



HTML5 Maps in the Classic User Interface

SL1 version 8.15.0

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Chapter

1

Introduction to HTML5 Maps

Overview

This manual describes how to view relationship maps on the **[Views]** tab for the various objects you are monitoring in SL1.

SL1 version 8.15.0 lets you view maps rendered using HTML5 on the **[Views]** tab of the "classic" user interface, while previous versions of the classic user interface only allowed Flash-based maps (also called views or classic maps). You can also view HTML5 (non-Flash) maps on the **[Topology]** tab for a Device and in Classic and Device Dashboards that use a Map widget.

NOTE: Currently, the default setting for rendering maps and classic maps is Flash. To make HTML5 the default rendering engine instead of Flash for all users of SL1, go to the **Behavior Settings** page (System > Settings > Behavior) in SL1 and select *HTML5* from the **Topology Map Rendering** drop-down.

WARNING: To prevent issues with new maps, ScienceLogic recommends that after you switch from Flash to HTML5, do not switch back to Flash again.

NOTE: In SL1 version 8.15.0, you can view maps *only* in the classic user interface. The SL1 user interface, also called the "new user interface" or "ap2", is not available in version 8.15.0.

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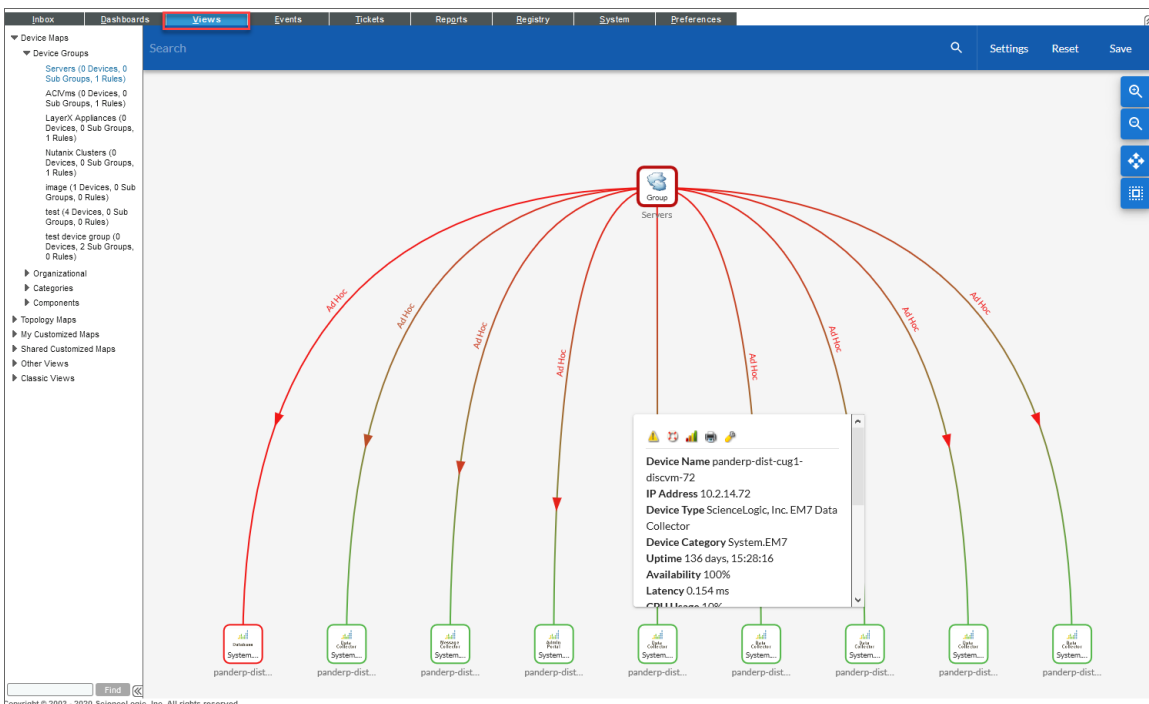
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What is a Map?

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 about the nodes, their hierarchy, and the relationships associated with those nodes. In this release of SL1, maps are rendered using HTML5 or Flash.

Maps can display business services, component maps (DCM, DCM+R), CDP topology, LLDP topology, Layer-2 topology, Layer-3 topology, and Virtual Infrastructure (VMware and virtual machines).

To view maps in the classic user interface, go to the **[Views]** tab:



You can also view HTML5 (non-Flash) maps on the **[Topology]** tab for a Device and in Classic and Device Dashboards that use a Map widget.

A map includes the following graphical elements:

- **Nodes.** Shapes that represent Devices and Topology Elements defined in SL1. The shape of a node represents its type, and the color of its outline specifies the current state of the node.
- **Edges.** Lines with or without arrows that represent the relationships and hierarchies between nodes. All device relationships are displayed as child and parent relationships. If the nodes on a map contain arrows, then the arrows represent the direction of the relationship, pointing from the child node to its parent node. If a node does not contain an arrow, then the relationship is bi-directional, or *undirected*.

Overview of Device Relationships

SL1 automatically defines parent and child relationships for certain devices. Users can also manually define some types of relationships. Devices can have the following types of relationships:

- Layer-2 devices and their clients. Layer-2 relationships are automatically discovered by SL1 and can be created in the **Subnet Map (L2)** page (Views > Topology Maps > Layer-2).
- Layer-3 devices and Layer-2 devices. Layer-3 relationships are automatically discovered by SL1 and can be created in the **Layer 3 Map** page (Views > Topology Maps > Layer-3).
- Network devices that use CDP (Cisco Discovery Protocol) and devices that are specified as neighbors in the CDP tables. CDP relationships are automatically discovered by SL1 and can be created in the **Subnet Map (CDP)** page (Views > Topology Maps > CDP).
- Network devices that use LLDP (Link Layer Discovery Protocol) and devices that are specified as neighbors in the LLDP tables. LLDP relationships are automatically discovered by SL1 and can be created in the **LLDP** page (Views > Topology Maps > LLDP).
- Component devices and their parent devices using Dynamic Application data. For example, virtual machines and their hypervisors.
- Device relationships between root devices, parent devices, and component devices (Component Mapping).
- Device relationships created using Dynamic Application data. For example, the Dynamic Applications in the VMware vSphere and NetApp PowerPacks are configured to create relationships between VMware Datastore component devices and their associated NetApp Volume component devices.
- Generic parent-child relationships, sometimes referred to as Event Correlation relationships or Ad-Hoc relationships, can be manually created. These relationships can be created in the **Device Children** page for the parent device.

NOTE: SL1 also automatically discovers relationships between VMWare hypervisors and VMWare virtual machines using SNMP data, but *only for legacy versions VMWare ESX 3.5 and VMWare ESX 4.x*.

All device relationships are displayed as child and parent relationships. For example:

- A Layer-2 switch is a parent device and a firewall attached to the switch is a child device.
- A Layer-3 router is a parent device and a Layer-2 switch attached to the router is a child device.
- A VMware ESX server is a parent device and a Linux VM on that server is a child device.

Maps that Display Device Relationships

The following options on the **Classic Maps** page (Maps > Classic Views) display device relationship information. Relationships are displayed in a map only if both the parent device and the child device are displayed in the map:

- **Organizational Maps** display all types of relationships.
- **Component Maps** display component relationships and relationships created using Dynamic Application data.
- **Layer-2 Maps** display Layer-2 relationships.
- **Layer-3 Maps** display Layer-3 relationships.
- **CDP Maps** display CDP relationships.
- **LLDP Maps** display LLDP relationships.
- **Customized Maps** display all types of relationships.
- **Virtual Topology Maps** display legacy VMware relationships collected using SNMP.

Viewing a Map

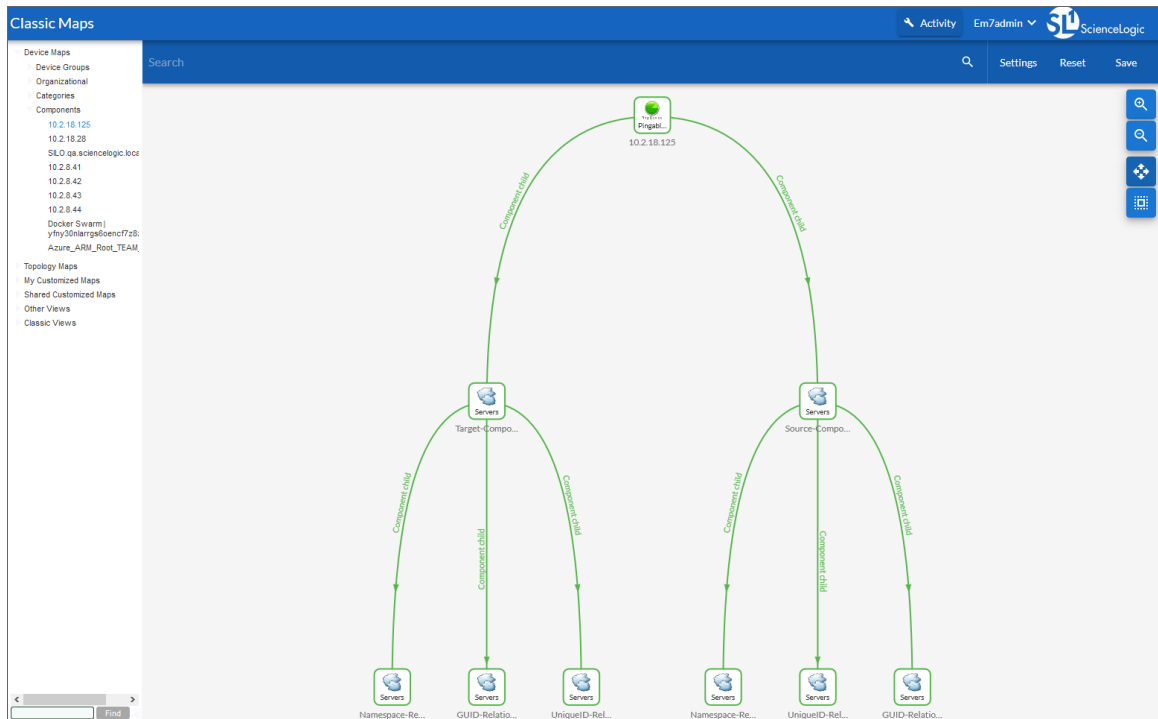
In previous versions of SL1, the maps on the **[Views]** tab were rendered using Flash. Because Flash is being deprecated at the end of 2020, the maps on the **Maps** page in SL1 can be rendered using HTML5 instead of Flash.

NOTE: Currently, the default setting for rendering maps and classic maps is Flash. To make HTML5 the default rendering engine instead of Flash for all users of SL1, go to the **Behavior Settings** page (System > Settings > Behavior) in SL1 and select *HTML5* from the **Topology Map Rendering** drop-down.

WARNING: To prevent issues with new maps, ScienceLogic recommends that after you switch from Flash to HTML5, do not switch back to Flash again.

To view a map:

1. On the **[Views]** tab, expand the section for the map you want to view and select the map name:



2. To view the properties for a node on a map, hover over that node. A pop-up **Properties** pane appears, displaying the name, state, organization, and other "metadata" for the selected node, including any Custom Attributes you created for the node. In addition, the **Properties** pane contains the following icons you can select:

- View events on a device (🚨)
- Create a ticket about the device (🎫)
- View the **Device Summary** page (📊)
- Print a report about the device (🖨️)
- View the **Device Properties** page (🔧)

User Interface Elements for Maps

The **Views** tab for a map includes the following user interface features:

- A **navigation bar** at the top
- A **viewing pane** in the middle
- A **Settings pane** on the right





Navigation Bar

The blue navigation bar at the top of a map window includes the following:

- **Search**. Type some or all of a node name in this field to search for specific nodes on the current map. Nodes that match the search criteria are highlighted in the map. Delete the search text to clear the search.
- **[Settings]**. Click this button to open or close the **Settings** pane, which contains tabs that let you customize the appearance of the map and edit the map. For more information, see the [Settings pane](#).
- **[Reset]**. Click this button to revert any unsaved changes you have made to your map.
- **[Save]**. Click this button to save any changes you have made to your map.

