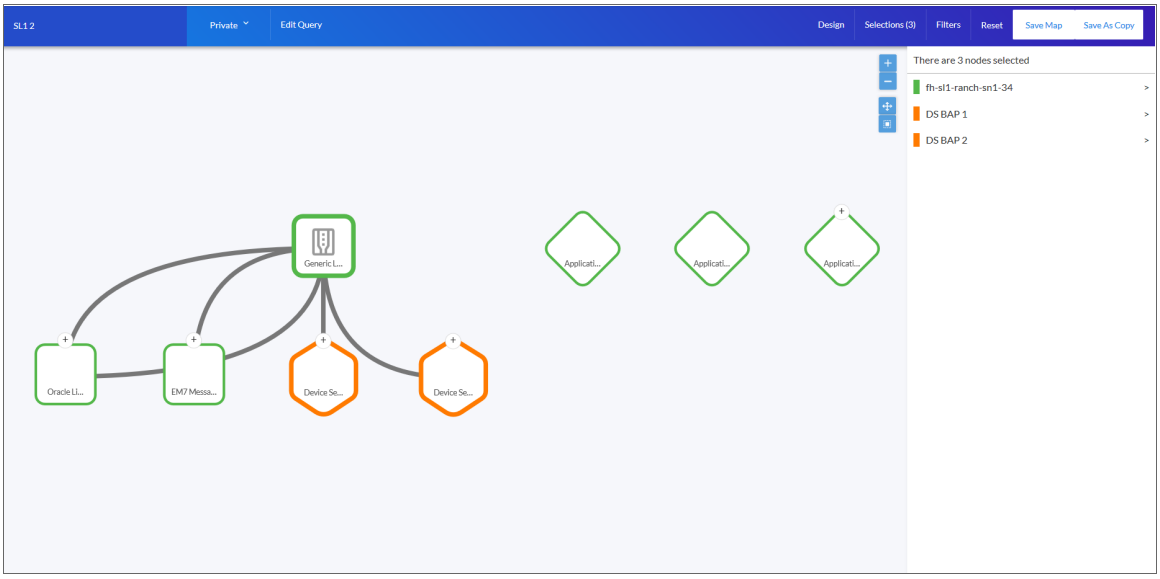
 : Zoom out on the map.

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

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

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 left mouse key, and drag the mouse. The map is dragged around by the spot you initially clicked on.
- ***To zoom in and out***, use the wheel of your mouse or two fingers on a Trackpad.
- ***To move nodes with your mouse***:
    - To select a node, left-mouse click on it.
    - To select multiple nodes, hold down the **<Ctrl>** key and left-mouse click on each node. You can then move these nodes around the screen as a group.



After you have rearranged nodes and want to save the layout, click the **[Design]** button, select the ***Fixed Current Nodes in Place*** toggle on the **Maps** menu, and click **[Save Map]**. The next time you open the map, the nodes will display in the same layout as when you saved the map.

# 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:

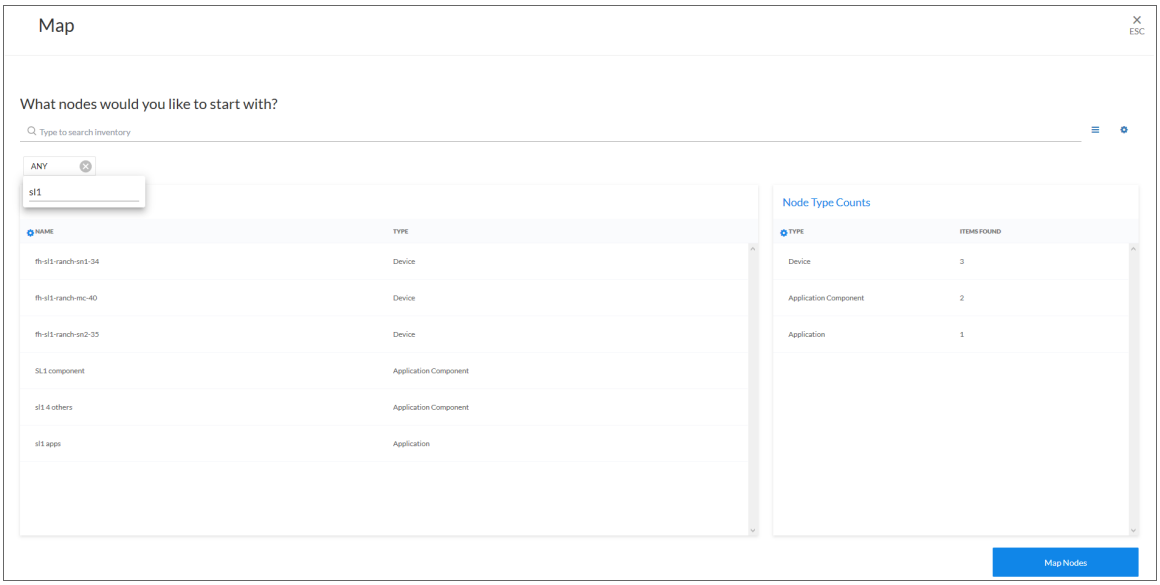
- To access a list of menu options, click the menu icon ( ).
- To view a page containing all of the menu options, click the Advanced menu icon ( ).

