



Viewing Devices, Links, and Services in Maps

Vision client maps display a variety of information in a topological view, such as devices, physical and logical connections, network services, and so forth. Whenever you open a map, Prime Network refreshes the map information. How to create a map is described in [Workflow for Creating a Map, page 4-2](#). These topics describe how to use maps to get the information you need about your network:

- [Opening Maps, page 7-2](#)
- [Interpreting NE Icons, Badges, and Colors, page 7-4](#)
- [Zooming In and Out To Get More Details, page 7-6](#)
- [Viewing a Table of NEs and Their Properties \(List View\), page 7-7](#)
- [How to Find Entities Inside and Outside Of Maps, page 7-11](#)
- [Finding Out Which Maps Include an NE, page 7-14](#)
- [Viewing Very Large Maps Using an Overview Window, page 7-15](#)
- [Drilling Down Into NE Groups \(Aggregations\), page 7-16](#)
- [Finding Services Using Map Overlays, page 7-17](#)
- [Viewing and Managing Links, page 7-20](#)
- [Making Changes to the Device Appearance in the Map, page 7-32](#)
- [Adding and Removing NEs from Existing Maps, page 7-33](#)
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- [Closing Maps, Renaming Maps, and Other Map Operations, page 7-36](#)
- [Changing the Vision Client Default Behavior, page 7-37](#)

Opening Maps

You can work on a maximum of five maps at any given time. Like all Prime Network clients, the Vision client is password-protected. When you log in, client updates (if any) are automatically applied.


Note

You can change your password at anytime by choosing **Tools > Change User Password** from the main menu.

Step 1 Launch the Vision client.

If You Are Using Prime Network:	Launch the Vision client by choosing:
As part of suite	Assure > Prime Network > Vision from the REPLACE main menu bar
As a standalone application	http://gateway-ip:6080/ana/services/install/install/webstart.html Start > Programs > Cisco Prime Network > Cisco Prime Network Vision

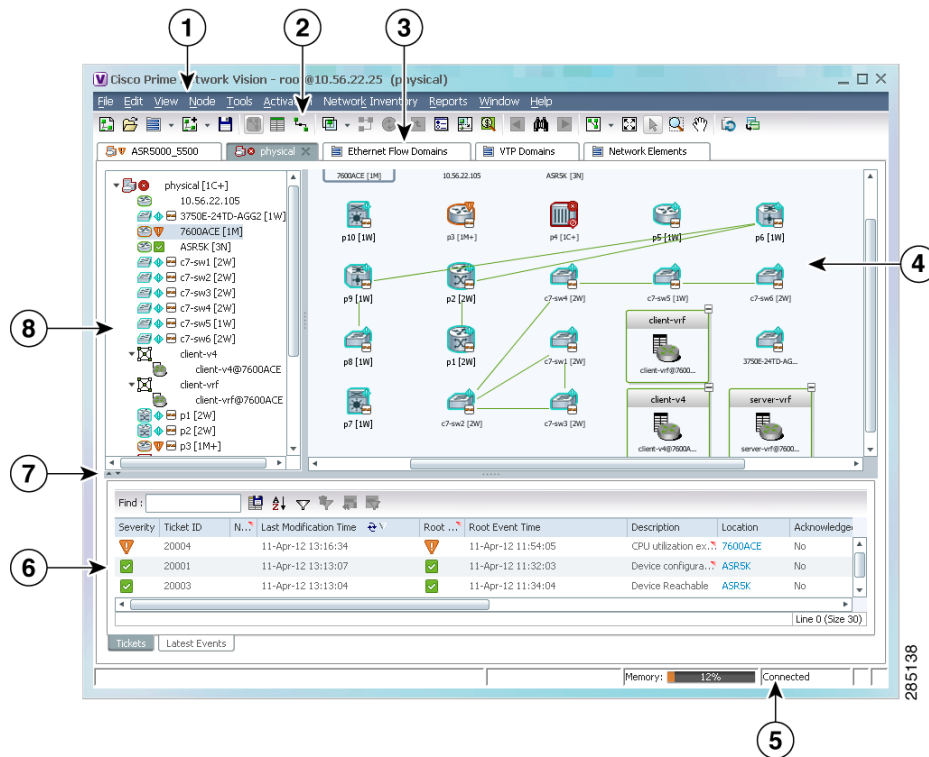
If you want the Vision client to prompt you to open the last map you used, you can configure it to do so as described in [Changing Vision Client Default Settings \(Sound, Display, Events Age\)](#), page 4-15.

Step 2 Select **File > Open Map** from the Vision client menu bar.

Step 3 Select a map and click **OK**.

[Figure 7-1](#) provides an overview of the Vision client with an open map, followed by a description of the map window.

Figure 7-1 Vision Client Window with Map View



1	Main menu—Opening, closing, and changing map layouts, launching CCM, online help and icon reference, etc.	5	Status bar (shows commands sent to gateway, memory used by client, and gateway connection status).
2	Toolbar—Map tools, overlays, links, filters, NE labels, and zoom controls.	6	Tickets and latest events related to all NEs in the map.
3	Tabs for active maps, lists of managed NEs, and views for Ethernet Flow and VTP Domains, and Compute Services.	7	Toggle for hiding/displaying ticket pane.
4	Content pane showing map view—Shows the map NEs and their relationships. Colors such as red and orange indicate problems on the NE. See Troubleshooting a Ticket , page 11-12.	8	Inventory window—Displays all NEs in the map. Double-clicking an NE opens the physical and logical inventory for the NE in the content pane.

Why You Cannot See Everything in a Map or Perform All Actions in a Map

What you can see and do in maps is determined by your user account settings. If you try to view an NE but you do not have the required permissions, the Vision client will display an error message.

- NEs—If you do not have permission to view an NE, it is displayed with a lock. The Vision client will also not display tickets for those NEs.
- Links—If one of a link's endpoints is outside your permissions, the link is greyed-out.

- Vision client choices—If you do not have permission to execute a menu choice, button, and so forth, they are greyed-out.

These guide also apply when you view an NE's physical or logical inventory, or perform any actions from the inventory windows. Permissions are described in [Permissions for Vision Client Maps](#), page B-2.

Saving a Changed Map Layout and Changing Map Display Defaults

When you close a map, Prime Network automatically saves most of your changes. If you made a change that Prime Network will not automatically save, the Vision client prompts you to manually save the map by clicking **Save Map Appearance** from the main toolbar.

You can also customize which items are displayed in maps, how items are displayed in maps, whether to use audio sounds, and when to remove NE tickets and events from the map. To change these settings, choose **Tools > Options** from the Vision client main menu. For more information, see [Changing Vision Client Default Settings \(Sound, Display, Events Age\)](#), page 4-15.

Interpreting NE Icons, Badges, and Colors










Tip

To view an icon reference, choose **Help > Icon Reference** from the main menu.






Are There Problems That No One Is Aware of?

The Vision client conveys critical information using colors and alarm badges. These can indicate a problem, its severity, and whether anyone is aware of the problem.

Alarm Badge	Color	Severity
	Red	Critical
	Orange	Major
	Yellow	Minor
	Light Blue	Warning
	Medium Blue	Information

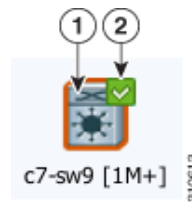
Alarm Badge	Color	Severity
	Dark blue	Indeterminate
	Green	Cleared, Normal, or OK

These examples show how an NE with a major ticket is displayed, depending on where you are in the Vision client.

Value	Navigation Pane	Map	Ticket Pane				
Element with ticket of Major severity			<table border="1"> <thead> <tr> <th>Severity</th> <th>Ticket ID</th> </tr> </thead> <tbody> <tr> <td></td> <td>520030</td> </tr> </tbody> </table>	Severity	Ticket ID		520030
Severity	Ticket ID						
	520030						

The alarm badge is displayed on top of a managed NE icon. In [Figure 7-2](#) the NE icon is for a Cisco MDS device.

Figure 7-2 What NE Icon Badges Signify

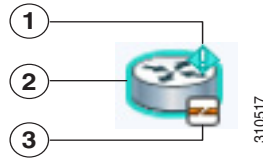


	Description	What this example shows:	Conclusion:
1	Network element icon and color: <ul style="list-style-type: none"> Icon represents NE type Color represents NE's most serious ticket that has <i>not been cleared</i> (<i>cleared</i> means it is no longer a problem) 	NE is a Cisco MDS device. Orange means the NE has at least one <i>uncleared</i> ticket, and its severity is Major.	The NE still has a Major uncleared ticket.
2	Color represents NE's most serious ticket that is <i>unacknowledged</i> (<i>acknowledged</i> means someone is aware of the problem)	Green means the NE has no <i>unacknowledged</i> tickets.	Someone is aware of the NE's Major uncleared ticket.

Is The Device Working Properly?

A badge displayed at the bottom right of the icon signals a reachability problem between Prime Network and the device, as shown in [Figure 7-3](#).

Figure 7-3 Element with Overlay Badges



	Description	What this example shows:	Conclusion:
1	Color represents NE's most serious ticket that is <i>unacknowledged</i>	Light blue means the NE still at least one <i>unacknowledged ticket</i> , and its severity is Warning.	No one is aware of the NE's uncleared Warning ticket.
2	Network element icon and color: <ul style="list-style-type: none"> Icon represents NE type Color represents NE's most serious ticket that has <i>not been cleared</i> (that is, the problem no longer exists) 	NE is a Cisco 7600 router. Light blue means the NE still at least one <i>uncleared ticket</i> , and its severity is Warning.	The NE still has an uncleared Warning ticket.
3	Icon represents the state of the device	The Cisco 7600 router is only partially reachable.	There may be a communication problem between Prime Network and the 7600 router.