Viewing Pane

Under the blue navigation bar is the **viewing pane**, which is the main viewing area 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.

TIP: If you selected **Show Legends** on the **[Link]** tab (∞) of the **Settings** pane, you will also see a colored legend to the left of the buttons that show either the status colors for the nodes, or the edge types for the map. For more information, see the [Settings pane](#).

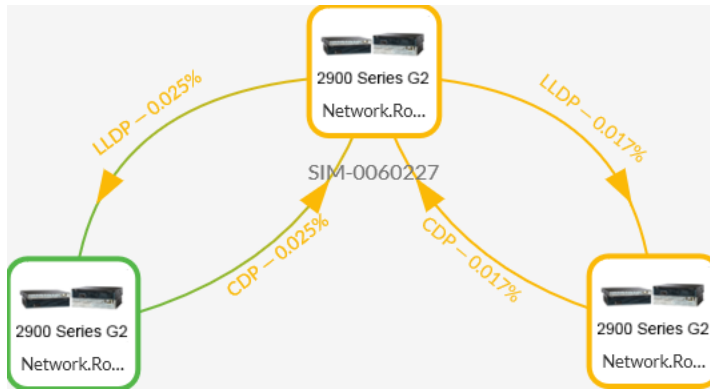
The viewing pane displays the following two types of graphical elements:

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



NOTE: When you select a node, the border for the node icon thickens and changes color.

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



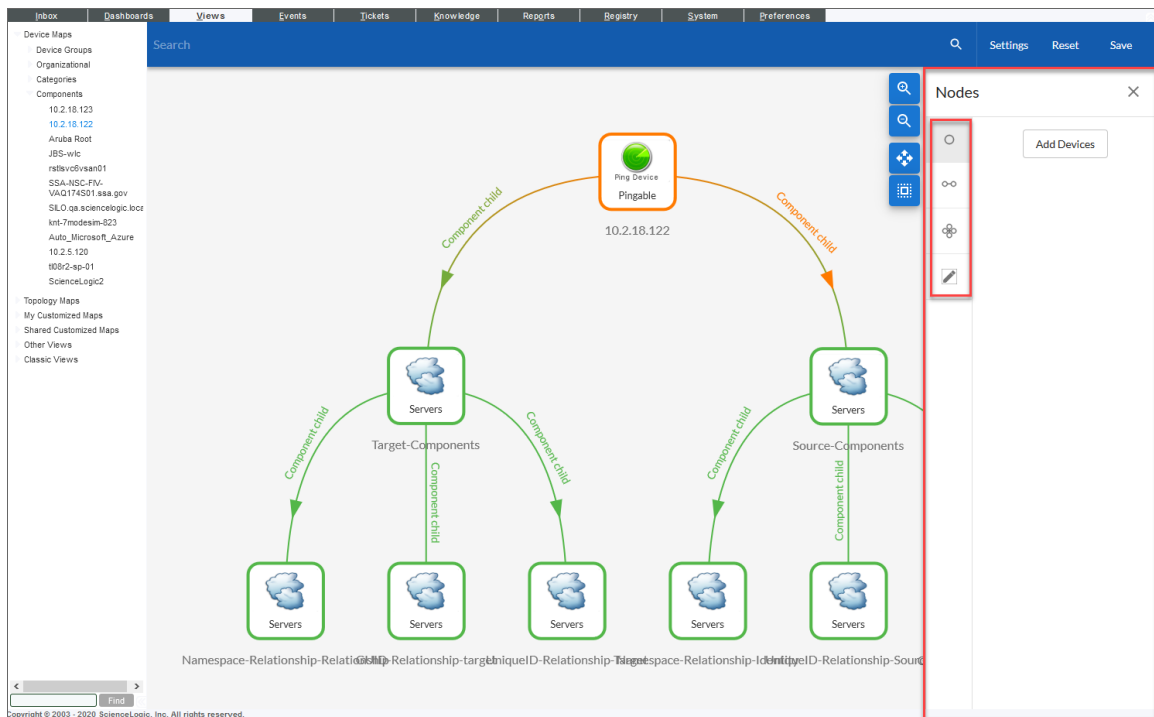
For LLDP and CDP relationships, the edges can include a label describing the relationship as well as a percentage that represents the network usage for the network interfaces on the devices.

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

The Settings Pane

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

1. On the **Views** tab, select a map and click the **[Settings]** button. The **Settings** pane appears:



The **Settings** pane contains four vertical tabs: **[Nodes]**, **[Link]**, **[Map]**, and **[Edit]**.

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

- **[Add Device]**. Click this button to add a device to the map, for Customized Maps only. For more information, see [Adding Devices and Device Groups to a Map](#).
- **[Add Group]**. Click this button to add a device to the map, for Customized Maps only. For more information, see [Adding Devices and Device Groups to a Map](#).

4. On the **[Link]** tab (∞), you can edit the following options:

- **Show Legends**. Shows or hides a small, color-coded legend for the map next to the four blue viewing buttons.
- **Color edges by**. If you enabled the **Show Legends** toggle, you can change the color of the edges in the map based on one of the following options:
 - **Status**. Colors the edges based on the status of the device or service, such as Critical or Healthy, that the edge is connecting.
 - **Edge type**. Colors the edges based on the type of relationship, such as DCM (Dynamic Component Map) or Service Connection, represented by the edge.
- **Selected Nodes**. Lists the names of any nodes you have selected in the viewing pane. If this is a device map, you can click the **[Create Relationship]** button to add a relationship between two selected device nodes. For more information, see [Creating a Relationship Between Two Devices on a Map](#).

5. On the **[Maps]** tab (⊗), you can edit the following options:

- **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** to show more options. 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*.
 - **Arrange via Relationship Direction** Select this option to arrange nodes based on the direction of the relationships of the nodes. If this option is selected, the direction of the relationships is from right to left.
 - **Space Nodes to Fit Screen**. Select this option to let SL1 automatically space the nodes on the map. If you do *not* select this option, you can edit the following two options:
 - **Horizontal Node Spacing**. Edit this value to create more or less white space to the left and right of each node. Use a value between 10 and 1000. The default is 100.
 - **Vertical Node Spacing**. Edit this value to create more or less white space above and below each node. Use a value between 10 and 1000. The default is 100.

- **Shape Type.** Select a shape type. Your options include a rectangle, a circle or oval, a cloud, text, or an image.
 - For a shape, you can click and drag to resize the shape, change the fill color and the line color of the shape, and change the width of the lines in the shape.
 - For text, you can add text in the text field, adjust the font size, change the alignment of the text, and change the color of the text. There are no character limits for the text field, but ScienceLogic recommends that you limit the text to ensure readability. Text might not appear on the map if the amount of text or the font size exceeds the available space in the text field.
 - For an image, click the **[Select Image]** button that appears when you select this option. For example, you use the image of a world map or an office floor plan as a background to better illustrate how your nodes are working within the context of their physical location. From the **Select an Image** window, you can select one of the existing images, or you can click **[Add Image]** to upload an image in SVG, JPEG, or PNG format that is less than 10 MB and not animated.

TIP: If you uploaded an image and want to prevent the image from getting stretched vertically or horizontally, select **Maintain Aspect Ratio** under the **[Select Image]** button.

NOTE: The map of the United States that is available from the **Select an Image** window does not work with Firefox browsers.



7. Click **[Save]** on the top navigation bar 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.

Repositioning Nodes on a Map

You can drag nodes to reposition them on the map to make viewing and managing them easier. When you reposition a node, it retains its relationships 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, click and 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, click the **[Save]** button.

Creating a Relationship Between Two Devices on a Map

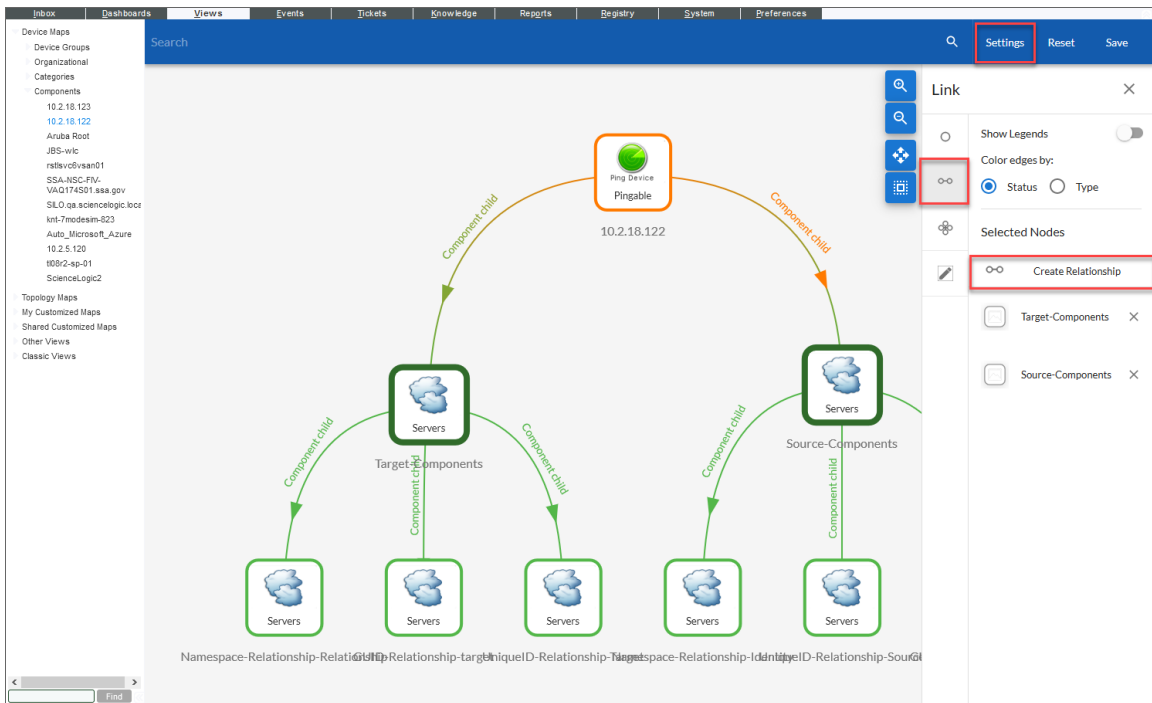
You can create a link between any two devices in a map to represent a new relationship. After you create a relationship, you can decide if the relationship will *only* exist in that map, or if that relationship will persist on all maps in SL1 after you save the map.

When creating a relationship between two devices, keep in mind the following aspects of relationships:

- If you want to create two different relationships between the same two nodes, the relationships must go in separate directions.
- If a relationship already exists, you cannot create that same relationship again between the two devices.
- You cannot change the direction of a relationship that was discovered by SL1.

