



Monitoring Carrier Ethernet Services

The following topics describe how you can use Cisco Prime Network Vision (Prime Network Vision) to monitor Carrier Ethernet services:

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User Roles Required to Work with Carrier Ethernet Services

This topic identifies the roles that are required to work with to Carrier Ethernet services in Prime Network Vision. Prime Network determines whether you are authorized to perform a task as follows:

- For GUI-based tasks (tasks that do not affect elements), authorization is based on the default permission that is assigned to your user account.
- For element-based tasks (tasks that do affect elements), authorization is based on the default permission that is assigned to your account. That is, whether the element is in one of your assigned scopes and whether you meet the minimum security level for that scope.

For more information on user authorization, see the Cisco Prime Network 3.10 Administrator Guide.

The following tables identify the tasks that you can perform:

- Table 13-1 identifies the tasks that you can perform if a selected element is not in one of your assigned scopes.
- Table 13-2 identifies the tasks that you can perform if a selected element **is in** one of your assigned scopes.

By default, users with the Administrator role have access to all managed elements. To change the Administrator user scope, see the topic on device scopes in the *Cisco Prime Network 3.10 Administrator Guide*.

Task	Viewer	Operator	OperatorPlus	Configurator	Administrator
Adding Elements to Maps			1	L.	
Add associated VLANs to a map			Х	Х	Х
Add EFP cross-connects			Х	Х	Х
Add Ethernet services to a map			Х	Х	Х
Add pseudowires to a map			Х	Х	Х
Add unassociated bridges			Х	Х	Х
Add VLANs to a map			Х	Х	Х
Add VPLS instances to a map			Х	Х	Х
Viewing Element Properties			1	L.	
View access gateway properties			_		Х
View associated network VLAN service links and VLAN mapping properties	_		_	_	Х
View CDP properties			_		Х
View EFD properties			_		Х
View EFP cross-connect properties	Partial ¹	Partial ¹	Partial ¹	Partial ¹	Х
View EFP properties	Partial ¹	Partial ¹	Partial ¹	Partial ¹	Х
View Ethernet flow domains	Х	Х	X	Х	Х
View Ethernet LAG properties	_		—	_	Х
View Ethernet service properties	Х	Х	X	Х	Х

 Table 13-1
 Default Permission/Security Level Required for Working with Carrier Ethernet

 Services - Element Not in User's Scope

Task	Viewer	Operator	OperatorPlus	Configurator	Administrator
View EVC service properties	_				Х
View IP SLA responder service properties			_	_	Х
View IS-IS properties	_				Х
View Link Layer Discovery Protocol (LLDP) properties	_		_		Х
View mLACP properties	_				Х
View OSPF properties	_				Х
View Provider Backbone Bridge (PBB) properties			_	_	Х
View pseudowire properties	Partial ¹	Partial ¹	Partial ¹	Partial ¹	Х
View pseudowire redundancy service properties	Partial ²	Partial ²	Partial ²	Partial ²	
View REP properties	—				Х
View REP properties for VLAN service links	_		_	_	Х
View STP properties	_				Х
View STP properties for VLAN service links	_		_	_	Х
View HSRP properties	_				X
View virtual service instance properties	_	—	_	_	Х
View VLAN bridge properties	_				Х
View VLAN links between VLAN elements and devices	Partial ³	Partial ³	Partial ³	Partial ³	Х
View VLAN mappings	_				Х
View VLAN service link properties	_				Х
View VLAN trunk group properties	_				Х
View VPLS access EFP properties	_				Х
View VPLS core or access pseudowire endpoint properties	_	—	_	—	Х
View VPLS instance properties	Х	Х	Х	Х	Х
Working with Overlays	1	1			
Apply overlays	Х	Х	Х	Х	Х
Display or hide overlays	Х	X	X	Х	Х
Remove overlays	Х	X	X	X	Х
View pseudowire tunnel links in VPLS overlays	_		_	_	Х

Table 13-1 Default Permission/Security Level Required for Working with Carrier Ethernet Services - Element Not in User's Scope (continued) Services

Task	Viewer	Operator	OperatorPlus	Configurator	Administrator
View REP information in VLAN domain views and VLAN overlays			_	_	X
View STP information in VLAN domain views and VLAN overlays		_	—	—	Х
Other Tasks			•	1	
Display pseudowire information		_			X
Ping a pseudowire		_			Х
Remove VLANs from a map	_	_	Х	Х	Х
Rename Ethernet flow domains	Х	Х	Х	Х	Х
Using REP and mLACP Show Commands		_	—	X	Х
Using Pseudowire Ping and Show Commands		_	_	X	X

Table 13-1 Default Permission/Security Level Required for Working with Carrier Ethernet Services - Element Not in User's Scope (continued)

1. The user can view properties available via **Node > Properties** but not those available via the right-click Properties option or in logical inventory.

2. The user can view the pseudowire redundancy icon in the navigation and map panes, but not the inventory or properties window.

3. The user can view links, but the links are dimmed and do not indicate their status.

Table 13-2 Default Permission/Security Level Required for Working with Carrier Ethernet Services - Element in User's Scope

Task	Viewer	Operator	OperatorPlus	Configurator	Administrator
Adding Elements to a Map		1	I.	L.	1
Add associated VLANs to a map		_	Х	Х	Х
Add EFP cross-connects		_	Х	Х	Х
Add Ethernet services to a map		_	Х	Х	Х
Add pseudowires to a map		_	Х	Х	Х
Add unassociated bridges		_	Х	Х	Х
Add VLANs to a map		_	Х	Х	Х
Add VPLS instances to a map		_	Х	Х	Х
Viewing Element Properties		1	1	L.	
View access gateway properties	Х	Х	Х	Х	Х
View associated network VLAN service links and VLAN mapping properties	X	Х	X	X	Х
View CDP properties	Х	X	Х	Х	Х
View EFD properties	Х	X	Х	Х	Х
View EFP cross-connect properties	Х	Х	Х	Х	Х

Task	Viewer	Operator	OperatorPlus	Configurator	Administrator
View EFP properties	Х	Х	Х	Х	Х
View Ethernet flow domains	Х	Х	Х	X	Х
View Ethernet LAG properties	Х	Х	Х	Х	Х
View Ethernet service properties	Х	Х	Х	Х	Х
View EVC service properties	Х	Х	Х	Х	Х
View IP SLA responder service properties	Х	X	X	X	X
View IS-IS properties	Х	Х	Х	X	Х
View Link Layer Discovery Protocol (LLDP) properties	Х	X	X	X	X
View mLACP properties	X	Х	Х	Х	Х
View OSPF properties	X	Х	Х	Х	Х
View Provider Backbone Bridge (PBB) properties	Х	X	Х	Х	X
View pseudowire properties	Х	Х	Х	Х	Х
View pseudowire redundancy service properties	Х	X	Х	Х	X
View REP properties	Х	Х	Х	Х	Х
View REP properties for VLAN service links	Х	X	X	Х	X
View HSRP properties	Х	Х	Х	Х	Х
View STP properties	Х	Х	Х	Х	Х
View STP properties for VLAN service links	Х	X	Х	Х	X
View VLAN bridge properties	X	Х	Х	Х	Х
View VLAN links between VLAN elements and devices	Х	X	Х	Х	X
View VLAN mappings	Х	Х	Х	Х	Х
View VLAN service link properties	Х	Х	X	Х	Х
View VLAN trunk group properties	Х	X	Х	Х	Х
View VPLS access EFP properties	Х	Х	Х	Х	Х
View VPLS core or access pseudowire endpoint properties	Х	X	X	X	X
View VPLS instance properties	Х	Х	X	Х	Х
View VSI properties	Х	Х	X	Х	Х

Table 13-2 Default Permission/Security Level Required for Working with Carrier Ethernet Services - Element in User's Scope (continued)

Task	Viewer	Operator	OperatorPlus	Configurator	Administrator
Working with Overlays			•		I
Apply overlays	Х	Х	Х	Х	Х
Display or hide overlays	Х	Х	Х	Х	X
Remove overlays	Х	Х	Х	Х	Х
View pseudowire tunnel links in VPLS overlays	X	X	X	X	X
View REP information in VLAN domain views and VLAN overlays	X	X	Х	X	X
View STP information in VLAN domain views and VLAN overlays	X	X	Х	X	X
Other Tasks	I			1	
Display pseudowire information				Х	Х
Ping a pseudowire				Х	Х
Remove VLANs from a map			Х	Х	Х
Rename Ethernet flow domains	Х	Х	Х	Х	Х
Using REP and mLACP Show Commands			_	X	X
Using Pseudowire Ping and Show Commands			—	X	Х

Table 13-2 Default Permission/Security Level Required for Working with Carrier Ethernet Services - Element in User's Scope (continued)

Viewing CDP Properties

Cisco Discovery Protocol (CDP) is primarily used to obtain protocol addresses of neighboring devices and discover the platform of those devices.

In Logical Inventory

To view CDP properties:

Step 1 In Prime Network Vision, double-click the device whose CDP properties you want to view.

Step 2 In the inventory window, click **Logical Inventory > Cisco Discovery Protocol**.

The CDP properties are displayed in logical inventory as shown in Figure 13-1.

NF	PE1-9K-FL	Poll Now							
•	Logical Inventory Access Gateway	Process:	Cisco Discovery I	Protocol	Process Status		Running		
	Access Lists	CDP Holdtime:	120.0 sec		CDP Message I	Interval:	5.0 sec		
	ATM Traffic Profiles	CDP Local Device ID:	NPE1-9K-FL.cisco	com	CDP Version:		2		
<u>ا</u>	Bidirectional Forwarding Detectio Bridges	r	THEI SKIELISCO	com	CD/ YCI3ION		2		
	Cisco Discovery Protocol								
	Ethernet Link Aggregation	CDP Neighbors Table	9						
Þ	IS-IS	Find :		1					
	Local Switching LSEs								
	Modular OS	Local Port $\begin{array}{c} \bullet \land \end{array}$		Local Por		Remote D AGG1-652		Remote Port ID	Remote IP Address 10.204.55.24
▶	MPBGPs	NPE1-9K-FL#0:Gigabit			nernet0/0/0/29			GigabitEthernet1/32	
•	OAM	NPE1-9K-FL#0:Gigabit		-	nernet0/0/0/30	CRS1-1-FI		GigabitEthernet0/4/2/2	10.204.2.1
	OSPF Processes Pseudowires	NPE1-9K-FL#0:Gigabit			nernet0/0/0/38	GSR1-IOX		GigabitEthernet0/2/1/0	10.204.2.18
>	Routing Entities	NPE1-9K-FL#0:Gigabit		-	nernet0/0/0/39	NPE2-760		GigabitEthernet4/10	10.204.2.9
F B	Traffic Engineering Tunnels	NPE1-9K-FL#1:Gigabit			nernet0/1/0/37	NPE2-760		GigabitEthernet4/7	10.220.1.10
• 🛄	VC Switching Entities Physical Inventory	NPE1-9K-FL#1:Gigabit	Ethernet0/1/0/39	GigabitEt	nernet0/1/0/39	CRS1-1-FI	Cisc.com	GigabitEthernet0/4/0/0	10.56.59.30
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Figure 13-1 CDP in Logical Inventory

Table 13-3 describes the CDP instance properties that are displayed.

 Table 13-3
 CDP Properties in Logical Inventory

Field	Description				
Process	Process name; in this case, Cisco Discovery Protocol				
Process Status	Process status: Running or Disabled.				
CDP Holdtime	ime Specifies the amount of time a receiving device should hold the information sent by a device before discarding it.				
CDP Message Interval	Interval between CDP advertisement transmissions.				
CDP Local Device ID	Local device identifier.				
CDP Version	CDP version: 1 or 2.				
CDP Neighbors Table					
Local Port	Local port name.				
Local Port ID	Local port identifier.				
Remote Device ID	Remote device identifier.				
Remote Port ID	Remote port identifier.				
Remote IP Address	Remote IP address.				

In Physical Inventory

To view CDP on a Layer 2 port:

- **Step 1** In Prime Network Vision, double-click the device with the Layer 2 port with the CDP information you want to view.
- Step 2 In the inventory window, select the required port under Physical Inventory.

The CDP information is displayed in the Discovery Protocols area in the Prime Network Vision content pane:

- Discovery Protocol Type—CDP
- Info—Up or Down

Viewing Link Layer Discovery Protocol Properties

LLDP stores and maintains the local device information, including a list of devices directly connected to the device.

In Logical Inventory

To view LLDP properties:

- **Step 1** In Prime Network Vision, double-click the device with the LLDP information you want to view.
- Step 2 In the inventory window, choose Logical Inventory > Link Layer Discovery Protocol. The LLDP properties are displayed in logical inventory as shown in Figure 13-2.

🔽 c7	7-sw10 [1N]	Poll Now						
e	Logical Inventory Access Lists	Process:	Link Laver Dis	covery Protocol	Process Status:	Running		
	Access Lists Bridges	LLDP Hold Time:	120.0 sec		LLDP Reinitialisation Del			
-	CFM	LLDP Advertisements Interval:	30.0 sec		Local System Name:	c7-sw10		
	Cisco Discovery Protocol Ethernet LMI	Local Chassis ID:	00 22 0C 98 F		Local System Name.	C7-SWID		
	IP SLA Responder	Local Chassis ID:	UU 22 UL 98 F4	4 80				
	Link Layer Discovery Protocol							
	Local Switching LSEs	LLDP Neighbors Table						
▶ IIII	MPBGPs	Find :		局局				
,	OAM	Local Port $ \underbrace{ \begin{array}{c} \\ \end{array}} /$		Local Port Name	Remote Chassis ID	Remote System Name	Remote Port ID	Remote Port Name
•	Operating System Resilient Ethernet Protocol	c7-sw10#0:GigabitEthernet1/0/2			00 22 0C 98 F4 00	c7-sw9	Gi1/0/2	GigabitEthernet1/0/2
	Routing Entities Spanning Tree Protocol	c7-sw10#1:GigabitEthernet1/1/2	Gi1/1/2	GigabitEthernet1/1/2	00 22 0C 99 09 00	c7-sw8	Gi1/1/2	GigabitEthernet1/1/2
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ts N	letwork Events Provisioning Events							

Figure 13-2 LLDP in Logical Inventory

Table 13-4 describes the properties that are displayed for LLDP.

Table 13-4	Link Layer Discovery Protocol Properties
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Field	Description
Process	Process; in this case, Link Layer Discovery Protocol
Process Status	Process status: Running or Disabled.
LLDP Hold Time	LLDP advertised hold time in seconds.
LLDP Reinitialization Delay	LLDP interface reinitialization delay in seconds
LLDP Advertisements Interval	LLDP advertisements interval in seconds.
Local System Name	Local system name.
Local Chassis ID	Local chassis identifier.

Field	Description
LLDP Neighbors Table	
Local Port	Local port.
Local Port ID	Local port identifier.
Local Port Name	Local port name.
Remote System Name	Remote system name.
Remote Chassis ID	Remote chassis identifier.
Remote Port ID	Remote port identifier.
Remote Port Name	Remote port name.
Remote Management IP	Remote management IP address.

Table 13-4 Link Layer Discovery Protocol Properties (continued)

In Physical Inventory

To view LLDP on a Layer 2 port:

- **Step 1** In Prime Network Vision, double-click the device with the Layer 2 port with LLDP information you want to view.
- Step 2 In the inventory window, select the required port under Physical Inventory.

The LLDP information is displayed in the Discovery Protocols area in the Prime Network Vision content pane:

- Discovery Protocol Type—LLDP
- Info—Tx (Enabled or Disabled), Rx (Enabled or Disabled).

Viewing Spanning Tree Protocol Properties

STP is a link management protocol that provides path redundancy while preventing undesirable loops in the network.

To view Spanning Tree properties:

- Step 1 In Prime Network Vision, double-click the element whose STP properties you want to view.
- **Step 2** In the inventory window, choose **Logical Inventory > Spanning Tree Protocol**.
- **Step 3** STP properties are displayed in logical inventory as shown in Figure 13-3.

	Logical Inventory [2M]	* 🕐 Poll Now							
-	Access Gateway								
v	2 (MSTAG) GigabitEthernet2/0/19	Process:		Spanning Tree		rocess Status:	Running		
	Access Lists	Bridge Hello	ime:	1.0 sec	ŀ	tello Time:	1.0 sec		
, <u>,</u>	ATM Traffic Profiles	Bridge Forwa	rd Delay:	4.0 sec	F	orward Delay:	4.0 sec		
	Bidirectional Forwarding Detection	Bridge Max A	ge:	6.0 sec	P	1ax Age:	6.0 sec		
	Bridges Cisco Discovery Protocol	STP Protocol		MST	i	JolinkFast:	Down		
> 🔳 🖤	Clock [2M]	BackboneFas	F.	Down					
	Ethernet Link Aggregation	Dackbonera	C;	DOMU					
	Ethernet LMI								
	Frame Relay Traffic Profiles ICCP Redundancy								
•	IS-IS	STP Instand	e Info Table	Э					
	Local Switching	Find :		🖬 🛃 🗸	* 戸戸市	ŀ			
	LSEs MPBGPs	STP Instance	ID 👬	VLAN Ids	Bridge Priority	STP Root Port	Root Cost	Designated Root	Bridge ID
- EF	MPLS-TP	MSTO		[1-4094]	32768		0	00 1E BE 8A B7 80	00 1E BE 8A B7 80
				1					
,	OAM								
	Operating System								
P	OSPF Processes Pseudowires								
- E	Resilient Ethernet Protocol								
	SeamentId 100								
	SegmentId 300								
►	Routing Entities								
•	Spanning Tree Protocol								
	Mst Properties								
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Figure 13-3 STP in Logical Inventory

Table 13-5 describes the properties that are displayed for STP.

Table 13-5 STP Properties

Field	Description
Process	Process; in this case, Spanning Tree Protocol.
Process Status	Process status: Running or Disabled.
Bridge Hello Time	Hello message keepalive interval (in seconds) when the port is the root.
Hello Time	Current hello time (in seconds).
Bridge Forward Delay	When the port is the root and in listening or learning state, amount of time to wait (in seconds) before proceeding to the forwarding state.
Forward Delay	Current bridge forward delay (in seconds).
Bridge Max Age	When the port is the root, maximum age of learned Spanning Tree Protocol port information (in seconds).
Max Age	Current maximum age (in seconds).
STP Protocol	STP version: MST, RSTP, PVSTP, MSTP, or RPVST.
UplinkFast	PVSTP Uplink Fast function status: Up or Down.
BackboneFast	PVSTP BackboneFast function status: Up or Down.

Field	Description
STP Instance Info Table	
STP Instance ID	STP instance name.
VLAN IDs	VLAN identifiers.
Bridge Priority	Bridge priority.
STP Root Port	Hyperlinked entry to the STP port in logical or physical inventory.
Root Cost	Root cost value for this bridge.
Designated Root	MAC address of the designated root.
Bridge ID	Bridge identifier (MAC address).
Bridge Hello Time	Hello message keepalive interval (in seconds) when the port is the root.
Hello Time	Current hello time (in seconds).
Bridge Forward Delay	When the port is the root and in the listening or learning state, amount of time to wait (in seconds) before proceeding to the forwarding state.
Forward Delay	Current bridge forward delay (in seconds).
Bridge Max Age	When the port is the root, maximum age of learned Spanning Tree Protocol port information (in seconds).
Max Age	Current maximum age (in seconds).

Table 13-5	STP Properties (continued)
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Step 4 To view the properties of an STP instance, do one of the following:

- Double-click the required instance.
- Click the required entry in logical inventory under the Spanning Tree Protocol branch.

Table 13-6 describes the information that is displayed in the STP Instance Information Properties window.

 Table 13-6
 STP Instance Information Properties

Field	Description
STP Instance ID	STP instance identifier.
VLAN ID	VLAN identifier.
Bridge Priority	Bridge priority.
Bridge ID	Bridge identifier (MAC address).
Root Cost	Root cost value for this bridge.
Designated Root	MAC address of the designated root.
Bridge Hello Time	Hello message keepalive interval (in seconds) when the port is the root.
Hello Time	Current hello time (in seconds).
Bridge Forward Delay	When the port is the root and in listening or learning state, amount of time to wait (in seconds) before proceeding to the forwarding state.
Forward Delay	Current bridge forward delay (in seconds).
Bridge Max Age	When the port is the root, the maximum age of learned Spanning Tree Protocol port information (in seconds).

Field	Description
Max Age	Current maximum age (in seconds).
STP Protocol Specification	Specific STP protocol type or variant used for this instance, such as Rapid PvSTP.
Is Root	Whether or not the port is the root: True or False.
Ports Info Table	
STP Port	Hyperlinked entry to the STP port in physical inventory.
Port State	STP port state: Disabled, Blocking, Listening, Learning, or Forwarding,
Port Role	Port role: Unknown, Backup, Alternative, Designated, Root, or Boundary.
Port Priority	Default 802.1p priority assigned to untagged packets arriving at the port.
Port Path Cost	Port path cost, which represents the media speed for this port.
Point To Point Port	Whether or not the port is linked to a point-to-point link: True or False.
Edge Port	Whether or not the port is an edge port; that is, whether it is connected to a nonbridging device: True or False.
MST Port Hello Time	This field is displayed in the Ports Info Table only for MST.
	In seconds, the interval between hello BPDUs sent by root switch configuration messages. The range is 1 to 10 seconds.
Port Identifier	STP port identifier.
Portfast	Whether or not STP PortFast is enabled on the port: Up or Down.
Designated Port Identifier	Designated STP port identifier.
Designated Bridge	STP designated bridge.
BPDU Filter	BPDU Filter status: Up or Down.
BPDU Guard	BPDU Guard status: Up or Down.

Table 13-6 STP Instance Information Properties (continued)

Step 5 To view MSTP properties, choose the required MSTP entry in logical inventory under Spanning Tree Protocol.

Table 13-7 describes the information that is displayed for MSTP.

Field	Description
MST Force Version	Force version used: MST, PVSTP, RSTP, STP, or Unknown.
MST Cfg ID Rev Level	Revision level used by the selected device and negotiated with other devices.
MST Cfg ID Name	MSTP instance name.
MST Max Instances	Maximum number of MSTP instances.
MST Cfg ID Fmt Sel	Configuration format used by this device and negotiated with other devices.
MST External Root Cost	External root cost of the MSTP instance.

Table 13-7 MSTP Properties in Logic	al Inventory
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The following topics describe how to view STP properties related to:

- VLAN domain views and overlays—See Viewing STP Information in VLAN Domain Views and VLAN Overlays, page 13-65.
- VLAN service link properties—See Viewing STP Properties for VLAN Service Links, page 13-66.

Viewing Resilient Ethernet Protocol Properties

Cisco Resilient Ethernet Protocol (REP) technology is implemented on Cisco Carrier Ethernet switches and intelligent service edge routers. REP is a segment protocol, and a REP segment is a chain of ports connected to each other and configured with the same segment identifier. Each end of a segment terminates on an edge switch. The port where the segment terminates is called the edge port.

Cisco Prime Network discovers and displays REP Segments (identified by a REP segment identifier that is locally configured on the network element) along with Global REP configuration details.

You can also view the REP port roles (open, alternate, and failed) in the Cisco Prime Network Vision map. The REP port role is displayed as a tool-tip between the REP enabled trunk ports in the Ethernet links. Using the Cisco Prime Network Vision map, you can identify if the segment is open or closed.

The map displays the forwarding direction (REP port roles) along the Physical links within VLAN overlays. It also displays the forwarding direction along the VLAN links among the switching elements within the VLAN logical domain topology.

REP implementation supports the following faults:

- A REP Port Role change to Failed service event will be generated when a REP port role is change from Alternate or Open to Failed.
- A REP Port Role change to OK clearing service event will be generated when a REP port role is change from Failed to Alternate or Open.

Correlation to these service events to physical layer events (for example Link down or Port down) is also performed.

You can REP properties in logical inventory.

Step 1 In Prime Network Vision, double-click the device configured for REP.

Step 2 In the inventory window, choose **Logical Inventory > Resilient Ethernet Protocol**.

Figure 13-4 shows an example of REP in logical inventory.

AGG-7606-TX [5M+]		_ 🗆 ×
AGG-7606-TX [SM+] Logical Inventory [IM+] Access Gateway Access Lists ATM Traffic Profiles Bidirectional Forwarding Detect Bridges CFM Cisco Discovery Protocol Clock CFM Cisco Discovery Protocol Local Switching Local Switching LSE MPBGPS MPLS-TP OAM Operating System OSPF Processes Pseudowires Resilient Ethernet Protocol OAM Operating System SoSPF Processes Pseudowires Resilient Ethernet Protocol Counting Eritites Curve Cisco Discovery	Image: Process Resilient Ethernet Protocol Process Status: Running Administrative VLAN: 1 Notification Enabled: true REP Version: 1 Image: Process Status: true REP Version: 1 Image: Process Status: true REP Segments Table Image: Process Status: true Find : Image: Process Status: Image: Process Status: Image: Process Status: Segments Table Image: Process Status: Image: Process Status: Image: Process Status: Image: Process Status: Segments Table Image: Process Status: Image: Pro	
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Figure 13-4 REP in Logical Inventory

Table 13-8 describes the information that is displayed for REP.

Table 13-8 REP Properties

Field	Description		
Process	rocess name; in this case, Resilient Ethernet Protocol.		
Process Status	State of the REP process, such as Running or Down.		
Administrative VLAN	Administrative VLAN used by REP to transmit its hardware flooding layer messages. Values range from 1 to 4094.		
Notification Enabled	Whether or not notification is enabled: True or False.		
REP Version	Version of REP being used.		
REP Segments Table	·		
Segment ID	Segment identifier.		
Segment Complete	Whether the segment is complete; that is, that no port in the segment is in a failed state: True or False.		

Step 3 To view REP segment properties, double-click the required entry in the REP Segments table. Figure 13-5 shows an example of REP segment properties in logical inventory.

AGG-7606-TX [5M+]	
AGG-7606-TX [5M+] Logical Inventory [1M+] Access Gateway Access Lists ATM Traffic Profiles	Poll Novv Segment ID: 100 Segment Complete: false
Bidirectional Forwarding Detect	Segment Ports
CFM Cisco Discovery Protocol Clock Clock Ethernet Link Aggregation Ethernet LMI Frame Relay Traffic Profiles	Port ᡫ≱_ Port State Port Type Port Role Remote Device Name Remote Port Name Blocked V AGG-7606-TX#4:GigabitEthernet4/2 Two Way Open
Frame Relay Traffic Profiles Frame Relay Traffic Profiles ICCP Redundancy ITAGroups IS-15 Local Switching Local Switching ISEs MPBGPs	
LSEs MPBGPs MPLS-TP OAM Operating System	
OSPF Processes Pseudowires Resilient Ethernet Protocol	
SegmentId 300	
U Device Zoom Best Fit	Line 0 (Size 1
Find : 📄 🛃 💎 🦞 🕽	5 B
Severity Ticket ID Last Modification Time 🗟	Root Root Event Time Description Location Acknowledged Creation Time
Tickets Network Events Provisioning Events	
	Memory: 14% Connected



Table 13-9 describes the information that is displayed for REP segments.