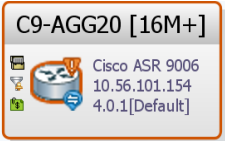
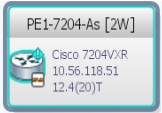
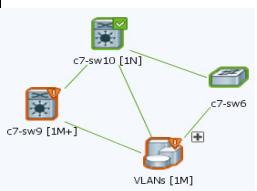

A complete list of all NE icons, severity icons, and device reachability icons is provided in [Icon Reference, page A-1](#). For information on how to respond to NE tickets, see [Managing Tickets with the Vision Client, page 11-1](#).

Zooming In and Out To Get More Details

Use these menu choices to manipulate a map:

From Vision Client Main Menu	To do the following
View > Zoom In	Zoom in on the map
View > Zoom Selection	Select an area in a map to zoom in on by clicking and dragging
View > Fit In Window	Fit the entire map in the display area
View > Pan	Move around in a map by clicking and dragging
View > Zoom Out	Zoom out of the map.

As you zoom in, the Vision client displays more NE detail. As you zoom out, the Vision client displays the NE's topological relationships, as shown in the following examples.

Huge	Large	Normal	Tiny (Overview)
			

Viewing a Table of NEs and Their Properties (List View)

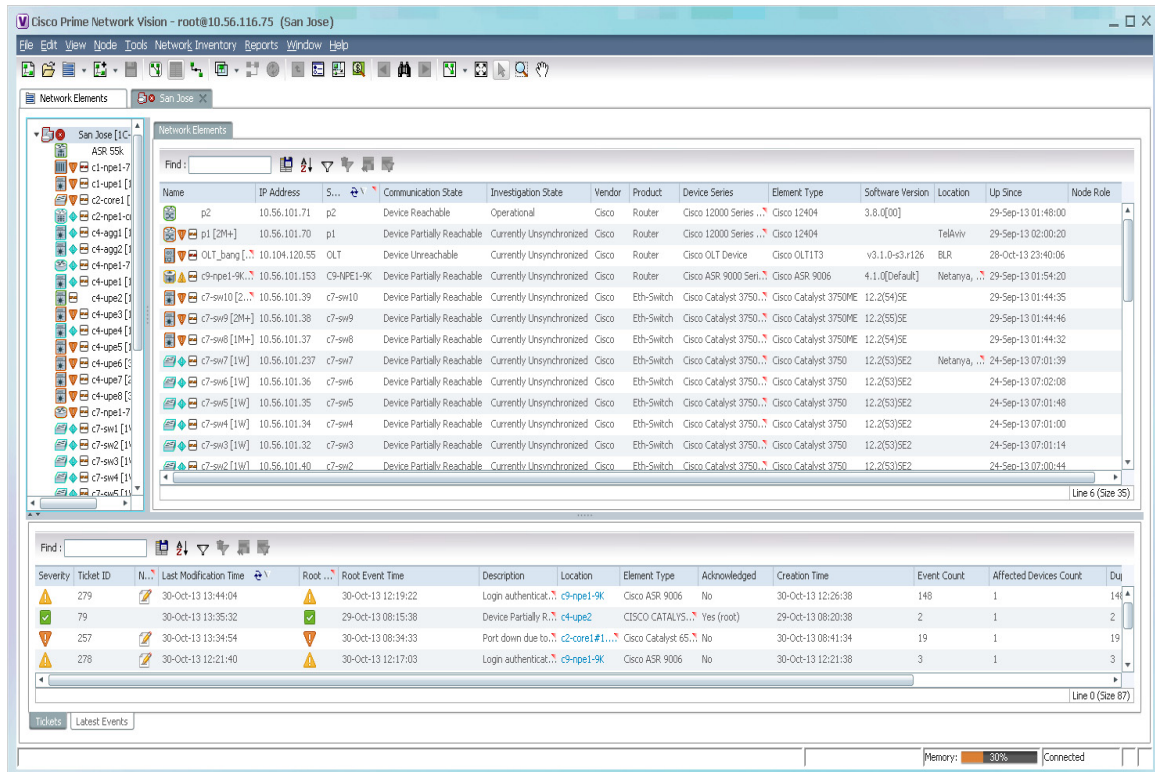
To get a quick look at the properties of devices in a map, change to a list view by clicking **Show List View** from the Vision client toolbar. This view provides a table of all NEs with details about IP addresses, the device model and software image it is running, how long it has been up, and virtualization information.



Note



If a cell's contents do not fit in the table, hover your mouse cursor over the table cell.

Figure 7-4 Vision Client Window with List View



The Network Elements tab lists all NEs in the map which you have permission to view. If you do not have permission to view a map's NE, it is listed under the Restricted Elements tab and displayed with a lock icon. From here you can perform the following operations:

To perform this table operation:	Click this toolbar button from List View:	Button Name
Searches for the string you enter		Find
Exports the selected information to a CSV file		Export to CSV
Arrange existing data according to sort operations that you specify (see Sorting Tables, page 7-9)		Sort Table Values
Only display information that matches the filter (see Filtering Tables, page 7-10)		Filter
Clear the existing filter		Clear Filter

To perform this table operation:	Click this toolbar button from List View:	Button Name
Display all table rows that meet the current filtering criteria		Show All Rows
Display only selected table rows		Show Only Selected Rows

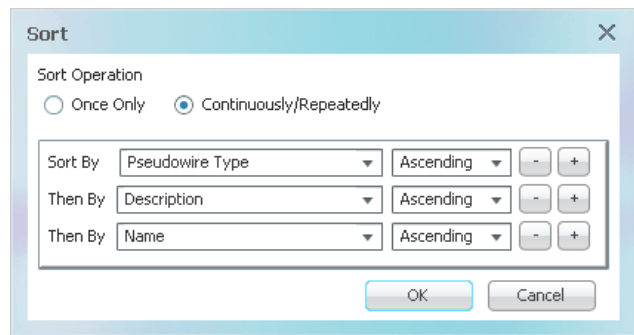
These topics explain how to sort and filter tabular information.

Sorting Tables

Sorting a table lets you arrange existing data in various ways, while filtering a table only displays the information that matches the filter.

Step 1 In the table toolbar, click **Sort Table Values**. The Sort dialog box is displayed.

Figure 7-5 Sort Dialog Box



Step 2 In the Sort Operation field, specify the frequency of the sort operation:

- **Only Once**—Sorts the information in the table only once according to the specified criteria. When this option is selected, newly added rows will always be listed at the bottom of the table, regardless of their sort criteria value. Also, if an existing row's value changes, the row will remain where it is.
- **Continuously/Repeatedly**—Sorts the information in the table continuously according to the specified criteria.

If you select this option, the  icon is displayed next to the selected column heading.

Step 3 In the Sort By field, specify the first sort criterion:

- In the first drop-down list, choose the column to use for the first sort criterion.
- In the second drop-down list, choose **Ascending** or **Descending** to indicate the sort order.

Step 4 Add and adjust the criteria as needed, and click **OK**. The table data is sorted.

Filtering Tables

Use filters for tables that contain many entries. You cannot apply a filter until the table has loaded; for tables with many entries, this can take a while. Once the entries are populated, the filter tool becomes available.

You can check whether a filter is applied by hovering your mouse cursor over the filter button.

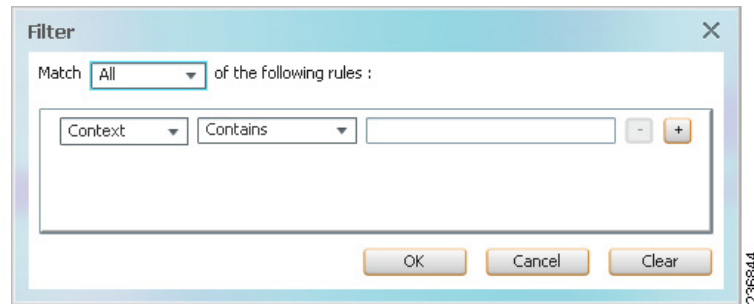


Note

These operations are performed from the table of NEs in a List View. These filters are different from filters that can be configured, saved, and used at a later time. For information on those filters, see [Viewing Tickets and Latest Events for All Devices in a Map, page 11-3](#)

Step 1 In table toolbar, click **Filter**. The Filter dialog is shown in [Figure 7-6](#).

Figure 7-6 Table Filter Dialog Box



Step 2 In the Match drop-down list, choose **All** or **Any**.


Step 3 For each criterion, specify the following:

- a. In the first drop-down list, choose the primary match category (the drop-down list contains all table columns).
- b. In the second drop-down list, choose a rule.
- c. In the third field, choose from the available values, or enter text (using a drop-down list or free text).



Tip

You can use the “Greater than” or “Less than” rule with a string for filtering. For example, if you want to include all interfaces above Ethernet0/0/3, you can select **Greater than** and enter the string **Ethernet0/0/3** to view interfaces Ethernet0/0/4, Ethernet0/0/5, and so on.

Step 4 Click  to add another criterion.

Step 5 Add and adjust the criteria, then click **OK**. The table data is displayed using the defined filter.

How to Find Entities Inside and Outside Of Maps

The Vision client provides a variety of ways to locate the NEs, technologies, and services you are interested in by using search, filters, business tags, and overlays. If you do not have sufficient permissions to view an NE, it is displayed with a lock icon. If you try to view the NE details, the Vision client displays a warning message.

