



# Validating Service Provisioning

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Cisco EPN Manager 2.1

Job Aid



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# Basics

## Overview

When you provision services, validating that they are configured and running as expected is an important last step to completing your provisioning tasks.

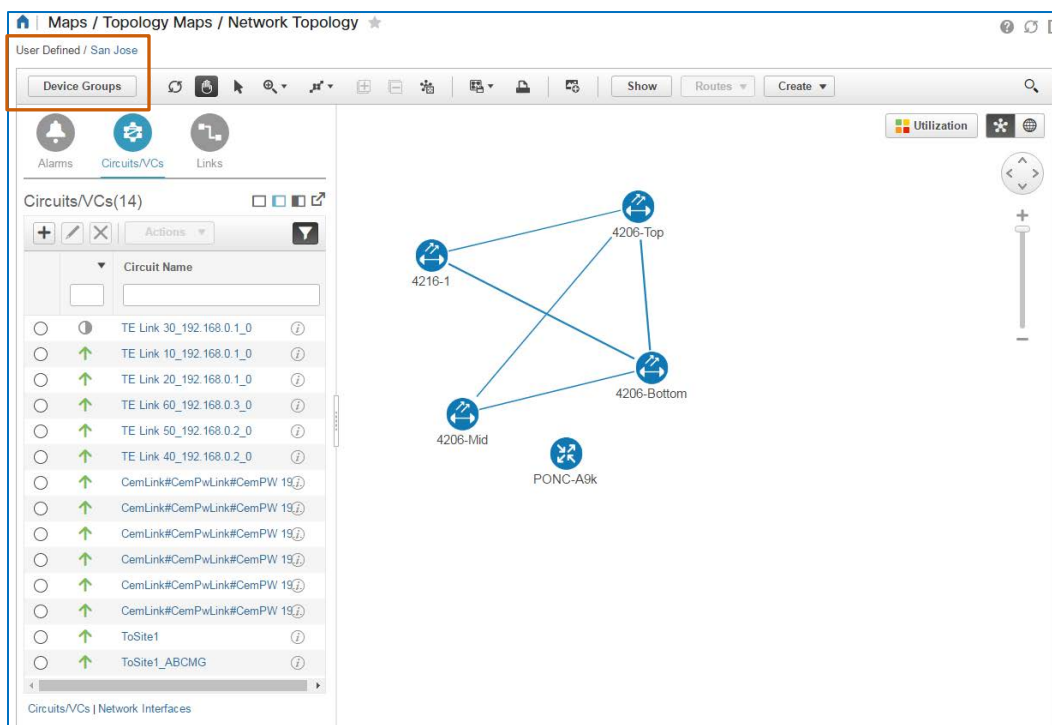
Cisco EPN Manager provides tools that you can use to monitor and evaluate provisioning, operational statuses, and connectivity, including:

- ❖ The **Circuits/VCs** lists.
- ❖ Service overlays.
- ❖ **Circuit/VC 360°** pop-up windows.
- ❖ **Multilayer Trace** graphical views.
- ❖ The optical service **Circuit History** audit trail.

These tools are available based on the type of service that you are provisioning, and are accessible on the **Network Topology** map.

This job aid introduces you to the types of information that you can see when using these **Network Topology** map tools.

To evaluate provisioning, open the device group that includes the devices that you are provisioning.



## Skills

To use the tools that this job aid addresses effectively, you need the following experience.

### Proficient

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- ❖ EPN Manager navigation and behaviors
- ❖ Networking and provisioning concepts, technologies, and network devices

### Expert

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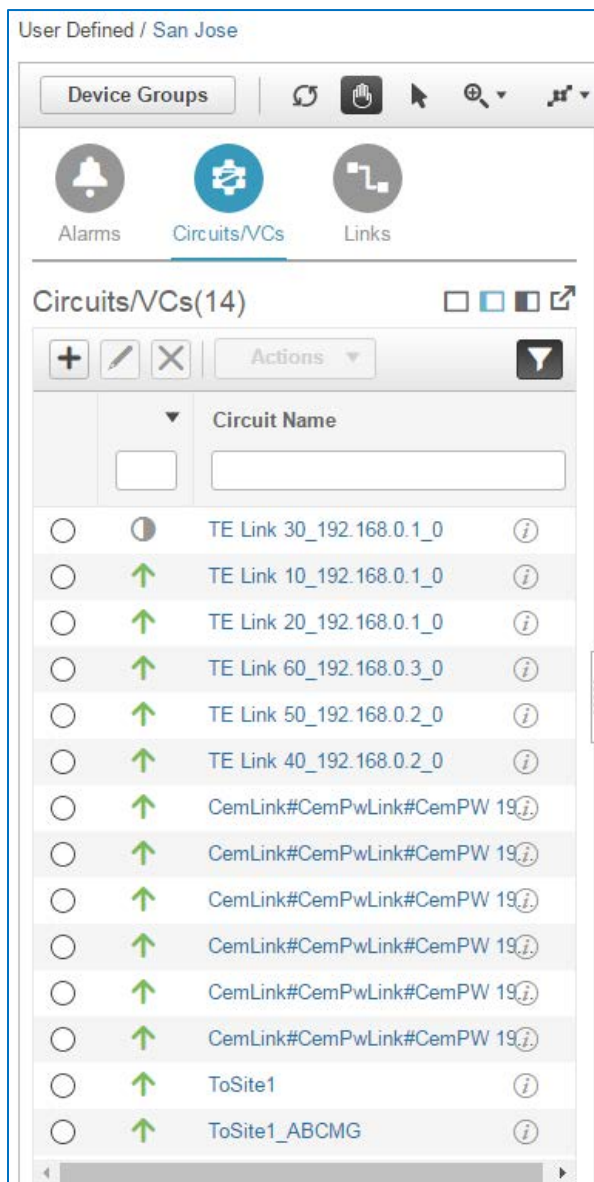
- ❖ Concepts and practical working knowledge of the type of service that you are provisioning
- ❖ Knowledge of the capabilities and configuration of the hardware that is supporting the service

# Service Provisioning Tools Overview

## Monitoring Provisioning Status

### The Circuits/VCs List

When a system user completes service provisioning by deploying the code that the user configured in the **Provisioning Wizard**, the system monitors the provisioning process and reports its progress and result in the **Circuits/VCs** list.



User Defined / San Jose

Device Groups

Alarms Circuits/VCs Links

Circuits/VCs(14)

Actions

		Circuit Name	
<input type="radio"/>		TE Link 30_192.168.0.1_0	<a href="#">i</a>
<input type="radio"/>		TE Link 10_192.168.0.1_0	<a href="#">i</a>
<input type="radio"/>		TE Link 20_192.168.0.1_0	<a href="#">i</a>
<input type="radio"/>		TE Link 60_192.168.0.3_0	<a href="#">i</a>
<input type="radio"/>		TE Link 50_192.168.0.2_0	<a href="#">i</a>
<input type="radio"/>		TE Link 40_192.168.0.2_0	<a href="#">i</a>
<input type="radio"/>		CemLink#CemPwLink#CemPW 19	<a href="#">i</a>
<input type="radio"/>		CemLink#CemPwLink#CemPW 19	<a href="#">i</a>
<input type="radio"/>		CemLink#CemPwLink#CemPW 19	<a href="#">i</a>
<input type="radio"/>		CemLink#CemPwLink#CemPW 19	<a href="#">i</a>
<input type="radio"/>		CemLink#CemPwLink#CemPW 19	<a href="#">i</a>
<input type="radio"/>		CemLink#CemPwLink#CemPW 19	<a href="#">i</a>
<input type="radio"/>		ToSite1	<a href="#">i</a>
<input type="radio"/>		ToSite1_ABCMG	<a href="#">i</a>

### To evaluate the progress of provisioning, on the Network Topology Map:

- ❖ Open the device group that contains the devices that are being provisioned, and then click **Circuits/VCs**.

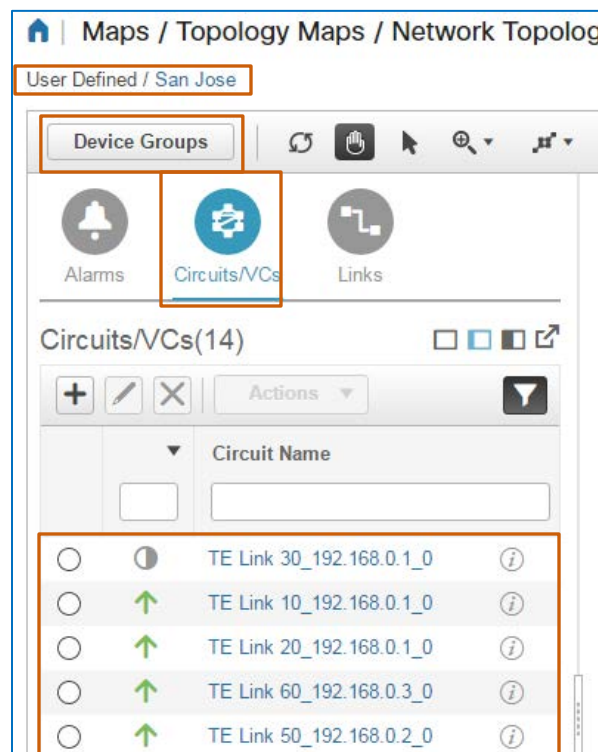
Below the toolbar, the **Circuits/VCs** list indicates each service that has been provisioned and its overall status.

When you begin provisioning, the system lists the service immediately and reports progress by using status indicator icons.

The length of the provisioning process varies based on configuration complexity. Provisioning simple configurations generally take about 5 minutes to complete, while provisioning complex configurations can take significantly more time.








**Note:** The system begins reporting metrics related to the service based on monitoring policies and device polling frequencies.



The following table maps how the list indicates the progress of service provisioning.



**Tip:** You can refresh the page manually to help ensure that you are seeing current information.

Step	Description	Status Indicator Name	Status Indicator Icon
1	Initial status of provisioning; the system has not yet added or discovered the service.	Missing	
2	Service provisioning is in progress. <b>Note:</b> If provisioning does not progress to the point of discovery, the service can remain in a partially discovered state.	Partially Discovered	
3	EPN Manager has discovered the service.	Full	
Result	The serviceability state of the service. After service discovery, the system reports the serviceability state the next time that the device inventory synchronizes. <b>Note:</b> Once services are managed and operational, indicator icons also can change to indicate alarm states.	Up	
		Down	

## Evaluating Service Connectivity

### Service Overlays

The service overlay displays the device connectivity at a network device level.