Table 13-9	REP Segment Propertie	es
------------	-----------------------	----

Field	Description
Segment ID	Segment identifier.
Segment Complete	Whether the segment is complete; that is, that no port in the segment is in a failed state: True or False.
Segment Ports Table	
Port	Hyperlinked entry to the port in physical inventory.
Port State	Current operational link state of the REP port: None, Init Down, No Neighbor, One Way, Two Way, Flapping, Wait, or Unknown.
Port Type	Port type: Primary Edge, Secondary Edge, or Intermediate.
Port Role	Role or state of the REP port depending on its link status and whether it is forwarding or blocking traffic: Failed, Alternate, or Open.
Remote Device Name	Name of the neighbor device that this port is connected to on this segment. This value can be null.
Remote Port Name	Name of the neighbor port on the neighbor bridge that this port is connected to on this segment. This value can be null.

Field	Description
Blocked VLANs	VLANs that are blocked on this port.
Configured Load Balancing Blocked VLANs	List of VLANs configured to be blocked at this port for REP VLAN load balancing.
Preemptive Timer	Amount of time, in seconds, that REP waits before triggering preemption after the segment is complete. The entry can range from 0 to 300, or be Disabled.
	The value Disabled indicates that no time delay is configured, and that the preemption occurs manually.
	This property applies only to REP primary edge ports.
LSL Ageout Timer	Using the Link Status Layer (LSL) age-out timer, the amount of time, in milliseconds, that the REP interface remains up without receiving a hello from a neighbor.
Remote Device MAC	MAC address of the neighbor bridge that this port is connected to on this segment. This value can be null.

Table 13-9	REP Segment	Properties	(continued)
			,

The following topics describe how to view REP properties related to VLANs:

- VLAN domain views and overlays—See Viewing REP Information in VLAN Domain Views and VLAN Overlays, page 13-62.
- VLAN service link properties—See Viewing REP Properties for VLAN Service Links, page 13-63.

Viewing HSRP Properties

Hot Standby Router Protocol (HSRP) is a protocol that provides backup to a router in case of failure. Using HSRP, several routers are connected to the same Ethernet network segment and work together to present the appearance of a single virtual router. The routers share the same IP and MAC addresses; therefore in the event of failure of one router, the hosts on the LAN will be able to continue forwarding packets to a consistent IP and MAC address.

HSRP groups are configured on IP interfaces. An IP interface is modeled by the VNE through the IPInterface DC. The IPInterface DC maintains the HSRP related information by the use of HSRP group entries. Ethernet DCs, which are used to model Ethernet ports, maintain MAC addresses of the HSRP groups.

To view HSRP properties:

- **Step 1** Double-click the required element in Prime Network Vision.
- **Step 2** In logical inventory, choose **Logical Inventory > Routing Entities > Routing Entity**.
- **Step 3** In the IP Interfaces tab, double-click the required interface to view the IP interface properties. If HSRP is configured on the IP interface, the HSRP Group tab is displayed as shown in Figure 13-6.

Γ

Poll Now								
me:	Gigal	bitEthernet	4/0/0 State:		Up			
Address:	2.0.0	.42	Mask:		255.255.255.252			
erface Descrip	ition:							
idresses 🕞	ISRP Group							
ind :		🖞 🏄 🗸	を目示					
roup Number	€∧	Version	Port Name	Priority	Coupled Router	State	Virtual IP Address	Virtual MAC Address
		2	GigabitEthern	100	0.0.0.0	Active	2.0.0.41	00 00 0C 9F F0 03
								Line 0 (Size 1)

Figure 13-6 HSRP Group Information

Table 13-10 describes the information in the HSRP Group tab.

Table 13-10 HSRP Group P	roperties
--------------------------	-----------

Field	Description
Group Number	Number of the HSRP group associated with the interface.
Version	Version of the HSRP group.
Port Name	Port on which the HSRP is configured.
Priority	Value that determines the role each HSRP router plays.
	Values are 1 through 254, with higher numbers having priority over lower numbers.
Coupled Router	The partnet router.
State	State of the HSRP group: Active or Standby.
Virtual IP Address	Virtual IP address assigned to the active router.
Virtual MAC Address	Virtual MAC address assigned to the active router.

Viewing Access Gateway Properties

In an access network, an access gateway configuration ensures loop-free connectivity in the event of various failures by sending statically configured bridge protocol data units (BPDUs) toward the access network. Using statically configured BPDUs enables the gateway device to act appropriately when notified of the following topology changes:

- Failure of a link in the access network.
- Failure of a link between the access network and the gateway device.
- Failure of an access device.
- Failure of a gateway device.

To view access gateway properties:

- **Step 1** Double-click the element configured for access gateway.
- **Step 2** In the inventory window, choose **Logical Inventory > Access Gateway >** *access-gateway*. The group name is appended by either MSTAG or REPAG, indicating the group type Multiple Spanning Tree Access Gateway or Resilient Ethernet Protocol Access Gateway.

Figure 13-7 shows an example of an access gateway entry in logical inventory.

20 ♥ 🖻 C9-AGG20 [20M+] ▼ 🖺 ♥ Logical Inventory [18M+]	Poll Now									
Access Gateway	Group Name: REP	AG-Group1	Group Typ	pe: REPAG						
OBmstag (MSTAG) GigabitEthernet0/0/0/17.1900										
REPAG-Group1 (REPAG)										
Access Lists ATM Traffic Profiles Bidirectional Forwarding Detection Bridges	Interfaces Propertie									
Bidirectional Forwarding Detection	Find :		$\downarrow \nabla$	r 📰 😽 👘						
Bridges	Interface	Config Name	Max Age	Provider Bridge	Bridge Address	Port Identifier	External Cost	Config Revision	Hello Time	Port
CFM	C9-AGG20#Aggreg.	REPAG1	20	false	00 00 11 11 33 33	1	0	1	2	true
CFM Cisco Discovery Protocol Ethernet Link Aggregation										
ICCP Redundancy [1m]										
IS-IS										
Local Switching LSEs										
Modular OS										
MPBGPs	-									
OAM OSPF Processes										
V Pseudowires										
Routing Entities										
VC Switching Entities VRFs										
VSIs										
Physical Inventory [4m+]										
Device Zoom Est Fit										
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ickets Network Events Provisioning Events	>		-		· · ·					

Figure 13-7 Access Gateway in Logical Inventory

Table 13-11 describes the information that is displayed for an access gateway.

Field	Description
Group Name	Access gateway group name.
Group Type	Group type: MSTAG or REPAG.
Interface Properties	
Interface	Hyperlink to the interface in physical inventory on which access gateway is configured.
Config Name	Name of the MSTP region.
	The default value is the MAC address of the switch, formatted as a text string using the hexadecimal representation specified in IEEE Standard 802.
Max Age	In seconds, the maximum age for the bridge.
	Values range from 6 to 40 seconds.
Provider Bridge	Whether the current instance of the protocol is in 802.1ad mode: True or False.
Bridge Address	Bridge identifier for the interface.
Port Identifier	Port identifier for the interface.
External Cost	External path cost on the current port.
	Values range from 1 to 200000000.
Config Revision	Number of the configuration revision.
Hello Time	Current hello time (in seconds)
Port Active	Whether or not the port is active: True or False.
BPDUs Sent	Number of BPDUs sent.
Reversion Control Enabled	Whether reversion control is enabled: True or False.

 Table 13-11
 Access Gateway Properties in Logical Inventory

Step 3 Choose an access gateway instance to view instance properties.

Figure 13-8 shows an example of the information displayed for an access gateway instance.

🖄 🛡 🖂 C9-/	AGG20 [20M+]	A OPOLIN											
- ₩ U	ogical Inventory [18M+] Access Gateway	Interface	Kev:		Gigabit	Ethernet0/0/0	/17.1900	Config Name:	mstag				
• III • III	OBmstag (MSTAG)	Config Re			1			Max Age:	20				
	GigabitEthernet0/0/0/17.1900	Provider			false			Bridge Addre:		00 00 20			
) (REPAG-Group1 (REPAG)		-					-		00 00 20			
	Access Lists ATM Traffic Profiles	BPDUs Se			68693			Port Identifie					
	Bidirectional Forwarding Detection	Reversion	Control Enabl	ed:	false			External Cost	: 0				
▶ 📑	Bridges	Hello Tim	•:		2			Port Active:	true				
1	CFM Cisco Discovery Protocol												
	Ethernet Link Aggregation												_
· 📷 🦀	TCCP Redundancy [Thi]	Instance	5										
) 	IS-IS	Find :		E		マキ戸	1						
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	Modular OS	1 Instance		10000		32768	4096		0 00 00 00 00 09	128	0	Access GW EX	ternal Cost
▶	MPBGPs	0	[1-4094]				32768						
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•	VSIs												
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Figure 13-8 Access Gateway Instance in Logical Inventory

Table 13-12 describes the information that is displayed for an access gateway instance.

Field	Description
Interface Key	Hyperlink to the interface in physical inventory on which access gateway is configured.
Config Name	Name of the MSTP region.
	The default value is the MAC address of the switch, formatted as a text string using the hexadecimal representation specified in IEEE Standard 802.
Config Revision	Number of the configuration revision.
Max Age	In seconds, the maximum age for the bridge.
	Values range from 6 to 40 seconds.
Provider Bridge	Whether the current instance of the protocol is in 802.1ad mode: True or False.
Bridge Address	Bridge identifier for the current switch.
BPDUs Sent	Number of BPDUs sent.
Port Identifier	Port identifier for the interface.
Reversion Control Enabled	Whether reversion control is enabled: True or False.
External Cost	External path cost on the current port.
	Values range from 1 to 200000000.

Table 13-12 Access Gateway Instance Properties

Field	Description
Hello Time	Current hello time (in seconds)
Port Active	Whether or not the port is active: True or False.
Instances Table	
Instance ID	Access gateway instance identifier.
VLAN IDs	VLAN identifiers.
Cost	Path cost for this instance.
Bridge Priority	Priority associated with current bridge.
Root Bridge Priority	Priority associated with the root bridge.
Root Bridge Address	Address of the root bridge.
Port Priority	Priority of the interface for this instance.
Topology Changes	Number of times the topology has changed for this instance.
Access GW External Cost	External root cost of this instance.

Table 13-12 Access Gateway Instance Properties (continued)

Working with Ethernet Link Aggregation Groups

Ethernet link aggregation groups (LAGs) provide the ability to treat multiple switch ports as one switch port. The port groups act as a single logical port for high-bandwidth connections between two network elements. A single link aggregation group balances the traffic load across the links in the channel.

LAG links are discovered automatically for devices that support LAG technology and use VNEs that model Link Aggregation Control Protocol (LACP) attributes.

You can create static links between Ethernet LAGs by choosing a LAG and the desired port channel for the A or Z side as described in Adding Static Links, page 6-15.

If a physical link within the link aggregation group fails, the following actions occur:

• Traffic that was previously carried over the failed link is moved to the remaining links.

Most protocols operate over single ports or aggregated switch ports and do not recognize the physical ports within the port group.

• An aggregation service alarm is generated.

The aggregation service alarm indicates the percentage of links within the aggregation that have failed. For example, if an Ethernet link aggregation group contains four Ethernet links and one fails, the aggregation service alarm indicates that 25% of the links are down.

Viewing Ethernet LAG Properties

```
<u>Note</u>
```

e Cisco CRS devices must be configured to receive SNMP traps in order to view Ethernet LAG properties. For more information on required SNMP settings, see the *Cisco Prime Network 3.10 Administrator Guide*.

To view properties for Ethernet link aggregation groups:

- Step 1 In Prime Network Vision, double-click the device with the link aggregation group you want to view.
- Step 2 In the inventory window, choose Logical Inventory > Ethernet Link Aggregation. The link aggregation properties are displayed as shown in Figure 13-9.

🛛 🐨 🖉 🖉	G-6500-CA [1M]	😨 Poll No	w						
-8	Logical Inventory Access Lists		Ethernet Link Aggregat	ion					
	ATM Traffic Profiles								
	Bridges Cisco Discovery Protocol								
	Clock	Data Link	Aggregations						
	Ethernet Link Aggregation	Find :	1 <u>2</u>	マヤ原同	ł				
	Ethernet LMI	ID to		1	Group Number	Bandwidth	Aggregation Control Protocol	Status	MAC Address
	Frame Relay Traffic Profiles			Туре					
)))))))))))))))))))	IS-IS		-CA#Aggregation Group 5	Ethernet Channel	5	10.0 Gbps	Manual	Down	00 21 D8 CD 69 80
▶ .	Local Switching	AGG-6500	-CA#Aggregation Group 50	IEEE 8023 AD LAG	50	10.0 Gbps	LACP	Down	00 18 B9 8C E5 04
<u>۲</u>	LSEs								
▶	MPBGPs								
	OAM	8							
	Operating System								
► F	OSPF Processes								
F F	Pseudowires								
▶	Routing Entities								
	Spanning Tree Protocol								
•	Spanning Tree Protocol Traffic Engineering Tunnels								
•	Spanning Tree Protocol Traffic Engineering Tunnels Tunnel Traffic Descriptors								
	Spanning Tree Protocol Traffic Engineering Tunnels Tunnel Traffic Descriptors VC Switching Entities								
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Figure 13-9 Ethernet Link Aggregation in Logical Inventory

Table 13-13 describes the aggregation group properties that are displayed in the Data Link Aggregations table.

Table 13-13Data Link Aggregations Table

Field	Description
ID	Aggregation identifier. Double-click the entry to view the properties for that aggregation.
Туре	Aggregation group type: Ethernet Channel or IEEE 8023 AD LAG.
Group Number	Aggregation group number.

Field	Description				
Bandwidth	Aggregation bandwidth.				
Aggregation Control Protocol	Aggregation control protocol: Manual, Link Aggregation Control Protocol (LACP), or Port Aggregation Protocol (PagP).				
Status	Aggregation status: Up or Down.				
MAC Address	Aggregation MAC address.				

Table 13-13 Data Link Aggregations Table (continued)

Step 3 To view properties for a specific aggregation, double-click the group identifier.

The information that is displayed depends on the type of aggregation:

- For Ethernet Channel aggregations, see Table 13-14.
- For IEEE 802.3 AD aggregations, see Table 13-15.

Table 13-14LAG Ethernet Channel Properties

Field	Description					
Group Number	Aggregation group number.					
Bandwidth	Aggregation bandwidth in b/s.					
Control Protocol	Aggregation control protocol: Manual, Link Aggregation Control Protocol (LACP), or Port Aggregation Protocol (PagP).					
MAC Address	Aggregation MAC address.					
Administrative State	Aggregation administrative status: Up or Down.					
Operational State Aggregation operational status: Up or Down.						
Adjacent group, hyperlinked to the group in logical inventory.						
mLACP Properties	mLACP properties are displayed if the aggregation group is associated with an ICCP redundancy group.					
ICCP Redundancy Group	ICCP redundancy group associated with this aggregation group, hyperlinked to the relevant entry in logical inventory.					
mLACP Role	Role of the LAG in the redundancy group: Active or Standby.					
mLACP Operational System MAC	MAC address used in a dual-homed environment that is selected by ICCP from one of the configured system MAC addresses for one of the points of attachment (PoAs).					
mLACP Operational System Priority	Priority used in a dual-homed environment that is selected by ICCP from the configured system priority on one of the PoAs.					
mLACP Failover Option	Configured mLACP failover mode: Revertive or Nonrevertive.					
mLACP Max Bundle	Maximum number of links allowed per bundle.					

Field	Description					
Aggregated Ports Table						
ID	Aggregated port identifier, hyperlinked to the interface in physical inventory.					
Туре	Aggregation type, such as Layer 2 VLAN.					
Mode	VLAN mode, such as Trunk.					
Native VLAN ID	VLAN identifier (VID) associated with this VLAN. The range of VLANs is 1 to 4067.					
VLAN Encapsulation Type	Type of encapsulation configured on the VLAN, such as IEEE 802.1Q.					
Allowed VLANs	List of VLANs allowed on this interface.					
VLAN Encapsulation Admin Type	VLAN administration encapsulation type, such as IEEE 802.1Q.					
Subinterfaces Table						
Address	IP address of the subinterface.					
Mask	Subnet mask applied to the IP address.					
VLAN Type	Type of VLAN, such as Bridge or IEEE 802.1Q.					
Operational State	Operational state of the subinterface: Up or Down.					
VLAN ID	VLAN identifier.					
Inner VLAN	CE-VLAN identifier.					
IP Interface	IP interface configured as part of the subinterface, hyperlinked to the routing entity or VRF in logical inventory.					
VRF Name	VRF associated with the subinterface.					
Is MPLS	Whether the subinterface is enabled for MPLS: True or False.					
	This column is displayed when at least one interface is MPLS-enabled.					
Tunnel Edge	Whether this is a tunnel edge: True or False.					
VC	Virtual circuit identifier, hyperlinked to the VC Table when the subinterface is configured for ATM VC.					
Binding	Hyperlinked entry to the specific bridge in logical inventory.					
EFPs Table						
EFP ID	EFP identifier.					
Operational State	EFP operational state: Up or Down.					
VLAN	VLAN associated with this EFP.					
Inner VLAN	CE-VLAN identifier.					
Translated VLAN	Translated, or mapped, VLAN identifier.					
Translated Inner VLAN	Translated, or mapped, inner VLAN identifier.					
Binding	Hyperlinked entry to the specific bridge in logical inventory.					
Description	Description for the EFP.					

Table 13-15	LAG IEEE 802.3 AD Properties
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Aggregation group number.Aggregation bandwidth.Aggregation control protocol: Manual, Link Aggregation Control						
Aggregation control protocol: Manual, Link Aggregation Control						
Aggregation control protocol: Manual, Link Aggregation Control Protocol (LACP), or Port Aggregation Protocol (PagP).						
Aggregation MAC address.						
Aggregation administrative status: Up or Down.						
Aggregation operational status: Up or Down.						
Priority of the partner system.						
Aggregation MAC address.						
Actor administrative key.						
Actor system priority.						
Partner operational key.						
Actor operational key.						
Maximum delay (in microseconds) for either delivering or discarding a received frame by the frame collector.						
Actor system identifier, in the form of a MAC address.						
Partner system identifier, in the form of a MAC address.						
mLACP properties are displayed if the aggregation group is associated with an ICCP redundancy group.						
ICCP redundancy group associated with this aggregation group, hyperlinked to the relevant entry in logical inventory.						
Role of the LAG in the redundancy group: Active or Standby.						
MAC address used in a dual-homed environment that is selected by ICCP from one of the configured system MAC addresses for one of th points of attachment (PoAs).						
Priority used in a dual-homed environment that is selected by ICCP from the configured system priority on one of the PoAs.						
Configured mLACP failover mode: Revertive or Nonrevertive.						
Maximum number of links allowed per bundle.						
Port identifier, hyperlinked to the interface in physical inventory.						
Type of VLAN, such as Layer 2 VLAN.						
Discovery protocols used on this port.						

Field	Description						
Subinterfaces Table							
Address	IP address of the subinterface.						
Mask	Subnet mask applied to the IP address.						
VLAN Type	Type of VLAN, such as Bridge or IEEE 802.1Q.						
Operational State	Operational state of the subinterface: Up or Down.						
VLAN ID	VLAN identifier.						
Inner VLAN	CE-VLAN identifier.						
IP Interface	IP interface configured as part of the subinterface, hyperlinked to the routing entity or VRF in logical inventory.						
VRF Name	VRF associated with the subinterface.						
VC	Virtual circuit identifier, hyperlinked to the VC Table when the subinterface is configured for ATM VC.						
Binding	Hyperlinked entry to the specific bridge in logical inventory.						
EFPs Table							
EFP ID	EFP identifier.						
Operational State	EFP operational state: Up or Down.						
VLAN	VLAN associated with this EFP.						
Inner VLAN	CE-VLAN identifier.						
Translated VLAN	Translated, or mapped, VLAN identifier.						
Translated Inner VLAN	Translated, or mapped, inner VLAN identifier.						
Binding	Hyperlinked entry to the specific bridge in logical inventory.						
Description	Description for the EFP.						
LACP Port Entries							
Aggregated Port	Port on which the aggregation is configured, hyperlinked to the entry in physical inventory.						
Dot3ad Agg Port Partner Admin Port Priority	Administrative port priority for the partner.						
Dot3ad Agg Port Partner Admin Key	Administrative key for the partner port.						
Dot3ad Agg Port Partner Oper Port Priority	Priority assigned to the aggregation port by the partner.						
Dot3ad Agg Port Actor Oper State	Local operational state for the port.						
Dot3ad Agg Port Actor Admin State	Local administrative state as transmitted by the local system in LACP data units (LACPDUs).						
Dot3ad Agg Port Selected Agg ID	Selected identifier for the aggregation port.						
Dot3ad Agg Port Partner Oper Key	Operational key for the partner port.						
Dot3ad Agg Port Partner Admin State	Partner administrative state.						
Dot3ad Agg Port Actor Port Priority	Priority assigned to the local aggregation port.						
Dot3ad Agg Port Partner Oper State	Partner administrative state as transmitted by the partner in the most recently transmitted LAPCDU.						
Dot3ad Agg Port Attached Agg ID	Identifier of the aggregator that the port is attached to.						

Table 13-15	LAG IEEE 802.3 AD Properties (continued)
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Field	Description
Dot3ad Agg Port Actor Admin Key	Administrative key for the local port.
Dot3ad Agg Port Actor Port	Number assigned to the local aggregation port.
Dot3ad Agg Port Partner Oper Port	Number assigned to the aggregation port by the partner.
Dot3ad Agg Port Actor Oper Key	Operational for the local port.
Dot3ad Agg Port Partner Admin Port	Administrative value of the port for the partner.

Table 13-15 LAG IEEE 802.3 AD Properties (continued)

Viewing mLACP Properties

Prime Network Vision supports the discovery of Multichassis LACP (mLACP) configurations on devices configured for them, and displays mLACP configuration information, such as redundancy groups and properties, in inventory.

To view mLACP properties:

Step 1 In Prime Network Vision, double-click the element configured for mLACP.

Step 2 In the inventory window, choose Logical Inventory > ICCP Redundancy.

In response, Prime Network Vision lists the Inter-Chassis Communication Protocol (ICCP) redundancy groups configured on the device as shown in Figure 13-10.



Figure 13-10 ICCP Redundancy in Logical Inventory

Table 13-16 describes the information displayed in the ICCP Redundancy Groups table.

Field	Description				
Group Number	ICCP group identifier.				
Peer Monitoring Option	Method used to monitor the peer: BFD or IP Reachability Monitoring.				
Member IP Address	IP address of the neighbor PoA device.				
Member Device Name	Name of the neighbor PoA device.				
mLACP Node ID	Identifier used by this member of the mLACP redundancy group.				
mLACP Configured System MAC	System MAC address of the redundancy group advertised to other members of the mLACP redundancy group and used for arbitration.				
mLACP Configured System Priority	System priority advertised to other mLACP members of the redundancy group.				

 Table 13-16
 ICCP Redundancy Groups in Logical Inventory

- Step 3 To view additional information about an ICCP redundancy group, do either of the following:
 - In the logical inventory window navigation pane, choose Logical Inventory ICCP Redundancy > *ICCP-group*.
 - In the logical inventory content pane, right-click the required group in the ICCP Redundancy Groups table and choose **Properties**.

The ICCP Redundancy Group Properties window is displayed with the Backbone Interfaces and Data Link Aggregations tabs as shown in Figure 13-11.

Figure 13-11 ICCP Redundancy Group Properties Window

V c1-npe1-76	[4M+]								_ 🗆 ×
	gical Inventory [4M+] Access Lists	*	Poll Now						
►	ATM Traffic Profiles		Group Number:	60	Peer Monitoring (Option:	BFD		
	Bidirectional Forwarding Detection [Member IP Address:	1.1.0.137	mLACP Node ID:		4		
> 100	Bridges CFM		mLACP Configured System MAC:	00 00 00 01 00 01	mI ACP Configure	ed System Priority:	20000		
	Cisco Discovery Protocol		merter configurou system rinter	00 00 00 01 00 01	marrar coningura		20000		
	Clock		Backbone Interfaces Data Link	Aggregations					
	Ethernet Link Aggregation Ethernet LMI								
	Frame Relay Traffic Profiles		Find :	화 💎 ヤ 📰 !	\$				
	GRE Tunnels		ID 🔁 🛆	Туре	Group Number	Bandwidth	Aggregation Control Protocol	Status	MAC Address
-	ICCP Redundancy		c1-npe1-76#Aggregation Group 6	0 Ethernet Channel	60	10.0 Gbps	Manual	Down	00 19 07 AB 43 00
	ICCP Group 50 ICCP Group 60								
× 📊	IS-IS								
Þ 🔜 🦁	Local Switching								
>	LSEs								
>	MPBGPs OAM								
	Onorsking Sustam	-							
۹ [
Q Device Zoom	Best Fit								
)									
		Ŧ							Line 0 (Size 1)
4 [^ Y	•								
			_						
Find :			7						
Severity Ticket	ID Last Modification Time Root Ca	use	Root Event Time Description	Location Acknowle	dged Creation T	ime Event Count	Affected Devices Count	Duplication Cour	t Reduction Count 4
4 -									Empty
									Lubby
Tickets Netw	vork Events Provisioning Events				,				
							Memory:	9% Co	nnected

Table 13-17 describes the information available in the ICCP Redundancy Group Properties window.

Field	Description						
Group Number	ICCP group identifier.						
Peer Monitoring Option	Method used to monitor the peer: BFD or IP Reachability Monitoring.						
Member IP Address	IP address of the neighbor PoA device.						
Member device name	Name of the neighbor PoA device.						
mLACP Node ID	Identifier used by this member of the mLACP redundancy group.						
mLACP Configured System MAC	System MAC address of the redundancy group advertised to other members of the mLACP redundancy group and used for arbitration.						
mLACP Configured System Priority	System priority advertised to other mLACP members of the redundancy group.						
Backbone Interfaces Tab							
ID	Backbone interface defined for the redundancy group, hyperlinked to the relevant entry in logical inventory.						
Status	Status of the backbone interface: Up, Down, or Unknown.						
Data Link Aggregations Tab							
ID	Link aggregation group associated with the redundancy group, hyperlinked to the relevant entry in logical inventory.						
Туре	Aggregation group type: Ethernet Channel or IEEE 8023 AD LA						
Group Number	Aggregation group number.						
Bandwidth	Aggregation bandwidth.						
Aggregation Control Protocol	Aggregation control protocol: Manual, LACP, or PAgP.						
Status	Aggregation status: Up or Down.						
MAC Address	Aggregation MAC address.						

Table 13-17 ICCP Redundancy Group Properties Window

Step 4 To view additional mLACP properties, double-click the entry for the required link aggregation group in the Data Link Aggregations tab.

mLACP information is displayed in the Link Aggregation Group Properties window, as described in the following tables:

- Table 13-14—LAG Ethernet Channel Properties
- Table 13-15—LAG IEEE 802.3 AD Properties

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Viewing Provider Backbone Bridge Properties

Provider backbone bridges (PBBs), specified by IEEE 802.1ah-2008, provide a way to increase the number of service provider supported Layer 2 service instances beyond the number supported by QinQ and VPLS. PBB adds a backbone VLAN tag and backbone destination and source MAC addresses to encapsulate customer Ethernet frames and create a MAC tunnel across core switches.