This chapter includes the following topics:

# Creating a Map

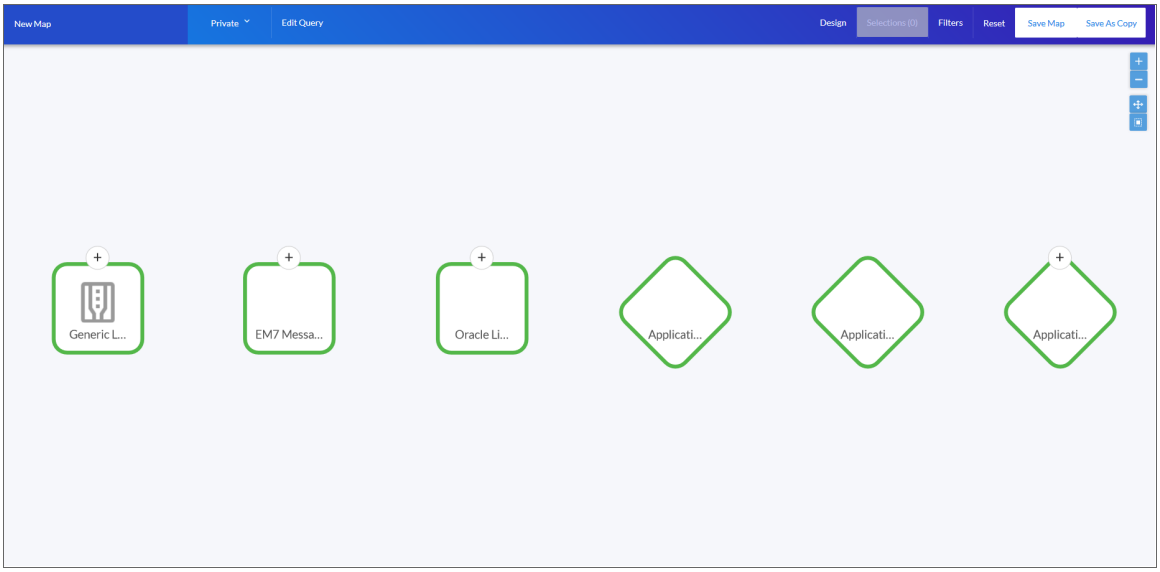
To create a map:

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 to display the **Map Screen**. The nodes that match your seed query appear in the map.




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

5. Click the name (*New Map*) in the upper-left corner, type a new name, and press **Enter** to save the new map name.
6. Update the appearance of the map using the **Design** pane and other manipulations. 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 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. A Map window appears.
2. In the ***Search*** field, type new search criteria in Basic or Advanced mode. The search bar lets you search through Devices, Topology Elements, Applications, Application Components, and Services.

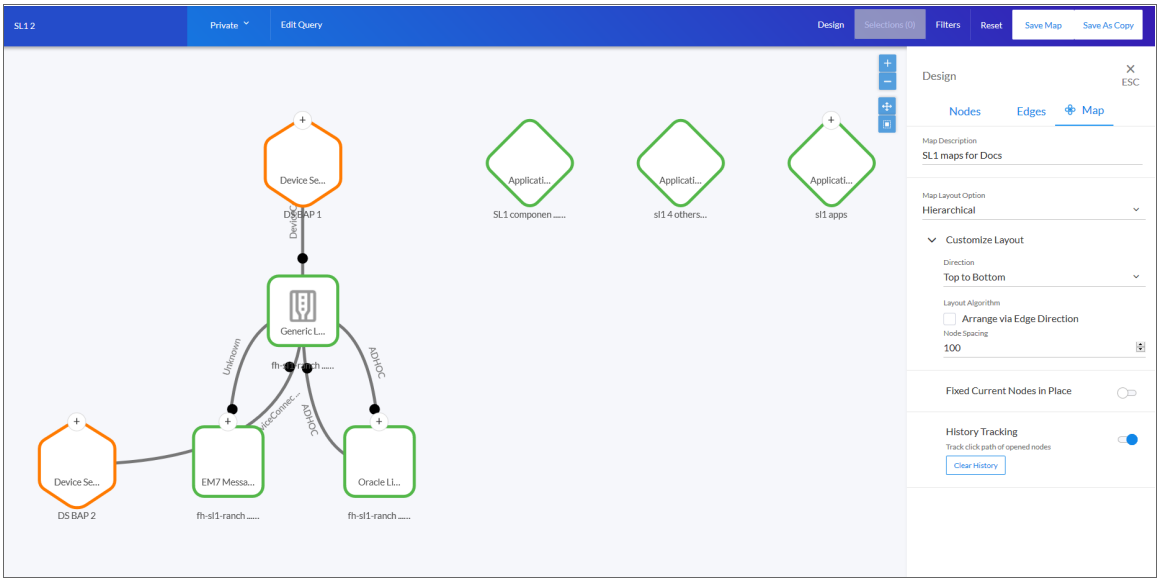
**TIP:** If you are looking for a very specific set of nodes, click the gear icon ( ) to the right of the **Search** field and select *Advanced*. In this mode you can create an advanced search using AND or OR for multiple search criteria. For more information, see the "Advanced Search" chapter in the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