Reviewing the circuit overlay after provisioning helps you to ensure that provisioning has occurred on the devices, as expected.



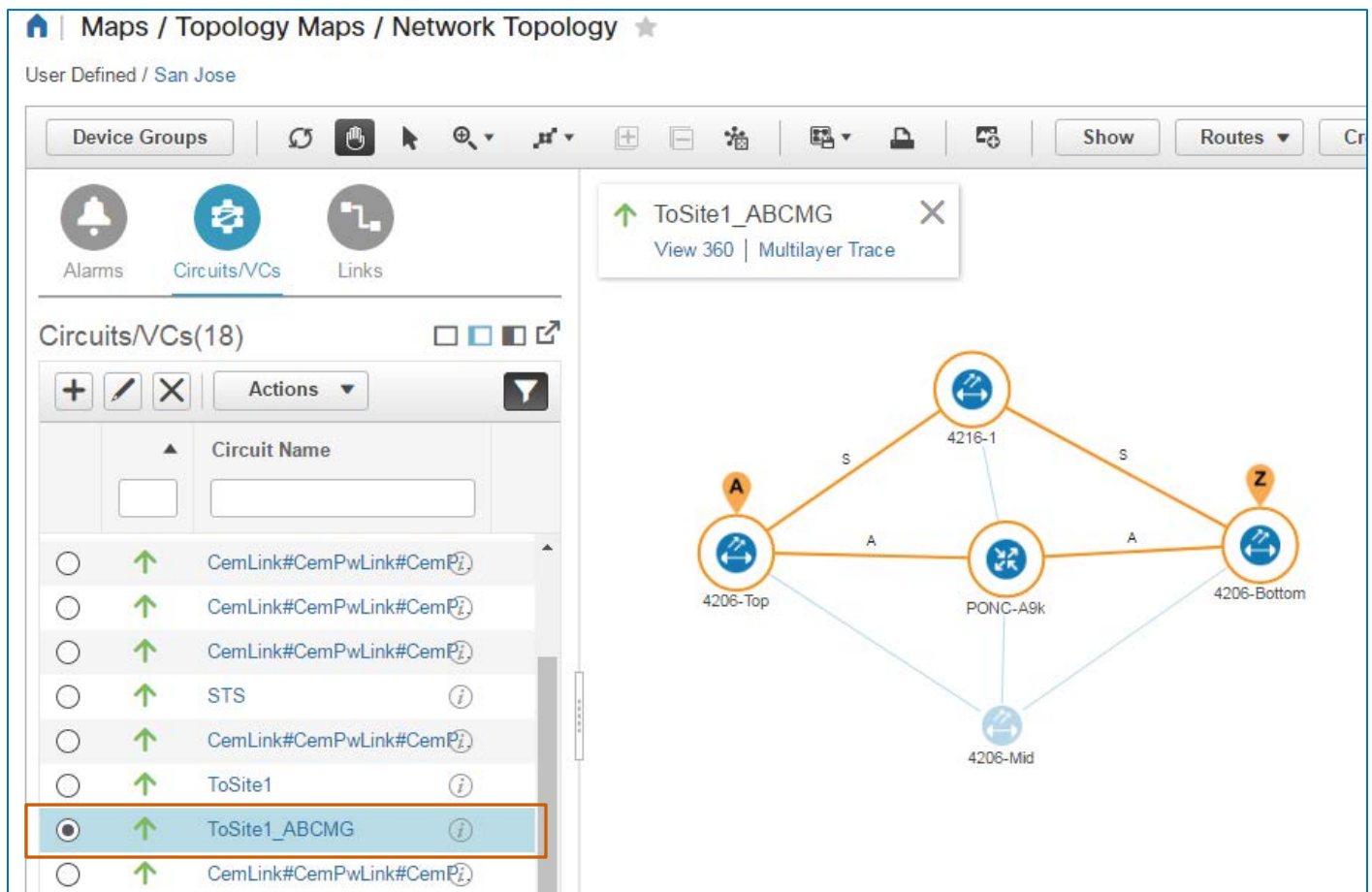
**Note:** The system identifies the working path as an action (**A**) path, and protected and restore paths as standby (**S**) paths.

When reviewing overlays, the working path is indicated with an **A**, and other paths with an **S**.

#### To display an overlay:

- ❖ In the **Circuits/VCs** list, click the service entry.

The overlay appears indicating device connectivity, including the working and any alternate, or protection, paths that are configured for the service.



The screenshot displays the 'Network Topology' view in the Cisco Service Provisioning Tools. The left sidebar shows the 'Circuits/VCs(18)' list, with 'ToSite1\_ABCMG' selected and highlighted by a red box. The main area shows the network topology for this circuit, featuring a central 'PONC-A9k' node connected to three edge nodes: '4206-Top', '4206-Mid', and '4206-Bottom'. The connections are labeled with 'A' (Action) and 'S' (Standby) paths. A tooltip for 'ToSite1\_ABCMG' is visible, showing 'View 360' and 'Multilayer Trace' options.

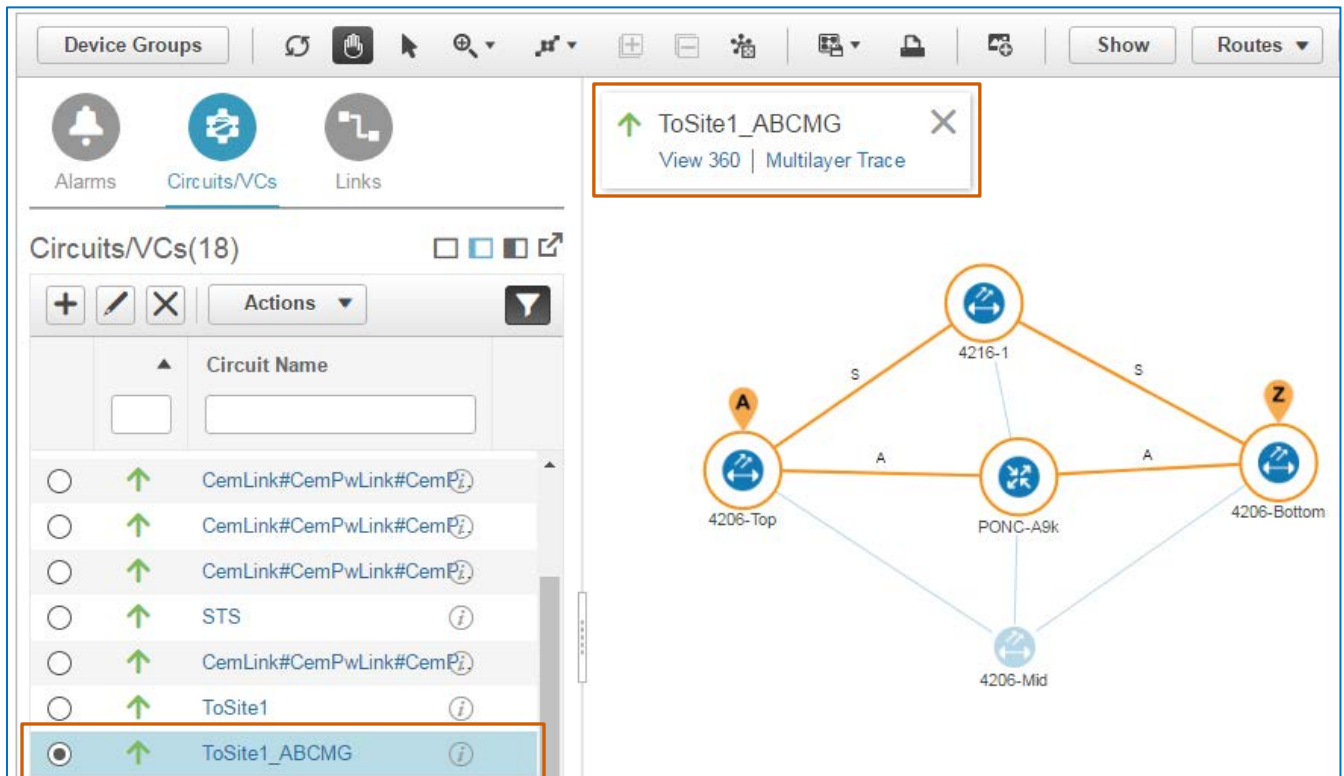


When you apply a service overlay, other tools that you can use to evaluate the state and connectivity of the service open in a pop-up window.

The screenshot below illustrates the tools that are available for a CEM service provisioned on a traffic engineering tunnel.



**Note:** The **View 360** link in the pop-up window opens [the Circuit/VC 360<sup>o</sup> pop-up window](#).



The screenshot displays the Cisco Service Provisioning Tools interface. On the left, a sidebar shows navigation options: Alarms, Circuits/VCS, and Links. The 'Circuits/VCS' section is active, displaying a list of 18 Circuits/VCS. The list includes entries like 'CemLink#CemPwLink#CemP...', 'STS', 'ToSite1', and 'ToSite1\_ABCMG'. The 'ToSite1\_ABCMG' entry is selected and highlighted. On the right, a network diagram is shown, illustrating the topology of the selected service. The diagram features nodes labeled '4206-Top', '4216-1', '4206-Bottom', '4206-Mid', and 'PONC-A9k', connected by links labeled 'S' and 'A'. A pop-up window titled 'ToSite1\_ABCMG' is visible in the top right corner, containing links for 'View 360' and 'Multilayer Trace'.

**To remove the overlay from the map:**

- ❖ In the pop-up window, click the close button.