Prime Network supports PBB inventory discovery and modeling for the following devices:

- Cisco 7600-series devices running Cisco IOS version 12.2(33)SRE1
- Cisco ASR 9000-series devices running Cisco IOS XR version 3.9.1

Prime Network models the IB type of Backbone edge bridges which includes both I-type and B-type components.

To view PBB properties:

Step 1 In Prime Network Vision, double-click the element configured for PBB.

Step 2 In the inventory window, choose **Logical Inventory** > **BridgeILans** > *PBB-bridge*.

Figure 13-12 shows an example of PBB properties in logical inventory.

172.20.125.80 _ 🗆 × Poll Now 172.20.125.80 P. Logical Inventory core123 Name: Access Gatew Access Lists ATM Traffic Profiles IB Bridge Mapping Bidirectional Forwarding Detection BridgeILans Find : BridgeILan core123 ISID 👻 / I-Bridge B-Bridge BridgeILan mycore123 BridgeILan obbtest 31000 172.20.125.80 bd10@ba10 172.20.125.80 core123@ba30 Bridges 32000 172.20.125.80 bd20@bg20 172.20.125.80 core123@bg30 • CFM Cisco Discovery Protocol Ethernet Link Aggregation 9 9 9 IS-IS Local Switching LSEs Modular OS MPBGPs OAM OSPE Proce Q Device Zoom E Best Fit Line 0 (Size 2) Find Last Modification Time 🕀 Root ... Root Event Time Severity Ticket ID Description Acknowledged Creation Time Location Tickets Network Events Provisioning Events 310762 Memory:

Figure 13-12 PBB Properties in Logical Inventory

Table 13-18 describes the information displayed for PBB.

Field	Description Identifier of the bridge as follows:					
Name						
	• For Cisco 7600 devices, the identifier of the MAC tunnel created.					
	• For Cisco ASR 9000-series devices, the identifier is a combination of the bridge group and the bridge domain on the B-Bridge component.					
IB Bridge Mapping Table	e					
ISID	24-bit entry representing the Backbone service instance.					
I-Bridge	XID of the I-Bridge component, hyperlinked to the relevant bridge in logical inventory.					
B-Bridge	XID of the B-Bridge component, hyperlinked to the relevant bridge in logical inventory.					

 Table 13-18
 PBB Properties in Logical Inventory

Viewing EFP Properties

Prime Network Vision provides information about EFPs in a number of ways. For example:

- EFP names displayed in Prime Network Vision maps add EFP and the managed element name to the interface name, such as GigabitEthernet4/0/1 EFP: 123@c4-npe5-67.
- If you select an EFP in the navigation pane in Prime Network Vision and then click **Show List View**, an Ethernet Flow Points table lists the network element, port, and network VLAN associated with the EFP.

To view additional EFP properties:

- **Step 1** In the Prime Network Vision map view, select the required EFP in the navigation pane or in the map pane and then do either of the following:
 - Right-click the EFP and choose Properties.
 - Choose Node > Properties.

Figure 13-13 shows an example of the EFP Properties window.

fp Id:	182	VLAN Match Criteria:	dot1q 182	
iplit Horizon Group:	0	Operational State:	Up	
Administrative State:	Up	Binding:	c1-npe1-76 (2082) VLAN2082	
Rewrite Definition:	pop 1			

Figure 13-13 EFP Properties Window

Table 13-19 describes the information displayed in the EFP Properties window.

Table 13-19	EFP Properties Window
-------------	-----------------------

Field	Description						
EFP ID	Identifier for the EFP.						
VLAN Match Criteria	Match criteria configured on the EFP for forwarding decisions.						
Split Horizon Group	Split horizon group to which the EFP is associated.						
	If no split horizon group is defined, the value is null.						
	If only one split horizon group exists and it is enabled for the EFP, the value is the default group 0.						
Operational State	Operational status of the EFP: Up or Down.						
Administrative State	Administrative status of the EFP: Up or Down.						
Binding	Hyperlinked entry to the relevant item in logical inventory, such as a pseudowire or bridge.						
Rewrite Definition	Rewrite command configured on the EFP: pop, push, or translate.						

Step 2 Click the hyperlink entry in the Binding field to view the related properties in logical inventory.In this example, clicking the hyperlink displays the relevant bridge in logical inventory, as shown in Figure 13-14.



Figure 13-14 Bridge Associated with EFP in Logical Inventory

Table 13-20 describes the information displayed for an EFP associated with a bridge.

 Table 13-20
 EFP Associated with a Bridge in Logical Inventory

Field	Description			
Name	VLAN bridge name.			
Туре	VLAN bridge type.			
MAC Address	VLAN bridge MAC address.			
VLAN ID VLAN bridge VLAN identifier.				
STP Instance	STP instance information, hyperlinked to the STP entry in logical inventory.			
VSI VSI information, hyperlinked to the VSI entry in logical inv				

Field	Description					
EFPs Table						
EFP ID	EFP identifier.					
Operational State	EFP operational state: Up or Down.					
VLAN	VLAN associated with this EFP.					
Inner VLAN	CE-VLAN identifier.					
Translated VLAN	Translated, or mapped, VLAN identifier.					
Translated Inner VLAN	Translated, or mapped, inner VLAN identifier.					
Binding	Hyperlinked entry to the specific interface and EFP entry in physical inventory.					
Description	Description for the EFP.					

Table 13-20	EFP Associated with a Bridge in Logical Inventory (continued)
	Li i Associated with a bhuge in Logical inventory (continued)

- **Step 3** To view EFP properties in physical inventory, navigate to the required interface in one of the following ways:
 - In the bridge entry in logical inventory, click the hyperlinked entry in the Binding field.
 - Use the procedure described in Viewing and Renaming Ethernet Flow Domains, page 13-41 to navigate to the individual interface.
 - In physical inventory, navigate to and then select the required interface.

The EFPs tab is displayed in the content pane next to the Subinterfaces tab as shown in Figure 13-15.

	SPF Processes	•	Location I	Information									
ERR .	seudowires esilient Ethernet Protocol		-	-									
	esilient Ethernet Protocol outing Entities		Type:	Plugg	Jable	Location:	4.GigabitEth	ernet4/4					
	panning Tree Protocol		Sending	Alarms: true		Port Alias:	GigabitEther	net4/4					
. 1	raffic Engineering Tunnels		Manage	d: true		Status:	ОК						
	unnel Traffic Descriptors												
	C Switching Entities		de Disal	ble Sending Alarm	s								
	RFs SIs			Transceiver									
CINK.	TP		Connoch	or Type:	RJ45			Pluggable	Type: SFI	n			
	ical Inventory												
	hassis		Connect	or Description:	Tran	sceiver 100	10BaseT Gi4/4	PID:	QB	CU-5798R			
P	Slot 1: Card - RSP720-30		Connect	or Serial Number:	AGM	122720VC		Pluggable	Port State: In				
► <u>max</u>	Slot 2: Card - 7600-SIP-4 Slot 4: Card - 7600-ES+2												
*	Subslot 3: Subcard - 1								* :-				
	Subslot 6: Subcard -		Find :		H	AL 🗸 🖷							
1	GigabitEthernet4/1	-										1	_
-15	GigabitEthernet4/2		EFP ID	Operational State					lated Inner VLAN	Binding		Description	
-16 -16	GigabitEthernet4/3 GigabitEthernet4/4		42	Up	40	404	40	404		c1-npe1	-76 (42) VLAN0042		
45	GigabitEthernet4/5		41	Up	40	402-403	40	402-4	103	c1-npe1	-76 (41) VLAN0041		
-16	GigabitEthernet4/6 -		40	Up	40	400	40	400					
46	GigabitEthernet4/7		50	Up	40	401	40	401					
1	GigabitEthernet4/8 -												
1	GigabitEthernet4/9	Ŧ											
	►												
evice Zoom	Best Fit												
			•									Line 2 (1 / 4 Sel	 A contract
		ĥ	_									LING 2 (17 4 DOI	sciedy
- 4			EFPs										
1	3	T										🗌 😯 Ref	fresh
	• •												
:	🖆 🛃 🖓	1											
erity Tickel	ID Last Modification	Time	9 7	Root Roo	t Event T	ime	Desc	ription	Location	Acknowled	ged Creation Tir	me	
													Empty
		Event											

Figure 13-15 EFPs Tab in Physical Inventory

Table 13-21 describes the information displayed in the EFPs tab.

Table 13-21 EFPs Tab

Field	Description					
EFP ID	EFP identifier.					
Operational State	EFP operational state.					
VLAN	VLAN identifier.					
Inner VLAN	CE-VLAN identifier.					
Translated VLAN	Translated VLAN identifier.					
Translated Inner VLAN	Translated CE-VLAN identifier.					
Binding	Hyperlinked entry to the specific bridge or pseudowire in logical inventory.					
Description	Configured description for the EFP.					
L

Connecting a Network Element to an EFP

You can add and connect network elements to an EFP under an existing aggregation for VLAN, VPLS, Pseudowire, and Ethernet Service.

To connect network elements to an EFP:

- Step 1Select an EFP node under the VLAN/VPLS/Pseudowire/Ethernet Service aggregation node and chooseFile > Add to Map > Network Element.
- **Step 2** In the Add Network Element dialog box, search for the desired network elements and choose the network element that you want to add.

The selected network element appears under the aggregation node in the navigation pane.

- **Step 3** Right-click the EFP node and choose **Topology > Connect CE Device**.
- **Step 4** Right-click the network element that you added and choose **Topology > Connect to** *EFP*.

The map view displays a link between the EFP and the added network element. If required, you can remove the link, by right-clicking the link and choosing **Remove Link**.

Step 5 To hide or show the connected network elements, right-click the EFP node and choose Hide Connected Devices or Show CE device.

Understanding EFP Severity and Ticket Badges

Severity and ticket badges are displayed on EFP icons as follows:

If the VLAN EFP element represents a configuration, such as a service instance on a Cisco 7600 device or an enhanced port on a Cisco ASR 9000 device, and is associated directly with a network VLAN or a bridge domain switching entity, the severity and ticket badges are based on the underlying service instance or enhanced port configuration.

Figure 13-16 shows an example of a ticket badge based on a service instance.

UPE19-ME3600-1	TX [1M]	🗓 Cisco Prime Network Vision - root@10.56.23.79 (123Doc)
▼	iot 0: Card - ME-3600X-2	Ele Edit View Node Iools Activation Network Inventory Reports Window Help
-168	GigabitEthernet0	E 🗃 - E - H 🕲 E - C - C - C - C - C - C - C - C - C -
-15	GigabitEthernet0/1	
- (5)	GigabitEthernet0/2	ETV 123Doc ×
45	GigabitEthernet0/3	
-15	GigabitEthernet0/4	▼ 5 7 1230ct [9M]
- 5	GigabitEthernet0/5	▼ UP22-3400ME-FL [1M]
4.5	GigabitEthernet0/6	🐨 🔍 UPE4-3750ME-FL [1M]
-15	GigabitEthernet0/7 - N	▼ UPE5-3400//E-FL[1M] VLAN-3450@UPE19-ME3600-TX [1M]
- 5	GigabitEthernet0/8 - M	▼ UPE18-ME3400-TX [1M]
-15	GigabitEthernet0/9 - M	▼ UPE19-ME3600-TX [1M] GigabitEthernet0/11
- 53	GigabitEthernet0/10 -	
-15	GigabitEthernet0/11	▼ UPE44-4924ME-CA [1M]
13	GigabitEthernet0/12 -	
	GigabitEthernet0/13	Ggabiceneneto(13gue=19-mc3bue-14 [m
4.5	GigabitEthernet0/14	Gigdb/Ethernet/(2EPP: 9450@AGG-7806-T) VLAN-9450@AGG+ME3800-TX
1	GigabitEthernet0/15 -	VLAN-3450@AGG4-ME3800-TX
- [5]	GigabitEthernet0/16 -	GgabitEthernet0/13@AGG4-ME3800-TX GigabitEthernet0/13 GigabitEthernet0/14 GigabitEthernet0/14
45	GigabitEthernet0/17 -	TenGigabäthernet0/18/AGGH#E3800-T:
- 53	GigabitEthernet0/18 -	VLAN-3450g00FE19-ME3600-1X [1M]
- 5	GigabitEthernet0/19 -	
15	GigabitEthernet0/20 -	GgabitEthernet0/13 EFP: 3450@UPE19-3
-12	GigabitEthernet0/21	GgabiEthernet0/148UPE19-ME3600-TX
-63	GigabitEthernet0/22 -	VIAN-34508UPF20-WE3600-TX
53- 53-	GigabitEthernet0/23 - GigabitEthernet0/24	GigabitEthernet0/130UPE20-ME3600-TX VLAN-3450@UPE20-ME3600-TX GigabitEthernet0/14@UPE20-ME3600-TX GigabitEthernet0/12 E
	Gigabite themeto/24	GgabtEthernetV146UFE20-HE300-TX
· [•	VLAN-34609Dxtb.linkAgyegatin209UFE18ME GigabitEthernet0/13 GigabitEthernet0/14 GigabitEthernet0/14
Q Device Zoom	Reet Fit	VLAN-3461@DatalinAggregation209UPEI3-ME GigabitEthemet0/13 GigabitEthemet0/13 GigabitEthemet0/13 GigabitEthemet0/13 GigabitEthemet0/13 GigabitEthemet0/13 GigabitEthemet0/13 GigabitEthemet0/13
Device 20011	Jest Tit	
0-0 0-0		
Slot Far	10 1	
Find :	🗎 24 🗸 1	
Sevenity Ticket ID	Last Modification Tim	Find: 自
Tickets Network Ev	vents Provisioning Eve	
		Memory: 21% Connected
		connected

Figure 13-16 EFP Severity and Ticket Badges Based on Underlying Service Instance

• If the Ethernet flow point element represents a VLAN interface for a regular switch port, the severity and ticket badges are based on the corresponding port, as shown in Figure 13-17.

Figure 13-17 EFP Severity and Ticket Badges Based on Corresponding Port



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Viewing EVC Service Properties

Certain EVC service properties are configured as port attributes. These attributes determine the degree of service transparency and protect the service provider's network from protocol control traffic. Prime Network Vision discovers these key EVC service properties and displays this information in physical inventory for the following devices:

- Cisco ME3400- and Cisco ME3400E-series devices running Cisco IOS versions 12.2(52)SE to 12.2(54)SE.
- Cisco 3750 Metro devices running Cisco IOS versions 12.2(52)SE to 12.2(54)SE.

Shared Switching Entities and EVC Service View

Some switching entities that Prime Network Vision discovers are concurrently part of a network VLAN and VPLS/EoMPLS instance. These switching entities are referred to as *shared switching entities*.

Prime Network Vision displays the switching entity information for shared switching entities only under the VPLS instances in the EVC service view.

To view EVC port-related properties for the supported devices and software versions:

- **Step 1** In Prime Network Vision, double-click the required device.
- **Step 2** In the inventory window, choose **Physical Inventory > Chassis >** module > port.

Figure 13-18 shows an example of a port in physical inventory configured with these EVC properties.

· III ·	Chassis	OPOII Now	
*	Slot 0: Card - ME-3400-24TS-A - F		
-10		Excedent anomation	
46		Type: RJ45 Location: 0.FastEthernet0/1	
-16		Sending Alarms: true Port Alias: FastEthernet0/1	
10		The second s	
-13		Managed: true Status: OK	
-(E -(E		land the sending Alarms	
-US -(E			
410		VLAN Interface	
46		Mode: Trunk VLAN Type: Layer 2 VLAN	
46			
45		Native VLAN ID: 1 VLAN Encapsulation Type: IEEE802.1Q	
10	FastEthernet0/13	Allowed VLANs: 1-4094 VLAN Encapsulation Admin Type: IEEE802.10	
10	FastEthernet0/14		
46			
1			
10		Storm Control and Monitoring Properties	1
10		Storm Control: Disabled Port Monitoring Status: Enabled	
10			
-[3 -[3]		Port Monitoring Interval: 10.0 sec MAC Address: 00 24 C3 C6 78 83	
-US -(15		Ethernet LMI Enabled: false Port Type: NNI	
-05			
46			
416			
46	GigabitEthernet0/2 - No Transc	Find: III 計 計 ▽ ▼ 幕 単	
	>	Address Mask VLAN Type Operational State VLAN ID 🔁 / Inner VLAN IP Interface VRF Name VC Binding	
		Bridge (1) default	4
evice Zoom	Eest Fit	Bridge (400) VLAN0400	
	I		
• gan		Bridge (401) VLAN0401	-
. umu -		Line 0 (Si	ze 102)
slot	Fan 0 2	Sub Interfaces	
		Sub Interfaces	
1:		50 C	
			_
IS Networ	k Events Provisioning Events		

Figure 13-18 EVC Port Properties in Physical Inventory

Table 13-22 describes the information displayed for these properties.

Table 13-22	EVC Port Properties in Physical Inventory
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Field	Description				
Storm Control and Monitoring Properties Area					
Storm Control	Status of storm control on the port: Enabled or Disabled.				
Port Monitoring Status	Status of port monitoring:				
	 Enabled—The switch sends keepalive messages on user network interfaces (UNIs) and enhanced network interfaces (ENIs) and does not send keep alive messages on network node interfaces (NNIs). Disabled—The switch does not send keepalive messages. 				
Port Monitoring Interval	Keepalive interval in seconds. The default value is ten seconds.				
Storm Control Level	Representing a percentage of the total available bandwidth of the port, the threshold at which additional traffic of the specified type is suppressed until the incoming traffic falls below the threshold.				
Storm Control Type	Type of storm the port is configured for protection from: Broadcast, Multicast, or Unicast.				

Field	Description	
Security Properties Areas		
Port Security	Status of security on the port: Enabled or Disabled.	
MAC Address Limit Maximum number of MAC addresses allowed on the interface.		
Aging Type	Type of aging used for automatically learned addresses on a secure port:	
	• Absolute—Times out the MAC address after the specified age-time has been exceeded, regardless of the traffic pattern. This is the default for any secured port, and the age-time value is set to 0.	
	• Inactivity—Times out the MAC address only after the specified age-time of inactivity from the corresponding host has been exceeded.	
Aging Time	Length of time, in minutes, that a MAC address can remain on the security table.	
Violation Mode	Action that occurs when a new device connects to a port or when a new device connects to a port after the maximum number of devices are connected:	
	• Protect—Drops packets with unknown source addresses until a sufficient number of secure MAC addresses are removed to drop below the maximum value	
	• Restrict—Drops packets with unknown source addresses until a sufficient number of secure MAC addresses are removed to drop below the maximum value and causes the Security Violation counter to increment.	
	• Shutdown—Puts the interface into the error-disabled state immediately and sends an SNMP trap notification.	

Table 13-22 EVC Port Properties in Physical Inventory (continued)

Viewing and Renaming Ethernet Flow Domains

An Ethernet flow domain represents an Ethernet access domain. The Ethernet flow domain holds all network elements between the CE (inclusive, if managed by the SP), up to the SP core (exclusive). This includes CE, access, aggregation, and distribution network elements.

An Ethernet flow domain can have no N-PEs (flat VLAN) or one or more N-PEs (N-PE redundancy configuration). The Ethernet flow domain is defined using physical connectivity at the port level, and not at the network element level. STP is used to mark the root bridge, root or blocked ports, and blocked VLAN links.

To view Ethernet flow domains:

Step 1 In Prime Network Vision, choose Network Inventory > Ethernet Flow Domains.

The Ethernet Flow Domain List window is displayed with the domain name, the system-defined domain name, and a brief description for each Ethernet flow domain as shown in Figure 13-19.

Figure 13-19 Ethernet Flow Domain List Properties Window

Ethernet Flow Domains			
Find : 🗾 🔡 🛃 💎 🧤 🗸			
Domain Name 🛛 🔁 🛆	System Defined Name	Description	
DataLinkAggregation1@c2-dist4	DataLinkAggregation1@c2-dist4		
DataLinkAggregation1@c3-ac4	DataLinkAggregation1@c3-ac4		
DataLinkAggregation10@c7-sw1	DataLinkAggregation10@c7-sw1		
DataLinkAggregation12@10.56.101.176	DataLinkAggregation12@10.56.101.176		
DataLinkAggregation12@3750E-24TD-AGG2	DataLinkAggregation12@3750E-24TD-AGG2		
DataLinkAggregation20@3750E-48PD-AGG6	DataLinkAggregation20@3750E-48PD-AGG6		
FastEthernet0/1@c4-ce8	FastEthernet0/1@c4-ce8		
FastEthernet1/0/1@c1-upe2	FastEthernet1/0/1@c1-upe2		
FastEthernet1/0/1@c3-ac3	FastEthernet1/0/1@c3-ac3		
FastEthernet1/0/1@c7-sw10	FastEthernet1/0/1@c7-sw10		
FastEthernet1/0/10@c4-upe9	FastEthernet1/0/10@c4-upe9		
GigabitEthernet1/1@c1-ce7	GigabitEthernet1/1@c1-ce7		
GigabitEthernet1/1@c4-ce2	GigabitEthernet1/1@c4-ce2		
GigabitEthernet1/1@c4-upe4	GigabitEthernet1/1@c4-upe4		
GigabitEthernet1/10@c4-ce3	GigabitEthernet1/10@c4-ce3		
GigabitEthernet3/1@c3-agg1	GigabitEthernet3/1@c3-agg1		
GigabitEthernet3/1@c7-npe1-76	GigabitEthernet3/1@c7-npe1-76		
			Line 0 (Size 17)
		emory: 7% Cor	nected

Step 2 To rename an Ethernet flow domain:

- a. Right-click the required domain, then choose Rename.
- **b.** In the Rename Node dialog box, enter a new name for the domain.
- c. Click OK.

The window is refreshed, and the new name is displayed.

- **Step 3** To view Ethernet flow domain properties, do either of the following:
 - Right-click the required domain, then choose Properties.
 - Double-click the required domain.

The Ethernet Flow Domain Properties window is displayed as shown in Figure 13-20.

Domain Name: FastEther	net1/0	/1@c3-ac2 Syste	m Defined Name:	FastEthernet1/0	D/1@c3-ac2			
Elements								
Find :	t ĝ	マキ 幕 辱						
ID €∧	Туре	Discovery Protocols	Aggregation Group	UNI Properties	OAM Admin Status	Is ELMI Enabled	Efps	
c3-ac2#0:FastEthernet1/0/1								-
c3-ac2#0:FastEthernet1/0/2								
c3-ac2#0:FastEthernet1/0/3								
c3-ac2#0:FastEthernet1/0/4								
c3-ac2#0:FastEthernet1/0/5								
c3-ac2#0:FastEthernet1/0/6								
c3-ac2#0:FastEthernet1/0/7								
c3-ac2#0:FastEthernet1/0/8								
c3-ac2#0:FastEthernet1/0/9								
c3-ac2#0:FastEthernet1/0/10								
c3-ac2#0:FastEthernet1/0/11								
c3-ac2#0:FastEthernet1/0/12								
c3-ac2#0:FastEthernet1/0/13								
c3-ac2#0:FastEthernet1/0/14							Line 0 (Siz	₹ e 26)
							Line 0 (Siz	e 26)

Figure 13-20 Ethernet Flow Domain Properties Window

Table 13-23 describes the information displayed in the Ethernet Flow Domain Properties window.

Note Not all fields are available in all tables. The table contents depend on the domain type, such as FastEthernet.

Table 13-23 Ethernet Flow Domain Properties Window

Field	Description
Domain Name	Name of the selected domain.
System Defined Name	Domain name as identified by the most dominant device and its lowest port name lexicographically.
Elements Table	
ID	Interface identifier, hyperlinked to the interface in physical inventory.
Туре	Aggregation group type: Ethernet Channel (EtherChannel), or IEEE 8023 AD LAG (IEEE 802.3 link aggregation group).
Discovery Protocols	Discovery protocols used on the interface.
Is ELMI Enabled	Whether or not Ethernet LMI is enabled on the interface: True or False.

Step 4To navigate to the individual interface or link aggregation group, click an interface identifier or group.The interface or link aggregation group properties are displayed in the inventory window.

Working with VLANs and VLAN Overlays

The following topics provide information and procedures for working with VLANs and VLAN overlays:

- Understanding VLAN and EFD Discovery, page 13-44
- Understanding VLAN Elements, page 13-45
- Switching Entities Containing Termination Points, page 13-49
- Adding VLANs to a Map, page 13-49
- Removing VLANs from a Map, page 13-52
- Viewing VLAN Mappings, page 13-52
- Working with Associated VLANs, page 13-54
- Viewing VLAN Links Between VLAN Elements and Devices, page 13-57
- Applying VLAN Overlays, page 13-60
- Displaying or Hiding VLAN Overlays, page 13-61
- Removing a VLAN Overlay, page 13-61
- Viewing VLAN Service Link Properties, page 13-62
- Viewing REP Information in VLAN Domain Views and VLAN Overlays, page 13-62
- Viewing REP Properties for VLAN Service Links, page 13-63
- Viewing STP Information in VLAN Domain Views and VLAN Overlays, page 13-65
- Viewing STP Properties for VLAN Service Links, page 13-66
- Viewing VLAN Trunk Group Properties, page 13-67
- Viewing VLAN Bridge Properties, page 13-69

Understanding VLAN and EFD Discovery

When you start the Prime Network gateway the first time, Prime Network Vision waits for two topology cycles to complete before discovering new VLANs, VLAN associations, and EFDs. The default configured time for two topology cycles to complete is one hour, but might be configured for longer periods of time on large setups. This delay allows the system to stabilize, and provides the time needed to model devices and discover links.

During this delay, Prime Network Vision does not add VNEs or apply updates to existing VLANs or EFDs.

After the initial delay has passed, Prime Network Vision discovers new VLANs, VLAN associations, and EFDs, applies updates to existing VLANs, VLAN associations, and EFDs, and updates the database accordingly.

When you restart the gateway, Prime Network Vision uses the persisted topology information instead of waiting two topology cycles, thus improving the discovery time for new VLANs, VLAN associations, and EFDs.

Understanding VLAN Elements

The following concepts are important to understand when working with the representation of edge EFPs inside VLANs:

- VLAN Elements in Prime Network Vision, page 13-45
- VLANs, page 13-45
- Switching Entities, page 13-45
- Ethernet Flow Points, page 13-46

VLAN Elements in Prime Network Vision

Table 13-24 describes the icons that Prime Network Vision uses to represent VLAN elements.

Table 13-24 VLAN Elements and Icons in Prime Network Vision

Element	Associated Network Element	Icon
Network VLAN	None	
Switching entity	Bridge	**
Ethernet Flow Point (EFP)	Ethernet port	

VLANs

Prime Network Vision discovers and allows you to display maps with a network-level view of VLANs.

In Prime Network, a VLAN entity consists of one or more switching entities and the corresponding EFP elements.

A network VLAN represents the virtual LAN. The network VLAN holds its contained switching entities and can be associated to a customer. The network VLAN also holds the Ethernet flow points that are part of the network VLAN but not part of any switching entity. For example, a port that tags ingress flows after which the flow moves to a different VLAN.