To connect two devices in a map:

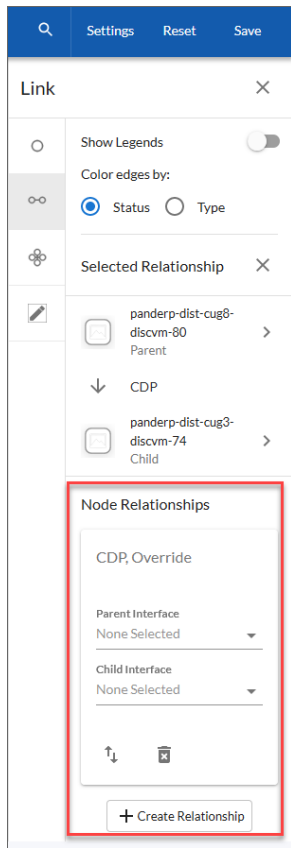
1. On the **[Views]** tab, select the map you want to edit.
2. Press **[Shift]** and click to select two device nodes. The outlines of the node are thickened when you select the nodes.
3. Click the **[Settings]** button and click the **[Link]** tab (∞∞):



4. Click the **[Create Relationship]** button. The **Select a relationship type** window appears.

5. In the **Relationship Type** drop-down, select the type of relationship you want to create for these two devices. Your options include:
- **Visual (this map only)**. Visual relationships appear only in the **Device Maps** and the **My Customized Maps** section. If SL1 has not already discovered another type of relationship between two devices, each manually created link initially has this type of relationship. For Visual Relationships, you can optionally convert the relationship to other types of relationships.
 - **Ad Hoc**. Ad Hoc relationships appear only in the **Device Maps** and the **My Customized Maps** section. Using this option creates a relationship labeled "Ad Hoc" between the two devices.
 - **CDP Relationship**. CDP relationships appear only in the **My Customized Maps** section and CDP maps pages. Cisco Discovery Protocol (CDP) allows discovery of Cisco hardware and allows Cisco hardware within the same LAN or WAN to share information about each other. This information includes the MAC address and IP address, the operating system, and information about the network interface. CDP uses a Layer-2 protocol that uses the Data Link Layer and is unrouted. CDP can also run on legacy Hewlett Packard Hardware.
 - **LLDP Relationship**. LLDP relationships appear only in the **My Customized Maps** section and LLDP maps pages. Link Layer Discovery Protocol (LLDP) allows discovery of hardware and allows hardware within the same LAN or WAN to share information about each other. This information includes the MAC address and IP address, the operating system, and information about the network interface. LLDP uses a Layer-2 protocol that uses the Data Link Layer and is unrouted.
 - **Layer 2 Relationship**. Layer-2 relationships appear only in the **My Customized Maps** section and **Layer-2 Maps** pages. Layer-2 relationships use the Data Link Layer and allow devices in a WAN or LAN to communicate with one another. Layer-2 relationships use Ethernet and MAC addresses to communicate with devices in the same LAN or WAN. Layer-2 relationships are unrouted.
 - **Layer 3 Relationship**. Layer-3 Relationships appear only in the **My Customized Maps** section and **Layer 3 Map** page. Layer-3 relationships use the Network Layer and allow devices from different subnets or networks to communicate. Layer-3 relationships use IP addresses and therefore are routed and can pass messages through routers.

- Click **[OK]**. The **Node Relationships** section appears under the **Select Relationship** section on the **Settings** pane:



- If you selected *CDP* or *LDP* as the type, select parent and child interfaces as needed.
- To change the direction of the arrow on the edge representing the relationship, click the Change Direction icon (↕).
- To remove the relationship from the map, click the Delete icon (🗑).
- To add another relationship for the two devices, click **[Create Relationship]** and edit the new relationship.
- To close the **Relationship** pane, click **[Save]** and then click the Close icon (✕) at the top right of the pane.

TIP: To open the **Settings** pane to edit this relationship again, or to edit any other relationship in a map, double-click the edge in the viewing pane that connects the two device nodes.

If SL1 does not discover a relationship, you can manually create the relationship in a customized map. For CDP, LLDP, Layer-2, and Layer-3 relationships, the newly created relationships will also appear in the appropriate maps. The manually created relationship will be saved in SL1. SL1 will not overwrite the new relationship. Manually created relationships have precedence over automatically discovered relationships in Layer-2, CDP, and Layer-3 maps.

If SL1 discovers a relationship but the relationship information is incorrect, you can manually edit the relationship in a Customized Map. For CDP, LLDP, Layer-2, and Layer-3 relationships, the edited information will also appear in the appropriate maps. The edited relationship will be saved in SL1. SL1 will not overwrite your changes to the relationship. Edited relationships have precedence over automatically discovered relationships in Layer-2, CDP, LLDP, and Layer-3 maps.

Chapter

2

Device Maps

Overview

Device maps allow you to view devices by organization, device group, category, and component devices. This makes it easy to visualize and manage devices. You can view and customize these maps, including adding images and text, and can move individual or multiple devices to display the map for your needs. However, you cannot add or delete devices from the device maps. To add or remove devices from the device maps, you must change the organization for a device, change the device group for a device, change the device category for a device, or delete or discover a component device.

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Device Group Maps

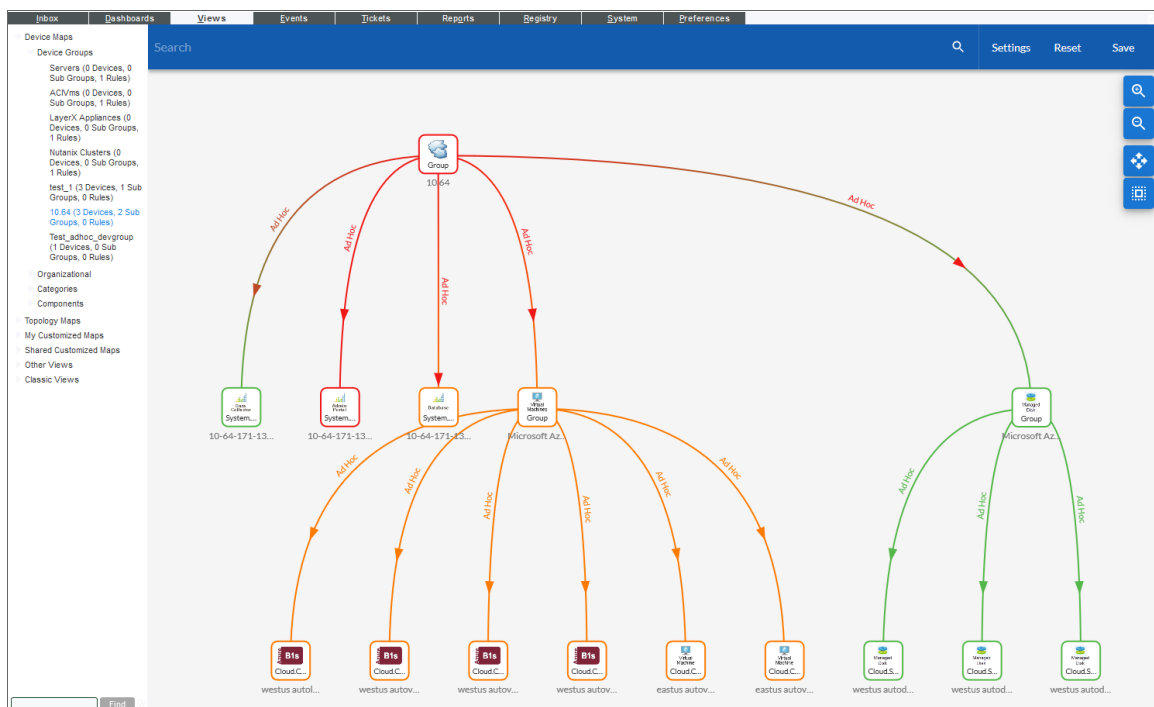
A device group is a user defined group of devices. Device groups make it easy to configure and manage multiple devices. You can define and edit the configuration of device groups using templates. SL1 will automatically update each view in the **Device Group Map** page ([Views] tab > Device Maps > Device Groups) as new devices are added to device groups, and as new device groups are defined. SL1 also updates each view with the latest status and event information.

The **Device Group Map** page allows you to view the member devices in each device group and also view the relationships between device groups and their sub-groups.

Viewing a Device Group Map

To view a device group map:

1. Go to the [Views] tab.
2. Expand the sections for Device Maps > Device Groups, and then select a device group. The **Device Group Map** page appears and displays a map of the device group and its member devices:



- The **Search** field at the top allows you to find one or more devices in the map. You can enter a string in that field and SL1 will highlight only the devices that have a device name that matches the string.
- Each device group and each member device appears as an icon.

- Each view contains a parent device group, represented by an icon with a cloud image. All devices and sub-groups radiate from this device group.
 - Each member device is connected to its device group with a line. The color of the line specifies the device's current state. The state reflects the event of the highest severity for the device.
 - When the view appears, you can view and reposition the components. The view can be edited and rearranged using drag-and-drop features. Devices and sub-groups can be repositioned for easier reading, if necessary.
3. When the map appears, you can view and reposition the components.
 4. Hovering over or clicking a device makes a pop-up **Properties** pane appear, displaying the name, state, organization, and other "metadata" for the selected node, including any Custom Attributes you created for the node.
 5. Hovering over a device group displays its name.

Organizational Maps

The **Organizational Map** page allows you to view devices by organization. This makes it easy to visualize and manage devices in organizations. If devices in the organization include relationships created by Dynamic Applications, these relationships are displayed in the map. If devices in this organization include CDP, LLDP, layer-2, or layer-3 relationships, they are included in the map.

All elements, policies, events, tickets, and users in SL1 are associated with an organization. An organization is a group for managing elements and user accounts. You can define organizations by geographic area, departments, types of devices, or any structure that works best for your needs. The minimum characteristics of an organization consist of:

- A unique name
- Users who are members of the organization
- Elements, such as devices, associated with the organization

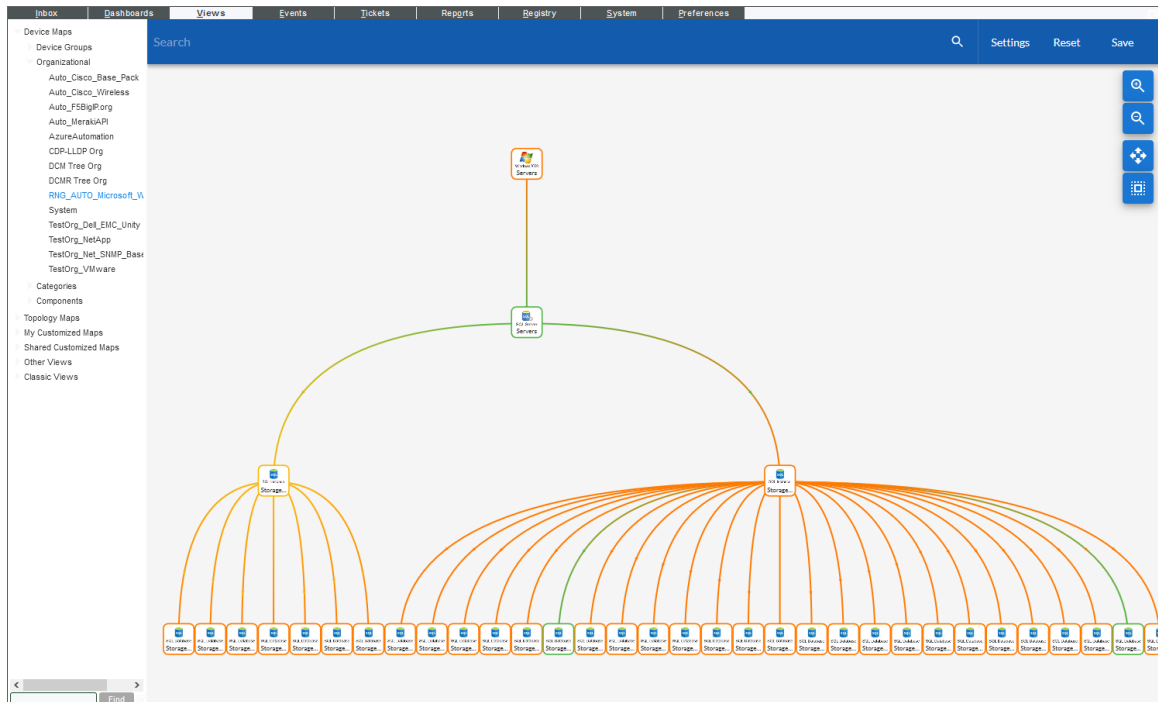
SL1 automatically updates the Organizational Maps as new devices are added to organizations and as new organizations are defined. SL1 also updates each map with the latest status and event information.