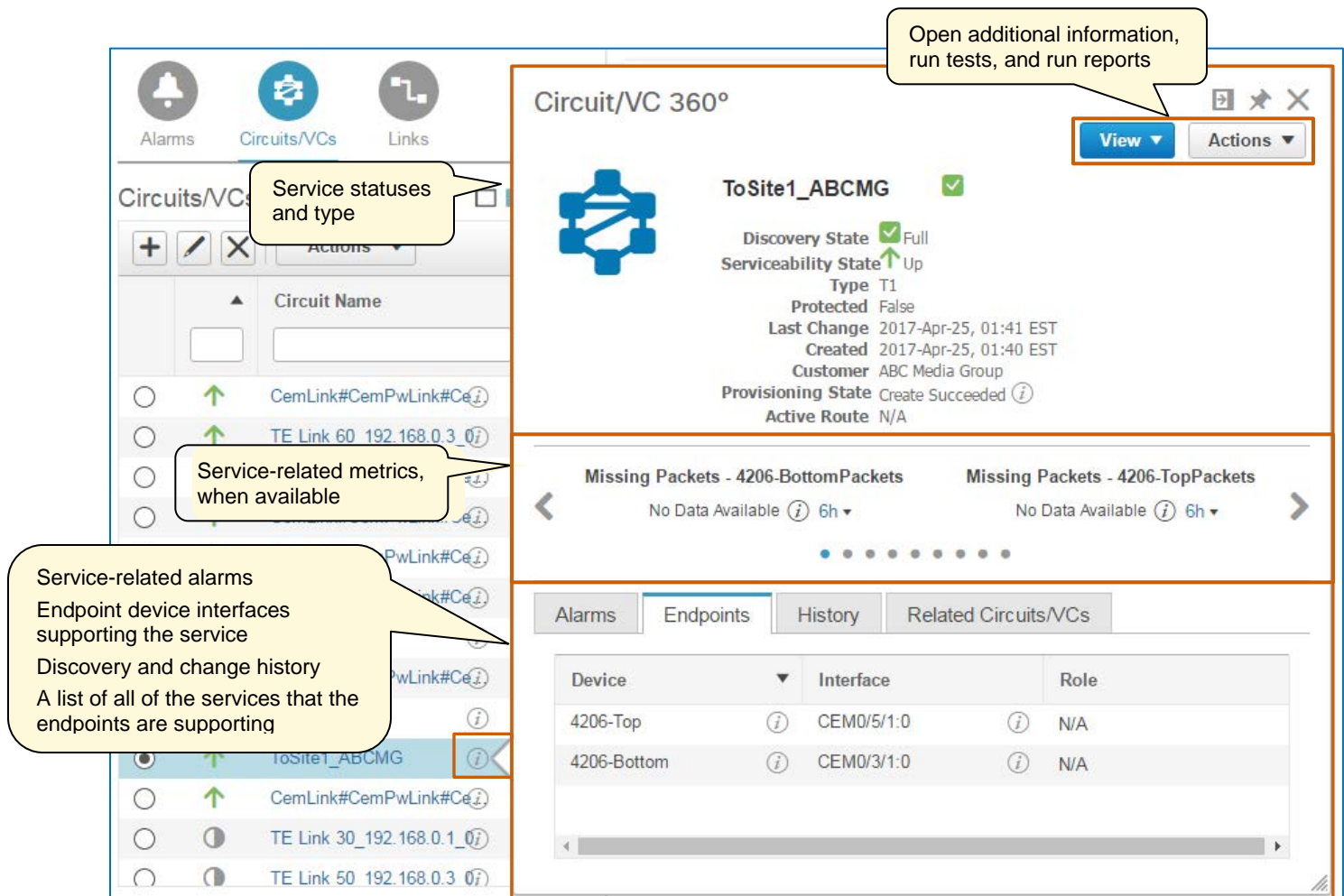
## Evaluating Service Details

### The Circuit/VC 360° Pop-Up Window

The **Circuit/VC 360°** pop-up window provides detailed information about the service.

To open the view:

- ❖ In the **Circuits/VCs** list, click the virtual connection's (VC's) information icon.



The screenshot shows the **Circuit/VC 360°** pop-up window. The main window displays the service name **ToSite1\_ABCMG** and its status. Below this, there are sections for **Missing Packets** and a table of **Endpoints**.

**Callouts:**

- Service statuses and type:** Points to the top section of the pop-up window showing the service name and status.
- Service-related metrics, when available:** Points to the **Missing Packets** section.
- Service-related alarms:** Points to the **Alarms** tab in the bottom section.
- Endpoint device interfaces supporting the service:** Points to the **Endpoints** tab in the bottom section.
- Discovery and change history:** Points to the **History** tab in the bottom section.
- A list of all of the services that the endpoints are supporting:** Points to the **Related Circuits/VCs** tab in the bottom section.

**Service Details:**

- Discovery State: Full
- Serviceability State: Up
- Type: T1
- Protected: False
- Last Change: 2017-Apr-25, 01:41 EST
- Created: 2017-Apr-25, 01:40 EST
- Customer: ABC Media Group
- Provisioning State: Create Succeeded
- Active Route: N/A

**Missing Packets:**

- Missing Packets - 4206-BottomPackets: No Data Available (6h)
- Missing Packets - 4206-TopPackets: No Data Available (6h)

**Endpoints Table:**

Device	Interface	Role
4206-Top	CEM0/5/1:0	N/A
4206-Bottom	CEM0/3/1:0	N/A



**Note:** When reviewing the information in the pop-up window, keep in mind that the system begins reporting metrics and alarms based on the monitoring policies and reporting parameters that administrators or users can configure.

Monitoring policies define such parameters as device polling frequency, the types of data to report, and reporting thresholds. This means that you might not see metrics, alarms, or other data immediately after service provisioning.

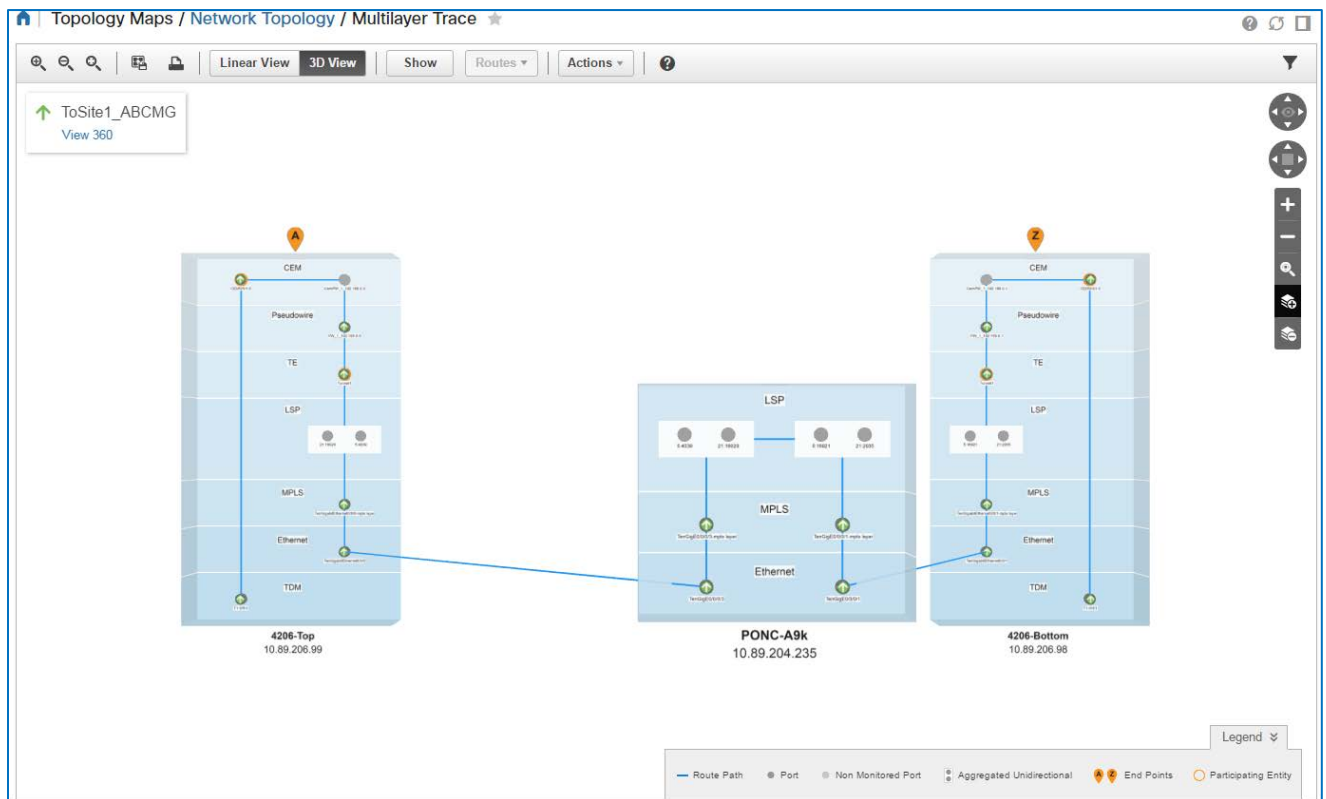
## Evaluating Service Connectivity Details

### The Multilayer Trace Graphical View

The **Multilayer Trace** graphical view illustrates the technology layers that are supporting the service's route.