Switching Entities

A switching entity represents a device-level Layer 2 forwarding entity (such as a VLAN or bridge domain) that participates in a network VLAN. A switching entity is associated to a network VLAN according to its relationship to the same Ethernet Flow Domain (EFD) and the VLAN identifier.

If you right-click a switching entity in Prime Network Vision and then choose Inventory, the inventory window is displayed with the corresponding bridge selected in Logical Inventory.

A switching entity typically contains EFP elements.

Γ

Ethernet Flow Points

An Ethernet flow point (EFP) can represent a port that is configured for participation in a specific VLAN.

If you right-click an EFP in Prime Network Vision and then choose **Inventory**, the inventory window is displayed with the corresponding port selected in Physical Inventory.

EFPs that are located in a switching entity represent Ethernet ports that are configured as switch ports (in either Access, Trunk, or Dot1Q tunnel mode).

Figure 13-21 shows an example of EFPs configured as switch ports in Prime Network Vision.

Figure 13-21 EFPs Configured as Switch Ports

Cisco Prime Network Vision - root@10.5	6.22.25 (physical)			_ 🗆 ×
File Edit View Node Tools Activation Ne	twork Inventory <u>R</u> eports <u>W</u> indow	Help		
🗈 🗳 🖹 - 🔛 - 💾 🔳 🔳 🐂 🖻	- 📰 🔘 🗨 📰 🔛 🚳 🔳	🏟 📧 - 🖾 🕟 🔍 🖑	G 🛱	
₿ ♥ physical ×				
GigabätEhment 1/50°700ACE GigabätEhment 1/20°700ACE GigabätEhment 1/20	GigabtEthemet1/29 GigabtEthemet1/10 CigabtEthemet1/10 CigabtEthemet1/27 CigabtEthemet1/27	GigabitEthemet1/26 GigabitEthemet1/32 GigabitEthemet1/32 GigabitEthemet1/25 GigabitEthemet1/25	GgabitEthernet1/31 GgabitEthernet1/28 GgabitEthernet1/28 GgabitEthernet1/6@ GgabitEthernet1/6@	GigabitEthemet1/30 GigabitEthemet1/50 GigabitEthemet1/50 GigabitEthemet1/20 GigabitEthemet1/20 Construction Access
Find : E 24 V W Severity Ticket ID N Last Modification		ne Description	Location Acknowledged	Creation Time
60001 12-Apr-12 13:05:				12-Apr-12 01:23:37
70001 12-Apr-12 13:33:				12-Apr-12 08-17-33
•				•
				Line 0 (Size 30)
Tickets Latest Events				
			Memory:	5% Connected

EFPs that are located directly inside a VLAN represent one of the following:

• Termination point EFPs—Ethernet ports that are at the edge of a Layer 2 domain flow, such as a VLAN, on which traffic enters a Layer 3 domain or a different Layer 2 domain, such as EoMPLS. These ports are found on such devices as the Cisco 7600 series, Cisco GSR, and Cisco ASR 9000 series devices.

These EFPs are typically connected to a switching entity inside the VLAN by a VLAN link, as shown in Figure 13-22.

		ation Network Invent		Mindow Help		ത്തം			
😰 📰 🔹						1 1 1 2 2 2	10 CH		
	DUTIONY J 27 [114] 26 [144] 26 [144] 26 [144] 26 [144] 26 [244] 27 [245] 27 [245] 28 [245] 29 [245] 29 [245] 20 [2	gabic 7600 7600 7600 7600 7600 7600 7600 7600 7600 7600 770	ernet1/30 *	GigabitEthernet1/25		link VLAN-10@	(net1/2@) () () () () () () () () () () () () ()		bbilEthernet1/6@ Trunk /25@7600ACE abitEthernet1/29 Trunk
	GigabitEthernet1/:	25@ v			[•
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600		r-12 13:16:22		12-Apr-12 01:23:36		tilization le	7600ACE	No	12-Apr-12 01:23:37 🔺
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۹ [►
									Line 0 (Size 30)

Figure 13-22 Termination Point EFP Inside a VLAN

• Edge EFPs—A subset of EFPs that exist inside a switching entity but that are not connected to other EFPs and that represent edge EFPs in the context of the VLAN.

In Prime Network Vision, edge EFPs are displayed directly under the VLAN at the same level as their switching entities and are connected to their corresponding switching entities by a dotted link, as shown in Figure 13-23.



Figure 13-23 Edge EFP Inside a VLAN

An edge EFP can be displayed both inside and outside of its switching entity, as shown (highlighted with a red outline) in Figure 13-24:



Figure 13-24 Edge EFPs Displayed Inside and Outside of Switching Entities

You can delete EFPs and switching entities that have a reconciliation icon by right-clicking them and choosing **Delete**. After all switching entities and EFPs are deleted from a network VLAN, the empty network VLAN is automatically deleted from Prime Network Vision after a few minutes.

Switching Entities Containing Termination Points

For some devices, such as Cisco 7600 series, Cisco GSR, and Cisco ASR 9000 series devices, the related switching entities can contain Ethernet flow point elements that serve as termination points on different network VLANs. If a single map contains both the switching entities and the network VLANs, a link is displayed between them.

Adding VLANs to a Map

You can add VLANs to a map if the VLANs were previously discovered by Prime Network Vision and are not currently displayed in the map.

<u>Note</u>

Adding VLANs affects other users if they are working with the same map.

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To add VLANs to a map:

- **Step 1** In Prime Network Vision, display the map to which you want to add the VLANs.
- Step 2 Choose File > Add to Map > VLAN. The Add VLAN to map dialog box is displayed as shown in Figure 13-25.

Figure 13-25 Add VLAN Dialog Box

0	earch EFD Name 💌		Go				
Avail	able VLANs as of [03-Nov-10 12:48] 🔞						
Find :							
Vame	€∧	ID	EFD Name	EFD System Name	System Name	Description	1
T.	VLAN-1@DataLinkAggregation10@c7-sw1	1	DataLinkAggregation10@c7-sw1	DataLinkAggregation10@c7-sw1	VLAN-1		Ŀ
Ŧ	VLAN-1@DataLinkAggregation12@10.56.101.176	1	DataLinkAggregation12@10.56.101.176	DataLinkAggregation12@10.56.101.176	VLAN-1		
Т	VLAN-1@DataLinkAggregation12@3750E-24TD-AGG2	1	DataLinkAggregation12@3750E-24TD-AGG2	DataLinkAggregation12@3750E-24TD-AGG2	VLAN-1		ľ
Ъ	VLAN-1@DataLinkAggregation20@3750E-48PD-AGG6	1	DataLinkAggregation20@3750E-48PD-AGG6	DataLinkAggregation20@3750E-48PD-AGG6	VLAN-1		
н	VLAN-1@FastEthernet1/0/1@c3-ac3	1	FastEthernet1/0/1@c3-ac3	FastEthernet1/0/1@c3-ac3	VLAN-1		1
Ŧ	VLAN-1@FastEthernet1/0/1@c7-sw10	1	FastEthernet1/0/1@c7-sw10	FastEthernet1/0/1@c7-sw10	VLAN-1		
н	VLAN-1@FastEthernet1/0/10@c4-upe9	1	FastEthernet1/0/10@c4-upe9	FastEthernet1/0/10@c4-upe9	VLAN-1		1
Ŧ	VLAN-1@GigabitEthernet1/1@c1-ce7	1	GigabitEthernet1/1@c1-ce7	GigabitEthernet1/1@c1-ce7	VLAN-1		
T.	VLAN-1@GigabitEthernet1/1@c4-upe4	1	GigabitEthernet1/1@c4-upe4	GigabitEthernet1/1@c4-upe4	VLAN-1		
T.	VLAN-1@GigabitEthernet1/10@c4-ce3	1	GigabitEthernet1/10@c4-ce3	GigabitEthernet1/10@c4-ce3	VLAN-1		
Т	VLAN-1@GigabitEthernet3/1@c3-agg1	1	GigabitEthernet3/1@c3-agg1	GigabitEthernet3/1@c3-agg1	VLAN-1		
Ŧ.	VLAN-1@GigabitEthernet3/1@c7-npe1-76	1	GigabitEthernet3/1@c7-npe1-76	GigabitEthernet3/1@c7-npe1-76	VLAN-1		ł
Ŧ	VLAN-2@DataLinkAggregation12@10.56.101.176	2	DataLinkAggregation12@10.56.101.176	DataLinkAggregation12@10.56.101.176	VLAN-2		
Ŧ	VLAN-2@DataLinkAggregation12@3750E-24TD-AGG2	2	DataLinkAggregation12@3750E-24TD-AGG2	DataLinkAggregation12@3750E-24TD-AGG2	VLAN-2		
Т	VLAN-2@DataLinkAggregation20@3750E-48PD-AGG6	2	DataLinkAggregation20@3750E-48PD-AGG6	DataLinkAggregation20@3750E-48PD-AGG6	VLAN-2		
Ŧ.	VLAN-3@DataLinkAggregation12@10.56.101.176	3	DataLinkAggregation12@10.56.101.176	DataLinkAggregation12@10.56.101.176	VLAN-3		
л.	VLAN-3@DataLinkAggregation12@3750E-24TD-AGG2	3	DataLinkAggregation12@3750E-24TD-AGG2	DataLinkAggregation12@3750E-24TD-AGG2	VLAN-3		
					Line 29 (1	/1,811 Select	ter

- **Step 3** In the Add VLAN dialog box, do either of the following:
 - Choose a search category, enter a search string, then click **Go** to narrow the VLAN display to a range of VLANs or a specific VLAN.

The search condition is "contains." Search strings are case-insensitive. For example, if you choose the Name category and enter "net," Prime Network Vision displays VLANs that have "net" anywhere in their names. The string "net" can be at the beginning, the middle, or end of the name, such as Ethernet.

• Choose **Show All** to display all the VLANs.

Step 4 Select the VLANs that you want to add to the map.

Press Shift or Ctrl to choose multiple adjoining or nonconsecutive VLANs.

Step 5 Click OK.

The VLANs are displayed in the Prime Network Vision content pane as shown in Figure 13-26. Any tickets that apply to the VLANs are displayed in the ticket pane.

W Cisco Prime Network Vision - root@192.168.100.171 (CPT) File Edit Yew Node Tools Activation Network Inventory Reports Window Help Image: Prime Prime Image: Prime Prime Image: Prime Prime Prime Image: Prime Prime Image: Prime Prime Prime Image: Prime Prime Prime Image: Prime Prime Prime Prime Image: Prime) ×
CPT [2M] I 0.64.106.171 I 0.64.106.174 [1M] I 0.64.106.224 [M] I 0.64.106.024 [M] I 0.64.106.174 [
Find:	
Severity Ticket ID N Last Modification Time e Root Root Event Time Description Location Advinowledged C V 39 10-Apr-12 09:01:50 V 10-Apr-12 08:59:50 MPLS interface r 10.64.106.1 No 1 Contract Contract Con	·
Tickets Latest Events Memory: 6% Connected	

Figure 13-26 VLANs in Map View

After you add a VLAN to a map, you can use Prime Network Vision to view its switching entities and Ethernet flow points. For more information, see:

- Viewing and Renaming Ethernet Flow Domains, page 13-41
- Viewing EFP Properties, page 13-32

You can view additional information about REP and STP in logical inventory, VLAN domain views, and VLAN overlays.

For REP, see:

- Viewing Resilient Ethernet Protocol Properties, page 13-14
- Viewing REP Information in VLAN Domain Views and VLAN Overlays, page 13-62
- Viewing REP Properties for VLAN Service Links, page 13-63

For STP, see:

- Viewing Spanning Tree Protocol Properties, page 13-10
- Viewing STP Information in VLAN Domain Views and VLAN Overlays, page 13-65
- Viewing STP Properties for VLAN Service Links, page 13-66

Removing VLANs from a Map

You can remove one or more VLANs from the current map. This change does not affect other maps. Removing a VLAN from a map does not remove it from the Prime Network database. You can add the VLAN to the map at any time.

When removing VLANs from maps, keep the following in mind:

- Removing a VLAN affects other users who are working with the same map view.
- This option does not change the business configuration or database.
- You cannot remove virtual routers or sites from the map without removing the VLAN.

To remove a VLAN, in the Prime Network Vision navigation pane or map view, right-click the VLAN and choose **Remove from Map**.

The VLAN is removed from the navigation pane and map view along with all VLAN elements such as connected CE devices. Remote VLANs (extranets) are not removed.

Viewing VLAN Mappings

VLAN mapping, or VLAN ID translation, is used to map customer VLANs to service provider VLANs. VLAN mapping is configured on the ports that are connected to the service provider network. VLAN mapping acts as a filter on these ports without affecting the internal operation of the switch or the customer VLANs.

If a customer wants to use a VLAN number in a reserved range, VLAN mapping can be used to overlap customer VLANs by encapsulating the customer traffic in IEEE 802.1Q tunnels.

To view VLAN mappings:

- **Step 1** In Prime Network Vision, double-click the device with VLAN mappings configured.
- **Step 2** In the inventory window, choose **Physical Inventory > Chassis >** *slot > port*.
- **Step 3** Click **VLAN Mappings** next to the Subinterfaces tab in the lower portion of the content pane.

The VLAN Mappings tab is displayed as shown in Figure 13-27.

c7-sw10 [1N]							_ 🗆 ×
r 📰 🗹 c7-sw10 [1N]	Poll Now						
Logical Inventory Physical Inventory	-Location Informal	tion					A
Chassis	Type:	Pluggable	Location:	1.GigabitEthernet1/1	/1		
Slot 0: Card - ME-C3750-24TE - Fixed		true	Port Alias:	GigabitEthernet1/1/1			
Slot 1: Card - ME-C3750-24TE - Fixed GigabitEthernet1/1/1	Managed:	true	Status:	OK			
GigabitEthernet1/1/2	lisable Sen	ding Alarms					
Slot Power	-Pluggable Transc	eiver					
	Connector Type	RJ	45	Pluggable Ty	vpe: SFP		
	Connector Desc		/100/1000Ba		GLC-T		
	Connector Seria		M122820AV	Pluggable Po			
	Connector Sone		112202011	n laggable r e	in state.		
	-VLAN Interface						
	Mode:	Trunk	VI AN Type:	Lave	r 2 VI AN		-
	Find :		2 V 🖷	同時			
	Find :	VLAN	Inner VLAN	Translated VLAN	Translated Inner VLAN	Action Ə	
	Direction Out	VLAN 1702			Translated Inner VLAN	Drop	
	Direction Out Out	VLAN 1702 1762			Translated Inner VLAN	Drop	
	Out Out Out	VLAN 1702 1762 1761	Inner VLAN	Translated VLAN	Translated Inner VLAN	Drop Drop Drop	
	Direction Out Out	VLAN 1702 1762 1761 1761		Translated VLAN 761	Translated Inner VLAN	Drop Drop Drop Translate	
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i Device Zoom) 🔯 Best Fit	Direction Out Out Out Out	VLAN 1702 1762 1761 1761	Inner VLAN	Translated VLAN 761	Translated Inner VLAN	Drop Drop Drop Translate	
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Device Zoom	Direction Out Out Out Out Out Out	VLAN 1702 1762 1761 1761 1728 1727	Inner VLAN	761 728 727	Translated Inner VLAN	Drop Drop Translate Translate Translate Translate Translate	• • • • • • • • • • • • • • • • • • • •
Device Zoom	Direction Out Out Out Out Out Out	VLAN 1702 1762 1761 1761 1728 1727	Inner VLAN 761	761 728 727	Translated Inner VLAN	Drop Drop Translate Translate Translate Translate Translate	
Device Zoom	Direction Out Out Out Out Out Out Out	VLAN 1702 1762 1761 1761 1728 1727 1726	Inner VLAN 761	761 728 727	Translated Inner VLAN	Drop Drop Translate Translate Translate Translate Translate	
Cevice Zoom	Direction Out Out Out Out Out Out Out Sub Interfaces	VLAN 1702 1762 1761 1761 1728 1727 1726	Inner VLAN 761	761 728 727	Translated Inner VLAN	Drop Drop Translate Translate Translate Translate Translate	
i Device Zoom Best Fit	Direction Out Out Out Out Out Out Out Sub Interfaces	VLAN 1702 1762 1761 1761 1728 1727 1726 VLAN Mapping	Inner VLAN 761	Translated VLAN 761 728 727 726		Drop Drop Translate Translate Translate Translate Translate	
Device Zoom Best Fit	Direction Out Out Out Out Out Out Out Out Sub Interfaces	VLAN 1702 1762 1761 1761 1728 1727 1726 VLAN Mapping	761	Translated VLAN 761 728 727 726		Drop Drop Translate Translate Translate Translate Translate	

Figure 13-27 VLAN Mappings Tab in Physical Inventory

Table 13-25 describes the information that is displayed in the VLAN Mappings table.

Table 13-25VLAN Mappings Table

Field	Description
Direction	Whether the VLAN mapping is defined in the incoming or outgoing direction: In or Out.
VLAN	Customer-side VLAN identifier.
Inner VLAN	Used for two-to-one mappings, the customer-side inner VLAN identifier.
Translated VLAN	Translated, or mapped, service-provider side VLAN identifier.
Translated Inner VLAN	Translated, or mapped, service-provider side inner VLAN identifier.
Action	Action taken if the VLAN traffic meets the specified mapping: Translate or Drop.

Working with Associated VLANs

Prime Network Vision discovers associations between network VLANs and displays the information in Prime Network Vision. Network VLAN associations are represented by VLAN service links, and can be any of the tag manipulation types described in Table 13-26.

Table 13-26	Types of Tag Manipulations in VLAN Associations	

VLAN Tag Manipulation	Description	Example
One-to-one	One VLAN tag is translated to another VLAN tag.	VLAN tag 100 > VLAN tag 200
Two-to-two	• Two VLAN tags exist and both are translated to other tags.	• Inner tag 100, Outer tag 101 > Inner tag 200, Outer tag 201
	• Two VLAN tags exist, but tag manipulation is applied only to the outer tag.	• Inner tag 100, Outer tag 101 > Inner tag 100, Outer tag 201
One-to-two	One VLAN tag exists and an additional tag is inserted into the packet.	VLAN tag 100 > Inner tag 100, Outer tag 101

When working with VLANs, you can:

- Add an associated VLAN—See Adding an Associated VLAN, page 13-54.
- View properties for associated VLANs—See Viewing Associated Network VLAN Service Links and VLAN Mapping Properties, page 13-56.

Adding an Associated VLAN

To add an associated VLAN to an existing VLAN in a map:

Step 1 In Prime Network Vision, select the required VLAN in the map view.

Right-click the VLAN and choose Add Associated VLAN. Step 2

The Add Associated VLAN table is displayed as shown in Figure 13-28.

	🖬 🛃 🗸 👎	1		
Vame		ID	EFD Name	EFD System Name
	LAN-1742@FastEthernet1/0/1@c7-sw10	1742	FastEthernet1/0/1@c7-sw10	FastEthernet1/0/1@c7-sw10
				•
				Line 0 (Size 1)
				OK Cancel

Figure 13-28 Add Associated VLAN Window

In this example, the selected network VLAN has one associated VLAN: VLAN-1742. Table 13-27 describes the information displayed in the Add Associated VLAN table.

 Table 13-27
 Add Associated VLAN Table

Field	Description
Name	Name of the VLAN.
ID	VLAN identifier.
EFD Name	Name of the Ethernet flow domain.
EFD System Name	Name that Prime Network assigns to the EFD.
System Name	Name that Prime Network assigns to the VLAN.
Description	Brief description of the VLAN.

Step 3Select the required VLAN in the Add Associated VLAN table, then click OK.The associated network VLAN is added to the map in Prime Network Vision.

Viewing Associated Network VLAN Service Links and VLAN Mapping Properties

After you add an associated network VLAN, you can:

- View the associated network VLAN service links in Prime Network Vision in the thumbnail view.
- View VLAN mapping properties in the Link Properties window.

To view associated network VLAN service links and VLAN mapping properties:

- **Step 1** Select the required network VLAN in the map view.
- Step 2 Right-click the VLAN, then choose Show Thumbnail.

Figure 13-29 shows an example of a network VLAN in a thumbnail.

The VLAN service links are displayed as lines between the associated network VLANs. The links represent the connections between the Ethernet flow points that are part of each network VLAN.

Figure 13-29 VLAN Service Links Between Associated Network VLANs



Step 3 To view additional information, right-click a link, and choose Properties.The Link Properties window is displayed as shown in Figure 13-30.

If VLAN tag manipulation is configured on the link, the VLAN Mapping Properties area in the Link Properties window displays the relevant information. For example, in Figure 13-30, the VLAN Mapping Properties area shows that a one-to-one VLAN mapping for VLAN tag 1709 to VLAN tag 709 is configured on GigabitEthernet1/1/1 on c7-sw8 on the egress direction.

/LAN-709@DataLinkAggregation3@c7-sw		_ 0
c7-sw5#1:GigabitEthernet1/0/3 <-> c7-sw8#	Connection Properties	
	Location: c7-sw5#1:GigabitEthernet1/0/3	Location: c7-sw8#1:GigabitEthernet1/1/1
	Port Alias: GigabitEthernet1/0/3	Port Alias: GigabitEthernet1/1/1
	CTD Descention	
	-STP Properties	
	Port State: FORWARDING	
	Port Role: DESIGNATED	
	VLAN Properties	
	VLAN ID: 709 Mode: Trunk	VLAN ID: 1709 Mode: Trunk
	Vlan Type: IEEE802.1Q	Vian Type: IEEE802.1Q
	Native Vian Id: 1	Native Vlan Id: 1
	VLAN Mappings Properties	
		Direction: Out
		VLAN: 1709
		Translated VLAN: 709
	Ethernet Properties	
	MAC Address: 00 24 13 43 72 83	MAC Address: 00 22 0C 99 09 1B
	Physical Properties	
ind : 👘 🎒 😴 🦆 📠		
:kets Network Events		
		Memory: 8% Connected

Figure 13-30 VLAN Mapping Properties in Link Properties Window

For additional information about viewing network VLAN service link properties, see:

- Viewing REP Properties for VLAN Service Links, page 13-63
- Viewing STP Properties for VLAN Service Links, page 13-66

Viewing VLAN Links Between VLAN Elements and Devices

If a Prime Network Vision map contains a VLAN and the network element on which the VLAN is configured, along with EFPs, switching entities, or network VLANs, you might see what appear to be multiple associations between the logical and physical entities. Actually, however, you are seeing other views of the original VLAN link.

For example, assume that you have the following situation, as shown in Figure 13-31 and described in the following paragraphs.



Figure 13-31 VLAN Elements and Devices in Prime Network Vision

The elements are configured as follows:

- Port GigabitEthernet1/1/2 on element c7-sw10 is connected to port GigabitEthernet1/1/2 on element c7-sw8 by an Ethernet topology link.
- Port GigabitEthernet1/1/2 on element c7-sw10 is a trunk port associated with VLAN-1704 which is configured on element c7-sw10.
- Port GigabitEthernet1/1/2 on element c7-sw8 is a trunk port associated with VLAN-704 which is configured on element c7-sw8.
- Port GigabitEthernet1/1/2 on element c7-sw8 has a VLAN mapping to tunnel VLAN-1704 (C-VLAN) in VLAN-704 (SP-VLAN).

In this example, VLAN discovery identified two network VLANs: VLAN-1704 and VLAN-704. Each of these network VLANs contains a switching entity and an EFP that represent the connected ports, GigabitEthernet1/1/2@c7-sw10 and GigabitEthernet1/1/2@c7-sw8, respectively.

The four links in the map are identified in Figure 13-32 and described in the following table.



Figure 13-32 Links Between VLAN Elements and Devices

- 1 The Ethernet topological link between port GigabitEthernet1/1/2 on VNE c7-sw10 and GigabitEthernet1/1/2 on VNE c7-sw8.
- 2 The VLAN link between GigabitEthernet1/1/2@c7-sw10 EFP and GigabitEthernet1/1/2@c7-sw8 EFP.
- **3** Another view of the VLAN link (link 2), shown as a link between GigabitEthernet1/1/2@c7-sw10 EFP and GigabitEthernet1/1/2@c7-sw8 EFP.
- 4 Another view of the VLAN link (link 2), shown as a link between GigabitEthernet1/1/2@c7-sw10 EFP and GigabitEthernet1/1/2@c7-sw8 EFP.

The key point is that a link between a VNE and EFP, switching entity, or network VLAN **does not** represent an association between the VNE and the logical element. Such a link is simply another view of the VLAN link.

If the thumbnail view is closed, instead of a link between the VNE and EFP, you will see a link between the VNE and the switching entity or network VLAN.

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Applying VLAN Overlays

You can create an overlay of a specific VLAN on top of the physical network elements displayed in a map view. The overlay highlights the network elements and links that the selected VLAN and its associated VLANs traverse. Network elements and links that are not part of the VLAN are dimmed in the map view.

The VLAN overlay is a snapshot of the network to help you visualize the network elements and links connected to a VLAN. The overlay displays STP and REP link and port information.

If you select a network VLAN that is associated with other VLANs, the associated VLANs are included in the overlay.

The VLAN service overlay allows you to isolate the parts of a network that are being used by a particular service. This information can then be used for troubleshooting. For example, the overlay can highlight configuration or design problems when bottlenecks occur and all site interconnections use the same link.

To add a VLAN overlay:

- **Step 1** Display the network map for which you want to create an overlay in Prime Network Vision.
- **Step 2** In the toolbar, choose **Choose Overlay Type > VLAN**.
- **Step 3** In the Select VLAN Overlay dialog box, do either of the following:
 - Choose a search category, enter a search string, then click **Go** to narrow the selection to a set of overlays or a specific overlay.

The search condition is "contains." Search strings are case-insensitive. For example, if you choose the Name category and enter "net," Prime Network Vision displays overlays that have "net" in their names. The string "net" can be at the beginning, middle, or end of the name, such as Ethernet.

- Choose **Show All** to view all overlays.
- **Step 4** Select an overlay, then click **OK**.

The network elements and physical links used by the selected VLAN overlay are highlighted in the network map. All other network elements and links are dimmed. The VLAN name is displayed in the title of the window. See Figure 13-33.

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Figure 13-33 VLAN Overlay Example



The overlay is a snapshot taken at a specific point in time. As a result, the information in the overlay might become stale. To update the overlay, click **Refresh the Last Selected Overlay** in the toolbar.

Displaying or Hiding VLAN Overlays

After you create a VLAN overlay, you can hide it by clicking **Hide Overlay** in the toolbar. All previously dimmed network elements and links are displayed. To display the overlay, click **Show Overlay**.

Note

The Overlay icon toggles between Show Overlay and Hide Overlay. When selected, the VLAN overlay is displayed and the Hide Overlay tool is active. When deselected, the VLAN overlay is hidden and the Show Overlay tool is active.

Removing a VLAN Overlay

To remove a VLAN overlay from a map, choose **Choose Overlay Type > None** in the toolbar. The overlay is removed from the map, and the Show Overlay/Hide Overlay icon is dimmed.