To search for:	See this section or use this method:
NEs by name or IP address	Finding NEs Using Basic NE Information (Name, Vendor, IP address) , page 7-12
NEs by vendor	
NEs by model number (12404) or device type (router)	
NEs by device series (Catalyst, Nexus, 3750)	Finding NEs Using Advanced Filters , page 7-12
NEs by software version	
NEs with tickets of certain severities	
NEs with unacknowledged tickets	
NEs by connectivity state (down, up	
NEs with Data Center virtual devices and associated virtual machines	
NEs with Data Center associated compute servers	
NEs affected by a ticket	Right-click ticket and choose Find Affected Elements
NEs by their label (customer or subscriber names, provider connections)	Finding NEs By Searching for NE Labels, Subscribers, and Provider Connections , page 7-13
NEs in current map, using a search string	Edit > Find in Map
Maps that contain specified NEs	Right-click the NE and choose Open Relevant Maps
Link types: Data links, physical links, VPN links	Using Link Filters to Find Links , page 7-21
Links by their level	Table 7-1 on page 7-25
Ethernet Flow Domains	Network Inventory > Ethernet Flow Domains from Vision client main menu
VTP Domains	Network Inventory > VTP Domains from Vision client main menu
Services: Ethernet, MPLS-TP tunnels, network clock, pseudowire, VLAN, VPLS, VPNs	Finding Services Using Map Overlays , page 7-17
Network TP tunnels	Click Show List View , then click TP Tunnels tab

Finding NEs Using Basic NE Information (Name, Vendor, IP address)

Use this method when you have a large number of NEs to find the NEs that match your criteria.



Note

You do not have to clear the results to start a new search. The Vision client always starts the search using all managed NEs.

- Step 1** From the Vision client, click the Network Elements tab.
- Step 2** Click **Search**.
- Step 3** Enter the search criteria. It is not case sensitive, and you can enter fragments.

Criteria	Examples	Example Search Strings
Element type—NE model	Cisco 12404	12404, 124, 12
IP address	198.51.100.1	198, 51, 198.51
Name—Name assigned when NE was added using the Administration client	c7-sw6	c7, sw, c7-
Product—NE family	Eth-switch	Eth, switch
System name—Name from NE MIB	p1	p1, p, 1
Vendor	Cisco	cisco, cisc, Cis

Click **Go**. The Vision client lists all devices that match your criteria, and which you have permission to view.



To start a search using different criteria, you do not have to clear the results. Just select your new choice from the drop-down list and enter your criteria.

- Step 4** To open the NE's inventory, double-click the NE from the list.

Finding NEs Using Advanced Filters

Use this method to search for NEs by advanced criteria, such as communication state, ticket severity, and similar detailed criteria. Some of the criteria provide drop-down lists for choices.

These filter buttons are listed above the table of NEs.

	<p>Filter—Turn on filter.</p> <p>If a filter is currently applied to the table contents, hover over this button to display the filter rules (such as 'Name' Contains Cisco).</p>
	<p>Clear Filter—Turn off filter and revert to original list.</p> <p>If this button is enabled, a filter is currently applied to the table contents.</p>

- Step 1** From the Vision client, click the Network Elements tab.
- Step 2** Click **Show All**. (Depending on the number of NEs, the table may require a few minutes to load.) Devices that you do not have permission to view are displayed with a lock.

Step 3 Click the **Filter** button and enter the search criteria using the logical operators to create rules.

Criteria	Example Search Strings
Severity	N/a; drop-down list
Unacknowledged	
Device communication state	
Device investigation state	
Vendor	
Product	
Device software versions	12.2, SG2, 3.8
Device series	Nexus, Catalyst, CRS, 3750
Location	Bangalore, Bang, Jose, San Jose, San
Up Since (dd-mm-yyyy)	3-May, 2013, Aug
Node role	primary, standby, secondary

Step 4 Click **OK**. To start a search using different criteria, clear the results by clicking the **Clear Filter** button.

Step 5 To open the NE's inventory, double-click the NE from the list.

Finding NEs By Searching for NE Labels, Subscribers, and Provider Connections

A *business tag* is a string that is meaningful to the business, and which can be used to label a component of a network element for use in Prime Network screens and reports. Business tags allow you to label NEs in the manner that best fits your deployment.

Business tags are normally applied to *business elements*, which are constructions or organizations of certain network elements and their properties into a logical entities (for example, Layer 2 VPNs, Layer 3 VPNs, and virtual routers).

To search for a business tag:

Step 1 Choose **Edit > Find Business Tag** from the main menu.

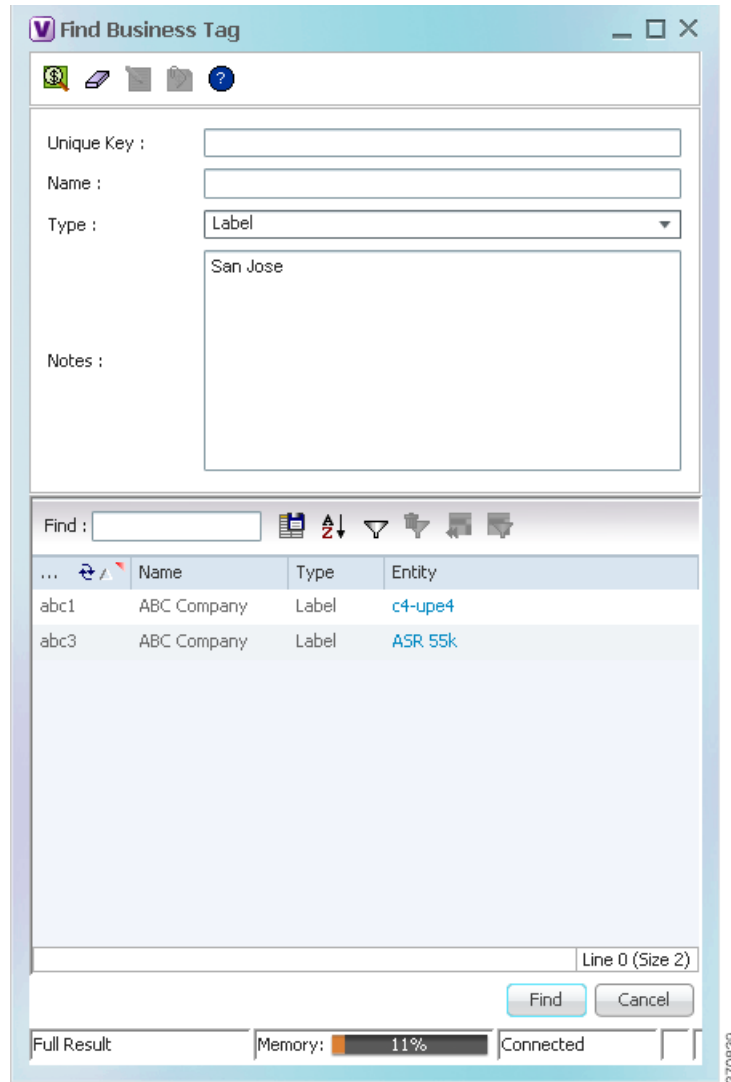
Step 2 In the Find Business Tag dialog box, enter the search criteria.

These are some examples of the criteria you can enter:

Field	Enter:	Vision client will search for NEs with business tags that:
Unique Key	Letter or number string	Have a unique key that contain the string
Name		Have a business tag name that contains the string
Notes		Have notes that contain the string
Type	From drop-down list	Have a business tag of that type (Label, Subscriber, Provider Connection, All types)

Step 3 Click **Find Business Tag**. [Figure 7-7](#) shows the results of a search for any label type business tags with notes that contain the string **San Jose**.

Figure 7-7 Find Business Tag Dialog Box With Results



Double-click the entity hyperlink to open the NE's inventory window. If the results display an NE with a lock icon, it means you do not have sufficient permissions to view it.

Finding Out Which Maps Include an NE

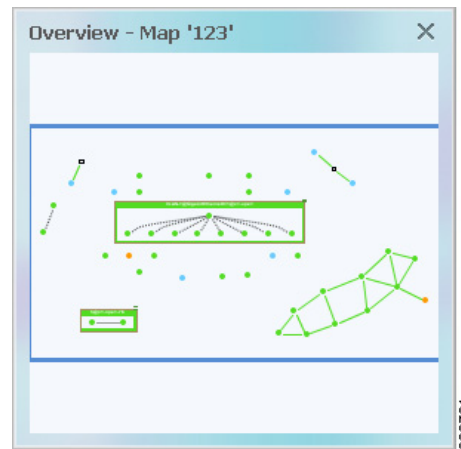
If you have a problematic NE, you may want know all other maps that include the NE to get an overall view of the impact of the NE's ticket. To find out which maps include a specified NE, right-click the NE in a map and choose **Open Relevant Maps**. The Vision client will display the Open Map dialog box with a list of all maps that include the selected element. From there, you can open the maps in which you are interested.

Viewing Very Large Maps Using an Overview Window

The Overview window provides a condensed view of all elements in a map. This is especially useful for large maps.

- Step 1** To open the Overview window, choose **View > Overview** from the main menu. Figure 7-8 shows an example of the Overview window. If you do not have permission to view an NE, it is displayed with a lock icon or greyed-out.

Figure 7-8 Overview Window



Note To view an icon reference, choose **Help > Icon Reference** from the main menu.

Dots represent elements, 5.1 indicate links, and the blue rectangle represents the current selection area. In other words, when you open the map named 123, it displays all of the items inside the blue rectangle.

- Step 2** To change the overview:
- Click inside the blue window and drag the rectangle to the desired map area.
 - Use the corner handles to resize the selection area.

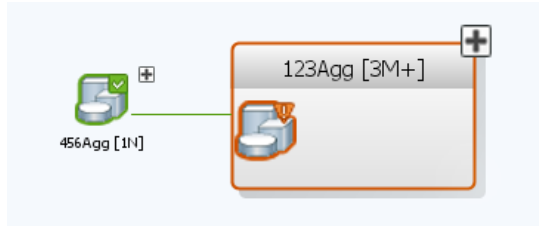
Drilling Down Into NE Groups (Aggregations)



Tip

To view an icon reference, choose **Help > Icon Reference** from the main menu.

Aggregations are groups of NEs. An aggregation can contain network elements, services, and other aggregations. Aggregations are displayed as a single entity, as shown in the following figure.



If you cannot create an aggregation, it is because you do not have a sufficient user access level, or you do not have permission to manage the NE.