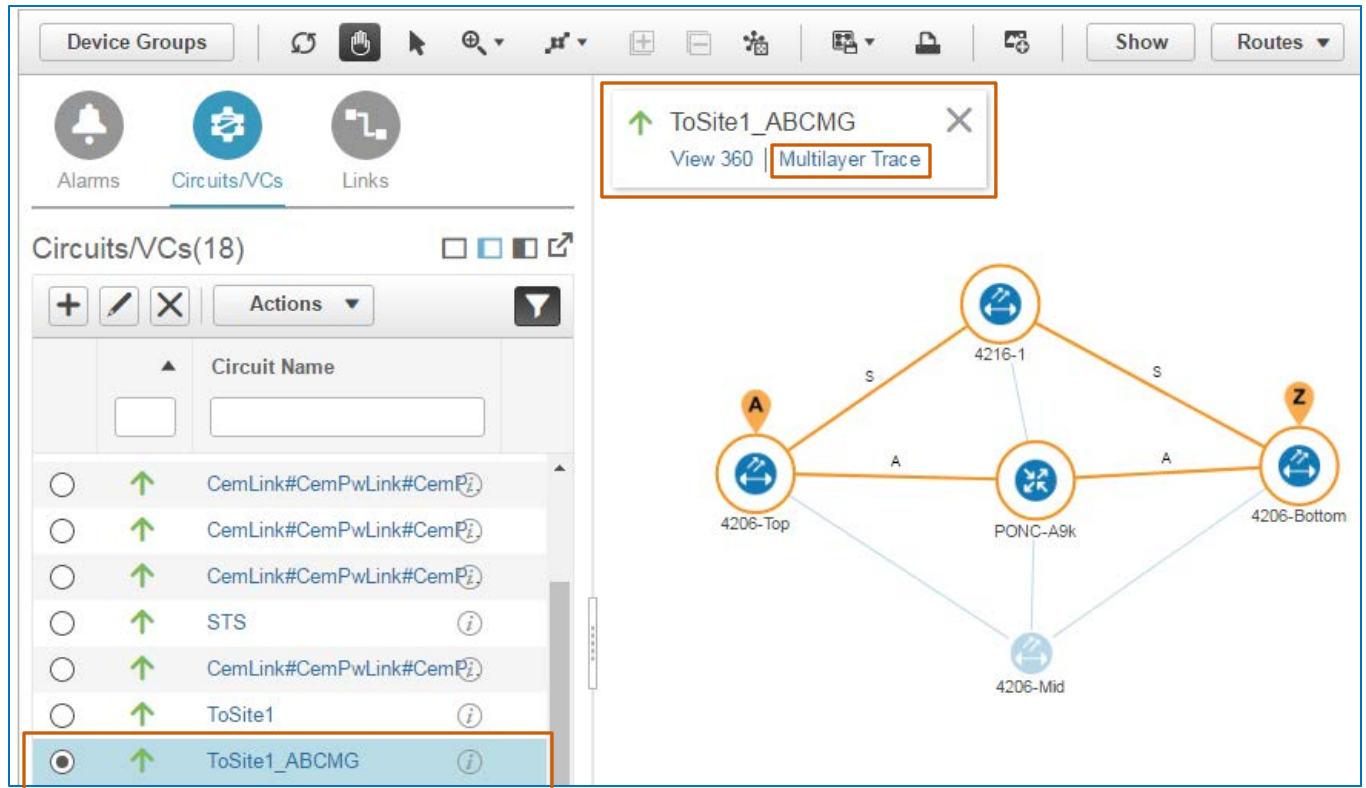


**Tip:** The **Multilayer Trace** graphical view is helpful when evaluating issues or alarms that the system is reporting on the service or related-devices, also.



**To open the Multilayer Trace:**

- ❖ In the **Circuits/VCs** list, click the service entry, and then, in the pop-up window, click **Multilayer Trace**.

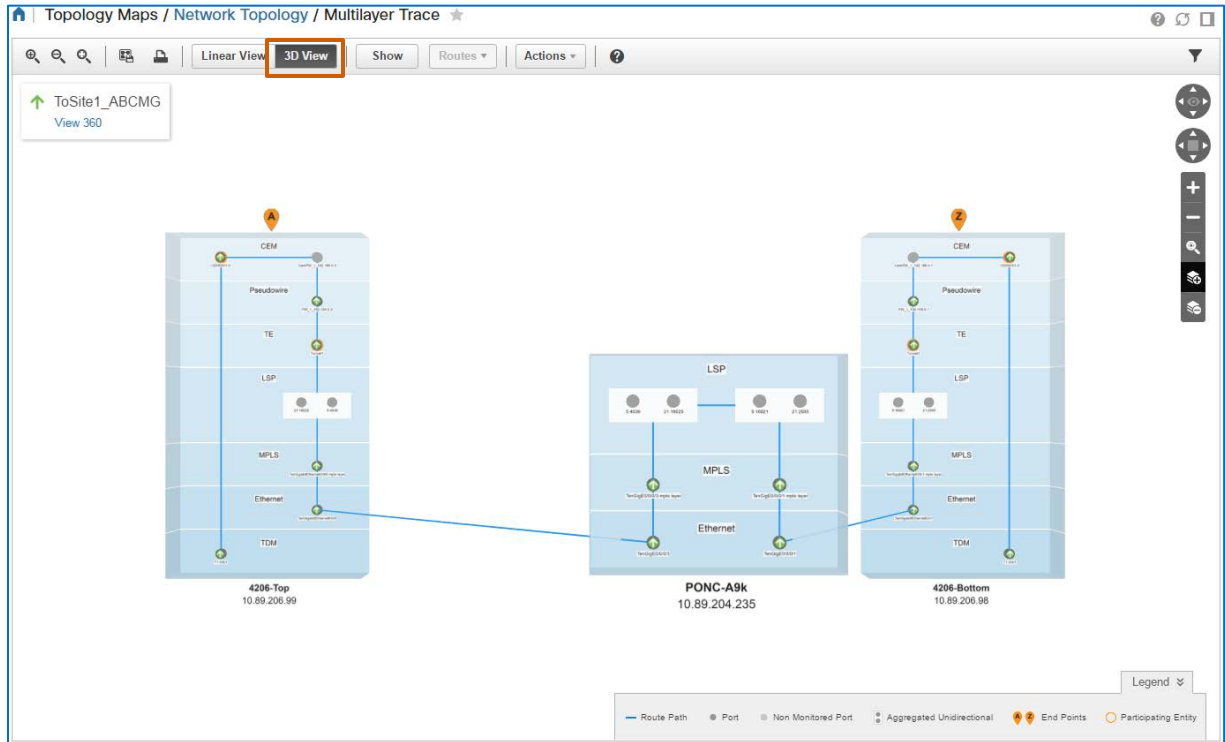


The screenshot displays the Cisco Service Provisioning Tools interface. On the left, the 'Circuits/VCs(18)' list is shown with a table of entries. The entry 'ToSite1\_ABCMG' is selected and highlighted with an orange box. On the right, a network diagram is displayed, showing a central node 'PONC-A9k' connected to three peripheral nodes: '4206-Top', '4206-Mid', and '4206-Bottom'. The diagram also shows connections between these nodes and a top node '4216-1'. A pop-up window titled 'ToSite1\_ABCMG' is visible, showing a 'View 360' button and a 'Multilayer Trace' button, both highlighted with orange boxes.

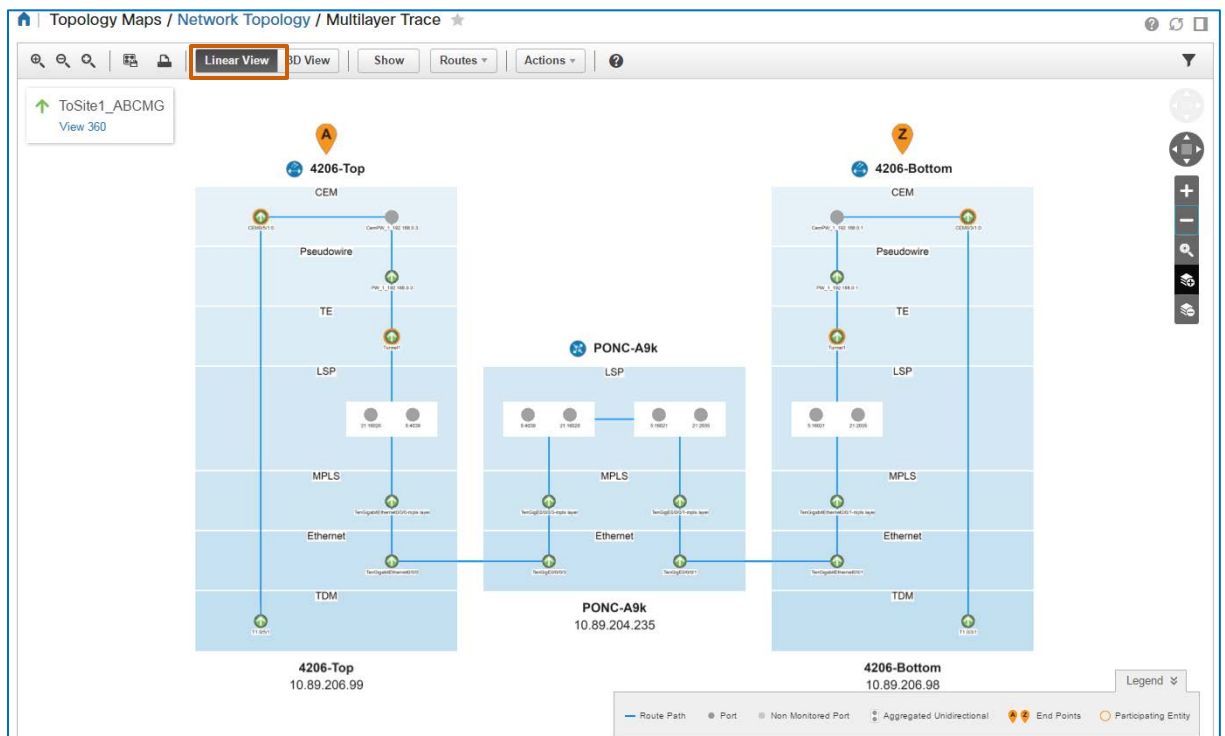
		Circuit Name	
<input type="radio"/>	↑	CemLink#CemPwLink#CemP...	
<input type="radio"/>	↑	CemLink#CemPwLink#CemP...	
<input type="radio"/>	↑	CemLink#CemPwLink#CemP...	
<input type="radio"/>	↑	STS	(i)
<input type="radio"/>	↑	CemLink#CemPwLink#CemP...	
<input type="radio"/>	↑	ToSite1	(i)
<input checked="" type="radio"/>	↑	ToSite1_ABCMG	(i)

The **Multilayer Trace** page illustrates the service connectivity from the **A** endpoint device to the **Z** endpoint device on the physical endpoints and through the applicable intermediate points on the technology layers.

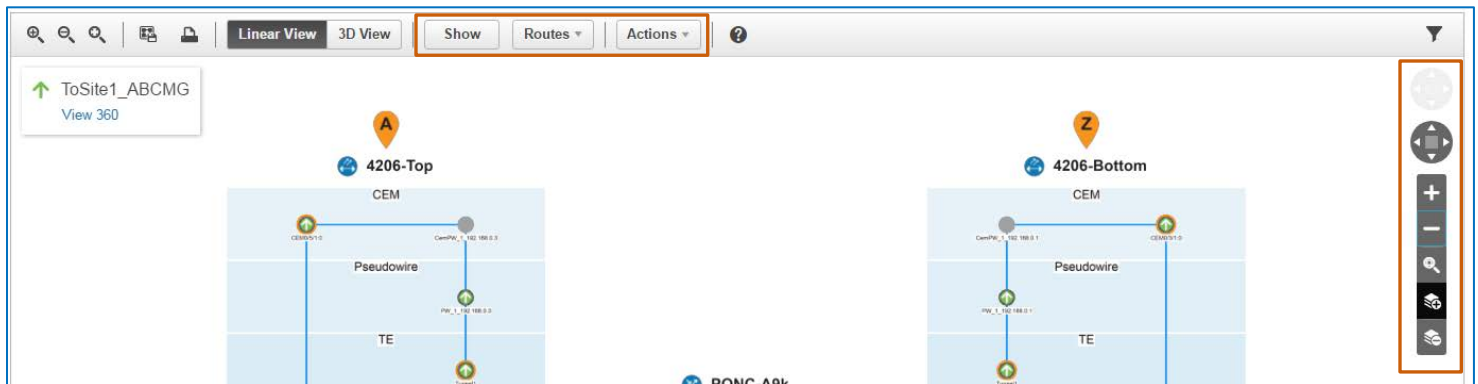
You can apply a three-dimensional layout...