Viewing VLAN Service Link Properties

See the following topics for information on viewing VLAN service link properties:

- Viewing REP Properties for VLAN Service Links, page 13-63
- Viewing STP Properties for VLAN Service Links, page 13-66
- Viewing Associated Network VLAN Service Links and VLAN Mapping Properties, page 13-56

Viewing REP Information in VLAN Domain Views and VLAN Overlays

You can view REP segment and port information in Prime Network Vision in the map view. The icons displayed depend on whether you view the REP information in the VLAN domain view or in a VLAN overlay. Table 13-28 describes the icons and badges used to represent REP segment and port information.

ltem	Description	VLAN Domain View	VLAN Overlay
REP-140	REP identifier—Uses the format REP- <i>id</i> where <i>id</i> represents the REP segment identifier.	The REP identifier is displayed in the domain view if the visual link represents only one link. f the visual link represents more than one link, no REP identifier is displayed.	The REP identifier is displayed in a VLAN overlay view if all the links represented by the visual link are from the same source to the same destination.
REP No Neighbor-255	REP No Neighbor segment— Indicates that the specified segment has no neighbor.	C7-SW9 [2M+] Cicco Catalyst 3 Disco Catalyst 3 12.2(95)5E	C7-sw9 [2M] Circo Calalytt 3 1055.101.38 12.2(55)5E Circo Calalytt 3 1056.101.39 12.2(55)5E Circo Calalytt 3 1056.101.39 12.2(54)5E
REP-?	REP identifier for incorrect configuration—Indicates that the two sides of the link are configured differently or incorrectly.	VLAN-711@c7-sw9 [PEP-7 (8) VLAN-711@c7-s (8)	C7-sw10 [1N] Cisco Calalyst 3 10.55.101.39 12.2(54)5E Cisco Calalyst 3 10.55.101.38 12.2(55)5E Cisco Calalyst 3 10.55.101.38 12.2(55)5E

ltem	Description	VLAN Domain View	VLAN Overlay
Ē	Multiple links with badges icon—Indicates that one or more link is represented by the visual link and at least one of the links contains a badge.	The multiple links icon is displayed in the domain view if more than one link is represented by the visual link and at least one of the links contains a badge.	The multiple links icon is displayed in a VLAN overlay view if either of the following is true: • More than one link is represented by the visual link and the links have different sources or destinations. • A badge or REP identifier exists on a sublink.
Р	REP primary badge—Indicates a REP primary port.	VLAN-407@cf-upe5 REP-140 VLAN-407@cf-upe4 VLAN-407@cf-upe4	C+upe4[1M] CISCO CATALYS_ 12.4(5)(02) 2
0	Blocking badge—Indicates a REP alternate port.	VLAN-407@c4-upe3	C4-agg1 CISCO CATALYS_ 10.56.10.1230 12.2(33)502
Po	Primary and blocking badge—Indicates a REP primary port that is also blocking.	REP-255 VLAN-142@c7-sw9 VLAN-142@c7-sw10	III / / C4-upe7 [III] C1500 C4TALYS_ 1054:0124[III] C4-upe8 [III] IIII / C4-upe8 [III] C1500 C4TALYS_ 1054:0124[III] IIII / C4-upe8 [III] C1500 C4TALYS_ 1054:0124[III] IIII / C4-upe8 [III] C1500 C4TALYS_ 1054:0124[III] IIII / C4-upe8 [III] C1500 C4TALYS_ 1024:0124[III] IIII / C4-upe8 [IIII] C1500 C4TALYS_ 1024:0124[III] IIII / C4-upe8 [IIII] C1500 C4TALYS_ 1024:0124[III] IIII / C4-upe8 [IIII] C1500 C4TALYS_ 1024:0124[III]

Table 13-28 REF	P Icons and Badges in VLAN Domai	in Views and Overlays (continued)
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Viewing REP Properties for VLAN Service Links

To view REP properties for a VLAN service link, open the Link Properties window in either of the following ways:

- Double-click the VLAN service link.
- Right-click the VLAN service link, and choose **Properties**.

Figure 13-34 shows an example of the Link Properties window with REP information.

•		Connection Proper	ties			
3	c4-upe4#1:GigabitEthernet1/6 <-> c4-upe5#0:FastEthernet0/1 Ether					
) 1	c4-upe4#1:GigabitEthernet1/6 <-> c4-upe5#0:FastEthernet0/1 Phys c4-upe4#1:GigabitEthernet1/6 <-> c4-upe5#0:FastEthernet0/1 VLAN		4-upe4#1:GigabitEthernet1/6		4-upe5#0:FastEthernet0/1	
6	c+-upe+#1.digabitechemect/6 <-> c+-upe5#0.Pastechemeto/1 #EAN	Port Alias: Gi	igabitEthernet1/6	Port Alias: Fa	astEthernet0/1	
		REP Properties				
		Segment ID:	140	Segment ID:	140	
		Port Type:	Primary Edge	Port Type:	Intermediate	
		Port Role:	Alternate	Port Role:	Open	
		Port Status:	Two Way	Port Status:	Two Way	
		Blocked VLANs:	[1-4094]			
		l				
		VLAN Properties				
		1.	500		500	
		VLAN ID:	500	VLAN ID:	500	
		Mode:	Trunk	Mode:	Trunk	
		Vlan Type:	IEEE802.1Q	Vlan Type:	IEEE802.1Q	
		Native Vlan Id:	1	Native Vlan Id:	1	
		-Ethernet Propertie	2%			
		Ethernet Propertie	15			
		MAC Address:	00 23 33 F2 A5 85	MAC Address:	00 24 C3 C6 7B 83	
		-Physical Properties				
		Oper Status:	Up	Oper Status:	Up	
		Admin Status:	Up	Admin Status:	Up	
		Maximum Speed:		Maximum Speed		
		Port Utilization	n Graph	Port Utilizatio	n Graph	
	•					

d :	■ A マ 专 画 医					
ets	Network Events					

Figure 13-34 VLAN Service Link Properties Window with REP Information

Table 13-29 describes the information that is displayed for REP for each end of the link.

 Table 13-29
 REP Properties in VLAN Service Link Properties Window

Field	Description
Segment ID	REP segment identifier.
Port Type	Port type: Primary Edge, Secondary Edge, or Intermediate.
Port Role	Role or state of the REP port depending on its link status and whether it is forwarding or blocking traffic: Failed, Alternate, or Open.
Port Status	Operational link state of the REP port: None, Init Down, No Neighbor, One Way, Two Way, Flapping, Wait, or Unknown.

Viewing STP Information in VLAN Domain Views and VLAN Overlays

You can view STP segment and port information in Prime Network Vision in the map view. The icons displayed depend on whether you view the STP information in the VLAN domain view or in a VLAN overlay. Table 13-30 describes the icons and badges used to represent STP link and port information.



ltem	Description	VLAN Domain View	VLAN Overlay
R	The STP root bridge, or root of the STP tree, is indicated by an uppercase R.	VLAN-2501@c7-sw4	67-5w7
GigabitEthernet	An STP root port is the port at the root of the STP tree. Each switching entity in the network VLAN should have a port designated as the root port.	GigabitEthernet1/2@ Trunk	GigabitEthernet
	The STP root port is indicated by an uppercase R on the Ethernet flow point that is designated the root port.		
0	STP blocks some VLAN ports to ensure a loop-free topology. The blocked port is marked with a red deny badge on the side on which traffic is denied.	VLAN-2157@c4-upe4	C4-upe4 [IM] CISCO CATALYS 1054.101.274 122(53)662 122(53)662 C4-agg1 ISS (102.274 ISS (102.274) ISS

To view additional STP information in a VLAN overlay, right-click an STP link and choose **Show Callouts**. The following STP port information is displayed as shown in Figure 13-35:

- Port name
- Port role
- Port state



Figure 13-35 STP Link Information in a VLAN Overlay

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Viewing STP Properties for VLAN Service Links

To view STP properties for a VLAN service link, open the Link Properties window in one of the following ways:

- Double-click the VLAN service link.
- Right-click the VLAN service link, and choose Properties.

Figure 13-36 shows an example of the Link Properties window with STP information.

Figure 13-36 STP Properties in VLAN Service Link Properties Window

C7-sw8 <-> VLAN-709@DataLinkAggreg	ation8@c7-sw8	_ 🗆 ×
c7-sw8#1:GigabitEthernet1/1/2 <-> c7-sw	Connection Properties Location: c7-sw8#1:GigabitEthernet1/1/2 Port Alias: GigabitEthernet1/1/2	Location: c7-sw10#1:GigabitEthernet1/1/2 Port Alias: GigabitEthernet1/1/2
	-STP Properties Port State: FORWARDING Port Role: ROOT	Port State: FORWARDING Port Role: DESIGNATED
	VLAN Properties VLAN ID: 709 Mode: Trunk Vlan Type: IEEE802.1Q Native Vian Id: 1	VLAN ID: 709 Mode: Trunk Vian Type: IEEE802.1Q Native Vian Id: 1
	-Ethernet Properties MAC Address: 00 22 0C 99 09 1C	MAC Address: 00 22 0C 98 F4 9C
	Physical Properties Oper Status: Up Admin Status: Up Maximum Speed: 1000.0 Mbps I Port Utilization Graph	Oper Status: Up Admin Status: Up Maximum Speed: 1000.0 Mbps Mert Utilization Graph
Tickets Network Events		Memory: 5% Connected
1		Memory: 5% Connected

Table 13-31 describes the information that is displayed for STP for the VLAN service link.

Table 13-31 STP Properties in VLAN Service Link Properties Window

Field	Description
Port State	STP port state: Disabled, Blocking, Listening, Learning, or Forwarding,
Port Role	STP port role: Unknown, Backup, Alternative, Designated, Root, or Boundary.

Viewing VLAN Trunk Group Properties

VTP is a Layer 2 multicast messaging protocol that manages the addition, deletion, and renaming of VLANs on a switched network-wide basis.

Prime Network Vision displays VTP information in the logical inventory. VTP information is shown only for Cisco devices that support VTP, and support is provided only for VTP Version 1 and 2. Support for Version 3 is limited to the additional attributes that are supported by the version, such as primary and secondary server. No support is provided for the display of VTP information at the port (trunk) level.

Prime Network Vision shows all VTP modes: Server, Client, Transparent, and Off. For each mode, Prime Network Vision displays the relevant mode information such as VTP domain, VTP mode, VTP version, VLAN trunks, and the trunk encapsulation. Prime Network Vision also displays VTP domain information in a view that includes a list of all switches that are related to these domains, their roles (server, client, and so on), and their VTP properties.

To view VTP properties:

- Step 1 In Prime Network Vision, choose Network Inventory > VTP Domains.
- **Step 2** Double-click the VTP domain you want to view.

The VTP Domain Properties window is displayed as shown in Figure 13-37.

Find :	🟥 🋃 🗸 🏲 🖡	5			
Managed Element 🛛 🔂 🗸	Operating Mode	Process Status	Authentication Enabled	Configuration Revision	Version
c7-sw2 - VTP Service	Server	Running	false	273	1
c7-sw3 - VTP Service	Transparent	Running	false	0	1
c7-sw6 - VTP Service	Server	Running	false	273	1
c7-sw7 - VTP Service	Transparent	Running	false	0	1

Figure 13-37 VTP Domain Properties Window in Logical Inventory

Table 13-32 describes the information that is displayed in the VTP Domain Properties window.

Table 13-32VTP Domain Properties Window

Field	Description
Managed Element	Managed element name, hyperlinked to VTP in logical inventory.
Operating Mode	VTP operating mode:
	• Server—Allows VLAN creation, modification, and deletion, and specification of other configuration parameters for the entire VTP domain. Server is the default mode.
	• Client—Same behavior as VTP server, except VLANs cannot be created, changed, or deleted.
	• Transparent—The device does not participate in the VTP. The device does not advertise its VLAN configuration and does not synchronize its VLAN configuration based on received advertisements.
	However, the device forwards received VTP advertisements out of their trunk ports in VTP Version 2.
	• Off—The device does not participate in VTP and does not forward VTP advertisements.
Process Status	Status of the VTP process: Running or Disabled.
Authentication Enabled	Whether or not VTP authentication is enabled: True or False.
	Authentication ensures authentication and integrity of switch-to-switch VTP messages. VTP Version 3 introduces an additional mechanism to authenticate the primary VTP server as the only device allowed to change the VLAN configuration on a network-wide basis.
Configuration Revision	32-bit number that indicates the level of revision for a VTP packet.
	Each VTP device tracks the VTP configuration revision number that is assigned to it. Most VTP packets contain the VTP configuration revision number of the sender.
Version	VTP version: 1, 2, or 3.

Step 3 To view the VTP properties at the device, double-click the VTP domain.

Table 13-33 describes the VTP information that is displayed in the inventory window content pane.

Field	Description
Operating Mode	VTP operating mode: Server, Client, Transparent, or Off.
Domain Name	VTP domain name.
Version	VTP version: 1, 2, or 3.
Pruning	Whether or not VTP pruning is enabled: True or False.
	VTP pruning increases available bandwidth by restricting flooded traffic to those trunk links that the traffic must use to access the appropriate network devices.

Table 13-33 VTP Properties in Inventory

Field	Description
Configuration Revision	32-bit number that indicates the level of revision for a VTP packet.
Authentication	Whether or not VTP authentication is enabled: True or False.

Table 13-33 VTP Properties in Inventory (continued)

Step 4 When finished, press **Ctrl + F4** to close each VTP properties window.

Viewing VLAN Bridge Properties

You can view VLAN bridges provisioned on a device by displaying the device in the Prime Network Vision inventory window and choosing Bridges in logical inventory.

To view VLAN bridge properties:

- Step 1 In Prime Network Vision, double-click the device containing the VLAN bridges you want to view.
- **Step 2** In the inventory window, choose **Logical Inventory > Bridges >** *bridge*.

VLAN bridge properties are displayed as shown in Figure 13-38.

Figure 13-38 VLAN Bridge Properties in Logical Inventory

Bridge (10) VLAN0703 Name: (701) VLAN0701 Type: Regular VLAN ID: 701 Stp Instance: (7-sw10(STP Service)) Bridge (702) VLAN0703 Bridge (703) VLAN0703 Bridge (703) VLAN0703 Bridge (703) VLAN0703 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (709) VLAN0705 Bridge (709) VLAN0705 Bridge (709) VLAN0705 Bridge (709) VLAN0705 Bridge (709) VLAN0705 Bridge (709) VLAN0705 Bridge (709) VLAN0705 Bridge (709) VLAN0705 Bridge (710) VLAN0705 Bridge (710) VLAN0716 Bridge (710) VLAN0716 Bridge (710) VLAN0716 Bridge (713) VLAN0715 Bridge (713) VLAN0715 Bridge (713) VLAN0715 Bridge (713) VLAN0715 Bridge (713) VLAN0715 Bridge (713) VLAN0715 Bridge (713) VLAN0715 Bridge (713) VLAN0715 Bridge (713) VLAN0715 Bridge (713) VLAN0716 Bridge (714) VLAN0715 Bridge (713) VLAN0715 Bridge (713) VLAN0715 Bridge (723) VLAN0726 Bridge (723) VLAN0726 Bridge (723) VLAN0726 Bridge (723) VLAN0726 Bridge (723) VLAN0726 Bridge (723) VLAN0726 Bridge (723) VLAN0726 Bridge (723) VLAN0726 Bridge (723) VLAN0726						~	O Poll Nov		Bridges	- I.
Bridge (702) VLAN0703 VLAN ID: TOI Stp Instance: C7-sw10(STP Service) Bridge (702) VLAN0703 Bridge (703) VLAN0703 Interfaces Interfaces Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Interfaces Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (713) VLAN0715 Bridge (713) VLAN0715 Bridge (713) VLAN0715 Bridge (713) VLAN0715 Bridge (713) VLAN0715 Bridge (713) VLAN0715 Bridge (714) VLAN0715 Bridge (712) VLAN0715 Bridge (713) VLAN0715 Bridge (714) VLAN0715 Bridge (714) VLAN0716 Bridge (720) VLAN0725 Bridge (720) VLAN0725 Bridge (720) VLAN0726 Bridge (720) VLAN0726 Bridge (720) VLAN0726 Bridge (720) VLAN0726 Bridge (720) VLAN0726 Bridge (720) VLAN0726 Bridge (720) VLAN0726 Bridge (720) VLAN0726 Bridge (720) VLAN0726 Bridge (720) VLAN0726 Bridge (720) VLAN0726 Bridge (7						14	POILNON			
Bridge (702) VLAN0702 WLAN ID: 701 Stp Instance: C7-sw10(STP Service) Bridge (702) VLAN0704 Interfaces Interfaces Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (703) VLAN0705 Bridge (710) VLAN0705 Bridge (710) VLAN0705 Bridge (710) VLAN0714 Bridge (710) VLAN0715 Bridge (712) VLAN0715 Bridge (712) VLAN0715 Bridge (713) VLAN0715 Bridge (713) VLAN0715 Bridge (713) VLAN0716 Bridge (713) VLAN0715 Bridge (713) VLAN0716 Bridge (713) VLAN0716 Bridge (713) VLAN0715 Bridge (713) VLAN0716 Bridge (713) VLAN0716 Bridge (713) VLAN0716 Bridge (713) VLAN0716 Bridge (713) VLAN0716 Bridge (713) VLAN0716 Bridge (713) VLAN0716 Bridge (713) VLAN0716 Bridge (713) VLAN0716 Bridge (723) VLAN0726 Bridge (723) VLAN0726 Bridge (723) VLAN0726 Bridge (723) VLAN0726 Bridge (723) VLAN0726 Bridge (723) VLAN0726 Bridge (723) VLAN0726 Bridge (723) VLAN0726 Bridge (723) VLAN0726 Bridge (723) VLAN0726 Bridge (ar	Regula	Type:	(701) VLAN0701	Name:			23
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Table 13-34 describes the information that is displayed. Depending on the bridge configuration, any of the tabs might be displayed for the selected bridge.

Table 13-34 VLAN Bridge Properties

Field	Description
Name	VLAN bridge name.
Туре	VLAN bridge type.
MAC Address	VLAN bridge MAC address.
VLAN ID	VLAN bridge VLAN identifier.
STP Instance	STP instance information, hyperlinked to the STP entry in logical inventory.
Bridge Table Tab	
MAC Address	Bridge MAC address.
Port	Port associated with the bridge, hyperlinked to the interface in physical inventory.
Interfaces Tab	
ID	VLAN interface identifier, hyperlinked to the interface in physical inventory.
Туре	VLAN interface type, such as Layer 2 VLAN.
Mode	VLAN interface configuration mode:
	• Unknown—The interface is not VLAN aware.
	• Access—Puts the interface into permanent nontrunking mode and negotiates to convert the link into a nontrunk link. The interface becomes nontrunking.
	• Dynamic Auto—The interface can convert the link to a trunk link. The interface becomes a trunk if the neighbor interface is set to Trunk or Dynamic Desirable mode.
	• Dynamic Desirable—The interface actively attempts to convert the link to a trunk link. The interface becomes a trunk if the neighboring interface is set to Trunk, Dynamic Desirable, or Dynamic Auto mode. Dynamic Desirable is the default mode for all Ethernet interfaces.
	• Trunk—Puts the interface into permanent trunking mode and negotiates to convert the link into a trunk link. The interface becomes a trunk interface even if the neighbor interface is not a trunk interface.
	• Dot1Q Tunnel—Configures the interface as a tunnel (nontrunking) port to be connected in an asymmetric link with an 802.1Q trunk port. 802.1Q tunneling is used to maintain customer VLAN integrity across a service provider network.
Native VLAN ID	VLAN Identifier (VID) associated with this VLAN. The range of the VLAN ID is 1 to 4067.
VLAN Encapsulation Type	Type of encapsulation configured on the VLAN, such as IEEE 802.1Q.

Field	Description	
Allowed VLANs	List of the VLANs allowed on this VLAN interface.	
VLAN Encapsulation Admin Type	VLAN administration encapsulation type, such as IEEE 802.1Q.	
EFPs Tab		
EFP ID	EFP identifier.	
Operational State	EFP operational state.	
VLAN	VLAN identifier.	
Inner VLAN	CE-VLAN identifier.	
Translated VLAN	Translated VLAN identifier.	
Translated Inner VLAN	Translated CE-VLAN identifier.	
Binding Port	Hyperlinked entry to the port in physical inventory.	
Description	Brief description of the EFP.	
Pseudowires Tab		
ID	Pseudowire identifier, hyperlinked to the VLAN entry in Bridges in logical inventory.	
Peer	Identifier of the pseudowire peer, hyperlinked to the entry in the Pseudowire Tunnel Edges table in logical inventory.	
Tunnel ID	Tunnel identifier.	
Tunnel Status	Status of the tunnel: Up or Down.	
Peer Router IP	IP address of the peer router for this pseudowire.	
Sub Interfaces Tab		
BER	VLAN bit error rate.	
Interface Name	Interface on which the VLAN is configured.	
VLAN Type	Type of VLAN, such as Bridge or IEEE 802.1Q.	
Operational State	Subinterface operational state.	
VLAN ID	VLAN identifier.	
Inner VLAN	CE-VLAN identifier.	

Step 3 When finished, press Ctrl + F4 to close each VLAN Bridge properties window.

Using Commands to Work With VLANs

The following commands can be launched from the physical inventory by right-clicking an Ethernet slot and choosing **Commands > Configuration**. Before executing any commands, you can preview them and view the results. If desired, you can also schedule the commands. To find out if a device supports these commands, see the *Cisco Prime Network 3.10 Supported Cisco VNEs*.

These commands are applicable only for Cisco ASR 5000 series network elements.



You might be prompted to enter your device access credentials while executing a command. Once you have entered them, these credentials will be used for every subsequent execution of a command in the same GUI client session. If you want to change the credentials, click **Edit Credentials**. Edit Credentials button will not be available for SNMP commands or if the command is scheduled for a later time.

Table 13-35 VLAIN Commands	Table 13-35	VLAN Commands
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Command	Inputs Required and Notes	
Create VLAN	VLAN ID, VLAN Context Name, Bind Interface Name, Status	
Modify VLAN	VLAN ID, Delete Bind Interface, Context Name, Bind Interface Name, Status	
Delete VLAN	VLAN ID	

Understanding Unassociated Bridges

Some switching entities might not belong to a flow domain, such as a network VLAN, a VPLS instance, or a network pseudowire. These switching entities are referred to as *unassociated bridges*.

In addition, a switching entity that belongs to a network VLAN is considered an unassociated bridge if it meets both of the following criteria:

- The network VLAN contains a null Ethernet flow domain (EFD).
- The switching entity contains no switch ports.

Unassociated bridge switching entities can hold Ethernet flow points that serve as termination points on different network VLANs. If these switching entities are added to a map with the relevant VLANs, the links are displayed in the Prime Network Vision map.

Adding Unassociated Bridges

Prime Network Vision enables you to add unassociated bridges to maps and to view their properties. To add an unassociated bridge to a map:

Step 1 In Prime Network Vision, select the required map or domain.

Step 2 Open the Add Unassociated Bridge dialog box in one of the following ways:

- Choose File Add to Map > Unassociated Bridge.
- In the toolbar, click Add to Map and choose Unassociated Bridge.

Figure 13-39 shows an example of the Add Unassociated Bridge dialog box.
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Vame		System Name	Description
22	VLAN-910@PE-7604-WEST	VLAN-910@PE-7604-WEST	
::	VLAN-901@PE-7604-WEST	VLAN-901@PE-7604-WEST	
::	VLAN-874@sol-dist-2	VLAN-874@sol-dist-2	
::	VLAN-400@PE-7604-WEST	VLAN-400@PE-7604-WEST	
22	VLAN-323@sol-dist-2	VLAN-323@sol-dist-2	
::	VLAN-101@sol-dist-2	VLAN-101@sol-dist-2	
\$\$	VLAN-100@PE-7604-WEST	VLAN-100@PE-7604-WEST	
::	VLAN-77@sol-dist-2	VLAN-77@sol-dist-2	
::	VLAN-43@sol-dist-2	VLAN-43@sol-dist-2	
::	VLAN-6@PE-7604-WEST	VLAN-6@PE-7604-WEST	
::	VLAN-1@sol-dist-2	VLAN-1@sol-dist-2	
22	VLAN-1@PE-7604-WEST	VLAN-1@PE-7604-WEST	
\$\$	Grace9@Grace9@asr-9k-auto1	Grace9@Grace9@asr-9k-auto1	
\$ \$	bd_sagay8@bg_sagay8@asr-9k-auto1	bd_sagay8@bg_sagay8@asr-9k-auto1	
**	bd_sagay6@bg_sagay6@asr-9k-auto1	bd_sagay6@bg_sagay6@asr-9k-auto1	

Figure 13-39 Add Unassociated Bridge Dialog Box

Step 3 In the Add Unassigned Bridge to *domain* dialog box, select the required bridge and click OK.The map is refreshed and displays the newly added bridge as shown in Figure 13-40.



Figure 13-40 Unassociated Bridge in Prime Network Vision

Working with Ethernet Flow Point Cross-Connects

Prime Network Vision automatically discovers Ethernet flow point (EFP) cross-connects, also known as locally switched EFPs. Prime Network Vision also identifies changes in already identified EFP cross-connects, such as cross-connect deletions or changes. Cross-connect changes can occur when one side of the cross-connect is removed or replaced.

Prime Network Vision also associates the VLANs that contain the EFPs that are part of the cross-connects. If the cross-connect contains a range EFP, which represents a range of VLANs, and you add the related VLANs to a map, Prime Network Vision displays the links between them and the cross-connect as well.

Prime Network Vision enables you to add EFP cross-connects to maps and to view their properties in inventory, as described in the following topics:

- Adding EFP Cross-Connects, page 13-75
- Viewing EFP Cross-Connect Properties, page 13-75

Adding EFP Cross-Connects

To add an EFP cross-connect to a map:

- **Step 1** In Prime Network Vision, select the map to which you wish to add the cross-connect.
- **Step 2** Open the Add EFP Cross-Connect dialog box in one of the following ways:
 - Choose File Add to Map > Cross Connect.
 - In the toolbar, click Add to Map and choose Cross Connect.
- **Step 3** In the Add EFP Cross Connect to *domain* dialog box, select the required EFP cross-connect and click **OK**.

The map is refreshed and displays the newly added EFP cross-connect.

Viewing EFP Cross-Connect Properties

To view EFP cross-connect properties in Prime Network Vision, do either of the following:

- Select the EFP cross-connect with the properties you want to view, and choose **Node > Properties**.
- Double-click the device configured with an EFP cross-connect and, in the inventory window, choose Logical Inventory > Local Switching > Local Switching Entity.

The information that is displayed for EFP cross-connects is the same in both the Local Switching Entry Properties window and in the Local Switching Table in logical inventory (as shown in Figure 13-41).

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Þ 200	CFM	1-alina3	Up	c4-npe1-76#4.0:GigabitEthernet4/0/3	GigabitEthernet4/0/3	Up	c4-npe1-76#
	Cisco Discovery Protocol	2-alina	Up	c4-npe1-76#4.0:GigabitEthernet4/0/2.444	GigabitEthernet4/0/2.444	Up	c4-npe1-76#
	Clock	3-alina2	Up	c4-npe1-76#4.0:GigabitEthernet4/0/2 EFP:555	GigabitEthernet4/0/2:555		c4-npe1-76#
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Figure 13-41 Local Switching Table in Logical Inventory

Table 13-36 describes the information displayed for the EFP cross-connects in the Local Switching Table.