To view an aggregation's contents, expand (open) it by right-clicking the aggregation and choosing **Show Thumbnail**. A thumbnail is an aggregation that has been opened. The Vision client will adjust the location of other NEs in the map so you can view the thumbnail contents, and then move them back when you close the thumbnail. As you traverse an aggregation, you will need to know the meaning of these terms:

- The aggregation *parent* is the next level up.
- The aggregation *root* is the map that contains the aggregation.

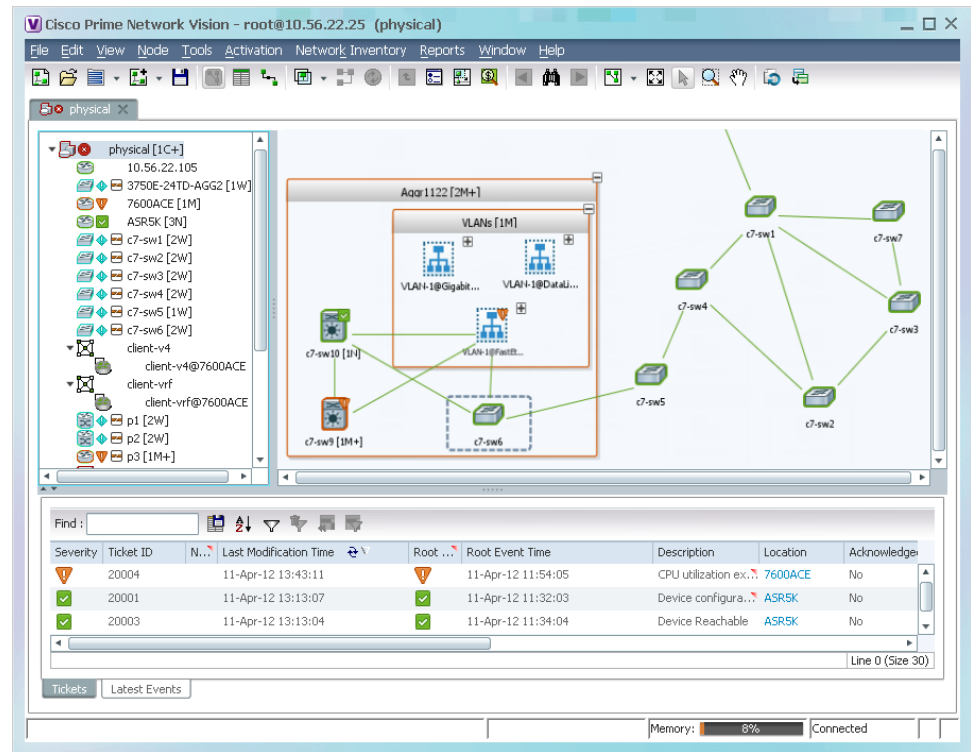
Figure 7-9 provides an example of two aggregation thumbnails—**Aggr1122** and **VLANs**. In this example, the Aggr1122 aggregation contains the VLANs aggregation. The dashed gray border around c7-sw6 indicates that c7-sw6 resides inside the **Aggr1122** thumbnail but not at the current map level.



Note

Multi-chassis devices are also displayed as aggregations.

Figure 7-9 Aggregation Thumbnails



This table lists the ways to move between aggregations and parent maps.

If you want to...	Do this...
View and drill into only the aggregation (not other NEs in the map)	Double-click the <i>thumbnail frame</i> (or the aggregation itself, if it is closed)
From an aggregation, go up one level (parent level)	Double-click the <i>inner level background</i>
Open and close thumbnail	Click the plus/minus sign at the top right of the aggregation

Finding Services Using Map Overlays

When you apply an overlay to a map, you can isolate the parts of a network that are being used by a specific service such as VPLS, network pseudowire, MPLS-TP tunnels, and so forth. Prime Network models and manages many more technologies and services which you can view from a device's inventory window. Those technologies and services are described in other topics in this guide.

Applying a Map Service Overlay

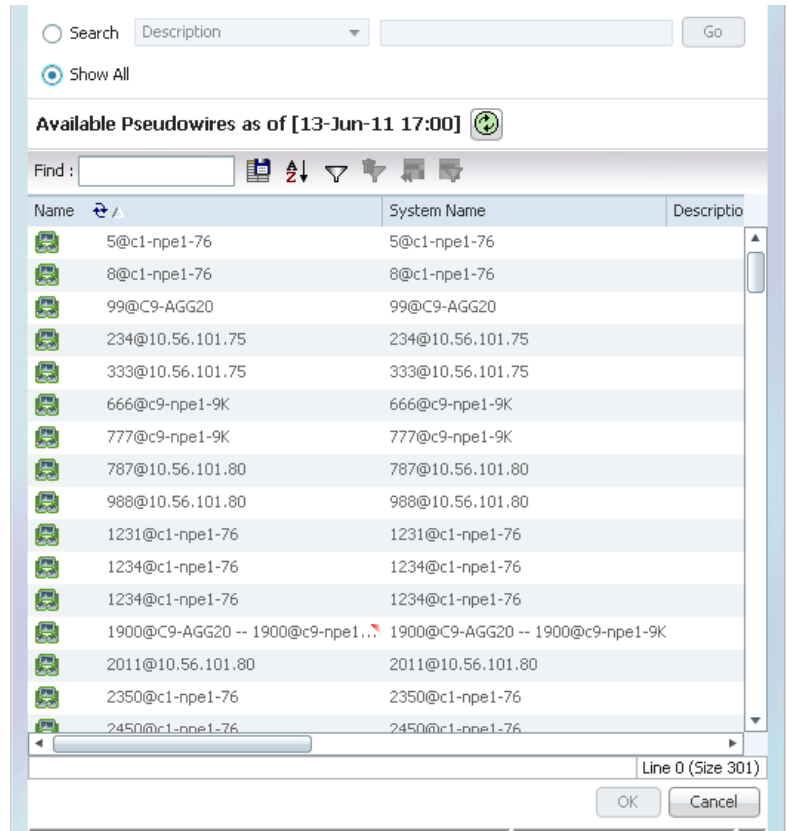
- Step 1** From the map toolbar, choose **Choose Overlay Type** > *overlay-type*, where *overlay-type* is one of the following.

Overlay Option	Search Criteria
Ethernet Service	EVC Terminating EFPs, ethernet service name, system name. See Applying Ethernet Service Overlays, page 18-126 .
MPLS-TP Tunnel	Description, MPLS-TP tunnel name, system name. See Applying an MPLS-TP Tunnel Overlay, page 17-17 .
Network Clock	Name. See Applying a Network Clock Service Overlay, page 26-48 .
Pseudowire	Description, Is Multisegment Pseudowire, pseudowire name, pseudowire role, pseudowire type, system name. See Applying Pseudowire Overlays, page 18-115 .
VLAN	EFD name, EFD system name, VLAN ID, VLAN name, system name. See Displaying VLANs By Applying VLAN Overlays to a Map, page 18-77 ; Viewing REP Information in VLAN Domain Views and VLAN Overlays, page 18-80 ; and Viewing STP Information in VLAN Domain Views and VLAN Overlays, page 18-83 .
VPLS	Name, system-defined name, VPN ID. See Applying VPLS Instance Overlays, page 18-98 and Viewing Pseudowire Tunnel Links in VPLS Overlays, page 18-99 .
VPN	Description, VPN name. See Applying VPN Overlays, page 17-25 .

The dialog box also displays the date and time at which the list was generated. To update the list, click **Refresh**.

- Step 2** Select the overlay that you want to apply to the map. [Figure 7-10](#) shows an example of the Select Pseudowire Overlay dialog box.

Figure 7-10 Select Pseudowire Overlay Dialog Box



Step 3 In the Select Overlay dialog box, do either of the following:

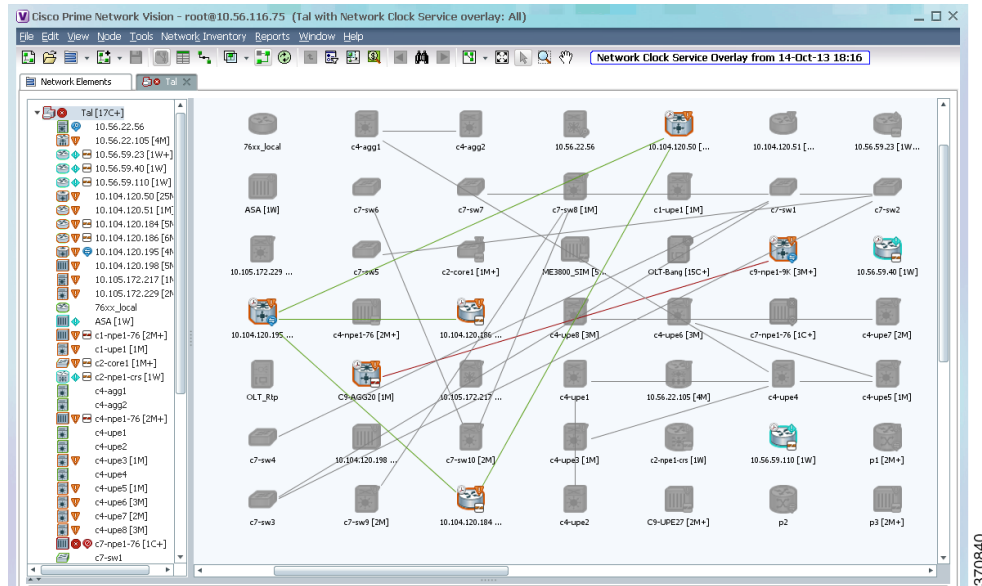
- Choose **Show All** to list all overlays of that service type.
- Choose **Search** to find the service using the following criteria. (Search strings are case-sensitive.)

Step 4 Click **OK**, and the elements and links that are used by the overlay are displayed in the map, and the overlay name and date are displayed in the toolbar.