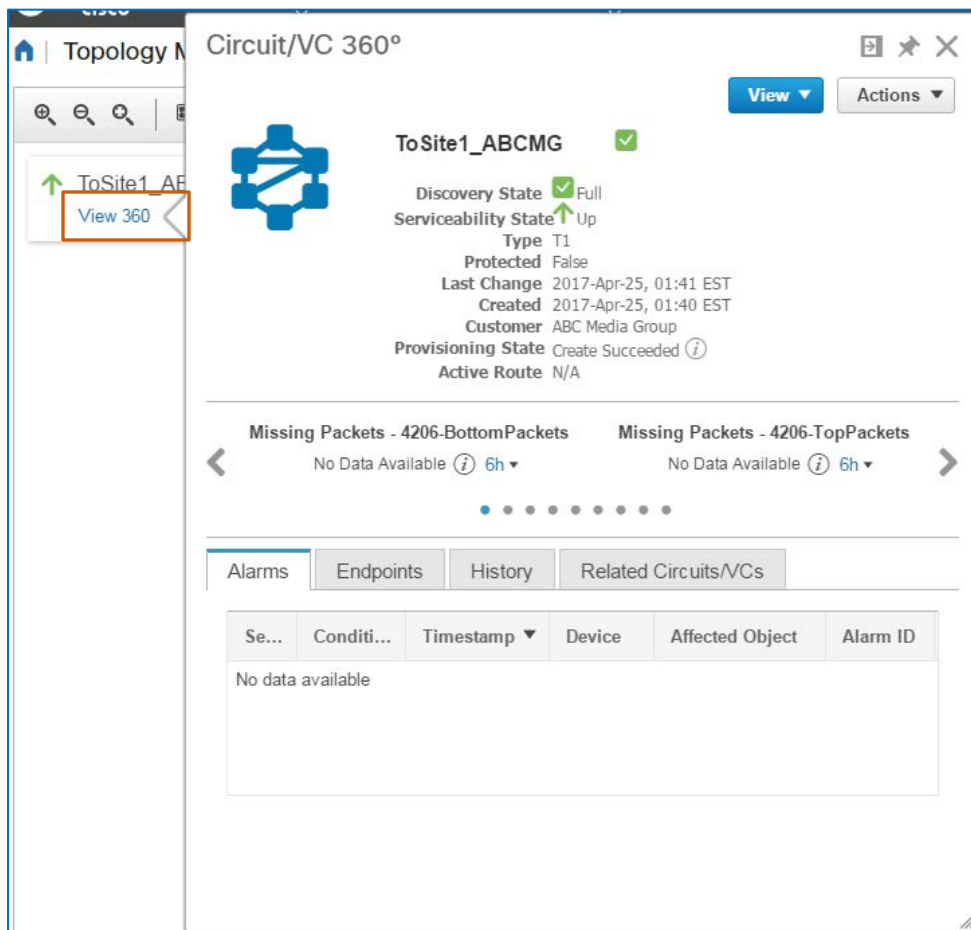
...or linear layout to the graphical view.



The view provides tools to manage the layout and the data that appears, and to review service details or take actions.



You also can open [the Circuit/VC 360° pop-up window](#) that reports information on the end-to-end service.



**Circuit/VC 360°**

**ToSite1\_ABCMG** ✓

- Discovery State ✓ Full
- Serviceability State ↑ Up
- Type T1
- Protected False
- Last Change 2017-Apr-25, 01:41 EST
- Created 2017-Apr-25, 01:40 EST
- Customer ABC Media Group
- Provisioning State Create Succeeded ⓘ
- Active Route N/A

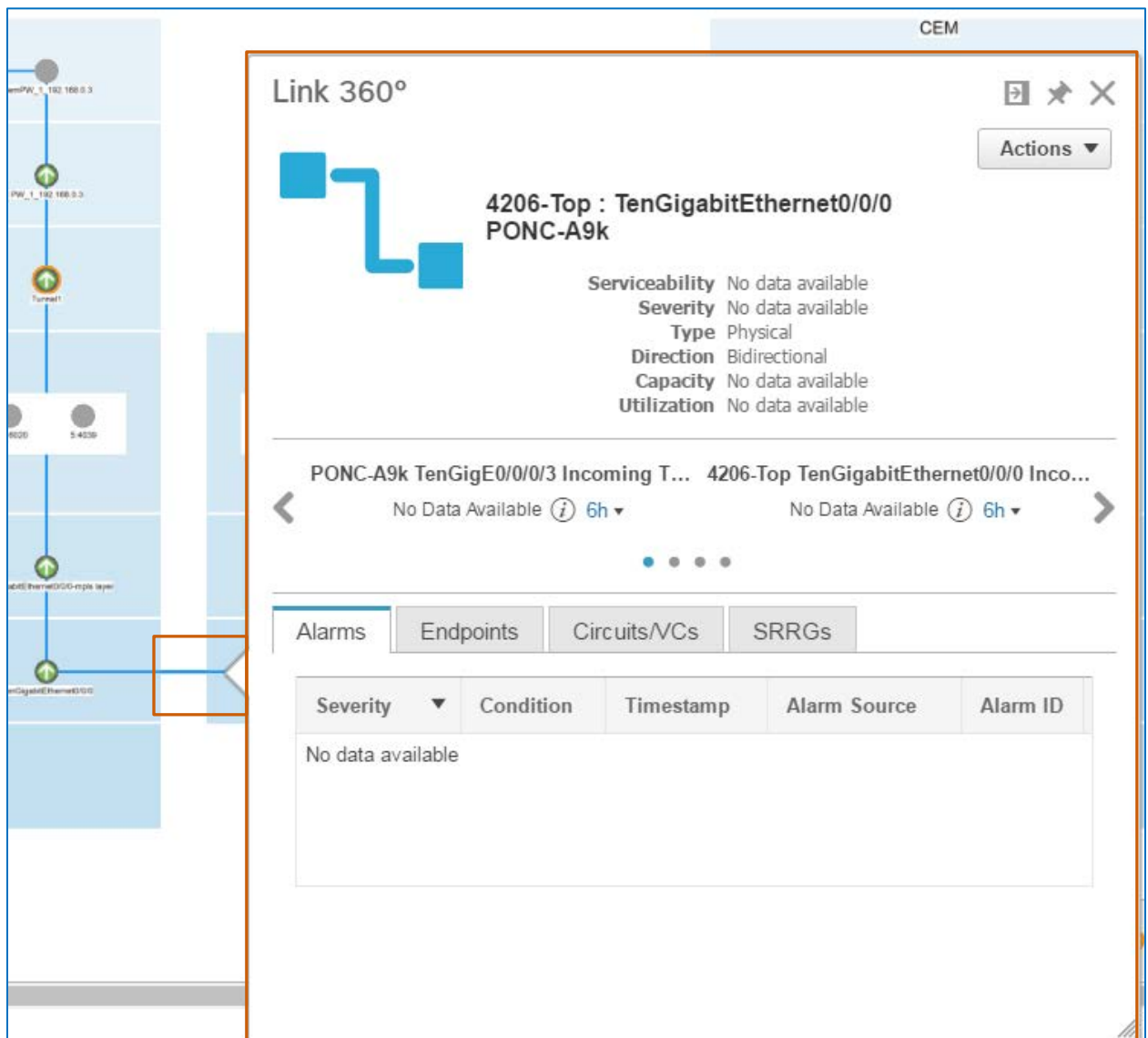
Missing Packets - 4206-BottomPackets No Data Available ⓘ 6h ▾

Missing Packets - 4206-TopPackets No Data Available ⓘ 6h ▾

Alarms Endpoints History Related Circuits/VCs

Se...	Condit...	Timestamp ▾	Device	Affected Object	Alarm ID
No data available					

You also can open details about intermediate links by clicking a link between intermediate interfaces carrying the service.



**Link 360°**

**4206-Top : TenGigabitEthernet0/0/0**  
**PONC-A9k**

Serviceability No data available  
Severity No data available  
Type Physical  
Direction Bidirectional  
Capacity No data available  
Utilization No data available

PONC-A9k TenGigE0/0/0/3 Incoming T... 4206-Top TenGigabitEthernet0/0/0 Inco...

No Data Available ⓘ 6h ▾ No Data Available ⓘ 6h ▾

Alarms Endpoints Circuits/VCS SRRGs

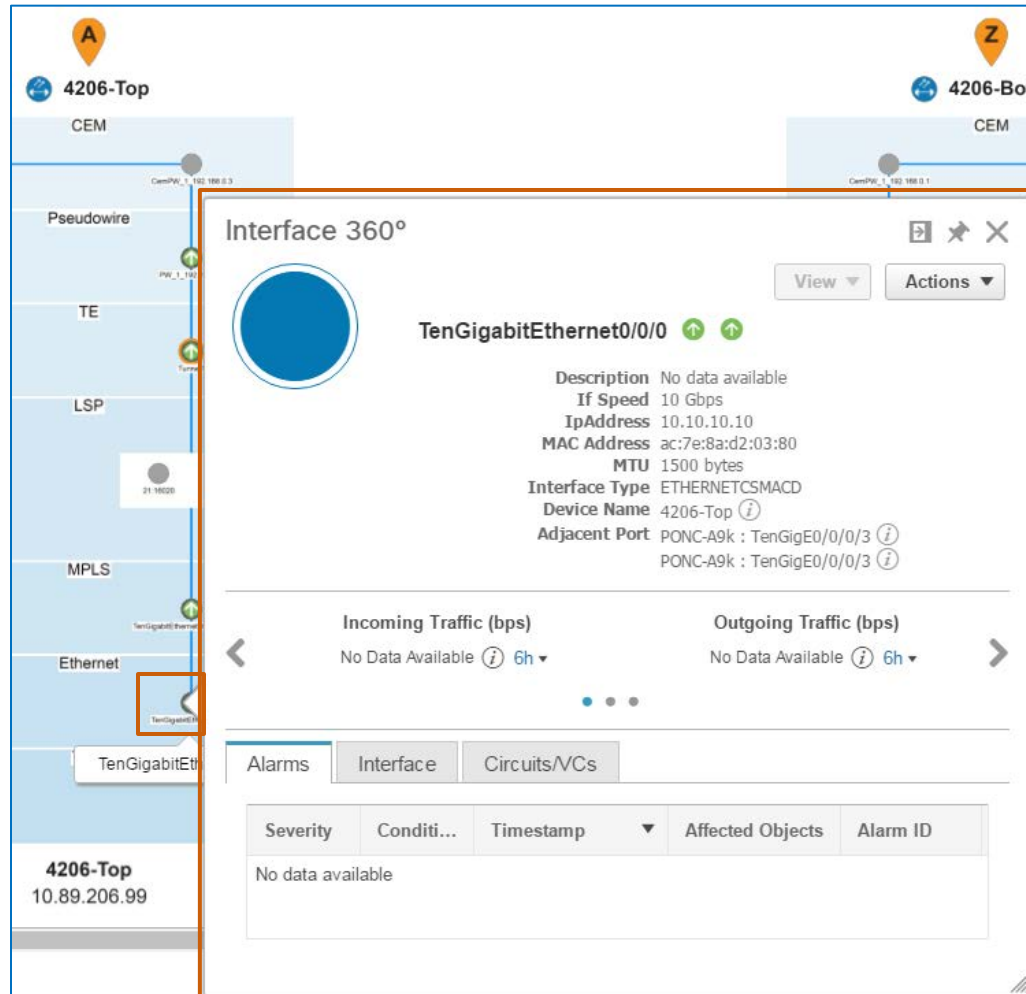
Severity ▾	Condition	Timestamp	Alarm Source	Alarm ID
No data available				