Field	Description
Key	Entry key for the cross-connect group.
Entry Status	Status of the cross-connect: Down, Unresolved, or Up.
Segment 1	Identifier of the first cross-connect segment, hyperlinked to the relevant entry in physical inventory.
Segment 1 Port Name	Identifier of the first cross-connect segment port.
Segment 1 Status	Status of the first cross-connect segment, such as Admin Up, Admin Down, Oper Down, or Up.
Segment 2	Identifier of the second cross-connect segment, hyperlinked to the relevant entry in physical inventory.
Segment 2 Port Name	Identifier of the second cross-connect segment port.
Segment 2 Status	Status of the second cross-connect segment, such as Admin Up, Admin Down, Oper Down, or Up.

Working with VPLS and H-VPLS Instances

Virtual Private LAN Service (VPLS) is a Layer 2 VPN technology that provides Ethernet-based multipoint-to-multipoint communication over MPLS networks. VPLS allows geographically dispersed sites to share an Ethernet broadcast domain by connecting sites through pseudowires. The network emulates a LAN switch or bridge by connecting customer LAN segments to create a single bridged Ethernet LAN.

Hierarchical VPLS (H-VPLS) partitions the network into several edge domains that are interconnected using an MPLS core. The edge devices learn only of their local N-PE devices and therefore do not need large routing table support. The H-VPLS architecture provides a flexible architectural model that enables Ethernet multipoint and point-to-point Layer 2 VPN services, as well as Ethernet access to Layer 3 VPN services, enabling service providers to offer multiple services across a single high-speed architecture.

Prime Network Vision discovers the following VPLS-related information from the network and constructs VPLS instances:

- VSIs
- Pseudowires
- EFPs
- Switching entities

Working with VPLS and H-VPLS in Prime Network Vision

Prime Network Vision enables you to:

- Add VPLS instances to a map—See Adding VPLS Instances to a Map, page 13-78.
- Apply VPLS overlays—See Applying VPLS Instance Overlays, page 13-79.
- View link details in VPLS overlays—See Viewing Pseudowire Tunnel Links in VPLS Overlays, page 13-81.
- View VPLS-related properties—See the following topics:
 - Viewing VPLS Instance Properties, page 13-83
 - Viewing Virtual Switching Instance Properties, page 13-84
 - Viewing VPLS Core or Access Pseudowire Endpoint Properties, page 13-86
 - Viewing VPLS Access Ethernet Flow Point Properties, page 13-88

You can delete a VPLS forward from Prime Network Vision if it is displayed with the reconciliation icon.

Adding VPLS Instances to a Map

You can add the VPLS instances that Prime Network Vision discovers to maps as required.

To add a VPLS instance to a map:

Step 1 In Prime Network Vision, select the required map or domain.

- **Step 2** Open the Add VPLS Instance to *map* dialog box in either of the following ways:
 - In the toolbar, choose **Add to Map > VPLS**.
 - In the menu bar, choose File > Add to Map > VPLS.
- **Step 3** In the Add VPLS Instance dialog box, do either of the following:
 - To search for specific elements:

a. Choose Search.

b. To narrow the display to a range of VPLS instances or a group of VPLS instances, enter a search string in the search field.

c. Click Go.

For example, if you enter **VPLS1**, the VPLS instances that have names containing the string VPLS1 are displayed.

• To view all available VPLS instances, choose Show All and click Go.

The VPLS instances that meet the specified search criteria are displayed in the Add VPLS Instance 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**.



If an element is not included in your scope, it is displayed with the locked device icon.

For information about sorting and filtering the table contents, see Filtering and Sorting Tabular Content, page 2-40.

- Step 4 In the Add VPLS Instance dialog box, select the instances that you want to add. You can select and add multiple instances by pressing Ctrl while selecting individual instances or by pressing Ctrl +Shift to select a group of instances.
- Step 5 Click OK.

The VPLS instance is displayed in the navigation pane and in the content area. In addition, any associated tickets are displayed in the ticket pane. See Figure 13-42.

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	GI GI	mo_ELarH1:439D0/4396g02-rge1 17/01/L43902-rge1-rs gabiEthernet4[0]5EFP:443@c4-npr gabe [4M+]	21-76	Demo_ELanHi24	c2-rost	s [54M]	c4npei-		Ţ
+ <u>.</u>	- Gi Giçi Giçi)/7/0/1.243@c2-npe1-crs gabitEthernet4/0/5 EFP: 443@c4-npi		Demo_ELanHi24	c2-npe1-cr	s [54M]			×
	- Gi Giçi Giçi)/7/0/1.243@c2-npe1-crs gabitEthernet4/0/5 EFP: 443@c4-npi	≥1-76 ►	Demo_ELanHi24	c2-npe1-cr	s [54M]			-
₹ind : [GIC Gic Gic Gic Gic Gic Gic Gic Gic Gic Gic	J/7(IVL343@c2-npei-cs pablEthernet4(IV)S EFP: 443@c4-np gate [444+]	• • •	Demo_ELanHi24	c2-npe1-cr	s [54M]			-
Find :	Giù Giù Giù Cang Cang Cang Cang Cang Cang Cang Cang	1/7(01.2430e2-npe1-cs pablEthemet4(0/SEPP: 4430e4-npe pablEthemet4(0/SEPP: 4430e4-npe pable [44+]	• • •		c2-rpsi-qr	s [544]	c4-npe1-	76 [6M]	-
▲ [Giù Giù Giữ Y Aggre	17/01/23@c2-npe1-cs gabtEthemet4(0/SEPP: 443@c4-npr gabe [4/4+] Last Modification Time € 1	Root?	Root Event Time	c2-rope1-gr c2-rope1-gr c2-core1	© (54M] [1M+] Location 1 c2-core1#17	c4-npe1-	76 [GM]	• • •

Figure 13-42 VPLS Instance in Prime Network Vision Map

The VPLS instance information is saved with the map in the Prime Network database.

Applying VPLS Instance Overlays

An VPLS instance overlay allows you to isolate the parts of a network that are being used by a specific VPLS instance.

To apply a VPLS instance overlay:

- **Step 1** In Prime Network Vision, choose the map in which you want to apply an overlay.
- **Step 2** From the toolbar, choose **Choose Overlay Type > VPLS**.

Figure 13-43 shows an example of the Select VPLS Instance Overlay for map dialog box.

Availa	able Vpls Instances as of [04-Nov-10 14:37]	1 🕑		
ind :	🟥 ĝi 🔽 🔽 🐺			
Jame	€∧	System Defined Name	Vpn Id	
	A:DomainA@GroupA@10.56.101.153	A:DomainA@GroupA@10.56.101.153	1	-
	C:DomainC@GroupC@10.56.101.153	C:DomainC@GroupC@10.56.101.153	4	
	cisco@c7-npe1-76	cisco@c7-npe1-76	991	
	EFPs_Test:(778) VLAN0778@c1-npe1-76	EFPs_Test:(778) VLAN0778@c1-npe	778	
	omar:(999) VLAN0999@10.56.101.75	omar:(999) VLAN0999@10.56.101.75	666	
	Oren_Test:(987) VLAN0987@c1-npe1-76	Oren_Test:(987) VLAN0987@c1-npe	987	
	QHVPLS:481781181:(2081) VLAN2081@10.56.1017	QHVPLS:481781181:(2081) VLAN208	481781181	
	QHVPLS:481781181:(2081) VLAN2081@c1-npe1-76	QHVPLS:481781181:(2081) VLAN2087	481781181	
	QinQ_VFI:(200) VLAN0200@10.56.101.75	QinQ_VFI:(200) VLAN0200@10.56.1	200	
	QVPLS:482782182:(2082) VLAN2082@10.56.101.75	QVPL5:482782182:(2082) VLAN2082	482782182	
	QVPLS:482782182:(2082) VLAN2082@c1-npe1-76	QVPL5:482782182:(2082) VLAN2082	482782182	
	Service1:(477) VLAN0477@10.56.101.75	Service1:(477) VLAN0477@10.56.10?	777	U
	Service2:(853) VLAN0853@c1-npe1-76	Service2:(853) VLAN0853@c1-npe1-76	1010	
	ServiceD:(426) VLAN0426@10.56.101.75	ServiceD:(426) VLAN0426@10.56.107	26	
	ServiceD@c1-npe1-76	ServiceD@c1-npe1-76	1001	
	VFI7:(307) VLAN0307@c3-npe1-76	VFI7:(307) VLAN0307@c3-npe1-76	99007	
	VFI7:(407) VLAN0407@10.56.101.75	VFI7:(407) VLAN0407@10.56.101.75	99007	-

Figure 13-43 Select VPLS Instance Overlay Dialog Box

Step 3 Select the required VPLS instance for the overlay.

Step 4 Click OK.

The elements being used by the selected VPLS instance are highlighted in the map while the other elements are dimmed, as shown in Figure 13-44.

▼ ● ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥	112VPLS [; V c4-npe V © c2-npe V © c2-core V Demo_ Der Der Der Gig V Demo_	210M+] 21-76 [6M] 21-crs [54M]		1M] 76 rs 1-76 [2M]	2 Reports Window		2 😰 🛱	Aggregat	e Overlay from 27-Ju	n-11 13:17
• 🖻	GIQ GIQ	1/7/0/1.243@c2-npe1- labitEthernet4/0/5 EFF gate [6M+]		1-76	54				±.	
4				•	c9-npe1-9K	[69 Demo_EL	anH:24	Demo_ELan	:242	
					c9-npe1-9K	[69 Demo_EL	anH:24	Demo_ELan	:242	-
Find :	Ticket ID	Last Modification T				- Denio_LL	anH:24	Demo_ELan	:242 Creation Time	
Find :	Ticket ID 360001		ime €V			- Demo_c	Location	-		
Find : Severity		Last Modification T	ime €7 8	Root	Root Event Time	Description	Location c4-upe8	Acknowledged	Creation Time	
Find :	360001	Last Modification T 27-Jun-11 13:19:4	ime €√ 18 12	Root"	Root Event Time 26-Jun-11 19:49:39	Description CPU utilization ex3	Location c4-upe8 c4-upe4	Acknowledged No No	Creation Time 26-Jun-11 19:49:39	-
Find : Severity	360001 460001	Last Modification T 27-Jun-11 13:19:4 27-Jun-11 13:16:4	ime	Root*	Root Event Time 26-Jun-11 19:49:39 27-Jun-11 12:16:40	Description CPU utilization ex	Location c4-upe8 c4-upe4 c2-core1#1	Acknowledged No No	Creation Time 26-Jun-11 19:49:39 27-Jun-11 12:16:40	
Find : Severity	360001 460001 440001	Last Modification T 27-Jun-11 13:19:4 27-Jun-11 13:16:4 27-Jun-11 13:13:0	ime €V 18 12 18	Root V V	Root Event Time 26-Jun-11 19:49:39 27-Jun-11 12:16:40 27-Jun-11 09:11:09	Description CPU utilization ex. ³ CPU utilization ex. ³ Port down due to. ³	Location c4-upe8 c4-upe4 c2-core1#13 c4-upe6	Acknowledged No No No	Creation Time 26-Jun-11 19:49:39 27-Jun-11 12:16:40 27-Jun-11 09:13:12	

Figure 13-44 VPLS Instance Overlay in Prime Network Vision

- **Step 5** To hide and view the overlay, click **Hide Overlay/Show Overlay** in the toolbar. The button toggles depending on whether the overlay is currently displayed or hidden.
- **Step 6** To remove the overlay, choose **Choose Overlay Type > None**.

Viewing Pseudowire Tunnel Links in VPLS Overlays

When a VPLS overlay is applied to a map in Prime Network Vision, you can view the details of the pseudowires that are interconnected through selected links.

To view unidirectional or bidirectional pseudowire traffic links when a VPLS overlay is applied to a map:

Step 1 Right-click the required link in the overlay, and choose **Show Callouts**. The link must be visible (not dimmed) in the map.

Link information is displayed as shown in Figure 13-45.

Overlay
;

p1#3.0:GigabitEthernet0/3/0/6 -> c2-np	e1-crs#0.7.0:GigabitEthernet0/7/0/0	
c1-npe1-76#VSI: vl2051 VPN Id: 2051	c2-npe1-crs#VSI: vfi2051 VPN Id: 5	
c2-npe1-crs#0.7.0:GigabitEthernet0/7/0)/0 -> p1#3.0:GigabitEthernet0/3/0/6	
	c7-npe1-76#VSI: vl2051 VPN Id: 2051 c1-npe1-76#VSI: vl2051 VPN Id: 2051	37516

Γ

The callout window displays the following information for each link represented by the selected link:

- Link details and direction.
- Details of the sites using the link and the interlinks.

Step 2 To view the pseudowire link details, double-click the yellow callout window.

The details about the link are displayed in the Link Details window as shown in Figure 13-46.

Figure 13-46 Link Details Window for a VPLS Overlay



The Link Details window provides the following information:

1	Link details and direction. In this example, the link is from p1 to p2.
3	Link details and direction. In this example, the link is from p2 to p1.
2 and 4	Details of the pseudowire tunnel traversing this link.

Step 3 Click **OK** to close the Link Details window.

Step 4 To close the link callout window, right-click the selected link, then choose **Hide Callouts**.

Viewing VPLS-Related Properties

Prime Network Vision enables you to view the properties of the following VPLS-related elements:

- VPLS instances—See Viewing VPLS Instance Properties, page 13-83.
- Virtual Switching Instances—Viewing Virtual Switching Instance Properties, page 13-84
- Tunnels—See Viewing VPLS Core or Access Pseudowire Endpoint Properties, page 13-86.
- Port connectors—See Viewing VPLS Access Ethernet Flow Point Properties, page 13-88.

Viewing VPLS Instance Properties

To view the properties of a VPLS instance in Prime Network Vision, open the VPLS Instance Properties window in either of the following ways:

- In the navigation pane or the map pane, right-click the VPLS instance and choose Properties.
- In the navigation pane or the map pane, select the VPLS instance and choose Node > Properties.

Figure 13-47 shows an example of the VPLS Instance Properties window.



) Servi	ice1:(477) VLAN0477@10.56.101	1.75 - Vpls Instance Properties			_ 🗆 ×
5ystem M	Name: Service1:(477) VLAN0477@1	0.56.101.75 Name: 9	Service1:(477) VLAN0477@10.56.101.75		
/pn Id:	777				
Vpls For	wards Access Pseudowires Access	Flow Points			
Find :	🔛 🛃 🗸 🖤	御屋			
Name	€∧	System Name	Bridge	VSI	Vpn Id
.	Service1:(477) VLAN0477@10.56.101.75	Service1:(477) VLAN0477@10.56.101.75	10.56.101.75 [Default context] (477) VLAN0477	10.56.101.75#VSI: Service1 VPN Id: 777	777
	Service1:(777) VLAN0777@c7-npe1-76	Service1:(777) VLAN0777@c7-npe1-76	c7-npe1-76 [Default context] (777) VLAN0777	c7-npe1-76#VSI: Service1 VPN Id: 777	777
•••	Service1:(852) VLAN0852@c1-npe1-76	Service1:(852) VLAN0852@c1-npe1-76	c1-npe1-76 [Default context] (852) VLAN0852	c1-npe1-76#VSI: Service1 VPN Id: 777	777
•••	Service1:DomainA@GroupA@c2-npe1-crs	Service1:DomainA@GroupA@c2-npe1-crs	c2-npe1-crs [Default context] DomainA@GroupA	c2-npe1-crs#VSI: Service1 VPN Id: 2	2
				Lir	e 0 (Size 4)
			4	1emory: 6% Connected	_ <u>∧</u>

Table 13-37 describes the information that is displayed for VPLS instance properties.

The tabs that appear in the window depend on the VPLS instance and its configuration.

Field	Description			
System Name	Name that Prime Network Vision assigns to the VPLS instance.			
Name	User-defined name of the VPLS instance.			
	When the VPLS instance is created, the system name and this name are the same. If you change the name of the VPLS instance (right-click, then choose Rename), the changed name appears in this field whereas the system name retains the original name.			
VPN ID	VPN identifier used in an MPLS network to distinguish between different VPLS traffic.			
VPLS Forwards Tab				
Name	User-defined name of the VPLS forward.			
System Name	Name that Prime Network Vision assigns to the VPLS forward.			
Bridge Bridge that the VSI is configured to use, hyperlinked to the table in logical inventory.				
VSI	VSI hyperlinked to the relevant entry in logical inventory.			

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Field	Description		
VPN ID	VPN identifier for the VSI.		
Access Pseudowires Tab			
Name	Pseudowire name.		
Port	VSI on which the pseudowire is configured, hyperlinked to the entry in logical inventory.		
Local Router IP	Local router IP address on which the pseudowire is configured.		
Tunnel ID	Virtual circuit identifier of the pseudowire.		
PTP Tunnel	Hyperlinked entry to the pseudowire properties in logical inventory.		
Peer Router IP	Peer router IP address on which the pseudowire is configured.		
Peer OID	Hyperlinked entry to the pseudowire properties of the peer.		
Pseudowire Type	Type of pseudowire, such as Ethernet, Ethernet Tagged, CESoPSN Basic, PPP, or SAToP.		
Pseudowire Edge Binding Type	 Pseudowire endpoint association: 0—Unknown 1—Connection termination point 2—Ethernet flow point 3—Switching entity 4—Pseudowire switching entity 5—VPLS forward 		
Access Flow Points Tab			
Name	Access flow point name. Double-click to view port connector properties.		
Port	Interface configured as a flow point, hyperlinked to the interface in physical inventory.		

Table 13-37	VPLS Instance Properties (continued	d)
-------------	-------------------------------------	----

Viewing Virtual Switching Instance Properties

To view VSI properties in Prime Network Vision, open the VSI properties window in either of the following ways:

- Double-click the required device and, in the inventory window, choose Logical Inventory > VSIs > *vsi*.
- In the navigation pane, expand the VPLS instance, right-click the required VPLS forward, and choose **Inventory** or **Properties**. (See Figure 13-48.)





If you right-click the VPLS forward and choose **Inventory**, the inventory window is displayed. If you right-click the VPLS forward and choose **Properties**, the VSI Properties window is displayed. The information displayed is the same for both options.

VSI properties are displayed as shown in Figure 13-49.

	Bridges A Cisco Discovery Protocol Clock Ethernet Link Aggregation Ethernet LMI Frame Relay Traffic Profiles GRE Tunnels IS-15 System	VSI Name: VSI Name: VSI Mode: Operational State: Local Bridge:	Cus_400_Mux Multipoint Up NPE2-7600-NY (400) VI	Adminis	: 400 ary Mode: Manual trative State: Up		
⊢	Process Null Local Switching	Pseudowires					
►	LSEs	Find :	📑 24 🗸 🕆	御屋			
	MPBGPs	Pseudowire ID +	Autodiscovery	Split Horizon	Pseudowire Peer IP	Pseudowire VC ID	
* **	MPLS-TP OAM	300@NPE2-7600-NY	false	false	172.255.1.41	300	
	Operating System	400@NPE2-7600-NY	false	true	172.200.1.7	400	
▶ 🔜	OSPF Processes	400@NPE2-7600-NY	false	true	172.200.1.6	400	
► <mark></mark> V	Pseudowires Routing Entities	403@NPE2-7600-NY	false	true	172.200.1.7	403	
 Image: Second se	Spanning Tree Protocol Traffic Engineering Tunnels Tunnel Traffic Descriptors VC Switching Entities VSIs VSIs Cus_100_Mux (VPN: 400) VTP mysical Inventory [1M]						Line 0 (Size 4)
	F		*****				Line e (size iy
Find :		÷					
Severity Tickel	: ID Last Modification Time 🕀 🕅	Root Root Ever	nt Time	Description	Location Acknowled	daed Creation Time	
lickets Netw	vork Events Provisioning Events						

Figure 13-49 VSI Properties in Logical Inventory

Table 13-38 describes the information that is displayed for the selected VSI.

Field	Description				
VSI Name	VSI name.				
VPN ID	VPN identifier used in an MPLS network to distinguish between different VPLS traffic.				
VSI Mode	VSI mode: Point-to-Point (default) or Multipoint.				
Discovery Mode	VSI discovery mode: Manual, BGP, LDP, RADIUS, DNS, MSS/OSS, or Unknown.				
Operational State	VSI operational status: Up or Down.				
Administrative State	istrative State VSI administrative status: Up or Down.				
Local Bridge	lge Local bridge, hyperlinked to the bridge in logical inventory.				
Pseudowires Table					
Pseudowire ID	Pseudowire identifier, hyperlinked to the Tunnel Edges table under Pseudowires in logical inventory.				
Autodiscovery	Whether the pseudowire was automatically discovered: True or False.				
Split Horizon	SSH pseudowire policy that indicates whether or not packets are forwarded to the MPLS core: True or False.				
Pseudowire Peer IP	IP address of the pseudowire peer.				
Pseudowire VC ID	Pseudowire virtual circuit identifier.				

Table 13-38VSI Properties in Logical Inventory

Viewing VPLS Core or Access Pseudowire Endpoint Properties

Pseudowire endpoints are displayed under VPLS Instance (Access) or VPLS Forward (Core) in the Prime Network Vision navigation pane.

To view pseudowire endpoint properties for a VPLS instance, right-click the required pseudowire endpoint in the navigation pane, and choose **Properties**. (See Figure 13-50.)

Figure 13-50 VPLS Pseudowire in Prime Network Vision Navigation Pane



Figure 13-51 shows an example of the Tunnel Properties window that is displayed.

Dell Now				
Port:	AGG-7604-TX#V5I: Cus_3466 VPN Id: 3466	Peer:	3466@NPE1-9K-NGN	
Peer VC Label:	16007	Status:	down	
.ocal VC Label:	0	Local Router IP:	172.255.3.175	
Peer Router IP:	172.200.1.1	Local MTU:		
Remote MTU:	1500	Pseudowire Type:	Ethernet	
Pseudowire Role:				

Figure 13-51 VPLS Tunnel Properties Window

Table 13-39 describes the information that is displayed for pseudowire endpoint properties.

Field	Description				
Port	VSI on which the pseudowire is configured, hyperlinked to the VSI in logical inventory.				
Peer	Hyperlinked entry to the pseudowire endpoint peer pseudowires in logical inventory.				
Peer VC Label	MPLS label that is used by this router to identify or access the tunnel. It is inserted into the MPLS label stack by the peer router.				
Tunnel Status	Operational state of the tunnel: Up or Down.				
Local VC Label	MPLS label that is used to identify or access the tunnel. It is inserted into the MPLS label stack by the local router.				
Local Router IP IP address of this tunnel edge, which is used as the MPLS rout identifier.					
Tunnel ID	Identifier that, along with the router IP addresses of the two pseudowire endpoints, identifies the PWE3 tunnel.				
Peer Router IP	IP address of the peer tunnel edge, which is used as the MPLS router identifier.				
Local MTU	Size, in bytes, of the MTU on the local interface.				
Remote MTU	Size, in bytes, of the MTU on the remote interface.				
Signaling Protocol	Protocol used by MPLS to build the tunnel, such as LDP or TDP.				
Pseudowire Type	Type of pseudowire, such as Ethernet, Ethernet Tagged, CESoPSN Basic, PPP, or SAToP.				

Table 13-39 Tunnel Properties Window

Viewing VPLS Access Ethernet Flow Point Properties

The ports that represent the attachment circuits to VPLS instances are displayed under VPLS instances in the Prime Network Vision navigation pane.

To view the properties for the Access Ethernet Flow Points configured for a VPLS instance, right-click the required interface in the navigation pane, and choose **Inventory**. (See Figure 13-52.)