Note The overlay is a snapshot taken at a specific point in time. To update the overlay, click **Refresh Overlay** in the toolbar.

Figure 7-11 Clock Service Overlay Example



Hiding and Removing Service Overlays from a Map

To temporarily hide an overlay or remove it completely:

- Temporarily hide a map overlay by clicking **Hide Overlay/Show Overlay** in the toolbar. The button toggles depending on whether the overlay is currently displayed or hidden.
- Delete an overlay from the map by choosing **Choose Overlay Type > None**.

Viewing and Managing Links

Links are the physical and logical connections that exist between elements in the network. You can get link property information for links that are:



- Between two devices.
- Between a device (Device A) and an aggregation, where a device inside the aggregation is connected to Device A.
- Between two aggregations that contain devices that cross the aggregations.

In Vision client maps, a single link can actually represent multiple links—for example, a physical ethernet link and an MPLS link. Drill down into the link to get this information. These topics explain how to manage links using the Vision client:

- [Using Link Filters to Find Links, page 7-21](#)
- [Interpreting Link Colors, Widths, and Symbols, page 7-21](#)
- [Viewing Link Details, page 7-22](#)
- [Checking the Impact of Link Problems \(Impact Analysis\), page 7-27](#)
- [Managing Missing Links \(Static Links\), page 7-29](#)

Using Link Filters to Find Links

Use a link filter when you want to locate specific link types, such as physical links, VPN links, data links, and so forth. Sometimes it may not be clear if a link filter is already applied to a map. To verify whether a map is using a link filter, check the map toolbar.

	A link filter is applied to the map. To clear the filter, click this icon and choose None from the Group drop-down list.
	A link filter is not applied. To apply a link filter, see Using Link Filters to Find Links, page 7-21 .

To create a link filter:

- Step 1** Click **Link Filter** in the main toolbar.
- Step 2** Select the specific links you want to view, or select a links group from the drop-down list.



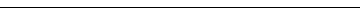
To display these links:	Choose
Data links (ATM, Frame Relay)	Data
Physical layer links	Physical
VPN links (GRE, Pseudowire, VPN, VPN IPv6)	VPN
Link types that you want to choose (your choices will be saved for the next time you open the link filter)	Custom
All links	All



- Step 3** Click **Apply** and **OK**. If any links are grey, it means you do not have sufficient permissions to view them. By default, the Vision client only displays a link if you have permission to view both of the link's end points.
- If you want to remove the filter later (and show all links), repeat the previous steps but choose **All** from the group drop-down list.
- Step 4** To interpret the information displayed by the Vision client, see [Viewing Link Information Displayed at the Map Level \(Tool Tips and Quick View\), page 7-23](#).

Interpreting Link Colors, Widths, and Symbols

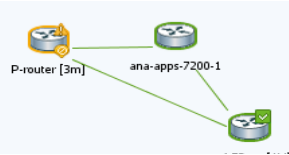
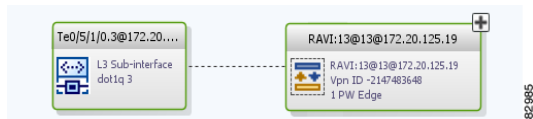
The following tables provide keys for understanding the link information displayed by the Vision client.

Link Colors:



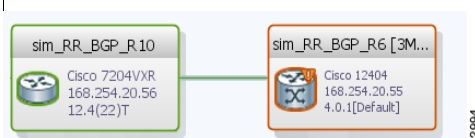
Link has a critical alarm	Red	
Link has a major alarm	Orange	
Link has a minor alarm	Yellow	

Link is operating normally	Green	
Link is selected	Blue	

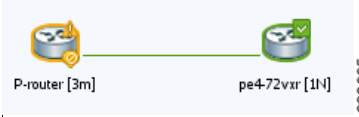
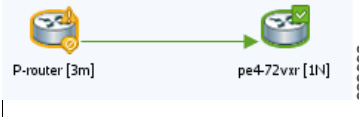
Solid or Dashed Link 5.1

Physical, topological, or service link, such as a link between two devices.	Solid line	
Association or <i>business link</i> between such elements as EVCs, VPLS service instances, or VPN components.	Dashed line	

Link Widths

Link represents multiple links of the same group (business, GRE, MPLS-TP, Pseudowire, VLAN, all others)	Normal width	
Line represents an <i>aggregated link</i> that contain links of different groups. Use high zoom level to view aggregated links.	Wide width	
Line represents a tunnel, with the center color representing the severity of any alarms on the link.	Tunnel	

Arrowheads

Bidirectional link	No arrowhead	
Unidirectional link, with the flow in the direction of the arrowhead	Arrowhead	

Viewing Link Details

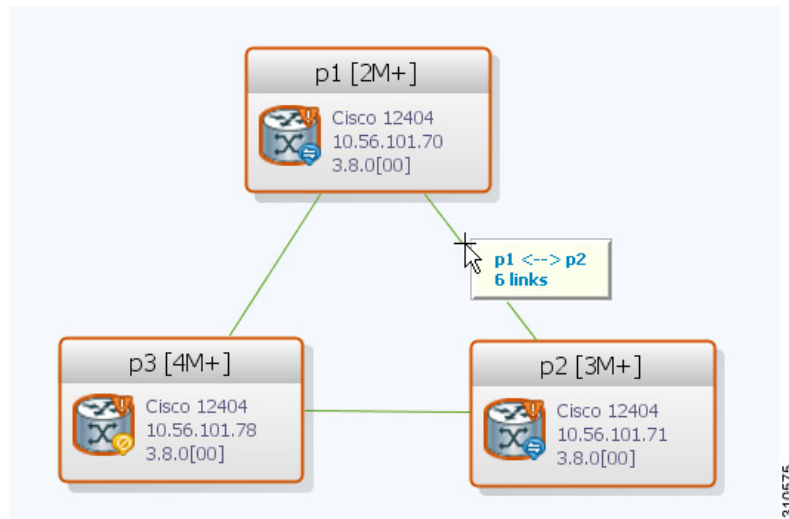
These topics explain how to traverse from the map level down to the link property details:

- [Viewing Link Information Displayed at the Map Level \(Tool Tips and Quick View\)](#), page 7-23
- [View Links at Different Levels in Aggregations and Maps \(Links View\)](#), page 7-24
- [Viewing Link Status and Detailed Link Properties](#), page 7-25

Viewing Link Information Displayed at the Map Level (Tool Tips and Quick View)

To view the link count and end points, hover your mouse cursor over the link to display the link tool tip, as shown in the following figure.

Figure 7-12 Vision Client Window with Link Tooltip



To display the link quick view, click the tooltip.

Figure 7-13 Link Quick View Example

The link quick view in [Figure 7-13](#) provides the following information.

1	Number of links represented by the single link in the map (in this example, 27 links).
2	Link endpoints.
3	List of all links represented by the link, including the link type, detail, and alarm status (color). This example shows 3 pseudowire links and one physical link.
4	Hyperlink to the link properties window. The Properties button is available for physical, topographical, and service links, but is not available for business links (dashed links). See Viewing Link Status and Detailed Link Properties, page 7-25 .

View Links at Different Levels in Aggregations and Maps (Links View)

You can launch a links view from a map or from an aggregation thumbnail. When you open the links view, it shows links at the current level and for all nested aggregations (all links must have both endpoints in the map or aggregation).

To open a links view, click **Show Links View** from the main toolbar. [Figure 7-14](#) shows an example of the links view launched from a map view.



Note

If some links are missing, your map may be using a link filter. To clear a link filter, click **Link Filter**, choose **All** from the group drop-down box (to display all links), and click **Apply** and **OK**.

Figure 7-14 Links View

Context	Severity	A End-Point	Bi Directional	Z End-Point	Link Type
h [197M+]		c9-npe1-9K#0:GigabitEthernet0/0/0/0	true	C9-AGG20#0:GigabitEthernet0/0/0/0	Ethernet
h [197M+]		c9-npe1-9K#0:TenGigE0/0/0/0	true	C9-AGG20#0:TenGigE0/0/0/0	Ethernet
h [197M+]		c9-npe1-9K#0:GigabitEthernet0/0/0/2	true	C9-AGG20#0:GigabitEthernet0/0/0/2	Ethernet
h [197M+]		c9-npe1-9K#Aggregation Group 20	true	C9-AGG20#Aggregation Group 20	LAG
h [197M+]		p1 IP:GigabitEthernet0/3/0/9	true	c9-npe1-9K IP:GigabitEthernet0/0/0/14	MPLS
h [197M+]		c9-npe1-9K IP:Bundle-Ether20	true	C9-AGG20 IP:Bundle-Ether20	MPLS
h [197M+]		p2 IP:Bundle-Ether10	true	c9-npe1-9K IP:Bundle-Ether10	MPLS
h [197M+]		c9-npe1-9K#0:GigabitEthernet0/0/0/1	true	C9-AGG20#0:GigabitEthernet0/0/0/1	Physical Layer
h [197M+]		c9-npe1-9K#0:GigabitEthernet0/0/0/0	true	C9-AGG20#0:GigabitEthernet0/0/0/0	Physical Layer
h [197M+]		p2#3.1:GigabitEthernet0/3/1/2	true	c9-npe1-9K#0:GigabitEthernet0/0/0/11	Physical Layer
h [197M+]		c9-npe1-9K#0:GigabitEthernet0/0/0/5	true	C9-LPE27#1:GigabitEthernet1/0/3	Physical Layer
h [197M+]		p2#3.1:GigabitEthernet0/3/1/3	true	c9-npe1-9K#0:GigabitEthernet0/0/0/12	Physical Layer
h [197M+]		C9-AGG20#0:GigabitEthernet0/0/0/5	true	C9-LPE27#1:GigabitEthernet1/0/4	Physical Layer
h [197M+]		c9-npe1-9K#0:TenGigE0/0/0/0	true	C9-AGG20#0:TenGigE0/0/0/0	Physical Layer
h [197M+]		10.56.101.75#4.0:GigabitEthernet4/0/0	true	p2#3.0:GigabitEthernet0/3/0/4	Physical Layer
h [197M+]		c9-npe1-9K#0:GigabitEthernet0/0/0/2	true	C9-AGG20#0:GigabitEthernet0/0/0/2	Physical Layer
h [197M+]		p1#3.0:GigabitEthernet0/3/0/9	true	c9-npe1-9K#0:GigabitEthernet0/0/0/14	Physical Layer
h [197M+]		777327@c1-npe1-76	true	777327@c9-npe1-9K	PW