You can evaluate and manage the components at an interface level by opening the **Interface 360°** pop-up window.

**To open the pop-up window:**

- ❖ Click the interface icon.



The screenshot displays the Cisco Service Provisioning Tools interface. On the left, a vertical stack of network layers is shown: CEM, Pseudowire, TE, LSP, MPLS, and Ethernet. The Ethernet layer is highlighted, and a red box indicates the 'TenGigabitEthernet0/0/0' interface icon. A pop-up window titled 'Interface 360°' is open, showing details for the 'TenGigabitEthernet0/0/0' interface. The window includes a 'View' dropdown and an 'Actions' dropdown. The interface details are as follows:

Description	No data available
If Speed	10 Gbps
IpAddress	10.10.10.10
MAC Address	ac:7e:8a:d2:03:80
MTU	1500 bytes
Interface Type	ETHERNETCSMACD
Device Name	4206-Top <a href="#">i</a>
Adjacent Port	PONC-A9k : TenGigE0/0/0/3 <a href="#">i</a>
	PONC-A9k : TenGigE0/0/0/3 <a href="#">i</a>

Below the details, there are two sections for traffic: 'Incoming Traffic (bps)' and 'Outgoing Traffic (bps)', both showing 'No Data Available' with a refresh icon and a 6h timer. At the bottom, there are tabs for 'Alarms', 'Interface', and 'Circuits/VCs'. The 'Alarms' tab is selected, showing a table with columns: Severity, Condition, Timestamp, Affected Objects, and Alarm ID. The table currently shows 'No data available'.



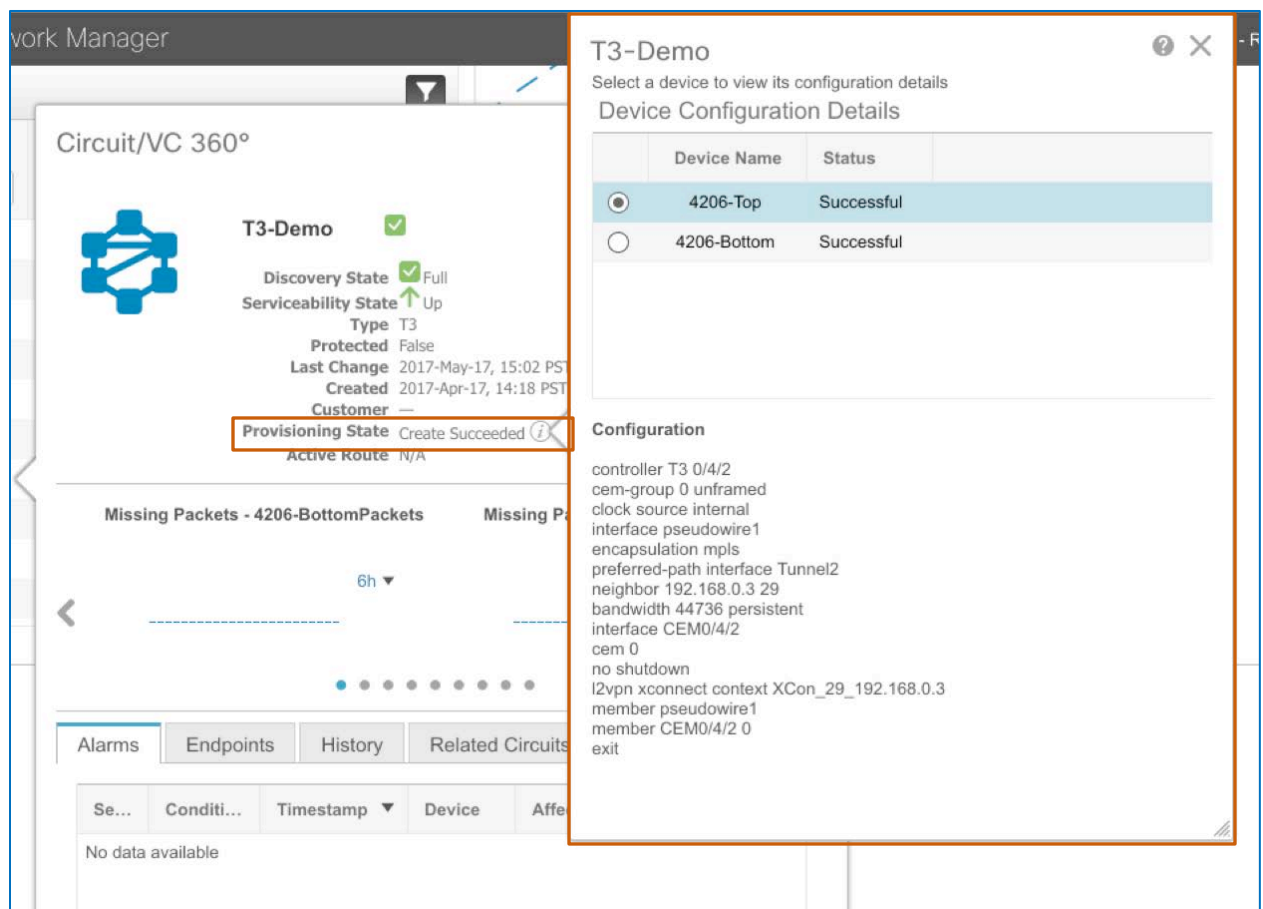
## Evaluating Changes Affecting Optical Services

### Reviewing Provisioning State Details

In cases in which a user has provisioned an optical circuit by using EPN Manager, the system indicates the provisioning state and provides details about the provisioning statuses of the devices and about their configurations in the circuit's **Circuit/VC 360°** pop-up window.

In those cases, the **Circuit/VC 360°** pop-up window provides an information button beside the **Provisioning State** indicator field.

To see the provisioning state information, you click the information button.



The screenshot shows the EPN Manager interface with a pop-up window titled "Circuit/VC 360°" for a circuit named "T3-Demo". The window displays various status indicators and a table of device configuration details.

**Provisioning State:** Create Succeeded (Information icon)

**Device Configuration Details:**

Device Name	Status
4206-Top	Successful
4206-Bottom	Successful

**Configuration:**

```

controller T3 0/4/2
cem-group 0 unframed
clock source internal
interface pseudowire1
encapsulation mpls
preferred-path interface Tunnel2
neighbor 192.168.0.3 29
bandwidth 44736 persistent
interface CEM0/4/2
cem 0
no shutdown
l2vpn xconnect context XCon_29_192.168.0.3
member pseudowire1
member CEM0/4/2 0
exit
  
```

### The Optical Service Circuit History

When provisioning of optical services is complete, the system begins building an audit trail of device and system changes that affect the service, referred to as the circuit history.

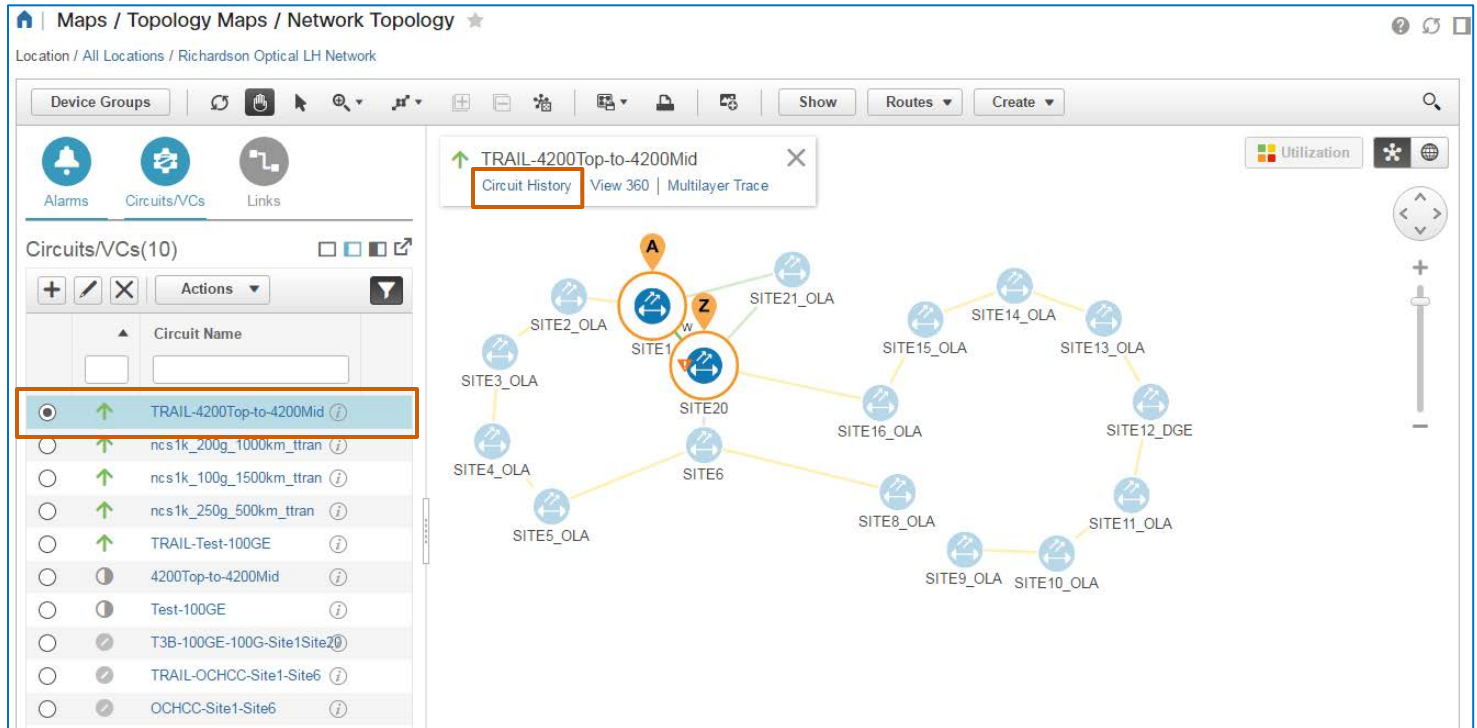
When you initially provision an optical service, you can refer to the history to:

- ❖ Validate that the system has discovered the service.