Figure 13-52 VPLS Interface in Prime Network Vision Navigation Pane

- III V	Service1:DomainA@GroupA@c2-npe1-crs [5M]	
۱)	777@c9-npe1-9K	
*	7777@c4-npe1-76	
> 🖬 🛛	A:DomainA@GroupA@c9-npe1-9K [2M]	
	GigabitEthernet4/0/5 EFP: 477@c4-npe1-76	
▶ 👬	Service1:(477) VLAN0477@c4-npe1-76	88
> 🔤 🗸	Service1:DomainA@GroupA@c2-npe1-crs [1M]	282



Figure 13-53 EFP Properties in Physical Inventory

	5lot 2: Card - 7600-SIP-400	🕝 Pol	Now					
> mm	Subslot 0: Subcard - SPA-24CHT	Levelie	on Information					
۶ 📖 s	5lot 3: Card - W5-X6748-GE-TX	Locado	in Information					
🔻 🛲 🕎 🛛 S	5lot 4: Card - 76-ES+XC-40G3C [3M	Туре	:	Pluggable	Location:	4.GigabitEthernet4/2		
	Subslot 3: Subcard - 7600-ES+4	C	ing Alarms:	true	Port Alias:	GigabitEthernet4/2		
	Subslot 6: Subcard - 7600-ES+3	benu	ing Alarins:	true	PURCANAS:	Gigabitethemet4/2		
-110	GigabitEthernet4/1	Mana	iged:	true	Status:	OK		
-15	GigabitEthernet4/2							
-15	GigabitEthernet4/3 - No Transce	📃 🕹 Di	isable Sending	Alarms				
10	GigabitEthernet4/4 - No Transce	D	H. T					
-15	GigabitEthernet4/5 - No Transce	Plugga	ble Transceive	er -				
-16I V	GigabitEthernet4/6	Conn	ector Type:	Fi	ber Optic	Pluggable Type:	SFP	
410	GigabitEthernet4/7 - No Transce							
-15	GigabitEthernet4/8 - No Transce	Conn	ector Descript	ion: Tr	ansceiver 10	00Base5X Gi4/2 PID:	SFP-GE-S	
-13	GigabitEthernet4/9	Conn	ector Serial Nu	umber: FN	51347118X	Pluggable Port State:	In	
410	GigabitEthernet4/10							
-15	GigabitEthernet4/11 - No Transc							
10	GigabitEthernet4/12 - No Transc	-						
-16	GigabitEthernet4/13 - No Transc	Gigabit	: Ethernet					
-16	GigabitEthernet4/14 - No Transc	MAG	Address: (00 1E F7 F6	CE 00 54-	net LMI Enabled: false		
-15	GigabitEthernet4/15 - No Transc	MAC	Address; L	JU 16 F / FO	LOUD Ethe	net umi Enableu: Taise		
10	GigabitEthernet4/16 - No Transc							
-15	GigabitEthernet4/17							
1.	GigabitEthernet4/17 GigabitEthernet4/18 - No Transc	Discov	erv Protocols -					
6 -	GigabitEthernet4/17 GigabitEthernet4/18 - No Transc GigabitEthernet4/19	Discov	ery Protocols					
ם)- ם)- ם)-	GigabitEthernet4/17 GigabitEthernet4/18 - No Transc GigabitEthernet4/19 GigabitEthernet4/20	Discov	ery Protocols					
-6 -6 -6 -6	GigabitEthernet4/17 GigabitEthernet4/18 - No Transc GigabitEthernet4/19 GigabitEthernet4/20 TenGigabitEthernet4/21 - No Tra	Find				- E E		
च)- च)- च)-	GigabilEthernet4/17 GigabilEthernet4/18 - No Transc GigabilEthernet4/19 GigabilEthernet4/20 TenGigabilEthernet4/21 - No Tra TenGigabilEthernet4/22 - No Tra	Find :	:] <u>\$</u> ↓ ▽ ¹			
-6 -6 -6 -6	GigabitEthernet4/17 GigabitEthernet4/18 - No Transc GigabitEthernet4/19 GigabitEthernet4/20 TenGigabitEthernet4/21 - No Tra	Find :				7 語 時 LAN Translated VLAN Translated Inner VLA	AN Binding ∂7	Description
46 46 46 ▼ 16 ▼	GigabitEthernet4/17 GigabitEthernet4/18 - No Transc GigabitEthernet4/19 GigabitEthernet4/20 TenGigabitEthernet4/21 - No Tra TenGigabitEthernet4/22 - No Tra ▼	Find :	D Operation	al State			AN Binding ⊕ /. 3450@AG5-7606-TX	Description
46 46 46 ▼ 16 ▼	GigabitEthernet4/17 GigabitEthernet4/18 - No Transc GigabitEthernet4/19 GigabitEthernet4/20 TenGigabitEthernet4/21 - No Tra TenGigabitEthernet4/22 - No Tra ▼	Find : EFP I 3450	D Operation Up	al State	VLAN Inner 3450		3450@AGG-7606-TX	Description
46 46 46 ▼ 16 ▼	GigabitEthernet4/17 GigabitEthernet4/18 - No Transc GigabitEthernet4/19 GigabitEthernet4/20 TenGigabitEthernet4/21 - No Tra TenGigabitEthernet4/22 - No Tra ▼	Find :	D Operation Up	al State	VLAN Inner			Description
-G -G -G -G -G ▼ -G V -G V -G V -G V -G	GigabitEthernet4/17 GigabitEthernet4/18 - No Transc GigabitEthernet4/19 GigabitEthernet4/20 TenGigabitEthernet4/21 - No Tra TenGigabitEthernet4/22 - No Tra ▼	Find : EFP I 3450	D Operation Up	al State	VLAN Inner 3450		3450@AGG-7606-TX	Description
46 46 46 ▼ 16 ▼	GigabitEthernet4/17 GigabitEthernet4/18 - No Transc GigabitEthernet4/19 GigabitEthernet4/20 TenGigabitEthernet4/22 - No Tra TenGigabitEthernet4/22 - No Tra Beast Fit	Find : EFP I 3450	D Operation Up	al State	VLAN Inner 3450		3450@AGG-7606-TX	Description
-G -G -G -G -G ▼ -G • ♥ -G ♥ - C ♥ - - C ♥ - - - -	GigabitEthernet4/17 GigabitEthernet4/18 - No Transc GigabitEthernet4/19 GigabitEthernet4/20 TenGigabitEthernet4/21 - No Tra TenGigabitEthernet4/22 - No Tra ▼	Find : EFP I 3450 3451	D Operation Up	al State	VLAN Inner 3450		3450@AGG-7606-TX	
-G -G -G -G -G ▼ -G • ♥ -G ♥ - C ♥ - - C ♥ - - - -	GigabitEthernet4/17 GigabitEthernet4/18 - No Transc GigabitEthernet4/19 GigabitEthernet4/20 TenGigabitEthernet4/22 - No Tra TenGigabitEthernet4/22 - No Tra Beast Fit	Find : EFP I 3450	D Operation Up	al State	VLAN Inner 3450		3450@AGG-7606-TX	
li li li li vevice Zoom) [∑] E	GigabitEthernet4/17 GigabitEthernet4/18 - No Transc GigabitEthernet4/19 GigabitEthernet4/20 TenGigabitEthernet4/22 - No Tra TenGigabitEthernet4/22 - No Tra Beast Fit	Find : EFP I 3450 3451	D Operation Up	al State	VLAN Inner 3450		3450@AGG-7606-TX	
- (3 - (3 - (3 - (3) -	GigabitEthernet4/17 GigabitEthernet4/18 - No Transc GigabitEthernet4/19 GigabitEthernet4/20 TenGigabitEthernet4/22 - No Tra TenGigabitEthernet4/22 - No Tra Best Fit	Find : EFP I 3450 3451	D Operation Up	al State	VLAN Inner 3450		3450@AGG-7606-TX	
li li li li vevice Zoom) [∑] E	GigabitEthernet4/17 GigabitEthernet4/18 - No Transc GigabitEthernet4/19 GigabitEthernet4/20 TenGigabitEthernet4/22 - No Tra TenGigabitEthernet4/22 - No Ten TenGigabitEthernet4/22 - No Ten Te	Find : EFP I 3450 3451 EFPs	D Operation Up Up	al State	VLAN Inner 3450	Translated VLAN Translated Inner VLA	3450@AGG-7606-TX AGG-7606-TX (3451) VLAN3451	Line 0 (Size 2)
- (3 - (3 - (3 - (3) -	GigabitEthernet4/17 GigabitEthernet4/18 - No Transc GigabitEthernet4/19 GigabitEthernet4/21 - No Tre TernGigabitEthernet4/22 - No Tre TernGigabitEthernet4/22 - No Tre Beast Fit	Find : EFP I 3450 3451 EFPs	D Operation Up	al State	VLAN Inner 3450	Translated VLAN Translated Inner VLA	3450@AGG-7606-TX	
- (3 - (3 - (3 - (3) -	GigabitEthernet4/17 GigabitEthernet4/18 - No Transc GigabitEthernet4/19 GigabitEthernet4/21 - No Trei TernGigabitEthernet4/22 - No Trei Beast Fit	Find : EFP I 3450 3451 EFPs	D Operation Up Up	al State	VLAN Inner 3450	Translated VLAN Translated Inner VLA	3450@AGG-7606-TX AGG-7606-TX (3451) VLAN3451	Line 0 (Size 2)

The information displayed in this window is the same as that displayed when the interface is selected in physical inventory.

The following information is displayed, depending on the interface and its configuration:

- Location and interface details.
- Technology-related information, such as Ethernet CSMA/CD or ATM IMA properties.
- VLAN configuration details.

- List of the configured subinterfaces on the port. For more information on the Subinterfaces table, see Viewing a Port Configuration, page 3-25.
- List of the configured EFPs on the port. For more information on the EFPs table, see Viewing EFP Properties, page 13-32.
- List of VLAN mappings configured on the port. For more information about the VLAN Mappings table, see Viewing VLAN Mappings, page 13-52.

Working with Pseudowires

Prime Network supports the discovery and modeling of Any Transport over MPLS (AToM) and Ethernet over MPLS (EoMPLS) domains that span multisegment pseudowires. After discovery is complete, you can add any of the pseudowires to a map, view their properties in logical inventory, or view their redundancy status.

The following topics describe the options available to you for working with pseudowires in Prime Network:

- Adding Pseudowires to a Map, page 13-89
- Viewing Pseudowire Properties, page 13-92
- Pinging a Pseudowire, page 13-95
- Displaying Pseudowire Information, page 13-97
- Viewing Pseudowire Redundancy Service Properties, page 13-99
- Applying Pseudowire Overlays, page 13-101

Adding Pseudowires to a Map

You can add a pseudowire that Prime Network discovers to maps as required. To add a pseudowire to a map:

- Step 1 In Prime Network Vision, select the required map or domain.
- **Step 2** Open the Add Pseudowire to *map* dialog box in either of the following ways:
 - In the toolbar, choose **Add to Map > Pseudowire**.
 - In the menu bar, choose File > Add to Map > Pseudowire.

Figure 13-54 shows an example of the Add Pseudowire dialog box.

L

 Se Sh 		-npe1-76	Go
Availa	ble Pseudowires as of [17-Jun-11	15:14] 🕲	
Find :	📫 🋃 🗸 🐂	加厚	
Vame		System Name 🛛 🕀 🛆	Descrip
2	5@c1-npe1-76	5@c1-npe1-76	A
2	8@c1-npe1-76	8@c1-npe1-76	
2	99@C9-AGG20	99@C9-AGG20	
8	234@10.56.101.75	234@10.56.101.75	
2	333@10.56.101.75	333@10.56.101.75	
2	666@c9-npe1-9K	666@c9-npe1-9K	
2	777@c9-npe1-9K	777@c9-npe1-9K	
2	1231@c1-npe1-76	1231@c1-npe1-76	
2	1234@c1-npe1-76	1234@c1-npe1-76	
2	1900@C9-AGG20 1900@c9-npe1-9K	1900@C9-AGG20 1900@c9-npe1-9K	
2	2350@c1-npe1-76	2350@c1-npe1-76	
2	2450@c1-npe1-76	2450@c1-npe1-76	
	9999@c1-npe1-76	9999@c1-npe1-76	
2	12345@10.56.101.75	12345@10.56.101.75	
2	23972@10.56.101.75	23972@10.56.101.75	
	23972@c1-ppe1-76	23972@c1-ppe1-76	
		Line 0) (Size 271)
		ОК	Cancel

Figure 13-54 Add Pseudowire Dialog Box

Step 3 In the Add Pseudowire dialog box, do either of the following:

- To search for specific elements:
 - a. Choose Search.

b. To narrow the display to a range of pseudowire or a group of pseudowires, enter a search string in the search field.

c. Click Go.

For example, if you enter **pseudo1**, the pseudowires that have names containing the string "pseudo1" are displayed.

• To view all available pseudowires, choose Show All and click Go.

The pseudowires that meet the specified search criteria are displayed in the Add Pseudowire 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**.



If an element is not included in your scope, it is displayed with the locked device icon.

For information about sorting and filtering the table contents, see Filtering and Sorting Tabular Content, page 2-40.

Step 4 In the Add Pseudowire dialog box, select the pseudowires that you want to add. You can select and add multiple pseudowires by pressing Ctrl while selecting individual pseudowires or by pressing Ctrl +Shift to select a group of pseudowires.

Step 5 Click OK.

The pseudowire is displayed in the navigation pane and in the content area. In addition, any associated tickets are displayed in the ticket pane. See Figure 13-55.



Figure 13-55 Pseudowire in Prime Network Vision Map

Step 6 Click the pseudowire in the navigation pane or double-click the pseudowire in the map pane to view the pseudowire components, such as pseudowire endpoints, pseudowire switching entities, and terminating interfaces.

Figure 13-56 shows an example of an expanded pseudowire in Prime Network Vision.

Γ



Figure 13-56 Pseudowire Components in Prime Network Vision Maps

The pseudowire information is saved with the map in the Prime Network database.

Viewing Pseudowire Properties

To view pseudowire properties:

- **Step 1** In Prime Network Vision, select the required map or domain.
- **Step 2** To view pseudowire endpoint properties configured on an element:
 - a. In the navigation or map pane, right-click the required element and then choose Inventory.
 - **b.** In the inventory window, choose Logical Inventory > Pseudowires.

The Tunnel Edges table is displayed, listing the pseudowire endpoints configured on the selected element. For a description of the information contained in the Pseudowires Tunnel Edges table, see Table 19-30 on page 19-54.

- **Step 3** To view the properties of a pseudowire that you added to a map, do either of the following:
 - If the pseudowire icon is of the largest size, click the **Properties** button.
 - Right-click the element, and then choose **Properties**.

The Pseudowire Properties window is displayed as shown in Figure 13-57.

⊻ 230@MW2	941-5 230@sol-dist-1 - Pseudo	wire Properties		_ 🗆 ×
Name: System Name:	230@MW2941-5 230@sol-dist-1 230@MW2941-5 230@sol-dist-1	Multisegment Pseudowire: Pseudowire Type:	false SATOP E1	
[Memory: 4% Connect	237160

Figure 13-57 Pseudowire Properties Window



Table 13-40 Pseudowire Properties Window

Field	Description
Name	Name of the pseudowire.
Multisegment Pseudowire	Whether or not the pseudowire is multisegment: True or False.
System Name	Internal or system-generated name of the pseudowire.
Pseudowire Type	Type of pseudowire, such as Ethernet, Ethernet Tagged, CESoPSN Basic, PPP, or SAToP.

Step 4 To view the properties of a pseudowire endpoint associated with a pseudowire, right-click the required pseudowire endpoint, and then choose **Properties**.

The Tunnel Properties window containing the pseudowire endpoint properties is displayed as shown in Figure 13-51 and described in Table 13-39.

Step 5 To view the properties of a pseudowire switching entity associated with the pseudowire, select the switching entity, and then choose **Node > Inventory**.

The Local Switching table is displayed as shown in Figure 13-41.

Table 13-36 describes the information displayed in the Local Switching table.

Step 6 To view the properties of the pseudowire endpoint that terminates on the subinterface, right-click the required interface, and then choose **Properties**.



Note The selected port must be an Ethernet subinterface for the Contained Current CTPs table to be displayed.

Table 13-41 describes the information displayed in the Contained Current CTPs table.

Field	Description
Local Interface	The name of the subinterface or port, hyperlinked to the interface in physical inventory.
ID	The tunnel identifier, hyperlinked to Pseudowires Tunnel Edges table in logical inventory.
Peer	The peer tunnel identifier, hyperlinked to the peer pseudowire tunnel in logical inventory.
Tunnel ID	The identifier that, along with the router IP addresses of the two tunnel edges, identifies the tunnel.
Tunnel Status	The operational state of the tunnel: Up or Down.
Local Router IP	The IP address of this tunnel edge, which is used as the router identifier.
Peer Router IP	The IP address of the peer tunnel edge, which is used as the router identifier.
Pseudowire Type	Type of pseudowire, such as Ethernet, Ethernet Tagged, CESoPSN Basic, PPP, or SAToP.
Local MTU	The size, in bytes, of the MTU on the local interface.
Remote MTU	The size, in bytes, of the MTU on the remote interface.
Local VC Label	The MPLS label that is used by this router to identify or access the tunnel. It is inserted in the MPLS label stack by the local router.
Peer VC Label	The MPLS label that is used by this router to identify or access the tunnel. It is inserted in the MPLS label stack by the peer router.
Signaling Protocol	The protocol used to build the tunnel, such as LDP or TDP.
Preferred Path Tunnel	The path to be used for pseudowire traffic.

Table 13-41 Contained Current CTPS Table	Table 13-41	Contained Current CTPs Table
--	-------------	------------------------------

Step 7 To view the properties of an Ethernet flow point associated with the pseudowire, right-click the EFP and then choose Properties.

See Viewing EFP Properties, page 13-32 for the information that is displayed for EFPs.

Pinging a Pseudowire

Note

Prime Network Vision enables you to ping a peer router to ensure that the pseudowire tunnel is available.

You might be prompted to enter your device access credentials while executing the command. Once you have entered them, these credentials will be used for every subsequent execution of a command in the same GUI client session. If you want to change the credentials, click **Edit Credentials**. Edit Credentials button will not be available for SNMP commands or if the command is scheduled for a later time.

To ping a pseudowire peer router:

- **Step 1** In the require map, double-click the required device configured for pseudowire.
- Step 2 In the inventory window, choose Logical Inventory > Pseudowires.
- **Step 3** In the Tunnel Edges table, select the interface with the peer edge that you want to ping, and make sure that the tunnel status is up.
- Step 4 Right-click the interface and choose Commands > Configure > Ping Pseudowire as shown in Figure 13-58.

		Poll Now					
Logical Inventory [21N] Access Lists		Tunnel Edges					
Access Lists							
Bidirectional Forwarding Detection		Find :	∇				
Access Lists ATM Traffic Profiles Bidirectional Forwarding Detection Bridges		Local Interface V	C ID	Peer	Status 😔 🔨	Pseudowire Role	Preferred Pa
► Lag CFM		c4-npe1-76 (3118) VLAN3118 7	77011@.	777011@c1-npe1-76	up		4
Cisco Discovery Protocol		c4-npe1-76 (3119) VI 4N3119 7	77012@ 🄊	777012@c1-npe1-76	up		
Clock		c4-npe1-76 (312 Poll Now c4-npe1-76 (312 Attach Business 1		0@c1-npe1-76	up		
CFM Cisco Discovery Protocol Clock Clock Ethernet Link Aggregation Ethernet LMI Frame Relay Traffic Profiles IS-15		c4-npe1-76 (312 Attach Business T	ſag	3@c2-npe1-crs	up		
Frame Relay Traffic Profiles		c4-npe1-76 (312 😽 Show Only Select	1.0	4@c2-npe1-crs	up		
• IS-IS		c4-ppe1-76#4 0	ed Rows	i gen i per ere	up		_
Local Switching	:	c4-npe1-76#4.0 Show All Rows		3@c1-npe1-76			
LSEs MPBGPs	:				up		
				4@c1-npe1-76	up		
Operating System		c4-npe1-76#4.0		1@c2-npe1-crs	up		
OSPF Processes		c4-npe1-/6#4.0		2@c2-npe1-crs	up		
Pseudowires		c4-npe1-76#4.0 Commands		► Configure ►	🐺 Ping Pseudowire		
Routing Entities		c4-npe1-76#4.0 Management		Show	up	_	
 Spanning Tree Protocol Traffic Engineering Tunnels 	-	c4-npe1-76#4.0. aigapitet net	//orog		up		
		c4-npe1-76#4.0:GigabitEthernet	77049@		up		
Device Zoom 💽 Best Fit		c4-npe1-76#4.0:GigabitEthernet	77052@.		up		
		c4-npe1-76#4.0:GigabitEthernet 7	77053@		up		
		•					+
						Line 2	2 (1 / 242 Selected
Find : 📑 🛃 😴 👻 👼							
ickets Network Events Provisioning Events							

Figure 13-58 Ping Pseudowire Command

The Ping Pseudowire dialog box is displayed with the General tab as shown in Figure 13-59.

Ping Pseudowire		_ 🗆 ×
General Result		
Ping with default Destination IP and ¥C-J	D	
Destination IP Address		
VC-ID		
Preview	Close	
Memory:	13% Connected	

Figure 13-59 Ping Pseudowire Dialog Box - General Tab

Step 5 In the General tab, provide the following inputs:

- Multisegment Ping—Enables or disables multisegment pinging (for Cisco IOS XR devices only.)
- Ping with default Destination IP and VC-ID—Check the check box to ping the selected peer pseudowire endpoint using the default destination IP address and VC identifier. You do not need to enter a destination IP address or tunnel identifier if you choose this option.
- Destination IP Address—Enter the required destination IP address if you do not want to use the default destination IP address. If you enter a destination IP address, you must enter the tunnel identifier in the VC-ID field.
- VC-ID—Enter the required tunnel identifier if you do not want to use the default VC identifier. If you enter a tunnel identifier, you must enter the destination IP address in the Destination IP Address field.
- **Step 6** To preview the command to ensure it is right, click **Preview**.

The command is displayed in the Result tab for your review.

Step 7 To execute the command, click **Execute**.

The result of the command is displayed in the Result tab, as shown in Figure 13-60.

	65@c7-npe1-76
	7-npel-76# ing mpls pseudowire 1.1.0.219 777065
*	Fotal number of MS-PW segments is less than segment number; Adjusting the segment number to l
S	ending 5, 100-byte MPLS Echos to 1.1.0.219, timeout is 2 seconds, send interval is 0 msec:
	cimetate is 2 seconds, send includi is 6 moto.
C	odes: '!' - success, 'Q' - request not sent, '.' - timeout,
	'L' - labeled output interface, 'B' - unlabeled output interface, 'D' - DS Map mismatch, 'F' - no FEC mapping, 'f' - FEC mismatch,
	'N' - malformed request, 'm' - unsupported tlvs, 'N' - no label entry,
	'P' - no rx intf label prot, 'p' - premature termination of LSP, 'R' - transit router, 'I' - unknown upstream index,
	'X' - unknown return code, 'x' - return code 0
π.	ype escape sequence to abort.
	uccess rate is 100 percent (5/5), round-trip min/avg/max = 1/3/8 ms
	lapsed time: O seconds
	Preview Execute Close

Figure 13-60 Ping Pseudowire Dialog Box - Result Tab

Step 8 Click **Close** to close the Ping Pseudowire dialog box.

Displaying Pseudowire Information

To view Virtual Circuit Connectivity Verification (VCCV) and Control Channel (CC) information for a pseudowire endpoint:

Note

You might be prompted to enter your device access credentials while exectuing the command. Once you have entered them, these credentials will be used for every subsequent execution of a command in the same GUI client session. If you want to change the credentials, click **Edit Credentials**. Edit Credentials button will not be available for SNMP commands or if the command is scheduled for a later time.

- **Step 1** In the require map, double-click the required device configured for pseudowire.
- **Step 2** In the inventory window, choose **Logical Inventory > Pseudowire**.
- Step 3In the Tunnel Edges table, right-click the required interface and choose Commands > Show > Display
Pseudowire.
- **Step 4** In the Display Pseudowire dialog box, do either of the following:
 - To view the command before running it, click **Preview**.
 - To run the command, click Execute.

When you click **Execute**, the results are displayed in the dialog box as shown in Figure 13-61.

Display Pseudowire	_ 🗆 ×
Result	
460760@c7-npe1-76	
c7-npel-76# show mpls l2transport binding 460760 include CC	
VCCV: CC Type: RA [2], TTL [3]	
VCCV: CC Type: RA [2], TTL [3]	
Elapsed time: 0 seconds	
,	
Preview Execute Close	
Memory: 12% Connected	

Figure 13-61 Display Pseudowire Dialog Box

Step 5 The following information is displayed:

- The element name.
- The command issued.
- The results, including:
 - VCCV: CC Type—The types of CC processing that are supported. The number indicates the position of the bit that was set in the received octet. The available values are:
 - CW [1]-Control Word
 - RA [2]-Router Alert
 - TTL [3]-Time to Live
 - Unkn [x]—Unknown
 - Elapsed time—The elapsed time, in seconds.
- **Step 6** Click **Close** to close the Display Pseudowire dialog box.

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Viewing Pseudowire Redundancy Service Properties

If a pseudowire is configured for redundancy service, a redundancy service badge is applied to the secondary (backup) pseudowire in the navigation and map panes in the Prime Network Vision window. Additional redundancy service details are provided in the inventory window for the device on which the pseudowire is configured.

To view redundancy service properties for pseudowires:

Step 1 To determine if a pseudowire is configured for redundancy service, expand the required pseudowire in the navigation or map pane.

If the pseudowire is configured for redundancy service, the redundancy service badge appears in the navigation and map panes as shown in Figure 13-62.



Figure 13-62 Pseudowire Redundancy Service Badge in a Map

Step 2 To view additional details, in the map, double-click the element with the redundancy service badge.

The PTP Layer 2 MPLS Tunnel Properties window is displayed as shown in Figure 13-63 and shows that the selected pseudowire has a Secondary role in a redundancy service.

Dell Now							
Port:	AGG-7604-TX#Aggrega	tion Group 20 EFP:3464	Peer:		3464@NPE2-9K-NGN		
Peer VC Label:	17368		Status:		down		
.ocal VC Label:	77		Local Router IP:		172.255.3.175		
eer Router IP:	172.200.1.2		Local MTU:		1500		
temote MTU:	1500		Pseudowire Type:		Ethernet Tagged		
seudowire Role:	Secondary						
ind : .ocal Interface 🗧	🖬 🎝 🔻 Ϋ		Peer	Status	S Pseudowire Role Pri	eferred Path Tunnel	Local Ro
.ocal Interface 🗧			Peer	Status	Pseudowire Role Pr	eferred Path Tunnel	Local Ro
AGG-7604-TX#Agg	gregation Group 20 EFP:3464	3464@AGG-7604-TX 3	3464@NPE2-9K-NGN	down	Secondary		172.255

Figure 13-63 Layer 2 MPLS Tunnel Properties for Pseudowire Redundancy Service

Step 3 In the PTP Layer 2 MPLS Tunnel Properties window, click the VC ID hyperlink.

The Tunnel Edges table in logical inventory is displayed, with the local interface selected in the table. (See Figure 13-64.)

Figure 13-64 Pseudowire Redundancy Service in Logical Inventory

V AGG	5-7604-TX [5M]		Poll Now					
-	Logical Inventory [2M]							
>	Access Gateway		Tunnel Edges					
	Access Lists		Find :	N				
	ATM Traffic Profiles		Local Interface	VCID 0	Peer	Status	Pseudowire Role	
▶	Bidirectional Forwarding Detection Bridges		AGG-7604-TX#2.0:GigabitEthernet2/0/0 EFP:3450	3450@AGG-7604-TX	3450@NPE2-9K-TX	down	1 Joudomic Rok	Ē
	Cisco Discovery Protocol		AGG-7604-TX#V5I: Cus 3456 VPN Id: 3456	3456@AGG-7604-TX	3456@AGG-7606-TX	UD		
۷ 🎫 ۷	Clock [2M]							
P	Ethernet Link Aggregation		AGG-7604-TX#V5I: Cus_3456 VPN Id: 3456	3456@AGG-7604-TX	3456@NPE1-9K-NGN	up		_
, III , III	Ethernet LMI		AGG-7604-TX#V5I: Cus_3456 VPN Id: 3456	3456@AGG-7604-TX	3456@NPE2-9K-NGN	up		
	Frame Relay Traffic Profiles ICCP Redundancy		AGG-7604-TX#VSI: Cus_3457 VPN Id: 3457	3457@AGG-7604-TX	3457@AGG-7606-TX	up		
	IS-IS		AGG-7604-TX#VSI: Cus_3457 VPN Id: 3457	3457@AGG-7604-TX	3457@NPE1-9K-NGN	up		
►	Local Switching		AGG-7604-TX#VSI: Cus_3457 VPN Id: 3457	3457@AGG-7604-TX	3457@NPE2-9K-NGN	up		
▶	LSEs		AGG-7604-TX#VSI: Cus_3461 VPN Id: 3461	3461@AGG-7604-TX	3461@NPE2-9K-NGN	up		
>	MPBGPs	:	AGG-7604-TX#VSI: Cus_3461 VPN Id: 3461	3461@AGG-7604-TX	3461@AGG-7606-TX	up		
► 	MPLS-TP	1	AGG-7604-TX#VSI: Cus 3461 VPN Id: 3461	3461@AGG-7604-TX	3461@NPE1-9K-NGN	up		
	OAM Operating System			3462@AGG-7604-TX	3462@NPE1-9K-NGN	up	Primary	
•	OSPF Processes		AGG-7604-TX#Aggregation Group 20 EFP:3462	3462@AGG-7604-TX	3462@NPE2-9K-NGN	UD	Secondary	
	Pseudowires		Hod 7001 The Aggregation aroup 20 ET 10102	3463@AGG-7604-TX	3463@NPE1-9K-NGN	up	Primary	
•	Resilient Ethernet Protocol				for the second			
•	Routing Entities		AGG-7604-TX#Aggregation Group 20 EFP:3463	3463@AGG-7604-TX	3463@NPE2-9K-NGN	up	Secondary	
> 	Spanning Tree Protocol Traffic Engineering Tunnels	1	AGG-7604-TX#Aggregation Group 20 EFP:3464	3464@AGG-7604-TX	3464@NPE2-9K-NGN	down	Secondary	
	Tunnel Traffic Descriptors			3464@AGG-7604-TX	3464@NPE1-9K-NGN	standby	Primary	Γ
•	VC Switching Entities	-		3465@AGG-7604-TX	3465@NPE1-9K-NGN	standby	Primary	
			AGG-7604-TX#Aggregation Group 20 EFP:3465	3465@AGG-7604-TX	3465@NPE2-9K-NGN	down	Secondary	
evice Zoon	n Best Fit		AGG-7604-TX#VSI: Cus_3466 VPN Id: 3466	3466@AGG-7604-TX	3466@AGG-7606-TX	standby		
			AGG-7604-TX#VSI: Cus_3466 VPN Id: 3466	3466@AGG-7604-TX	3466@NPE1-9K-NGN	standby		
			AGG-7604-TX#VSI: Cus 3466 VPN Id: 3466	3466@AGG-7604-TX	3466@NPE2-9K-NGN	standby		
		-	•					۲
1							Line 22 (1 / 22 Sele	ecteo
d :	日本マヤ幕	-						
								_
ets Net	work Events Provisioning Events							

The entries indicate that the selected tunnel edge has a Secondary role in the first VC and a Primary role in the second VC.