Viewing an Organizational Map

To view an organizational map:

1. Go to the **[Views]** tab.

- Expand the sections for Device Maps > Organizational, and then select an organization. The **Organizational Map** page appears and displays a map of the organization and its member devices:



- The **Search** field at the top allows you to find one or more devices in the map. You can enter a string in that field and SL1 will highlight only the devices that have a device name that matches the string.
 - Each member device appears as an icon in the map.
 - The Organizational Map page for an organization also displays the relationships between devices in the organization. This includes:
 - Layer-2 devices and their clients
 - Layer-3 devices and layer-2 devices
 - Component devices and their parents, e.g. virtual machines and their hypervisors
 - Network devices that use CDP (Cisco Discovery Protocol) and devices that are specified as neighbors in the CDP tables
 - Network devices that use LLDP (Link Layer Discovery Protocol) and devices that are specified as neighbors in the CDP tables
 - Device relationships created with Dynamic Applications
 - Manually created parent-child relationships that affect event correlation
- When the map appears, you can view and reposition the components.
 - Hovering over or clicking a device makes a pop-up **Properties** pane appear, displaying the name, state, organization, and other "metadata" for the selected node, including any Custom Attributes you created for the node

Device Category Maps

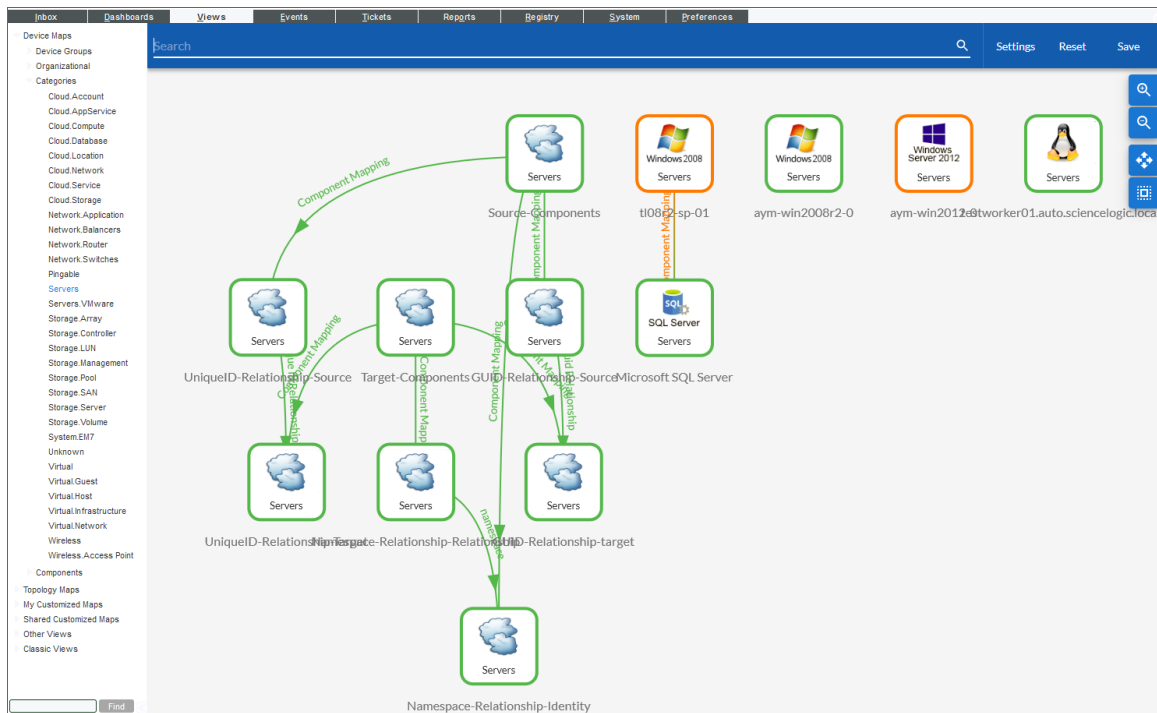
The **Device Category Map** page allows you to view devices by device category. This makes it easy to visualize and manage devices. A **device category** is a logical categorization of devices by primary function. SL1 uses device categories to group related devices in reports and views.

Device categories are paired with device classes to organize and describe discovered devices. Device class usually describes the manufacturer. Device category describes the function of the hardware. For example, a device might have a device class of "Microsoft Windows 2000 Server" and a device category of "servers".

Viewing a Device Category Map

To view a device category map:

1. Go to the **[Views]** tab.
2. Expand the sections for Device Maps > Categories and then select a device category. The **Device Category Map** page appears and displays a map of the device category and its member devices:



- The **Search** field at the top allows you to find one or more devices in the map. You can enter a string in that field and SL1 will highlight only the devices that have a device name that matches the string.
- Each member device appears as an icon in the map.

3. When the map appears, you can view and reposition the components.
4. Hovering over or clicking a device makes a pop-up **Properties** pane appear, displaying the name, state, organization, and other "metadata" for the selected node, including any Custom Attributes you created for the node

Component Maps

The **Component Map** page allows you to view devices by root node and also view the relationships between root nodes, parent components, and child components. This map makes it easy to visualize and manage root nodes and their components.

NOTE: User accounts of type "user" can view only root nodes and device components that belong to their organization(s).

SL1 uses Dynamic Applications to retrieve data from a management device and discover each entity managed by that management device. SL1 then uses that retrieved data to create a device for each managed entity. In some cases, the managed entities are nested.

- In SL1, a managed entity is called a **component device**. A component device is an entity that runs under the control of a physical management device.
- In SL1, the **root device** is the physical device that manages one or more component devices.
- In SL1, a **parent device** is a device that has associated entities modeled as component devices. A parent device can be either a root device or another component device.

For example, in a Cisco UCS system, SL1 might discover a physical server that hosts the UCS manager. SL1 might discover a chassis as a component device. The chassis is a child device to the physical server; the physical server is the root device. SL1 might also discover a blade as a component device that is part of the chassis. The blade is a child device to the chassis. The chassis is the parent device.

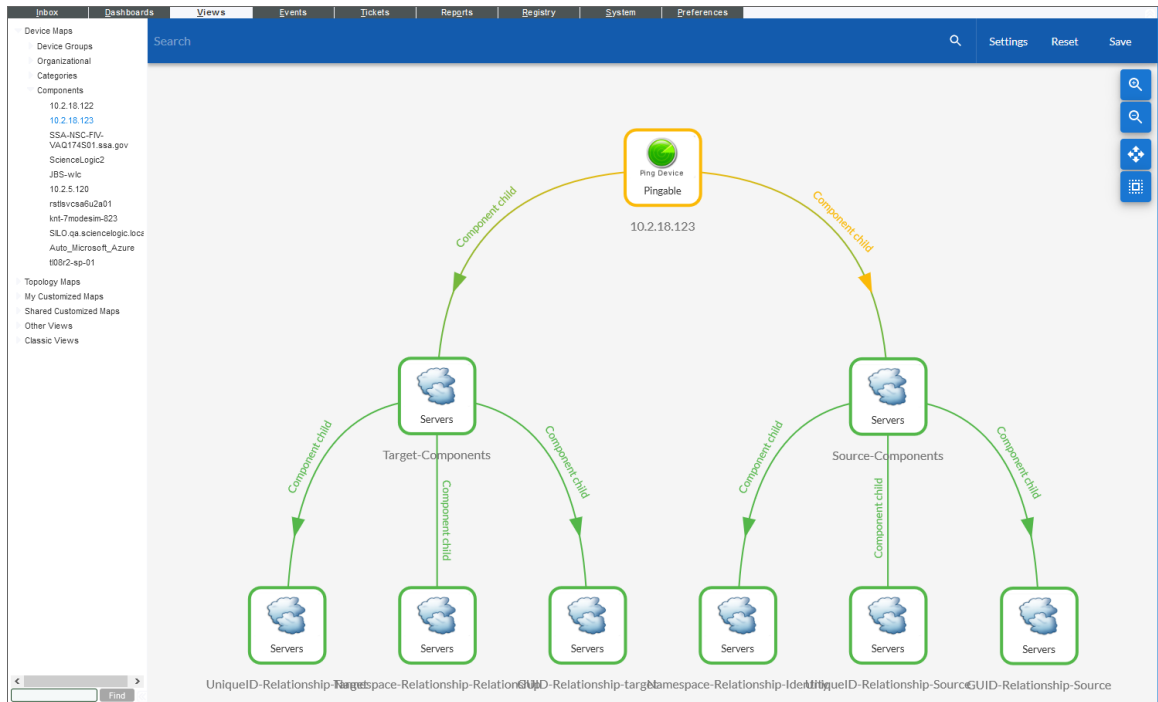
SL1 automatically updates the Component Map as new component devices are discovered. SL1 also updates each map with the latest status and event information.

Viewing a Component Map

You can view a component map from the **Component Map** page. To view a Component Map:

1. Go to the **[Views]** tab.

- Expand the links for Device Maps > Components and then select a root node. The **Device Component Map** page appears and displays the map of the root node and its component devices:



- The **Search** field at the top allows you to find one or more devices in the map. You can enter a string in that field and SL1 will highlight only the devices that have a device name that matches the string.
 - Each root node and component device appears as an icon.
 - Each map contains a root node. All parent and child devices radiate from this root node.
 - Each component device is connected to its parent with a line. The color of the line specifies the device's current state. The state reflects the event of the highest severity for the device.
3. When the map appears, you can view and reposition the components.
 4. Hovering over or clicking a device makes a pop-up **Properties** pane appear, displaying the name, state, organization, and other "metadata" for the selected node, including any Custom Attributes you created for the node

NOTE: For a user of type *User*, you can view only root nodes and device components that belong to your organization(s).

Chapter

3

Topology Maps

Overview

During discovery, SL1 automatically discovers all networks and subnets in your infrastructure. On the **[Views]** tab in the classic user interface), SL1 creates graphical representations of these discovered networks and subnets to create topology maps.

SL1 creates four types of topology maps:

- Layer-2 Maps
- CDP Maps
- LLDP Maps
- Layer-3 Maps

This chapter describes each type of map, and how to view and edit each topology map.