Severity	Ticket ID	Last Modification Time	Root	Root Event Time	Description	Location	Acknowledged	Creation Time	Eve
	590005	13-Jun-11 17:42:20		13-Jun-11 16:19:48	Layer 2 tunnel d...	777334@c9-	No	13-Jun-11 16:21:48	5
	590007	13-Jun-11 16:27:43		13-Jun-11 16:27:28	Device configura...	c9-npe1-9K	No	13-Jun-11 16:27:28	2
	390146	13-Jun-11 13:22:13		11-Jun-11 19:51:52	Link up	C9-AGG20#...	No	11-Jun-11 19:53:53	153
	420013	13-Jun-11 13:21:20		12-Jun-11 01:07:22	sensor value cro...	c9-npe1-9K	No	12-Jun-11 01:07:22	43
	471002	13-Jun-11 13:20:13		12-Jun-11 14:58:55	Device Reachable...	C9-AGG20	Partially	12-Jun-11 15:00:55	404

310577

Note the following:

- The context field may be empty if one side of the link is not included in the map, or the link is filtered out of all contexts. A blue background indicates an external link (a link with only one endpoint in the map or aggregation).
- The A End-Point is the element or site that is the source of the link; The Z End-Point is the destination. For unidirectional links, traffic is from A to Z.







Note

If you load a map with many links (for example, thousands of links), it can take a while for the complete list of links to load. The filtering options in the table are unavailable until the table has completely loaded.

The links view provides buttons that allow you to traverse among link levels, as follows:

Table 7-1 Ways to Traverse Link Levels

To do the following:	Do the following, or click icon:
View a link in a map	Right-click link and choose Select Link in Map (link will be blue)
View all link properties (see Viewing Link Status and Detailed Link Properties, page 7-25)	Right-click link and choose Properties
Display all links the map or selected aggregation, including external links (All Links icon).	
Display links that have only one side in the selected map or aggregation (External Links). (These are indicated with the blue background in the previous figure.)	
Display links in the selected map or aggregation, excluding links in any closed aggregations (Flat Links).	
Display for the selected aggregation and any nested aggregations with both endpoints in the map or aggregation (Deep Links). This is the default.	

Viewing Link Status and Detailed Link Properties

To view link details, click the link (it will turn blue), then right-click the link and choose Properties. As shown in [Figure 7-15](#), the link properties window provides general information about the selected link, details of the link connection, and technology-specific information appropriate for the link. If multiple links exist between the elements or aggregations, the link properties window displays information for all the links.

Figure 7-15 Link Properties Window

Severity	Event ID	Time	Description	Location	Detection Type	Alarm ID	Ticket ID	Causing Event ID	Duplication Count	Reduction Count	Archived
✓	22333...	13-Jun-11 13:13:45	Link up	c9-npe1-9K#0:GigabitE...	Service	471003	471002		1	1	False
✗	12279...	13-Jun-11 12:59:09	Link down on unreach...	c9-npe1-9K#0:GigabitE...	Service	471003	471002	14108967567400...	1	1	False
✓	58798...	13-Jun-11 12:55:19	Link up	c9-npe1-9K#0:GigabitE...	Service	471003	471002		1	1	False
✓	58755...	13-Jun-11 12:55:19	Link up	c9-npe1-9K#0:GigabitE...	Service	471003	471002		1	1	True
✓	72713...	13-Jun-11 07:26:11	Link up	c9-npe1-9K#0:GigabitE...	Service	471003	471002		1	1	False

The links listed on the left display the left and right link identifiers between the two nodes, the device alias, and the Connection Termination Point (CTP). When you select a link, the properties area is populated with extensive information about the selected link, most of which is self-explanatory. These items are especially important:

- Under General Properties, the type can be either dynamic or static.
 - Dynamic links are real links between devices or aggregations.
 - Static links are not real links, but are created by Prime Network advanced users to represent a real link (for example, when a real link is not discovered). Static links provide allow Prime Network to perform correlation flows through the link.
- Link status is displayed under the Connection Information.

Speed, port type, port admin and operational status, and other information is displayed for connections of types such as Ethernet CSMA/CD, Gigabit Ethernet, LAG, MLPPP, MP-BGP, MPLS Link Information, PPP, Pseudowire, T1, and VRF.

Users with advanced privileges can click **Calculate Affected** to see which resource pairs would be impacted by a problem with the link. (If the link had a ticket, the same information would be automatically generated and displayed in the ticket under the Affected Parties tab.) See [Checking the Impact of Link Problems \(Impact Analysis\)](#), page 7-27.

These tools are provided for working with specific technologies:

- **Labels**—For Ethernet links, lists all LSPs and their source and destination labels. For more information, see [Viewing LSPs Configured on an Ethernet Link, page 17-13](#).
- **VCs**—For ATM links, lists configured and misconfigured VCs. For more information, see [Viewing ATM VPI and VCI Properties, page 26-10](#).

Checking the Impact of Link Problems (Impact Analysis)

The Vision client provides a feature that, for a selected network link, calculates the elements that might be affected if the link were to go down.



Note Impact analysis applies only to physical links.

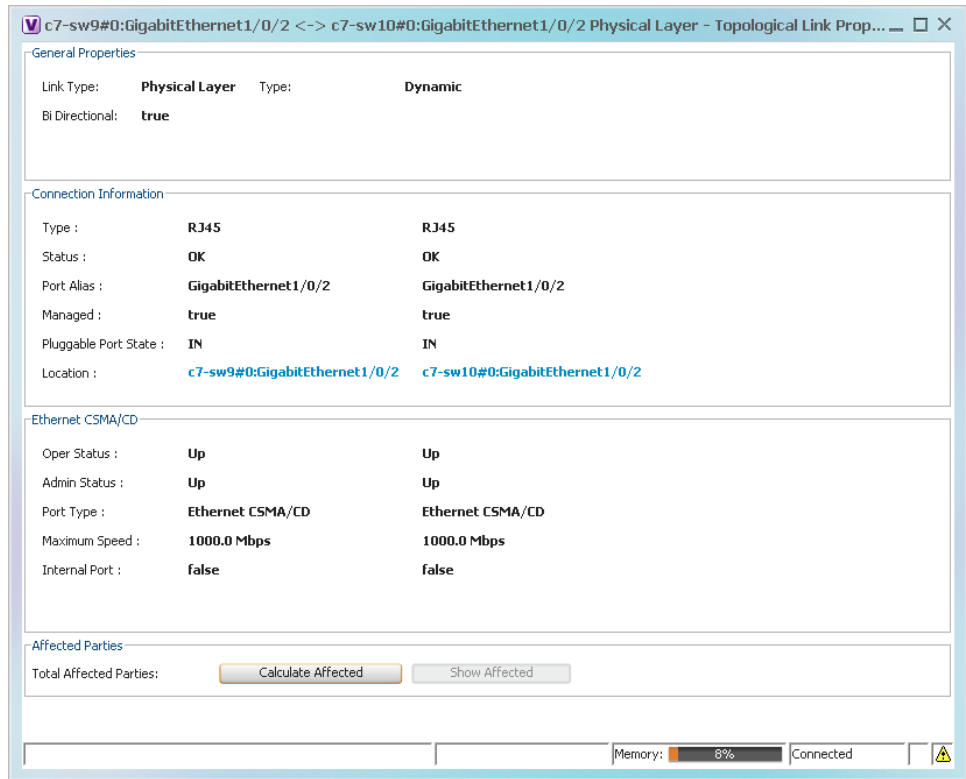
To calculate impact analysis:

-
- Step 1** Select a map or aggregation in the navigation pane, and click **Show Links View** in the main toolbar. The links view is displayed in the content pane.
- Step 2** In the table toolbar, click **Link Filter**. The Link Filter dialog box is displayed. For information about the Link Filter dialog box, see [Using Link Filters to Find Links, page 7-21](#).
- Step 3** In the Filter dialog box:
- a. In the Match drop-down list, choose **All**.
 - b. In the field drop-down list, choose **Link Type**.
 - c. In the operand drop-down list, choose **Equals**.
 - d. In the matching criteria drop-down list, choose **Physical Layer**.
 - e. Click **OK**.
- Only physical links are displayed in the links view.
- Step 4** In the links view, right-click the required link and choose **Properties**. The Topological Link Properties window is displayed.