- ❖ Determine whether any other changes have occurred immediately after provisioning the service that might affect it.

**To open the circuit history:**

- ❖ In the **Circuits/VCs** list, select the service entry, and then, in the pop-up window, click **Circuit History**.



The screenshot displays the Cisco Service Provisioning Tools interface. On the left, the 'Circuits/VCs(10)' list is shown with a table of entries. The entry 'TRAIL-4200Top-to-4200Mid' is selected and highlighted with an orange box. Above this list, a pop-up window for 'TRAIL-4200Top-to-4200Mid' is open, with the 'Circuit History' tab selected and highlighted with an orange box. The main area of the interface shows a network topology map with various sites (SITE1, SITE20, SITE6, etc.) and their connections. The map is titled 'TRAIL-4200Top-to-4200Mid' and includes a 'View 360' and 'Multilayer Trace' option.

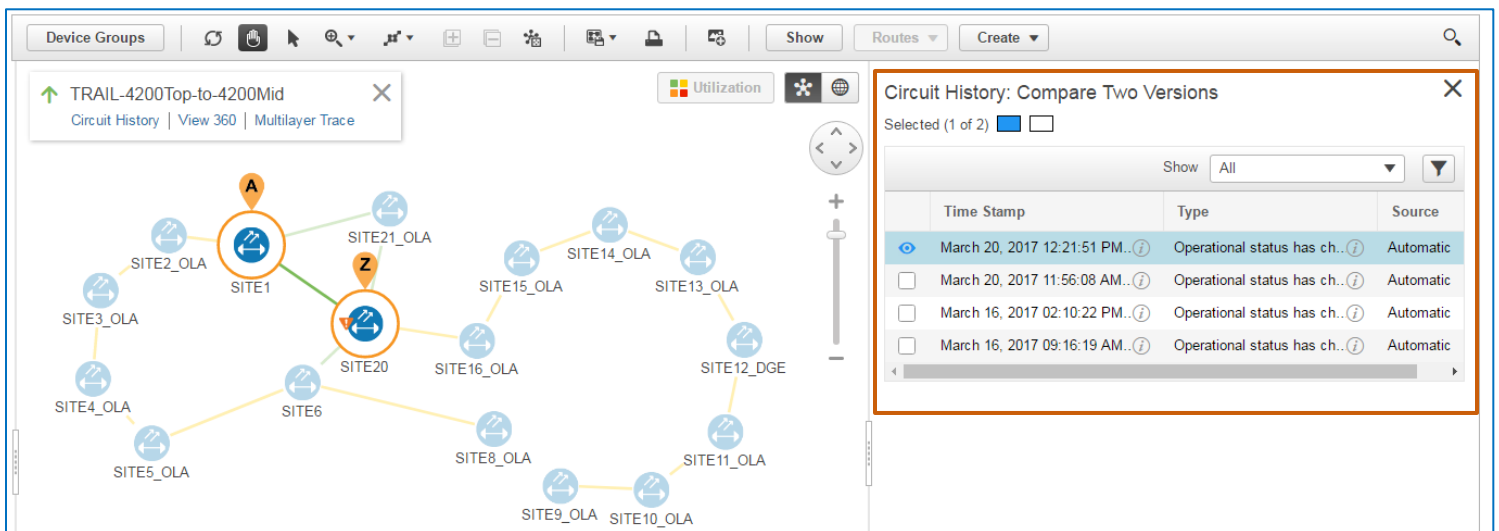
Circuit Name	Status	Actions
TRAIL-4200Top-to-4200Mid	Active	View 360   Multilayer Trace
ncs1k_200g_1000km_ttran	Active	
ncs1k_100g_1500km_ttran	Active	
ncs1k_250g_500km_ttran	Active	
TRAIL-Test-100GE	Active	
4200Top-to-4200Mid	Active	
Test-100GE	Active	
T3B-100GE-100G-Site1Site20	Active	
TRAIL-OCHCC-Site1-Site6	Active	
OCHCC-Site1-Site6	Active	

The **Circuit History** opens on the right side of the map and lists the network activity that affects the optical service.

In new (greenfield) deployments, the history of a newly provisioned optical service reports two actions:

- ❖ The first entry reports that the commands that you configured in EPN Manager have been deployed to the network, which then follows those commands to execute the provisioning process.
- ❖ When provisioning is complete, the circuit history reports that EPN Manager has discovered the provisioned circuit, which means it is available for use.

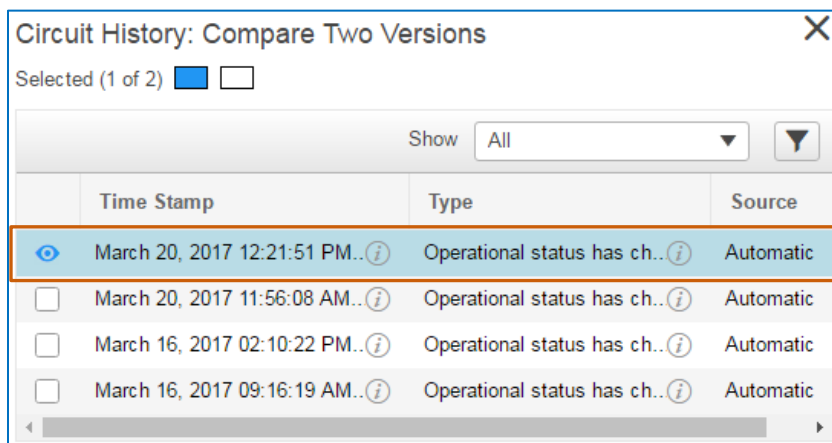
In previously existing (brownfield) deployments, the circuit history reports only whether EPN Manager has discovered the circuit.



The screenshot shows the EPN Manager interface. On the left, a network map displays various sites (SITE1, SITE2\_OLA, SITE3\_OLA, SITE4\_OLA, SITE5\_OLA, SITE6, SITE8\_OLA, SITE9\_OLA, SITE10\_OLA, SITE11\_OLA, SITE12\_DGE, SITE13\_OLA, SITE14\_OLA, SITE15\_OLA, SITE16\_OLA, SITE20, SITE21\_OLA) connected by lines. On the right, the 'Circuit History: Compare Two Versions' panel is open, showing a table of events.

Time Stamp	Type	Source
March 20, 2017 12:21:51 PM..	Operational status has ch..	Automatic
March 20, 2017 11:56:08 AM..	Operational status has ch..	Automatic
March 16, 2017 02:10:22 PM..	Operational status has ch..	Automatic
March 16, 2017 09:16:19 AM..	Operational status has ch..	Automatic

When network or device changes occur that can affect the service, the circuit history reports the change.



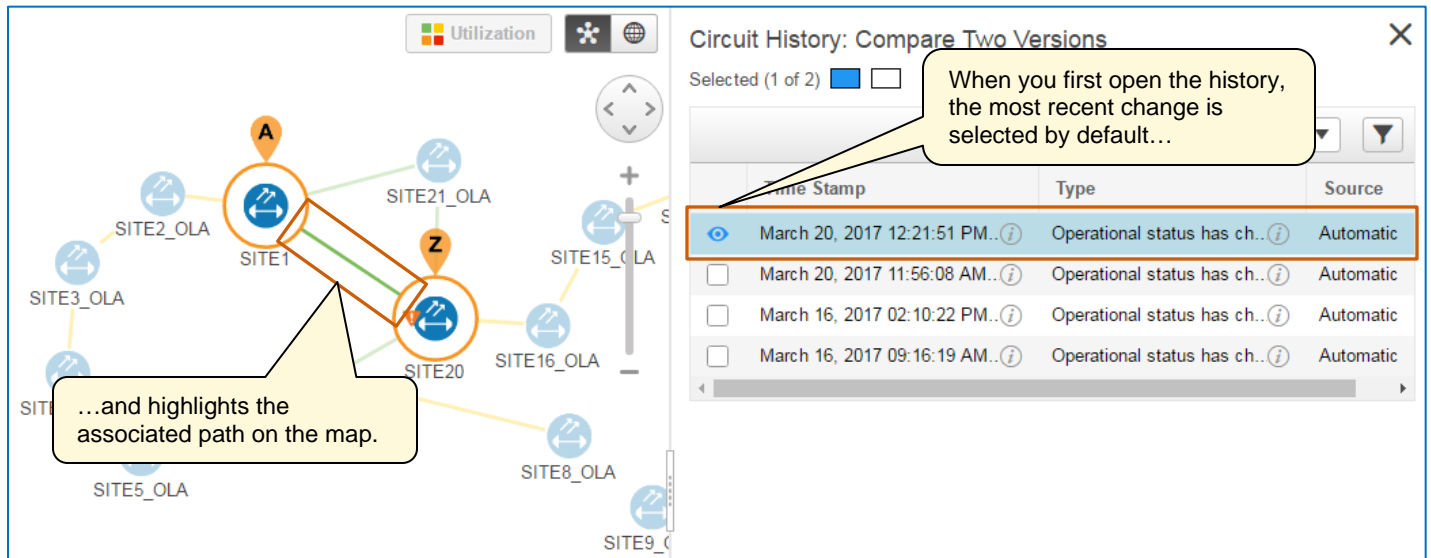
This is a close-up of the 'Circuit History: Compare Two Versions' panel. It shows a table with the same data as the previous screenshot, but with the first row highlighted in blue.