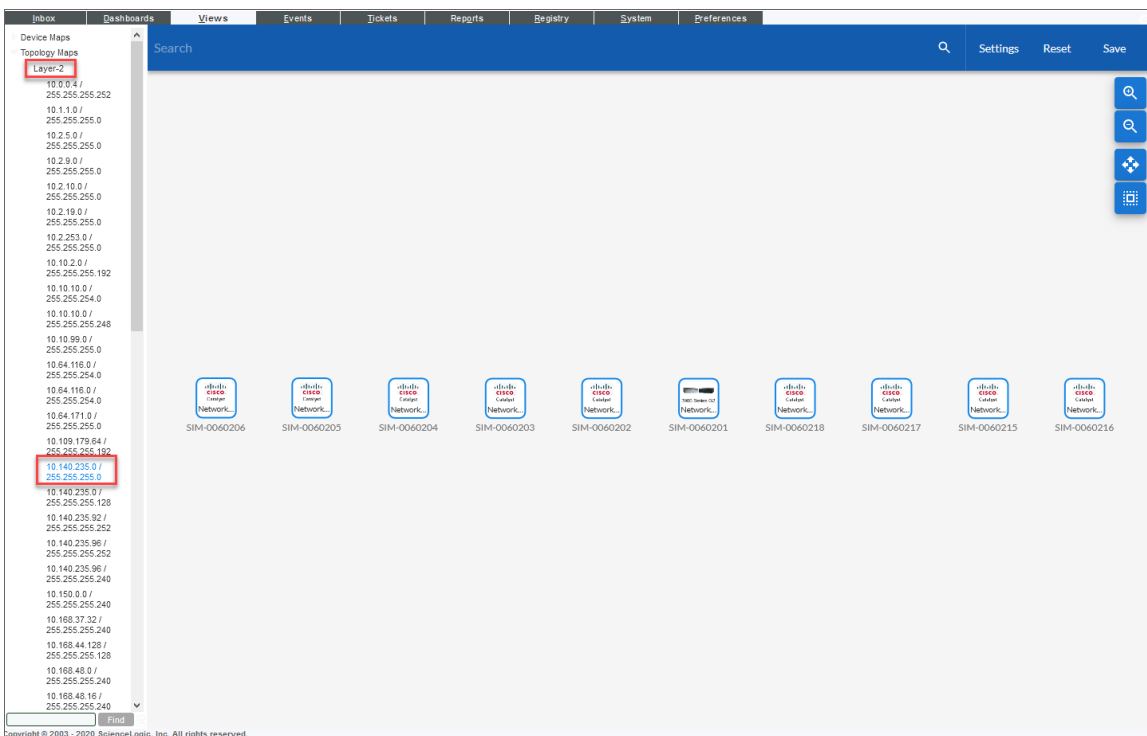
This chapter includes the following topics:

<i>Layer-2 Maps</i>	26
<i>CDP Maps</i>	27
<i>LLDP Maps</i>	28
<i>Layer-3 Maps</i>	29

Layer-2 Maps

Layer-2 networks are unrouted subnets, where devices are identified by MAC addresses, as opposed to routed networks, where devices are identified by IP address. Layer-2 links communicate over the Data Link Layer and use Ethernet and MAC addresses to communicate with devices in the same LAN or WAN.

The **Layer-2 Maps** page on the **[Views]** tab (Topology Maps > Layer-2) displays a network map, where you can view details and relationships in any layer-2 network that has been discovered by SL1 :



A layer-2 network map can include:

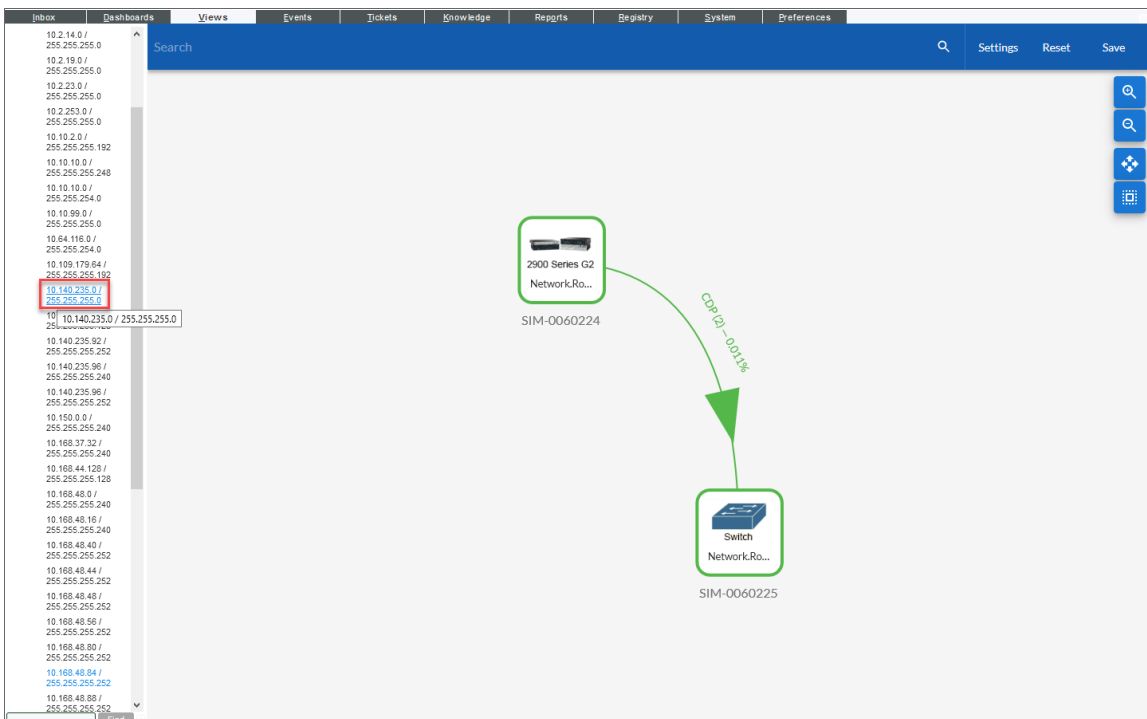
- Devices of each device category defined in SL1.
- Unknown devices, which are represented with cloud icons and labeled as "unknown".
- Links between devices.
- Links between networks (created with switches or routers).
- Unknown connections are represented with cloud icons and labeled as "unknown".
- SL1 automatically updates the map as new devices are discovered. SL1 also updates the map with the latest status and event information.

CDP Maps

Cisco Discovery Protocol (CDP) allows discovery of Cisco hardware and allows Cisco hardware within the same LAN or WAN to share information about each other. This information includes the MAC address and IP address, the operating system, and information about the network interface. CDP is a Layer-2 protocol that uses the Data Link Layer and is unrouted. CDP can also run on legacy Hewlett Packard Hardware.

CDP maps show layer-2, unrouted subnets, where devices are identified by MAC addresses, as opposed to routed networks, where devices are identified by IP address.

The **CDP Maps** page on the **[Views]** tab (Topology > CDP) displays a network map, where you can view details and relationships in any CDP network that has been discovered by SL1:



NOTE: For SL1 to create CDP maps, you must first enable the **Enable CDP Topology** checkbox on the **Behavior Settings** page (System > Settings > Behavior). This checkbox tells SL1 to discover CDP relationships where possible.

If you enable **Use CDP Topology**, SL1 automatically discovers all CDP relationships in your infrastructure. SL1 then creates graphical representations of those discovered networks and subnets. These graphical representations are called Topology Views.

A CDP map can include:

- Devices of each device category defined in SL 1.
- Links between devices.
- Links between networks (created with switches or routers).
- SL1 automatically updates the map as new devices are discovered. SL1 also updates the map with the latest status and event information.

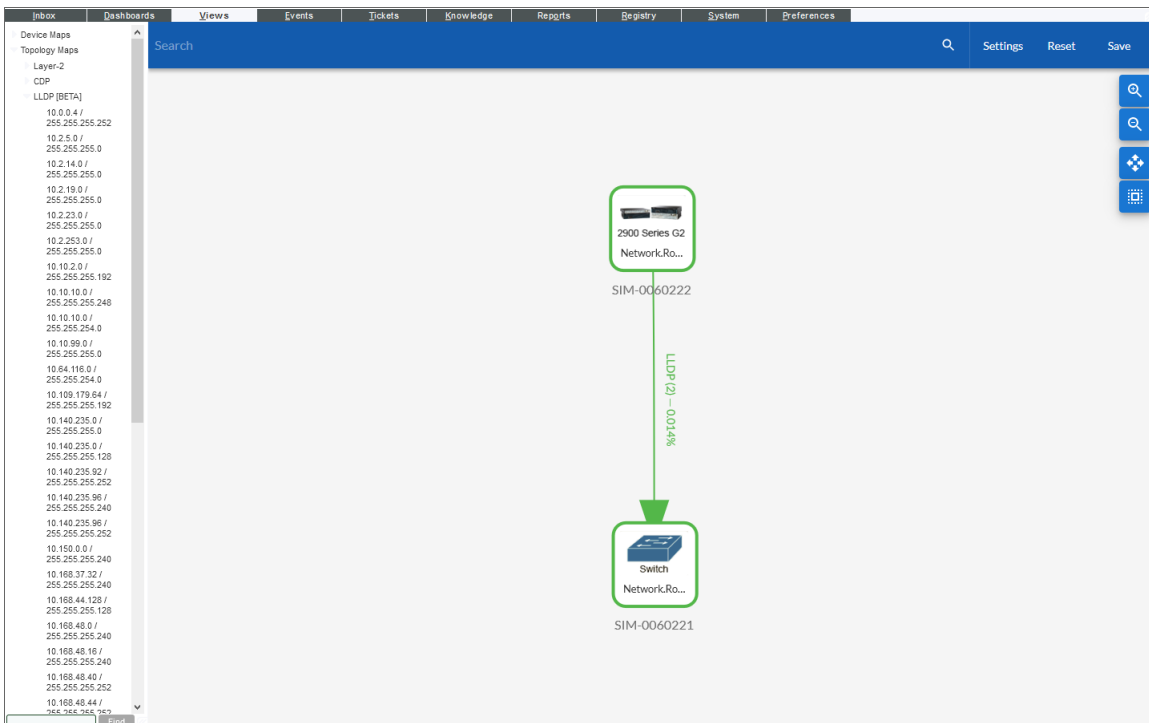
NOTE: Because CDP provides very accurate discovery details, links and relationships in CDP Maps take precedence over links and relationships in Layer-2 Maps.

LLDP Maps

Link Layer Discovery Protocol (LLDP) allows discovery of Cisco hardware and allows Cisco hardware within the same LAN or WAN to share information about each other. This information includes the MAC address and IP address, the operating system, and information about the network interface. LLDP is a layer-2 protocol that uses the Data Link Layer and is unrouted.

LLDP maps show layer-2, unrouted subnets, where devices are identified by MAC addresses (as opposed to routed networks, where devices are identified by IP address).

The **LLDP** page on the **[Views]** tab (Topology Maps > LLDP [BETA]) displays a network map, where you can view details and relationships in any LLDP network that has been discovered by SL 1 :



NOTE: For SL1 to create LLDP maps, you must first select the **Enable LLDP Topology** checkbox in the **Behavior Settings** page (System > Settings > Behavior). This checkbox tells SL1 to discover LLDP relationships where possible.

If you enable **Enable LLDP Topology**, SL1 automatically discovers all LLDP relationships in your infrastructure. SL1 then creates graphical representations of those discovered networks and subnets. These graphical representations are called Topology Views. The Topology Maps pages allow you to view details and relationships in any network that has been discovered by SL1.

A LLDP map can include:

- Devices of each device category defined in SL1.
- Links between devices.
- Links between networks (created with switches or routers).
- SL1 automatically updates the map as new devices are discovered. SL1 also updates the map with the latest status and event information.