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

To change the appearance of a map:

1. In the **Map** window, click the **[Design]** button. The Design pane appears:




The **Design** pane includes three menus: **Nodes**, **Edges**, and **Map**.

2. On the **Nodes** menu, you can edit the following option related to nodes:
   - ***External Labels***. Lets you show or hide the actual name of the node under the node icon.
3. On the **Edges** menu, 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.

4. On the **Maps** menu, 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.

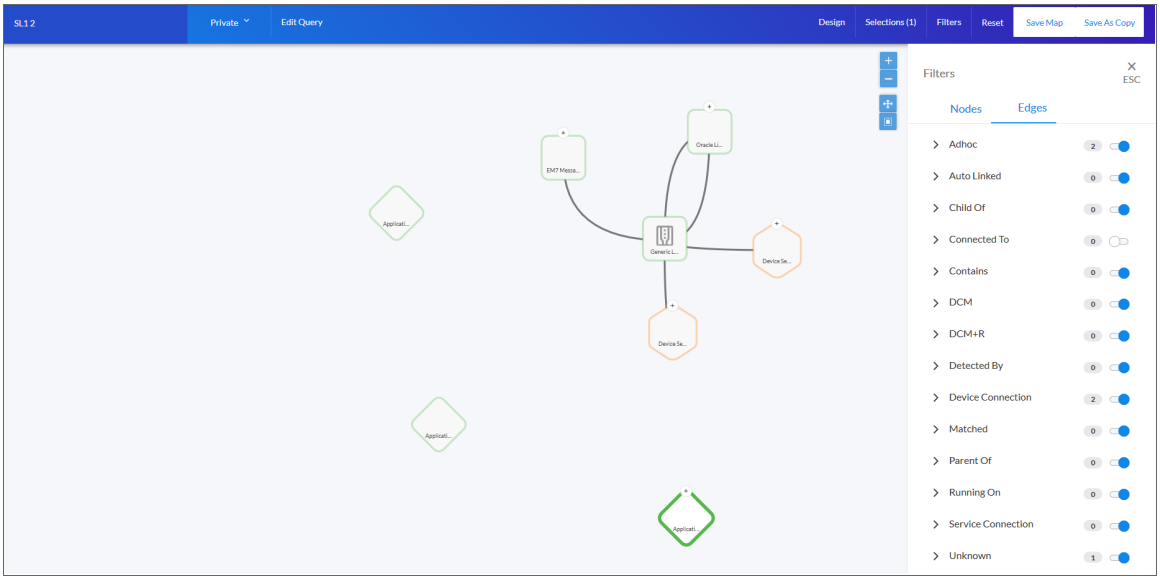
     - *Tiered Hierarchical*. This layout explicitly calls out the different tiers of a hierarchy in a map using labels.
     - *Force Atlas*. This is a force-directed layout close to other algorithms used for network spatialization that integrates different techniques that include the Barnes Hut simulation. 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 on the map. The default is 100.
       - ***LinLog Mode***. 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 enabled, SL1 tracks the click path of opened nodes. Click the **[Clear History]** button to clear the click path history.

**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.

5. You can also change the appearance of a map by clicking the **[Filters]** button. The **Filters** pane appears:




The **Filters** pane includes two menus: **Nodes** and **Edges**.

6. On the **Nodes** menu, you can edit the following options related to nodes:

   - ***Devices***. 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.

7. On the **Edges** menu, you can edit a variety of display options related to edges.
8. Click the **[Save Map]** button to save the map.

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