For more information about the Pseudowires Tunnel Edges table, see Table 19-30 on page 19-54.

Applying Pseudowire Overlays

A pseudowire overlay allows you to isolate the parts of a network that are used by a specific pseudowire. To apply a pseudowire overlay:

- **Step 1** In Prime Network Vision, choose the map in which you want to apply an overlay.
- **Step 2** From the toolbar, choose **Choose Overlay Type > Pseudowire**.

Figure 13-65 shows an example of the Select Pseudowire Overlay for map dialog box.

Figure 13-65 Select Pseudowire Overlay Dialog Box

MYdlid	ble Pseudowires as of [23-Jun-11 14	1:59] 🗭	
Find :	 ∎ ≵ ⊽ † #		
Name		System Name	Descri
2	63@CR5_Sim	63@CRS_Sim	
8	99@C9-AGG20	99@C9-AGG20	
8	102@CR5_Sim	102@CRS_Sim	
8	103@CRS_Sim	103@CRS_Sim	
8	234@c4-npe1-76	234@c4-npe1-76	
8	333@c4-npe1-76	333@c4-npe1-76	
2	666@c9-npe1-9K	666@c9-npe1-9K	
8	777@10.56.101.137	777@10.56.101.137	
8	777@c9-npe1-9K	777@c9-npe1-9K	
8	988@10.56.101.137	988@10.56.101.137	
2	1900@C9-AGG20 1900@c9-npe1-9K	1900@C9-AGG20 1900@c9-npe1-9K	
8	2350@10.56.101.137	2350@10.56.101.137	
8	2450@10.56.101.137	2450@10.56.101.137	
8	3400@10.56.101.137	3400@10.56.101.137	
8	3401@10.56.101.137	3401@10.56.101.137	
	12345@c4-npe1-76	12345@c4-npe1-76	-

- **Step 3** Select the required pseudowire for the overlay.
- Step 4 Click OK.

The elements being used by the selected pseudowire are highlighted in the map while the other elements are dimmed, as shown in Figure 13-66.



Figure 13-66 Pseudowire Overlay in Prime Network Vision

- **Step 5** To hide and view the overlay, click **Hide Overlay/Show Overlay** in the toolbar. The button toggles depending on whether the overlay is currently displayed or hidden.
- **Step 6** To remove the overlay, choose **Choose Overlay Type > None**.

Working with Ethernet Services

Ethernet services are created when the following business elements are linked to one another:

- Network VLAN and bridge domain are linked through a shared EFP.
- Network VLAN and VPLS instance are linked through either of the following:
 - A shared, standalone EFP.
 - A shared switching entity.
- Network VLAN and network pseudowire (single or multi-segment) are linked through either of the following:
 - A shared, standalone EFP.
 - A shared switching entity.
- VPLS-EoMPLS connected via a shared access pseudowire endpoint.
- Network VLAN and cross-connect are connected by a shared EFP.
- Network VLAN and service link are connected by a shared EFP.

If a VPLS, network pseudowire, cross-connect, or network VLAN object is not connected to another business element, it resides alone in an Ethernet service.

In releases prior to Prime Network Vision 3.8, EVC multiplex was discovered by means of Ethernet flow point associations. Beginning with Prime Network Vision 3.8, multiplex capabilities were enhanced to distinguish multiplexed services based on the Customer VLAN ID; that is, Prime Network Vision 3.9 is Inner Tag-aware.

As a result, in environments in which service providers have customers with multiplexed services, an EVC can distinguish each service and create its own EVC representation.

Prime Network Vision discovers Ethernet services and enables you to add them to maps, apply overlays, and view their properties. See the following topics for more information:

- Adding Ethernet Services to a Map, page 13-103
- Applying Ethernet Service Overlays, page 13-104
- Viewing Ethernet Service Properties, page 13-106

Adding Ethernet Services to a Map

You can add the Ethernet services that Prime Network Vision discovers to maps as required.

To add an Ethernet service to a map:

- Step 1 In Prime Network Vision, select the required map or domain.
- Step 2 Open the Add Ethernet Service to map dialog box in either of the following ways:
 - In the toolbar, choose Add to Map > Ethernet Service.
 - In the menu bar, choose File > Add to Map > Ethernet Service.
- **Step 3** In the Add Ethernet Service dialog box, do either of the following:
 - To search for specific elements:

a. Choose **Search**, and then choose a search category: EVC Terminating EFPs, Name, or System Name.

b. To narrow the display to a range of Ethernet services or a group of Ethernet services, enter a search string in the search field.

c. Click Go.

For example, if you choose Name and enter **EFP1**, the network elements that have names beginning with EFP1 are displayed.

• To view all available Ethernet services, choose Show All and click Go.

The available elements that meet the specified search criteria are displayed in the Add Ethernet Service 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**.



If an element is not included in your scope, it is displayed with the locked device icon.

For information about sorting and filtering the table contents, see Filtering and Sorting Tabular Content, page 2-40.

Step 4 In the Add Ethernet Service dialog box, select the elements that you want to add. You can select and add multiple elements by pressing Ctrl while selecting individual elements or by pressing Ctrl +Shift to select a group of elements.

L

Step 5 Click OK.

The Ethernet service is displayed in the navigation pane and in the content area. In addition, any associated tickets are displayed in the ticket pane. See Figure 13-67.



Figure 13-67 Ethernet Service in Prime Network Vision

The Ethernet service information is saved with the map in the Prime Network database.

Applying Ethernet Service Overlays

An Ethernet service overlay allows you to isolate the parts of a network that are being used by a specific Ethernet service.

To apply an Ethernet service overlay:

Step 1 In Prime Network Vision, choose the map in which you want to apply an overlay.

Step 2 From the toolbar, choose **Choose Overlay Type > Ethernet Service**.

Figure 13-68 shows an example of the Select Ethernet Service Overlay for *map* dialog box.

💿 Sl	how All		
Avail	able Ethernet Services as of [05-Nov-10 09:38] 🕲		
ind :	🖺 🛃 🗸 🕆 🐺		
lame	€x	System Name	Description
	Ethernet Service 5002: ServiceD@c1-npe1-76	ServiceD@c1-npe1-76	A
	Ethernet Service 5004: cisco@c7-npe1-76	cisco@c7-npe1-76	
	Ethernet Service 5006: Oren_Test:(987) VLAN0987@c1-npe1-76	Oren_Test:(987) VLAN0987@c1-npe1	
	Ethernet Service 5010: VFI7@c1-npe1-76	VFI7@c1-npe1-76	
	Ethernet Service 5012: VFI7:(307) VLAN0307@c3-npe1-76	VFI7:(307) VLAN0307@c3-npe1-76	
	Ethernet Service 5015: eli@c1-npe1-76	eli@c1-npe1-76	
	Ethernet Service 5018: eli:eli-bd1@eli-group@c2-npe1-crs	eli:eli-bd1@eli-group@c2-npe1-crs	
	Ethernet Service 5020: seliyahu:(83) VLAN0083@c7-npe1-76	seliyahu:(83) VLAN0083@c7-npe1-76	
	Ethernet Service 5022: seliyahu@c1-npe1-76	seliyahu@c1-npe1-76	
	Ethernet Service 5024: VFI7:(707) VLAN0707@c7-npe1-76	VFI7:(707) VLAN0707@c7-npe1-76	
	Ethernet Service 5026: vl2051@c3-npe1-76	vl2051@c3-npe1-76	
	Ethernet Service 5032: 777018@10.56.101.75 777018@c1-npe1-76	777018@10.56.101.75 777018@c1.入	
	Ethernet Service 5033: 777089@c1-npe1-76 777089@c4-upe9	777089@c1-npe1-76 777089@c4-u	
	Ethernet Service 5034: 777060@c1-upe2 777060@c4-upe9	777060@c1-upe2 777060@c4-upe9	
	Ethernet Service 5035: 23972@c1-npe1-76 23972@c4-upe9	23972@c1-npe1-76 23972@c4-upe9	
	Ethernet Service 5037: 777110@c1-npe1-76 777110@c4-upe9	777110@c1-npe1-76 777110@c4-u	
	Ethernet Service 5039: 777067@c1-upe2 777067@c3-npe1-76	777067@c1-upe2 777067@c3-npe	-
			Line 0 (Size 2,061)

Figure 13-68 Select Ethernet Service Overlay Dialog Box

- **Step 3** Select the required Ethernet Service for the overlay.
- Step 4 Click OK.

The elements being used by the selected Ethernet service are highlighted in the map while the other elements are dimmed, as shown in Figure 13-69.



Figure 13-69 Ethernet Service Overlay in Prime Network Vision

Step 5 To hide and view the overlay, click **Hide Overlay/Show Overlay** in the toolbar. The button toggles depending on whether the overlay is currently displayed or hidden.

Step 6 To remove the overlay, choose **Choose Overlay Type > None**.

Viewing Ethernet Service Properties

To view Ethernet service properties:

- Step 1 In Prime Network Vision, select the map containing the required Ethernet service.
- Step 2 In the navigation or map pane, right-click the Ethernet service and choose Properties.

Figure 13-70 shows an example of an Ethernet Service Properties window with the EVC Terminating table. Depending on the types of service in the EVC, tabs might be displayed. For example, if the EVC contains two network VLANs and a VPLS, tabs are displayed for the following:

- EVC Terminating table
- Network VLANs
- VPLS

283226

Evc:	EVC			
vc Tei	rminating			
ind :		1 目 型		
Jame		Port	Binding Type	
••> ••	DataLinkAggregation10@c7-sw1	c7-sw1#Aggregation Group 10		
	DataLinkAggregation11@c7-sw1	c7-sw1#Aggregation Group 11		
	GigabitEthernet1/0/7@c7-sw1	c7-sw1#1:GigabitEthernet1/0/7		
	GigabitEthernet3/6@c7-npe1-76	c7-npe1-76#3:GigabitEthernet3/	6	

Figure 13-70 Ethernet Service Properties Window

Table 13-42 describes the information that is displayed for an Ethernet service.

Table 13-42 Ethernet Service Properties Window

Field	Description
Name	Ethernet service name.
System Name	Name that Prime Network Vision assigns to the Ethernet service.
EVC	Name of the EVC associated with the Ethernet service, hyperlinked to the EVC Properties window.
EVC Terminating Table	
Name	EVC name, represented by the interface name, EFP, and the EFP name.
Network Element	Hyperlinked entry to the specific interface and EFP in physical inventory.
Port	Hyperlinked entry to the specific interface in physical inventory.

Step 3To view the EVC Properties window, click the hyperlink in the EVC field.Figure 13-71 shows an example of the EVC Properties window.

stem Name: QHVPL	5:481781181:(2081) VLAN	2081@10.56.101.75	Vame: QHVPL5:481781181:((2081) VLAN2081@10.56	.101.75
etwork Vlans Vpls In	istances				
nd :	🗌 🟥 🛃 🗸 🎙 📠	5			
ame	ID EFC	Name EFD System N	Jame System Name	Description	
VLAN-481	481		VLAN-481		
VLAN-2081	2081		VLAN-2081		
					Line 0 (Size 2)

Figure 13-71 EVC Properties Window

Table 13-43 describes the information that is displayed in the EVC Properties window. The tabs that are displayed depend on the services included in the EVC. For example, if the EVC contains two network VLANs and a VPLS, tabs are displayed for the following:

- EVC Terminating table
- Network VLANs
- VPLS

Table 13-43 EVC Properties Window

Field	Description				
System Name	Name of the system on which the EVC is configured.				
Name	EVC name.				
Cross-Connects Table					
Name	Cross-connect name.				
Segment 1	Identifier of the first cross-connect endpoint.				
Segment 2	Identifier of the second cross-connect endpoint.				
System Name	Cross-connect system name.				

Field	Description				
Network VLANs Tab					
Name	VLAN name.				
ID	VLAN identifier.				
EFD Name	Name of the Ethernet flow domain.				
EFD System Name	Name that Prime Network Vision assigns to the EFD.				
System Name	VLAN system name.				
Description	Brief description of the VLAN.				
Network Pseudowires Tab					
Name	Pseudowire name.				
System Name	System on which the pseudowire is configured.				
Description	Brief description of the pseudowire.				
Pseudowire Type Type of pseudowire.					
Is Multisegment Pseudowire Whether or not the pseudowire is multisegment: True o					
VPLS Instances Tab					
Name	VPLS instance name.				
System Defined Name	Name that Prime Network Vision assigns to the VPLS instance.				
VPN ID	Identifier of associated VPN.				

Table 13-43	EVC Properties Window (continued)
-------------	-----------------------------------

Viewing IP SLA Responder Service Properties

Cisco IOS Service Level Agreements (SLAs) software allows you to analyze IP service levels for IP applications and services by using active traffic monitoring to measure network performance.

The IP SLA responder is a component embedded in the destination Cisco device that allows the system to anticipate and respond to IP SLAs request packets. The responder provides accurate measurements without requiring dedicated probes. The responder uses the Cisco IOS IP SLAs Control Protocol to provide a mechanism through which it can be notified on which port it should listen and respond.

Two-Way Active Measurement Protocol (TWAMP) defines a standard for measuring round-trip network performance between any two devices that support the protocol.

Prime Network Vision supports IP SLA Responder service on the following devices:

- Cisco 3400ME and 3750ME devices running Cisco IOS 12.2(52)SE.
- Cisco MWR2941 devices running Cisco CSR 3.2.

To view IP SLA Responder service properties:

- **Step 1** In Prime Network Vision, double-click the device configured for IP SLA Responder service.
- **Step 2** In the inventory window, choose **Logical Inventory > IP SLA Responder**.

IP SLA Responder properties are displayed as shown in Figure 13-72.

V 3750E-24TD-AGG2 [1N]		_ 🗆 ×
✓ ● \$3750E-24TD-AGG2 [1N] ✓ ● Logical Inventory ▲ Access Lists	IP SLA Responder Status: Down IP SLA TWAMP Responder Status: Unknown	
Access Lists Bridges Gisco Discovery Protocol Gisco Discovery Protocol Cisco Discovery Protocol Ethernet LMA Aggregation Ethernet LMA Discovery Protocol Ethernet LMA Discovery Protocol Ciscovery Protocovery Protocol Ciscovery Protocovery Pr	UDP Echo	
IP SLA Responder IS-15 Iocal Switching ISEs	IP Address Port Number 10.10.2.33 1	
 ▶ ■ MPBGPs ○ OAM ● Operating System ▶ ■ Routing Entities 		
Spanning Tree Protocol Tunnel Traffic Descriptors VC Switching Entities		
 VTP Physical Inventory 		
Q Device Zoom Best Fit		
	Lin	e 0 (Size 1)
	Memory: 9% Connected	e 0 (Size 1)

Figure 13-72 IP SLA Responder in Logical Inventory

Table 13-44 describes the properties displayed for IP SLA Responder service.

 Table 13-44
 IP SLA Responder Properties in Logical Inventory

Field	Description				
IP SLA Responder Status	Status of the IP SLA Responder: Up or Down.				
IP SLA TWAMP Responder Status	Status of the IP SLA TWAMP responder: Up or Down.				
UDP Echo Tab					
IP Address	Destination IP address used for the UDP echo operation.				
Port Number	Destination port number used for the UDP echo operation.				
TCP Connect Tab					
IP Address	Destination IP address used for the TCP connect operation.				
Port Number	Destination port number used for the TCP connect operation.				

13-111

Viewing IS-IS Properties

Intermediate System-to-Intermediate System (IS-IS) protocol is a routing protocol developed by the ISO. It is a link-state protocol where IS routers exchange routing information based on a single metric to determine network topology. It behaves in a manner similar to OSPF in the TCP/IP network.

IS-IS networks contain end systems, intermediate systems, areas, and domains. End systems are user devices. Intermediate systems are routers. Routers are organized into local groups called areas, and areas are grouped into a domain.

To view IS-IS properties:

- Step 1 In Prime Network Vision, double-click the device configured for IS-IS.
- Step 2 In the inventory window, choose Logical Inventory > IS-IS > System.

Figure 13-73 shows an example of the IS-IS window with the Process table in logical inventory.

C9-AGG20 [28M+]		Poll Nov	~					_ 🗆 ×
Eligibility [15M+]		Version:	1					
Access Gateway Access Lists		version:	1					
ACCESS LISTS								
Bidirectional Forwarding Detection		Processes						
Bridges		Find :		🖬 🛃 🔽 🛛	す 戸 原 …			
CFM		Process ID	€ A	System ID	IS Type		Manual Area Addres	s
Access Gateway Access Lists ATM Traffic Profiles Bidrectional Forwarding Detection Bidrectional Forwarding Detection Bidrectional Forwarding Detection Gisco Discovery Protocol CFM Cisco Discovery Protocol FV Ethernet Link Aggregation Ethernet Link Aggregation CCP Redundancy [Im]		IGP		0143.0008.0170	level-2		49.1680.0212	
Ethernet Link Aggregation ICCP Redundancy [1m]								
- System								
Process IGP								
Local Switching								
LSEs Modular OS								
Image: Second secon								
OAM .								
OSPF Processes								
Reudowires	•							
Device Zoom								
	-							Line 0 (Size 1)
ind : 📄 🛃 🗸 🐺 🀺	5							
everity Ticket ID Last Modification Time		Root	Root Eve	nt Time	Description	Location	Acknowledged	Creation Tir
ckets Network Events Provisioning Events								
					Memo	ry: 16%	6 Connected	

Figure 13-73 IS-IS Window in Logical Inventory

Table 13-45 describes the information that is displayed in this window and the Processes table.

Field	Description			
Version	Version of IS-IS that is implemented.			
Processes Table				
Process ID	Identifier for the IS-IS process.			
System ID Identifier for this Intermediate System.				
IS Type Level at which the Intermediate System is running: Level 2, or Level 1-2.				
Manual Area Address Address assigned to the area.				

 Table 13-45
 IS-IS Properties in Logical Inventory - Processes Table

Step 3 To view IS-IS process information, choose **Logical Inventory** > **IS-IS** > **Process** *nnn*.

Figure 13-74 shows an example of the information that is displayed for the IS-IS process.





Table 13-46 describes the information that is displayed for the selected IS-IS process.

Field	Description						
Process	Unique identifier for the IS-IS process.						
System ID	Identifier for this Intermediate System.						
IS Type	Level at which the Intermediate System process is running: Lev Level 2, or Level 1-2.						
Manual Area Address	Address assigned to the area.						
Metrics Tab							
IS Type	Level at which the Intermediate System is running: Level 1, Level 2, or Level 1-2.						
Metric Style	Metric style used: Narrow, Transient, or Wide.						
Metric Value	Metric value assigned to the link. This value is used to calculate the path cost via the links to destinations. This value is available for Level 1 or Level 2 routing only.						
	If the metric style is Wide, the value can range from 1 to 16777214. If the metric style is Narrow, the value can range from 1 to 63.						
	The default value for active IS-IS interfaces is 10, and the default value for inactive IS-IS interfaces is 0.						
Address Family	IP address type used: IPv4 or IPv6.						
Interfaces Tab							
Interface Name	Interface name.						
Neighbors Tab							
System ID	Identifier for the neighbor system.						
Interface	Neighbor interface name.						
IP Address	Neighbor IP address.						
Туре	IS type for the neighbor: Level 1, Level 2, or Level 1-2.						
SNPA	Subnetwork point of attachment (SNPA) for the neighbor.						
Hold Time	Holding time, in seconds, for this adjacency. The value is based on received IS-to-IS Hello (IIH) PDUs and the elapsed time since receipt.						
State	Administrative status of the neighbor system: Up or Down.						
Address Family	IP address type used by the neighbor: IPv4 or IPv6.						

 Table 13-46
 IS-IS Process Properties in Logical Inventory

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Viewing OSPF Properties

Prime Network Vision supports the following versions of OSPF:

- OSPFv1
- OSPFv2
- OSPFv3

Using Prime Network Vision you can view OSPF properties for:

- OSPF processes, including the process identifier and OSPF version.
- OSPF network interfaces, such as the area identifier, network type, and status.
- OSPF neighbors, including the neighbor identifier, neighbor interface address, and status.

To view OSPF properties:

Step 1 In Prime Network Vision, double-click the device configured for OSPF.

Step 2 To view OSPF processes, choose Logical Inventory > OSPF Processes > OSPF Process (vn) ID where vn represents the OSPF version and ID is the OSPF process identifier.

For example, in Figure 13-75, the entry in the navigation tree is OSPF Process (v2) 10.

Figure 13-75 OSPF Processes in Logical Inventory

	2 7/00 MV [7M]	Poll Now				
• • • •	2-7600-W [7M+] Logical Inventory [6M+] Access Lists AIM Traffic Profiles Bidirectional Forwarding Detection Bridges Cisco Discovery Protocol Clock Ethernet Link Aggregation Ethernet LMI	OSPF Process De Process ID: OSPF Version:	100 v2	Router ID:	172.255.1.4	10 10000.0 msec
	Frame Relay Traffic Profiles GRE Tunnels IS-IS Local Switching LSEs MPBGPs	Schedule Delay Max Wait Time: OSPF Neighbors	10000	D.0 msec		10000,0 IIISEL
	MPLS-TP OAM	Find :		日外マヤー		
▼ , , , , , , , , , , , , , , , , , , ,	Operating System OSPF Process (v2) 100 OSPF Process (v2) 200 Pseudowires Routing Entitles Spanning Tree Protocol Traffic Engineering Tunnels Tunnel Traffic Descriptors VC Switching Entitles	Neigh	0	Interface Address 10.201.1.142 10.201.1.149 10.201.1.129 10.201.1.2	State FULL FULL FULL	OSPF Interface OSPF If: GigabitEthernet3/0/13 OSPF If: GigabitEthernet3/0/19 OSPF If: GigabitEthernet3/0/1 OSPF If: Tunnel1000
						Line 0 (Size 4)
Find :	単外マキル					
				-		
ickets Net	work Events Provisioning Events					
1400						

Table 13-47 describes the information that is displayed for OSPF processes.

Field	Description				
OSPF Process Details					
Process ID	Unique process identifier.				
Router ID	Router IP address.				
OSPF Version	OSPF version: v1, v2, or v3.				
SPF Timers					
Schedule Delay	Number of milliseconds to wait after a change before calculating the shortest path first (SPF).				
Min Hold Time	Minimum number of milliseconds to wait between two consecutive SPF calculations.				
Max Wait Time	Maximum number of milliseconds to wait between two consecutive SPF calculations.				
OSPF Neighbors Table					
Neighbor ID	OSPF neighbor IP address.				
Area	OSPF area identifier.				
Interface Address	IP address of the interface on the neighbor configured for OSPF.				
State	ate State of the communication with the neighbor: Down, Attempt, Init, 2-Way, Exstart, Exchange Loading, and Full.				
OSPF Interface	Hyperlinked entry to the OSPF Interface Properties window.				
	The OSPF Interfaces window displays the same information as the OSPF Interfaces Table below.				
OSPF Interfaces Table					
IP Interface	OSPF interface, hyperlinked to the relevant entry in the routing entity IP Interfaces table in logical inventory.				
	For more information about the IP Interfaces table, see Table 19-13.				
Internet Address	OSPF interface IP address.				
Area ID	OSPF area identifier.				
Priority Eight-bit unsigned integer that specifies the priority of the interface. Values range from 0 two routers, the one with the higher priority takes precedence.					
Cost Specified cost of sending a packet on the interface, expressed as a metric. Values range from 65535.					
Status	State of the interface: Up or Down.				
State	OSPF state: BDR, DR, DR-Other, Waiting, Point-to-Point, or Point-to-Multipoint.				
Network Type	Type of OSPF network: Broadcast, Nonbroadcast Multiple Access (NBMA), Point-to-Multipoint, Point-to-Point, or Loopback.				
DR Address	Designated router IP address.				
BDR Address	Backup designated router IP address.				

Table 13-47 OSPF Processes in Logical Inventory

Using REP and mLACP Show Commands

The following commands can be launched from the inventory by right-clicking the appropriate node and selecting **Commands**. Before executing any commands, you can preview them and view the results. If desired, you can also schedule the commands. To find out if a device supports these commands, see the *Cisco Prime Network 3.10 Supported Cisco VNEs*.

Note

You might be prompted to enter your device access credentials while executing a command. Once you have entered them, these credentials will be used for every subsequent execution of a command in the same GUI client session. If you want to change the credentials, click **Edit Credentials**. Edit Credentials button will not be available for SNMP commands or if the command is scheduled for a later time.

Table 13-48REP and mLACP Commands

Command	Input Required and Notes
REP Command	
REP > Show REP Segment Information	This action performed at the command the launch point.
mLACP Commands	
Commands > Show and choose:	These actions are performed at the command the launch
Show Group	point.
Show MPLS LDP	
Show Channel	
Show LACP Internal	

Using Pseudowire Ping and Show Commands

The **Ping Pseudowire** and **Display Pseudowire** commands can be launched from the inventory by right-clicking the appropriate node and selecting **Commands**. Before executing any commands, you can preview them and view the results. If desired, you can also schedule the commands. To find out if a device supports these commands, see the *Cisco Prime Network 3.10 Supported Cisco VNEs*.

Ping Pseudowire Command

Use the **Ping Pseudowire** command to ping the peer router with a tunnel ID from a single or multisegment pseudowire. This command can be used to verify connectivity between any set of PE routers in the pseudowire path. For a multisegment pseudowire this command can be used to verify that all the segments of the multisegment pseudowire are operating. You can use this command to verify connectivity at the following pseudowire points:

- From one end of the pseudowire to the other
- · From one of the pseudowires to a specific segment
- The segment between two adjacent PE routers

You can choose to ping the peer router by default or provide the IP of the required destination router to ping.

```
Note
```

The **Ping Pseudowire** command applies to all Cisco IOS and Cisco IOS XR devices that support pseudowire technology.

For more information on how to use this command, see Pinging a Pseudowire, page 13-95.

Display Pseudowire Command

Use the Display Pseudowire command to show the MPLS Layer 2 (L2) transport binding using tunnel identifier. MPLS L2 transport binding allows you to identify the VC label binding information. This command can be used to display information about the pseudowire switching point.

For more information on how to use this command, see Displaying Pseudowire Information, page 13-97.