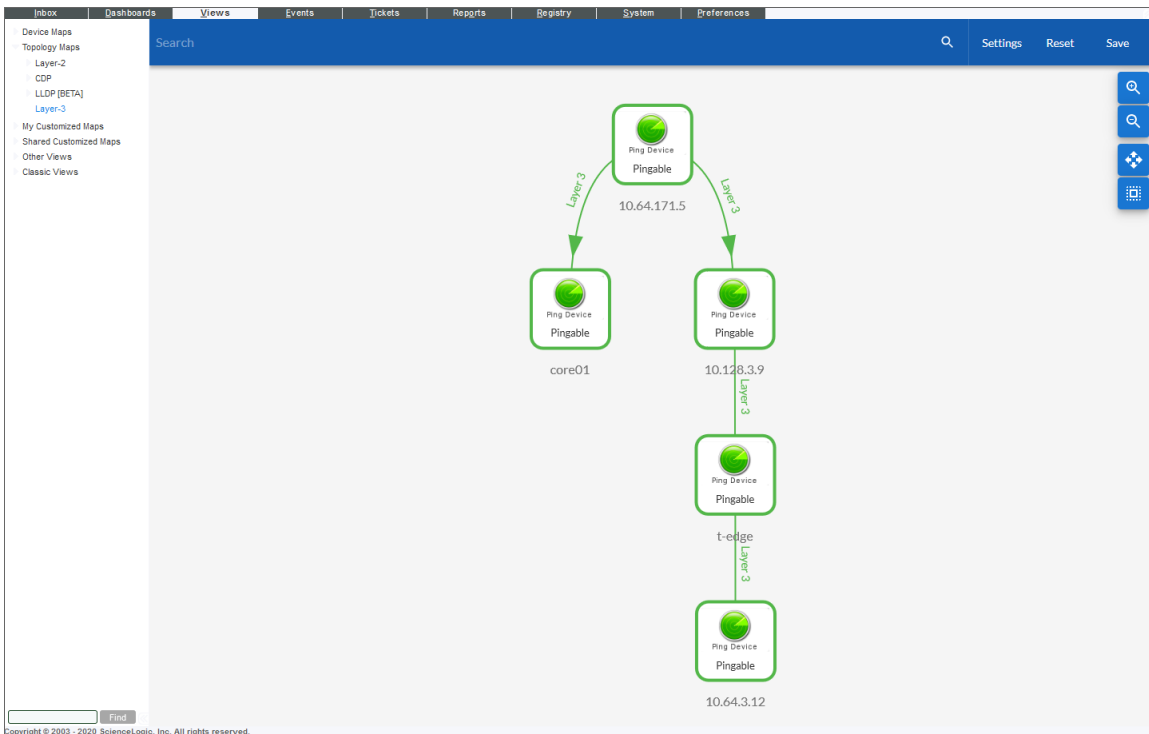
NOTE: Because LLDP provides very accurate discovery details, links and relationships in LLDP Maps take precedence over links and relationships in layer-2 Maps.

Layer-3 Maps

Layer-3 networks are routed subnets, where devices are identified by IP address, as opposed to unrouted networks, where devices are identified by MAC address. Layer-3 links communicate over the Network Layer and allow devices from different subnets or networks to communicate. Layer-3 links use IP addresses to identify devices and their networks and therefore are routed and can pass messages through routers.

SL1 creates **layer-3** maps by running traceroute from a Data Collector to all devices that have layer-3 collection enabled in the device class.

The **Layer-3 Maps** page on the **[Views]** tab (Topology Maps > Layer-3) displays a network map, where you can view details and relationships between Data Collectors and layer-3 routers and switches, and between the layer-3 routers and switches that have been discovered by SL1.



A layer-3 network map can include:

- Data Collectors, switches, and routers.
- Links between devices.
- Links between networks (created with switches or routers).
- SL1 automatically updates the map as new devices are discovered. SL1 also updates the map with the latest status and event information.

Chapter

4

Customized Maps

Overview

This chapter covers the use of customized maps, which you can use to create maps and view the devices that are most important to you.

This chapter includes the following topics:

<i>About Customized Maps</i>	32
<i>Adding Devices and Device Groups to a Map</i>	33

About Customized Maps

A customized map allows you to view the devices and links that are most important to you. When you create a customized map, you also create a new device group on the **Device Groups** page. You can add devices and other sub-device groups to the new map, just as you would to a standard device group.

If SL1 has information about the relationships between the devices in a customized map, SL1 automatically includes the appropriate links in the customized map. Customized maps display every type of relationship data, which includes:

- Layer-2 devices and their clients
- Layer-3 devices and Layer-2 devices
- Component devices and their parents, e.g. virtual machines and their hypervisors
- Network devices that use CDP (Cisco Discovery Protocol) and devices that are specified as neighbors in the CDP tables
- Network devices that use LLDP (Link Layer Discovery Protocol) and devices that are specified as neighbors in the LLDP tables
- Device relationships created with Dynamic Applications
- Manually created parent-child relationships that affect event correlation

Customized maps appear in the following sections:

- **My Customized Maps.** Personalized maps that you create.
- **User Customized Maps.** If you are a user of type "administrator", you can navigate to the maps in this section to view and edit all customized maps in SL1, even if the device group associated with the map was defined with the field **Shared (visible to all users)** set to *no*.
- **Shared Customized Maps.** If a customized map or device group is defined as "shared", you can view the maps in this section. The maps in **Shared Customized Maps** require the same Access Hooks and Access Keys as device groups. Depending upon the Access Keys assigned to your account, you might be able to edit **Shared Customized Maps** created by other users. To learn more about Access Hooks and Access Keys, see the manual **Access Permissions**.

NOTE: If you create a device group from the **Device Groups** page and set the **Visibility** field to include *Maps/Views*, the device group will appear as a map in the **Custom Device Group Map** page (Views > My Customized Maps). If you set the **Shared** field to yes, the device group will appear for view by other users as a map in the **Shared Customized Maps** page (Views > Shared Customized Maps).

Each customized map is automatically populated with topology links (including CDP, LLDP, Layer-2, or Layer-3 relationships, or relationships created by Dynamic Applications) that SL1 has discovered between the devices in the map. You can create new links between devices, edit links between devices, and delete links.

When you create a link in a Customized Map, it is initially created only on the view for that map. You can optionally convert a view-only link to a CDP, LLDP, Layer-2, Layer-3, or Event Correlation relationship. When you convert a view-only link, the relationship is saved by SL1 for use in the other topology maps and event correlation.

When you delete a link in a Customized Map, the change is made only in that map. The link will still exist in SL1, and will appear in the other topology maps and will be used in event correlation.

When you edit a view-only relationship, the change is made only in that map. When you edit a CDP, LLDP, Layer-2, Layer-3, or Event Correlation relationship, the changes are applied throughout SL1.

Adding Devices and Device Groups to a Map

When you initially create a customized map and add devices and device groups to the customized map, you are actually defining a device group; however, you are using the maps interface instead of the **Device Groups** page to do so.

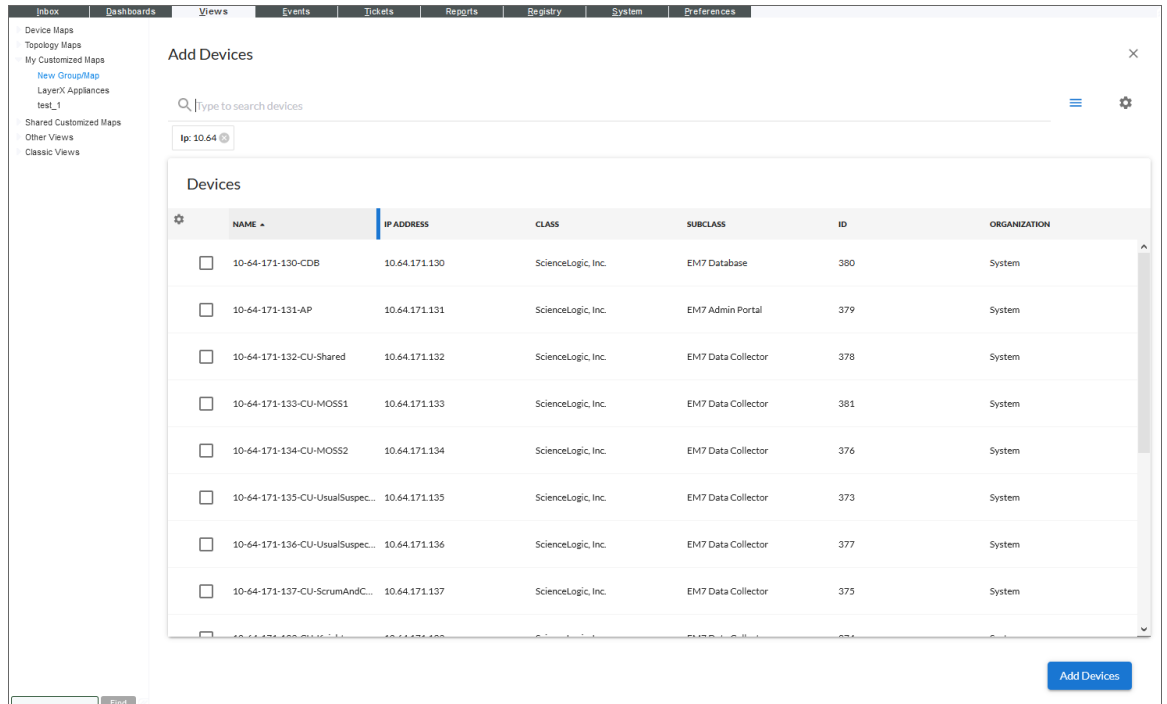
NOTE: You can also create a device group from the **Device Groups** page. If you select *Maps* in the **Visibility** field, the device group will appear as a map in the **Custom Device Group Map** page (Views > My Customized Maps). If you set the **Shared** field to *yes*, the device group will appear as a map in the **Shared Customized Maps** page (Views > Shared Customized Maps).

NOTE: By default, device groups created in the **Custom Device Group Map** page include only *Maps/Views* under **Visibility** and have **Shared** set to *no*. However, you can change these default settings by editing the device group from the **Device Groups** page.

To create a customized map:

1. Go to the **Custom Device Group Map** page (Views > My Customized Maps > New Group/Map).
2. Click the **[Settings]** button.

- On the Nodes tab (○), click the **[Add Devices]** button or the **[Add Groups]** button:
 - To add a device to the map**, click the **[Add Devices]** button. When the **Add Devices** page appears, use a Basic or Advanced Search to find for the device(s) you want to add to the customized map. Select the checkbox for the device devices you want to add and click **[Add Devices]**.
 - To add a device group to the map**, click the **[Add Groups]** button. When the **Add Devices** page appears, use a Basic or Advanced Search to find for the device(s) you want to add to the customized map. Select the checkbox for the device group or groups that you want to add and click **[Add Device Groups]**.



TIP: For more information, see the "Basic Search" chapter in the *Introduction to SL1* manual. 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**. For more information, see the "Advanced Search" chapter in the *Introduction to SL1* manual.

- To delete a device or device group, select the device or device group and click **[Remove Selected Nodes]**.

NOTE: If a device group includes a dynamic rule, SL1 will examine the rule and automatically add devices that match the rule's criteria to the device group. If you delete a device that SL1 has automatically added to the device group, the device will reappear the next time you view the device group map. For details on device groups and dynamic rules, see the manual *Device Groups and Device Templates*.

5. After you add two or more devices to the map, you can manually create and edit device relationships. For more information, see [Creating a Relationship Between Two Devices on a Map](#).
6. Click **[Save]** to save the map. The **Select a new map name** window appears.
7. In the **New Map Name** field, type a name for the new map and click **[OK]**. The map is added to Views > My Customized Maps.

TIP: Click **[Refresh]** in your browser if the new map does not appear in the Views > My Customized Maps section.

Chapter

5

Virtual Infrastructure

Overview

SL1 includes support for legacy VMWare ESX servers that report virtual machine relationships via SNMP. SL1 can automatically discover the relationships between legacy ESX servers and virtual machines (called VM Guest OSs). SL1 automatically maps the relationships between ESX Servers and their client virtual machines.