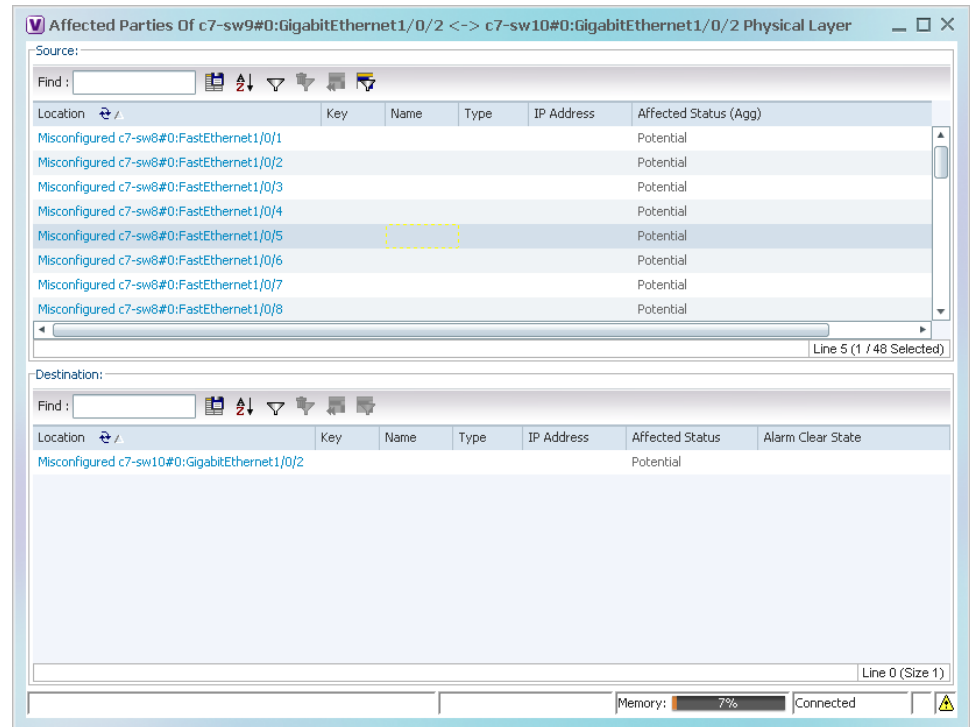
Note Resize the window as needed to view all the information.

Figure 7-16 Topological Link Properties Window



- Step 5** Click **Calculate Affected**. The total number of potentially affected parties is displayed in the Affected Parties area.
- Step 6** Click **Show Affected**. The Affected Parties window is displayed as shown in [Figure 7-17](#). For information on the status (Potential, Real, Recovered), see [Viewing a Ticket's Affected Parties Tab \(Resource Pairs\)](#), page 11-15.

Figure 7-17 Affected Parties Window



- Step 7** To view the potentially affected destinations if a link were to go down, click an entry in the Source table. The potentially affected destinations are displayed in the Destination table.
- Step 8** To view source or destination properties in inventory, click the required hyperlinked entry.

Managing Missing Links (Static Links)

Prime Network allows you to create *static links* that do not perform any configuration or provisioning on a device or in the network. Static links are created in the Prime Network model and are not updated. Static links are useful for map visualization and network correlation; for example, if Prime Network does not discover a link that you know exists in the network, you can create a static link that is displayed in the map. For correlation purposes, Prime Network treats the static link as if it were a physical or logical link and allows correlation flows to go through the static link. Prime Network supports 10 or 100 Gigabit Ethernet link between an ASR9K device and Cloud VNE. Only advanced users can create static links; see [Permissions for Vision Client Links, page B-6](#). For information on creating static links, see [Managing Missing Links \(Static Links\), page 7-29](#).

Link Discovery and Flickering Ethernet Topology Links

Prime Network discovers topology links using various protocols, such as STP, CDP, and LLDP. In some situations, the link configurations themselves can prevent Prime Network from discovering the correct information. For example, if Layer 2 protocol tunneling is configured and the discovery protocols are tunneled, Prime Network can create an incorrect link. This scenario results in a flickering link that is

first created incorrectly due to tunneled discovery information, and then disconnected when the Prime Network counters test discovers that the counters on the edges of the link do not match. During the next topology cycle, Prime Network recreates the link, which is disconnected again during the counters test.

A link is considered flickering when it is connected, disconnected, and reconnected when using the same connection technique because the topology information is conflicting. When this situation occurs, Prime Network generates a system event with the message “Physical Link discovery inconsistent.”

To prevent an ongoing cycle of link creation and disconnecting, Prime Network detects such case of flickering links, creates a system event with the message “Inconsistent Physical Link Discovery between *system:interface1* and *system:interface2*, and stops the link from flickering by disconnecting it.

To remedy the situation, we recommend that you wait until the link disappears from the map and then create a static link.

In addition, you can add a new link using the Administration client. For more information, see the [Cisco Prime Network 5.1 Administrator Guide](#).

Adding a Static Link to a Map



Note

Only advanced users can create static links. See [Permissions for Vision Client Links](#), page B-6.

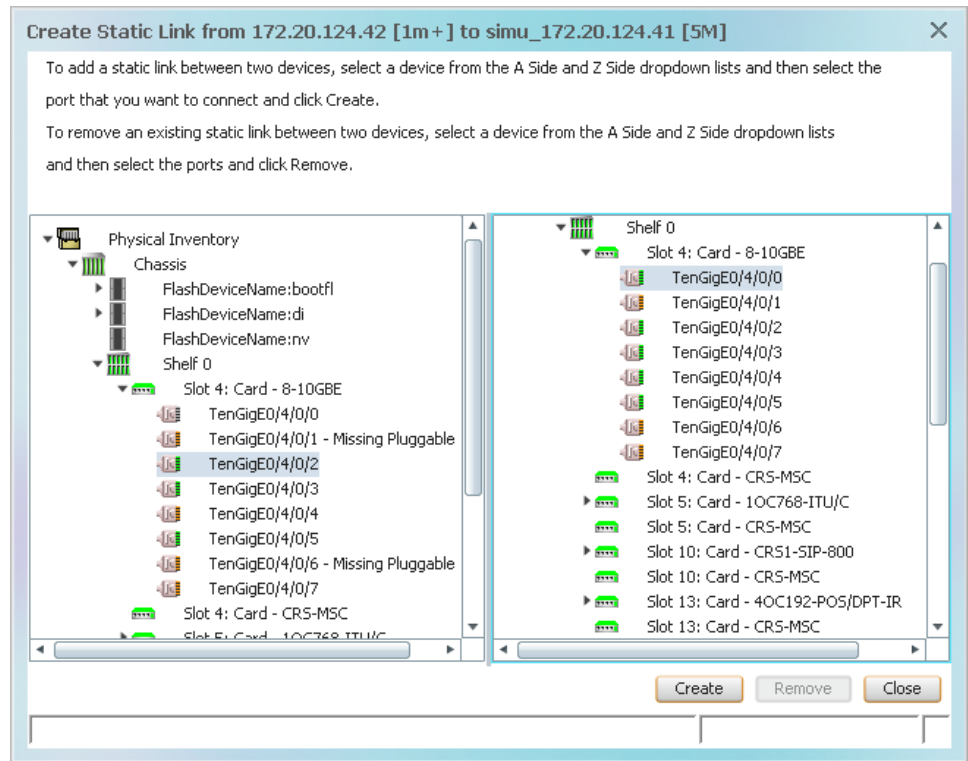
To create a static link, select a device or port and define it as the A side. Then define a second device or port as the Z side. Prime Network validates the new link after the two ports are selected. Validation checks the consistency of the port types (for example, RJ45 on both sides), and Layer 2 technology type (for example, ATM OC-3 on both sides).

You can also create static links between Ethernet Link Aggregation Groups (LAGs) by choosing a LAG and the desired port channel for the A or Z side as described in the following procedure.

When you add a new link, the color of the link reflects its current state. For example, if the operation status of a port is down, the link is colored red. You can add links from either a map or from an NE’s inventory window.

-
- Step 1** Right-click the required A Side device in the navigation pane or in a map, and choose **Topology > Mark as A Side**.
- Step 2** Right-click the required Z Side device or LAG in the navigation pane or properties pane to display the right-click menu and choose **Topology > Mark as Z Side**. The Create Static Link window is displayed as shown in [Figure 7-18](#), so that you can select the ports to connect.

Figure 7-18 Create Static Link Window



Step 3 Select the required port on both the A Side device and the Z Side device.

Step 4 Click **Create** to validate the connection and create the new link.

A success message is displayed.

A warning message is displayed if any of the following apply:

- A validation check fails.
- The operation status of one port is Up and the other port is Down.
- The selected ports are not of the same type.
- The Layer 2 technology type is not the same.
- One of the ports is part of another link.

Adding a Link Using the Inventory Window

Step 1 Open the inventory window for the required A Side device.

Step 2 In the navigation pane, navigate to the required port or LAG.

Step 3 Right-click the required port or LAG and choose **Topology > Mark as A Side**.

Step 4 Repeat [Step 1](#) and [Step 2](#) for the Z Side port or LAG.

Step 5 Right-click the required port or LAG and choose **Topology > Mark as Z Side**. A confirmation message is displayed.

Step 6 Click **Yes**.

The ports are connected, and a link is created between the selected ports.

A warning message is displayed if any of the following conditions exist:

- One of the validation checks fails.
- The operation status of one port is Up and the other port is Down.
- The ports selected are not of the same type.
- The Layer 2 technology type is not the same.
- One of the ports is part of another link.

For information about removing a static link, see the [Cisco Prime Network 5.1 Administrator Guide](#).

Making Changes to the Device Appearance in the Map

Maps present Prime Network's model of your network devices and connections. This information is constantly updated in a variety of ways to keep the model current. It is important to understand when you are making a change to the Prime Network *model* of a device versus when you are making a change to an *actual device*.

The following table lists actions you can perform from a map. These actions only affect the Prime Network model, not the real network element. Whether you can perform these actions depends on your permissions; see [Permissions for Vision Client Maps](#), page B-2.