Time Stamp	Type	Source
March 20, 2017 12:21:51 PM..	Operational status has ch..	Automatic
March 20, 2017 11:56:08 AM..	Operational status has ch..	Automatic
March 16, 2017 02:10:22 PM..	Operational status has ch..	Automatic
March 16, 2017 09:16:19 AM..	Operational status has ch..	Automatic

Information in the circuit history can be helpful when you are evaluating issues or alarms that the system is reporting on the circuit.

You can review actions that the system or system users have taken that might be affecting the circuit's behavior or connectivity. For example, changes might occur that cause the service to switch from the working route to the protected route.

You also can compare any two entries in the history to help determine changes.



Utilization

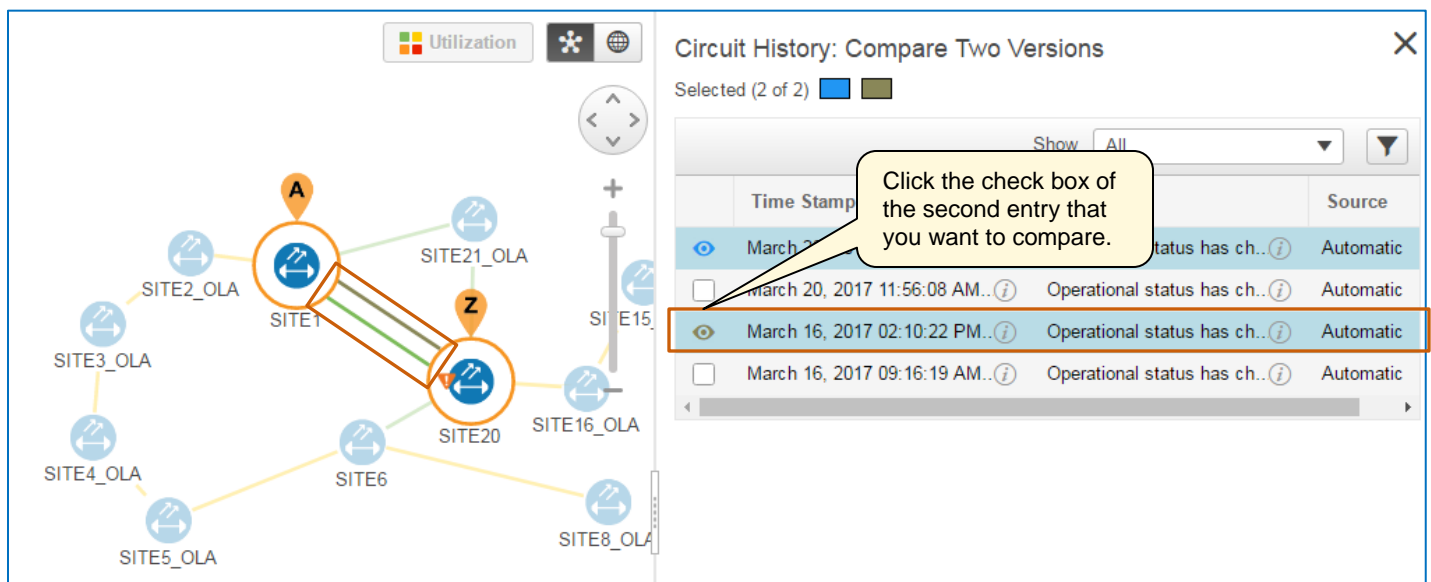
...and highlights the associated path on the map.

**Circuit History: Compare Two Versions**

Selected (1 of 2) ☒ ☐

When you first open the history, the most recent change is selected by default...

Time Stamp	Type	Source
<input checked="" type="checkbox"/> March 20, 2017 12:21:51 PM..i	Operational status has ch..i	Automatic
<input type="checkbox"/> March 20, 2017 11:56:08 AM..i	Operational status has ch..i	Automatic
<input type="checkbox"/> March 16, 2017 02:10:22 PM..i	Operational status has ch..i	Automatic
<input type="checkbox"/> March 16, 2017 09:16:19 AM..i	Operational status has ch..i	Automatic



Utilization

Click the check box of the second entry that you want to compare.

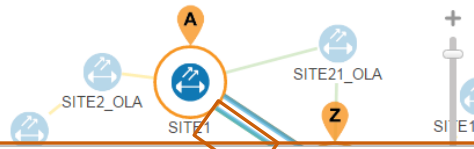
**Circuit History: Compare Two Versions**

Selected (2 of 2) ☒ ☒

Show All

Time Stamp	Type	Source
<input checked="" type="checkbox"/> March 20, 2017 12:21:51 PM..i	Operational status has ch..i	Automatic
<input checked="" type="checkbox"/> March 20, 2017 11:56:08 AM..i	Operational status has ch..i	Automatic
<input checked="" type="checkbox"/> March 16, 2017 02:10:22 PM..i	Operational status has ch..i	Automatic
<input type="checkbox"/> March 16, 2017 09:16:19 AM..i	Operational status has ch..i	Automatic

You can click either link to review details about its state.



	Time Stamp	Type	Source
<input checked="" type="checkbox"/>	March 20, 2017 12:21:51 PM...	Operational status has ch...	Automatic
<input type="checkbox"/>	March 20, 2017 11:56:08 AM...	Operational status has ch...	Automatic
<input checked="" type="checkbox"/>	March 16, 2017 02:10:22 PM...	Operational status has ch...	Automatic

Link Details

SITE1 - SITE20 ☒

Type OTS

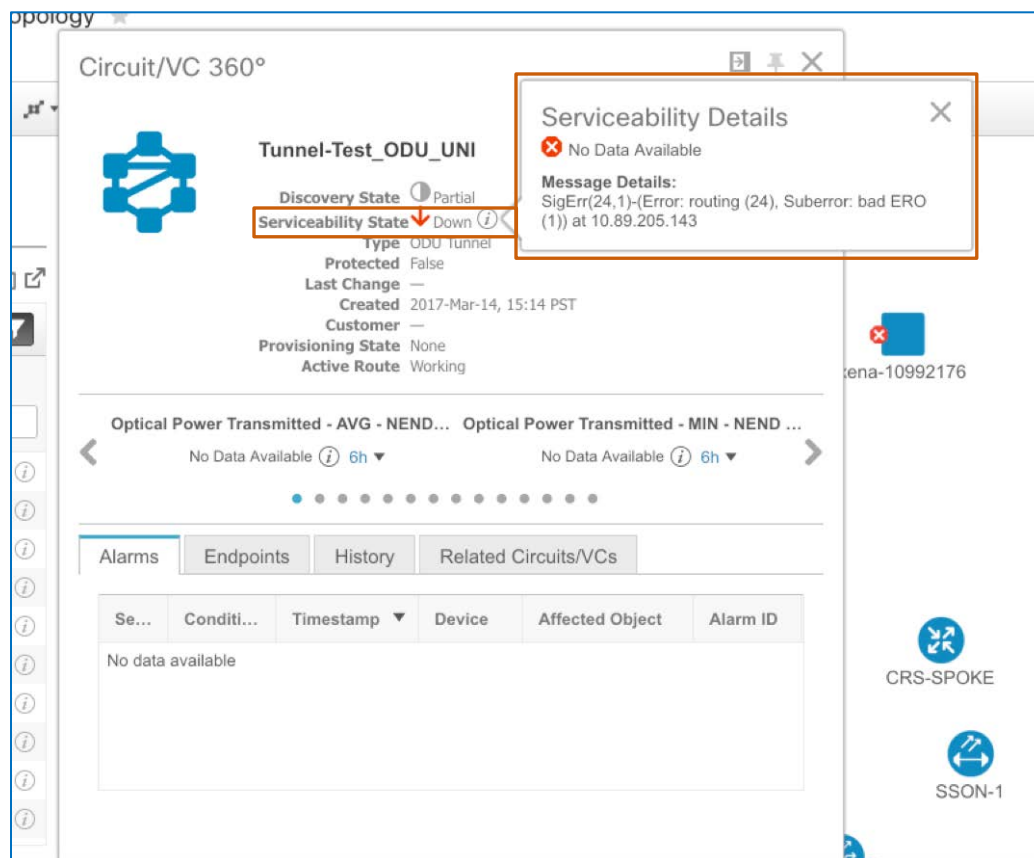
Severity	Link Name	Type	A Side Device	A Side Interface	Z Side Device	Z Side Interface	Utilization
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> SITE1:LINE... <input type="checkbox"/>	OTS	SITE1 <input type="checkbox"/>	<input checked="" type="checkbox"/> SITE1:LINE-1-3... <input type="checkbox"/>	SITE20 <input type="checkbox"/>	<input checked="" type="checkbox"/> SITE20:LINE-1... <input type="checkbox"/>	1.04 % (1/96 Channels) <input type="text"/>

## Serviceability Down State Details

When a circuit indicates a serviceability down state, in some cases, the system can capture details about the situation.

In cases in which details about the down state are available, the **Circuit/VC 360°** pop-up window for the circuit provides an information button beside the **Serviceability State** indicator field.

To see the serviceability down state information, you click the information button.



The screenshot shows the 'Circuit/VC 360°' pop-up window for a circuit named 'Tunnel-Test\_ODU\_UNI'. The 'Serviceability State' is 'Down', and an information button (i) is visible next to it. A 'Serviceability Details' dialog box is open, displaying the following information:

- Serviceability Details**
- ✖ No Data Available
- Message Details:**
- SigErr(24,1)-(Error: routing (24), Suberror: bad ERO (1)) at 10.89.205.143

The main window also shows other details for the circuit:

- Discovery State:** Partial
- Protected:** False
- Last Change:** —
- Created:** 2017-Mar-14, 15:14 PST
- Customer:** —
- Provisioning State:** None
- Active Route:** Working

Below these details, there are sections for 'Optical Power Transmitted - AVG - NEND...' and 'Optical Power Transmitted - MIN - NEND ...', both showing 'No Data Available' with a 6h refresh button. At the bottom, there are tabs for 'Alarms', 'Endpoints', 'History', and 'Related Circuits/VCs'. The 'Alarms' tab is selected, showing a table with columns: 'Se...', 'Condi...', 'Timestamp', 'Device', 'Affected Object', and 'Alarm ID'. The table currently displays 'No data available'.

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