This chapter includes the following topics:

<i>Virtual Topology Maps</i>	37
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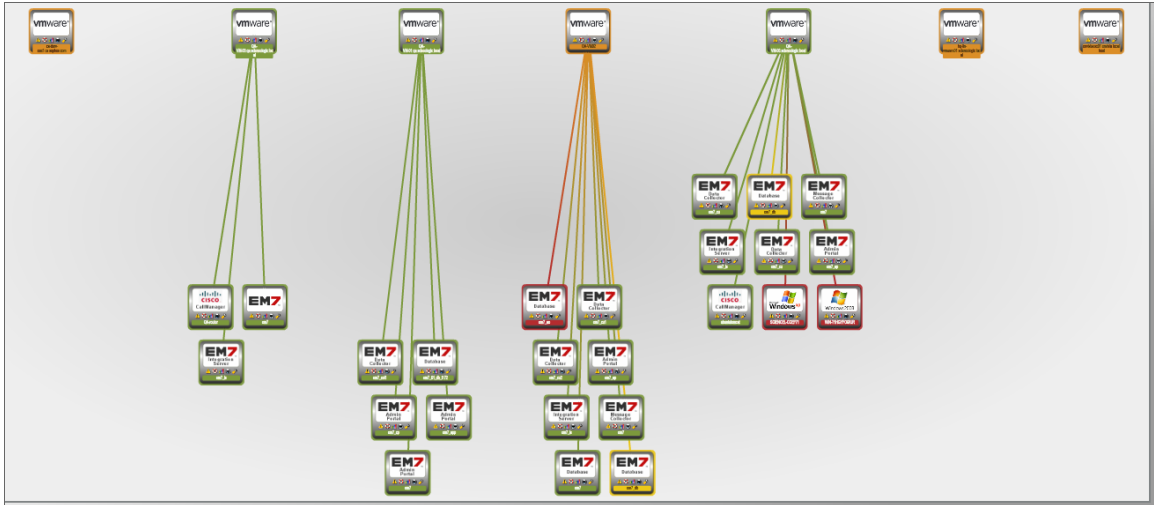
Virtual Topology Maps

SL1 can automatically discover and monitor VMware ESX servers. SL1 can also automatically discover each client virtual machine (called VM Guest OSs). SL1 automatically maps the relationships between ESX Servers and their client virtual machines.

The **Virtual Topology Map** page allows you to view information about a VMware ESX Server and their related virtual machines. SL1 automatically updates the map as new ESX servers and virtual machines are discovered. SL1 also updates the map with the latest status and event information.

You can view the virtual topology map from the **Virtual Topology Map** page. To view the virtual topology map:

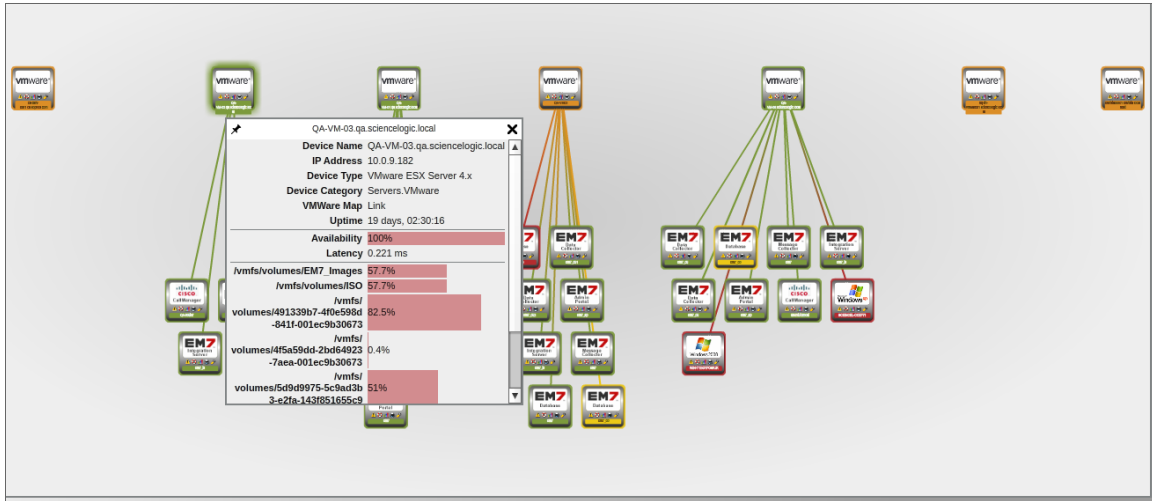
1. Go to the **Virtual Topology Map** page (Maps > Classic Maps > Other Views > Virtual Infrastructure). The virtual topology map displays:



- Each VMWare ESX Server is represented by an icon.
- Each "virtual machine" associated with the VMWare ESX Server is also displayed, each with its own icon.
- The blank field in the upper right allows you to find one or more devices in the map. You can enter a string, and SL1 will highlight only the devices that have a device name that matches the string.

NOTE: In some instances, SL1 will display a virtual machine in a map, yet the virtual machine has a question mark icon. This means that SL1 can see that the virtual machine exists based on information collected from the ESX server, but the virtual machine is not discovered as a device in SL1.

2. Mousing over a VMware ESX server or virtual machine displays the following information:



- **Device Name.** Name of the device in SL1.
- **IP Address.** IP address of the device.
- **Device Type.** Device class for the server.
- **Device Category.** Device category for the server.
- **Uptime.** Uptime of the server.
- **Availability.** Percent availability of the server.
- **Latency.** Latency of the sever.
- **CPU Usage.** CPU usage for the server.
- **Memory Usage.** Memory usage for the server.
- **Swap Usage.** Swap usage for the server.
- **Disk partitions and usage.** Displays each disk partition on the server and its current percent usage.
- **Recent Events.** The most recent events associated with the server.

Chapter

6

Classic Views

Overview

Classic Views allow you to view devices by device group, device organizations, and device categories. Unlike Device Maps, which show relationships between devices, Classic Views allow you to view device status and events associated with each device in a simplified, sortable grouping. Devices are grouped by the severity of event. An event is a message that is triggered when a specific condition is met. Events are color-coded, and can be one of the following: Healthy (green), Notice (blue), Minor (yellow), Major (orange), or Critical (red).

This chapter includes the following topics:

<i>Types of Classic Views</i>	41
<i>Viewing Classic Views</i>	42

Types of Classic Views

Classic Views are similar to Device Maps in that they show devices by device groups, devices by organization, and devices by category. Unlike Device Maps, Classic Views show only the status of a device and the most recent event associated with a device. Classic Views show you the following views:

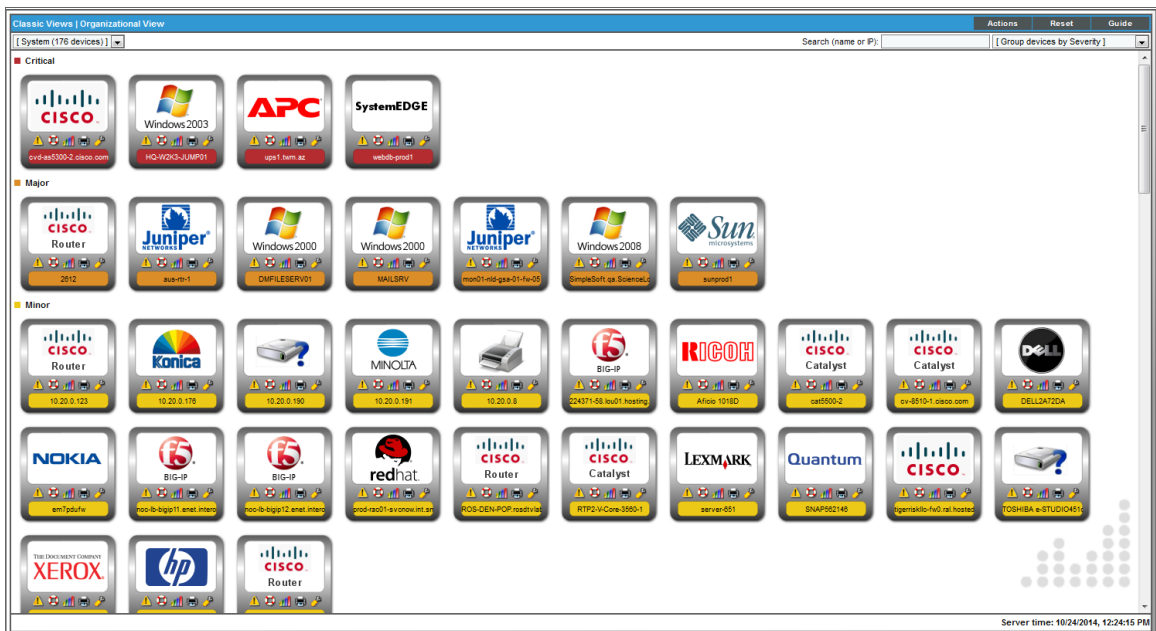
- **Device Group.** A device group is a user-defined group of devices. Device groups make it easy to configure and manage multiple devices. SL1 automatically updates the Device Group View as new devices are added to device groups and as new device groups are defined. SL1 also updates this view every five seconds with the latest status and event information.
- **Organizational View.** All devices, policies, events, tickets, and users in SL1 are associated with an organization. An organization is a group for managing elements and user accounts. An organization can be defined by geographic area, departments, types of devices, or any structure that works best for your needs. The minimum characteristics of an organization are:
 - A unique name
 - Users who are members of the organization
 - Elements, such as devices, associated with the organization
- **Device Categories.** A device category is a logical categorization of devices by primary function. SL1 uses device categories to group related devices in reports and views. Device categories are paired with device classes to organize and describe discovered devices. Device class usually describes the manufacturer. Device category describes the function of the hardware. For example, a device might have a device class of "Microsoft Windows 2000 Server" and a device category of "servers". You can view device category maps in the **Device Category Map** pages (Views > Device Maps > Categories).

Viewing Classic Views

You can view a classic view from the **Classic Views** section on the [Views] tab.

To view a classic view:

1. On the [Views] tab, go to the **Classic Views** section and select a classic view from the list.
2. Select a device group/organization/category from the drop-down list in the upper left of the page. You can also search and sort a device group/organization/category. Sorting and searching views are discussed later in this section. Each classic view will be displayed with the following parameters:



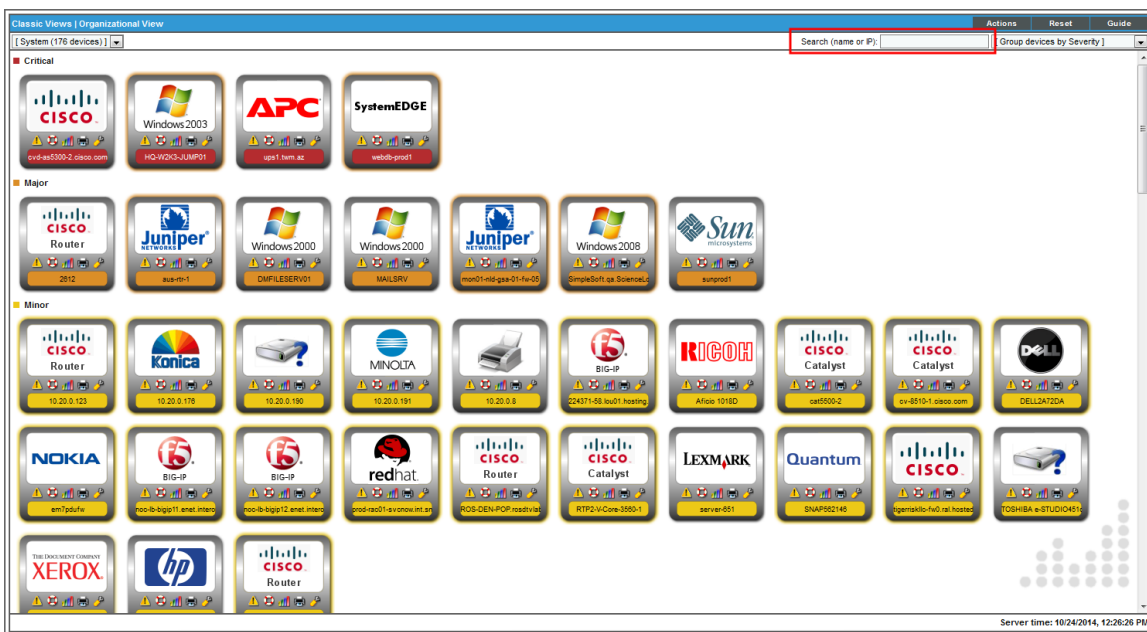
- Each device in the device group appears as an icon.
- Each icon is color coded, to represent the most severe event that is currently active for the device.
- Events that have occurred in the last minute create a border around the device icon and cause the border to flash once per second.
- Events that have occurred in the last five minutes create a border around the device icon and cause the border of the device icon to flash slowly.
- Events that occurred prior to the last five minutes do not create a border around the device icon. However, the device icon is still color-coded to reflect the device's event with the highest severity.
- If a device does not have an event associated with it, the event icon does not have a border. However, the device icon is still color-coded to reflect the device's status (usually green for "healthy").