To do the following:	Right-click the NE in a map and select:
Change the name of an NE	Apply a business tag to the NE (see Labelling NEs to Associate Them with Customers (Business Tags) , page 4-9)
Add a virtual link between two devices so correlation can proceed through the link but no alarms are generated (for example, if a link goes down)	Right-click the device port or LAG and choose Topology (see Adding a Static Link When a Network Link is Missing , page 4-13)
Group the NE with other NEs in the map	Create an aggregation (see Grouping Network Elements into Aggregations , page 4-7)
Change the location of an NE in a map	Drag the NE to the desired location
Change the size of an NE icon	Right-click the NE and choose Resize
Change the size of the text that is displayed with the NE icon	Changing Vision Client Default Settings (Sound, Display, Events Age) , page 4-15
Do not display an acknowledged badge with NE icon when ticket is acknowledged	
Only display severity status badge at NE icon level (not in NE inventory where event occurred)	

Prime Network provides many context-sensitive commands that you can use to make changes in the network. You can launch these commands by right-clicking an NE and choosing **Commands**. Your permissions determine whether you can run these commands, and the commands that are available depend on the device type, operating system, and if a service or technology is supported and enabled on the device. These commands are documented throughout this guide with the service or technology to which they apply. A complete list of commands, along with the devices that support them, is provided in [Addendum: Additional VNE Support for Cisco Prime Network 5.1](#). You can also add support for new commands by downloading and installing Prime Network Device Packages (DPs). For information on DPs, see the discussion about adding new VNE support in the [Cisco Prime Network 5.1 Administrator Guide](#). For information on commands that change basic NE properties (for example, SNMP configurations, port and interface properties, an NE's DNS server, and so forth), see [Drilling Down into the Properties of a Network Element, page 8-2](#).

Adding and Removing NEs from Existing Maps

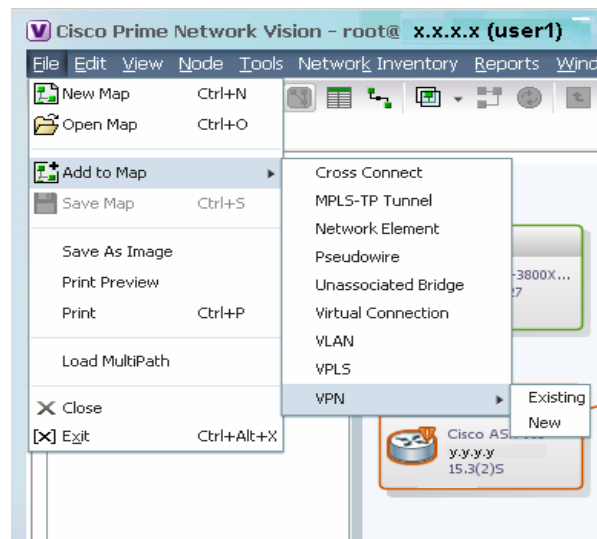
When you add an element to a map, the map is automatically saved in the Prime Network database. You can display all NEs by selecting **Show All** in [Step 3](#), but devices you do not have permission to view are displayed with a lock icon; they are also not returned in search results.

To add an element to a map:

- Step 1** Choose **File > Open** and select a map from the map list.
- Step 2** Choose **File > Add to Map > element**.

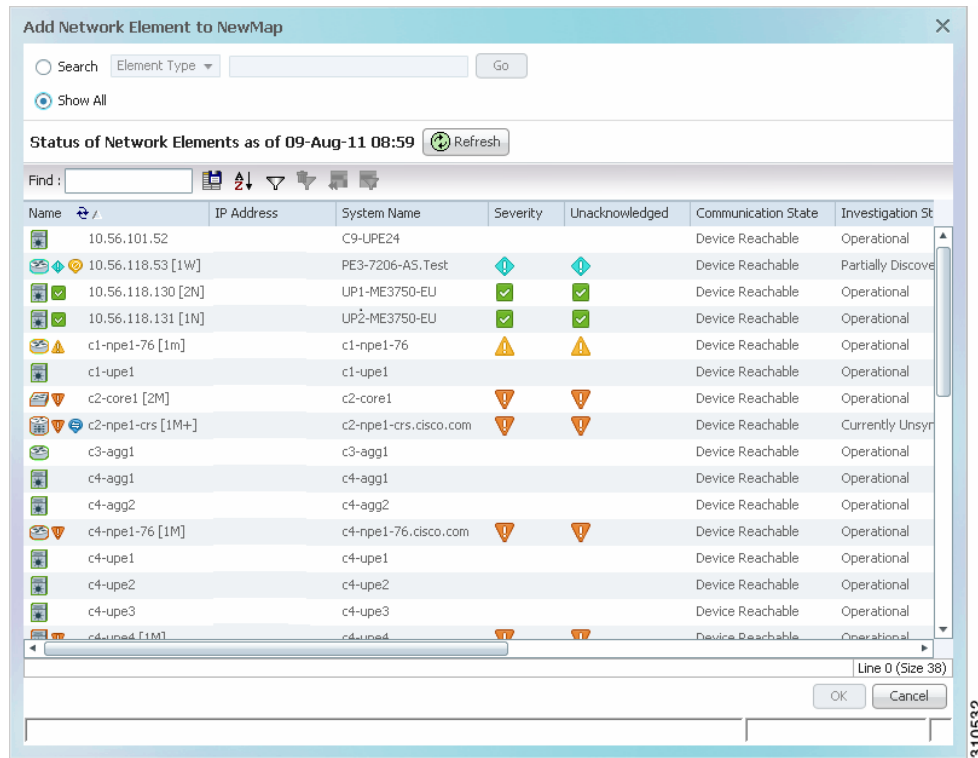
[Figure 7-19](#) shows the type of elements you can add to maps.

Figure 7-19 Available Elements to Add to Maps



Note If you choose to add a new VPN, the Create VPN dialog box is displayed. For information on creating a VPN, see [Creating a VPN, page 17-22](#). In all other instances, the Vision client presents a dialog box similar to [Figure 7-20](#).

Figure 7-20 Add Element Dialog Box



Step 3 Use one of the following tools to locate the NEs you want to add to the map.

- Search for the elements you want to add to the map. For example, you can search Ethernet Services by the system name, NEs element type, pseudowires by their role, and so forth.



Note If you are working with a large number of NEs, use the search filter. Otherwise, it may take some time for all of the NEs to be listed.

- To view all available elements, choose **Show All**. If you do not have permission to view an NE, it is shown with a lock icon.

The available elements are displayed in the dialog box in table format. The dialog box also displays the date and time at which the list was generated. To update the list, click **Refresh**.

Step 4 Select the elements that you want to add.

Step 5 Click **OK**. If you selected a large number of elements (for example, more than 25 VLANs or VPLS instances), the action may take a while to complete.

The NEs are added to the map and are displayed in the navigation pane and content area. In addition, any associated tickets are displayed in the ticket pane.

Removing Elements from a Map

When you delete an element from a map, it is removed from the map in the database. However, it continues to be managed by Prime Network. Your user account permissions determine whether you can remove items from a map.

To remove a network element from a map, right-click the NE and choose **Remove from Map**.

Grouping NEs Using Aggregations

[Drilling Down Into NE Groups \(Aggregations\), page 7-16](#), explains how to traverse between nested aggregations—that is, aggregations that contain other aggregations. Aggregations can contain network elements, services, other aggregations, and so forth.

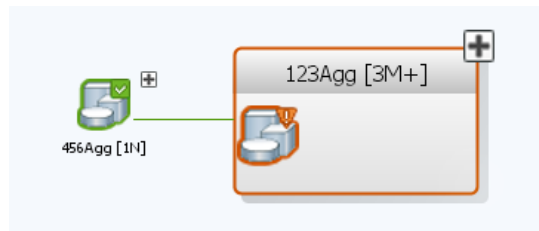


Note

If you cannot create an aggregation, you either do not have sufficient privileges or the device is not in your scope. See [Permissions for Vision Client NE-Related Operations, page B-4](#).

To aggregate network elements:

- Step 1** Select multiple NEs and aggregate them by choosing **Node > Aggregate**.
- Step 2** In the Aggregation dialog box, enter a unique name for the aggregation and click **OK**. The aggregation is displayed in the navigation pane and the map pane. Aggregations are displayed as a single entity with the aggregation icon and a plus sign, as in the following two examples:



The aggregation icon changes color according to the alarm severity. For more information about severity colors, see [Interpreting NE Icons, Badges, and Colors, page 7-4](#).

Making Changes to Aggregations

This table shows how to make changes to aggregations:

If you want to...	Do this...
Add an NE to an aggregation (certain restrictions exist; for example, you cannot add an EVC to a VLAN)	<ol style="list-style-type: none"> 1. Double click the thumbnail <i>frame</i> so only the aggregation is displayed. 2. Select File > Add to Map and select the NE. You can choose NEs that are not in the parent map (the NE will have a dotted grey border around it).
Remove an NE from an aggregation	<ol style="list-style-type: none"> 1. Double click the thumbnail <i>frame</i> so only the aggregation is displayed. 2. Right-click the device you want to remove and choose Remove from Map. The device is removed from the aggregation but not the parent map.
Ungroup (disaggregate) an aggregation (nested aggregations will be moved up one level)	<ol style="list-style-type: none"> 1. Go to the parent map level. (If you are in a thumbnail, double-click the thumbnail background.) 2. Right-click the aggregation and choose Disaggregate.

Closing Maps, Renaming Maps, and Other Map Operations



Note

If you cannot perform these tasks, you do not have sufficient privileges.

To perform this operation:	Choose or do the following:
Close a map	File > Close
Rename a map	File > Save as New Map or <ol style="list-style-type: none"> 1. Select File > Open. 2. From the Open Map Dialog, select the map and click Rename Map in the toolbar.
Save a map's appearance	File > Save Map
Save the map as an image	File > Save as Image
Print the map	File > Print
Display all maps that include a specified NE	Right-click an NE in a map and choose Open Relevant Maps
Delete a map from the Vision client and Prime Network database	<ol style="list-style-type: none"> 1. Select File > Open. 2. From the Open Map Dialog, select the map and click Delete from Map in the toolbar.

Changing the Vision Client Default Behavior

All users can change their Vision client defaults. The defaults apply only to the client machines—that is, the machine from which you launch the Vision client. You can change:

- What is displayed when you start the Vision client
- Audio alerts and sounds
- NE text (font sizes, whether you can label NEs with business tags)
- Ticket severity information that is displayed with an NE icon
- Age of tickets that are displayed in the Vision client

To change these settings, see [Changing Vision Client Default Settings \(Sound, Display, Events Age\)](#), page 4-15.