- Initially, the page displays the last five minutes of device events over a time span of a few seconds. You might see the color of each icon change, and you might see the frequency at which the border flashes change. In the lower right corner, you will see the timestamp quickly cycle through the last five minutes.
 - The view automatically refreshes every five seconds. In the lower right corner, you will see the timestamp update. Based on the updated information, the device icons might move and/or the border around the device icons might change.
3. Each device has the following icons you can select: View events on a device (🚩); create a ticket about the device (📄); view the **Device Summary** page (📊); print a report about the device (🖨️); or view the **Device Properties** page (🔧).

Searching and Sorting a Classic View

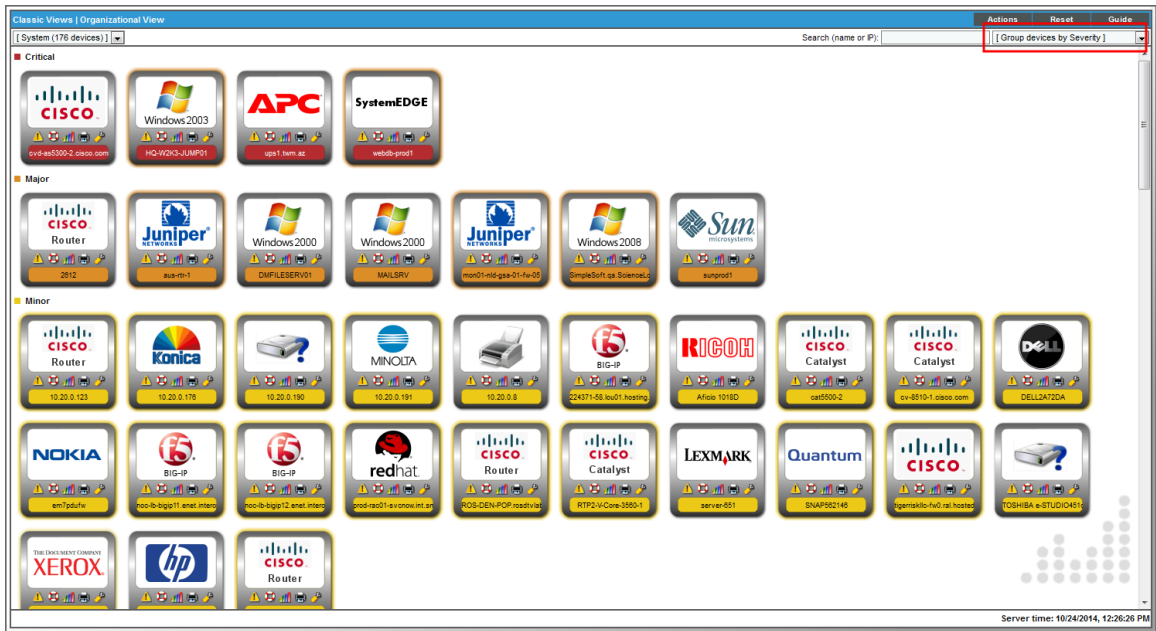
The **Classic Views** section include a search field in the upper right that allows you to search the currently displayed devices for a device name or a device IP.

This field is a find-while-you-type filter. As you type, the page is filtered to match the text in the **Search** field.



The **Classic Views** pages also include a **Group devices by** field in the upper right that allows you to sort the list of devices. You can sort by:

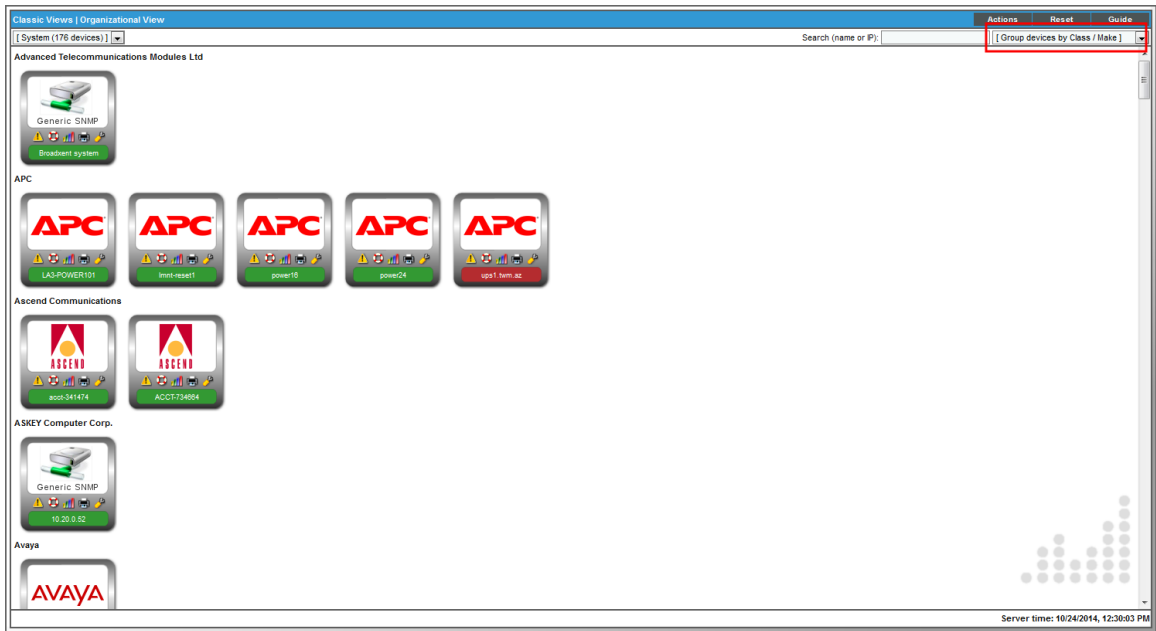
- **Group devices by Severity.** Groups devices by the severity of the device status, with highest severity first. Within each severity, orders by device name, in ascending alphabetical order.



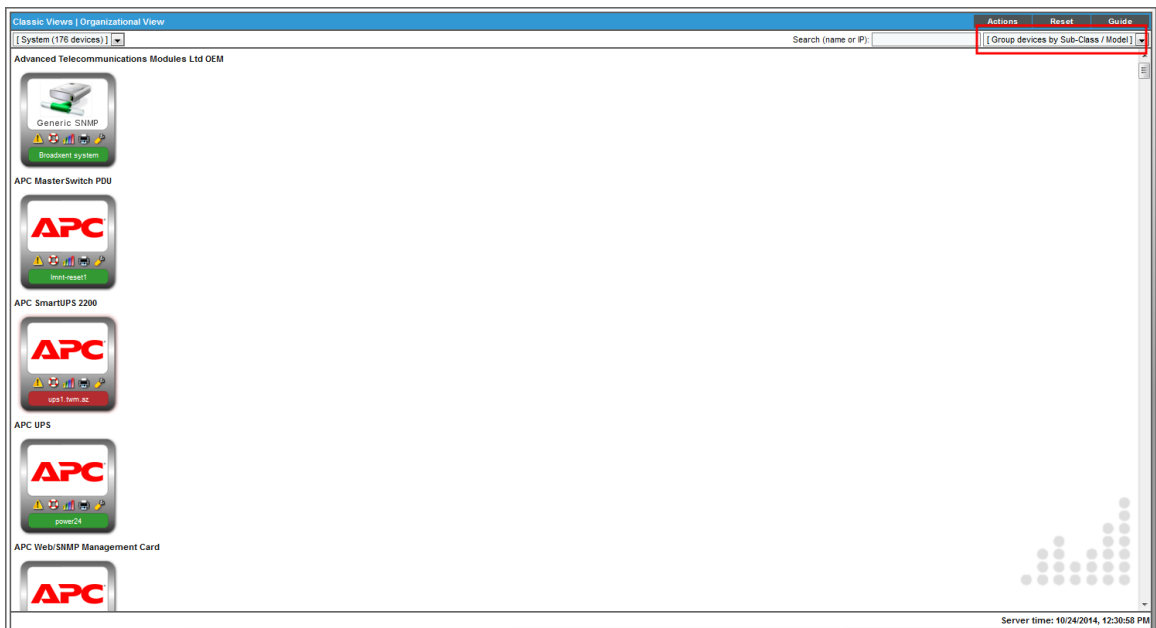
- **Group devices by Name.** Groups devices by name, in ascending alphabetical order.



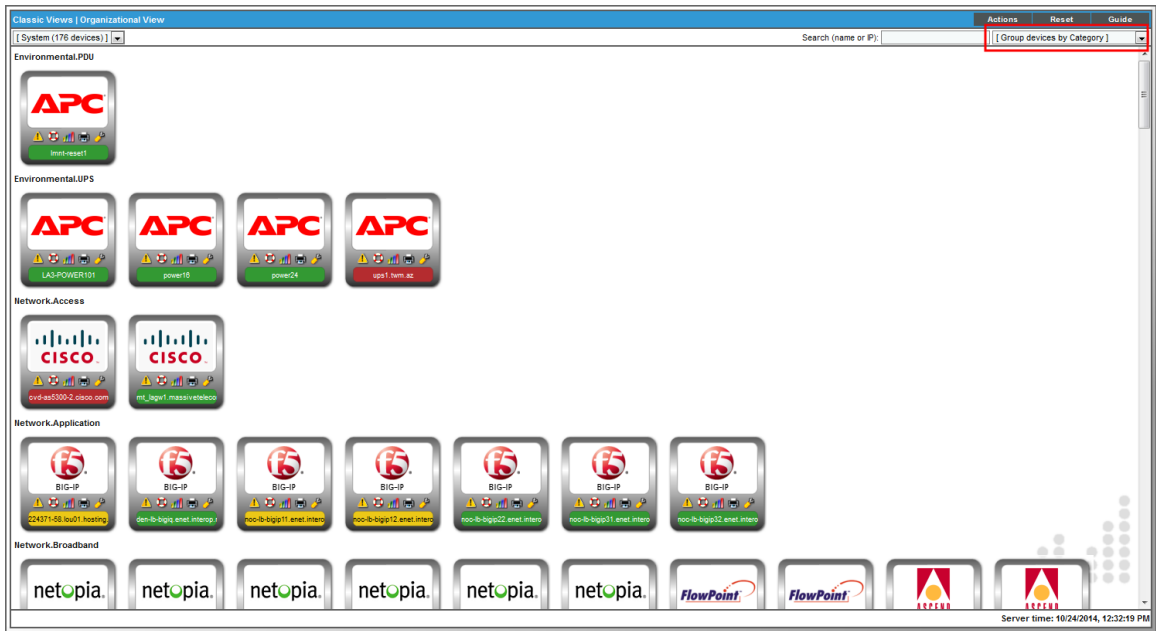
- **Group devices by Class/Make.** Groups devices by manufacturer, in ascending alphabetical order. Within each manufacturer, orders by device name, in ascending alphabetical order.



- **Group devices by Sub-Class/Model.** Groups devices by manufacturer and model, in ascending alphabetical order. Within each sub-class/model, orders by device name, in ascending alphabetical order.



- **Group devices by Category.** Groups devices by device category, in ascending alphabetical order. Within each device category, orders by device name, in ascending alphabetical order.



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