



## Trunk EFP Support

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The Trunk EFP Support feature provides support for Ethernet flow points (EFPs) on trunk ports. A trunk port allows a range of VLANs to be forwarded on a given interface while still maintaining data-plane segmentation between the VLANs.

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## Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see [Bug Search Tool](#) and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to [www.cisco.com/go/cfn](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

## Restrictions for Trunk EFP Support

- The **rewrite ingress tag pop 1 symmetric** command is the only **rewrite** command that is supported for trunk EFP configurations. The **rewrite ingress tag pop 1 symmetric** command must be included in the configuration when the Trunk EFP Support feature is enabled.
- A bridge-domain number that is part of a trunk EFP configuration cannot be shared by other EFPs under the same port or interface.
- Only one trunk EFP can be configured under one port or interface.

- All features configured on a trunk EFP (other than encapsulations and bridge-domain assignments) are applied uniformly to all VLANs and bridge domains. If a feature requires VLAN-specific or bridge-domain-specific configuration values, the feature cannot be applied on the trunk EFP. Those special VLANs or bridge domains must be removed from the EFP trunk to form individual EFPs.

## Information About Trunk EFP Support

### Benefits of Trunk EFP Support

The Carrier Ethernet infrastructure supports the following types of Ethernet flow points (EFPs):

- Static EFPs that are user-configurable.
- Dynamic EFPs that are created and maintained during a Cisco Intelligent Services Gateway (ISG) session.

With this feature, a new EFP type has been added that is intended for use on a trunk port.

A trunk port allows a range of VLANs to be forwarded on a given interface while maintaining data-plane segmentation between the VLANs.



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#### Note

Like a static EFP, this new type of EFP is user-configurable via the **service instance trunk** command, the **encapsulation** command, and the **bridge-domain from-encapsulation** command when the Trunk EFP Support feature is enabled.

### Ethernet Flow Points

An Ethernet flow point (EFP) is a forwarding decision point in the provider edge (PE) router, which gives network designers flexibility to make many Layer 2 flow decisions within the interface. Many EFPs can be configured on a single physical port. (The number varies from one device to another.) EFPs are the logical demarcation points of an Ethernet virtual connection (EVC) on an interface. An EVC that uses two or more user network interfaces (UNIs) requires an EFP on the associated ingress and egress interfaces of every device that the EVC passes through.

EFPs can be configured on any Layer 2 traffic port; however, they are usually configured on UNI ports. The following parameters (matching criteria) can be configured on the EFP:

- Frames of a specific VLAN, a VLAN range, or a list of VLANs (100-150 or 100,103,110)
- Frames with no tags (untagged)
- Frames with identical double-tags (VLAN tags) as specified
- Frames with identical Class of Service (CoS) values

A frame passes each configured match criterion until the correct matching point is found. If a frame does not fit any of the matching criteria, it is dropped. Default criteria can be configured to avoid dropping frames.

The following types of commands can be used in an EFP:

- Rewrite commands—In each EFP, VLAN tag management can be specified with the following actions:
  - Pop—1) pops out a tag; 2) pops out two tags
  - Push—pushes in a tag
  - Translate—1 to 1) changes a tag value; 1 to 2) pops one tag and pushes two tags; 2 to 1) pops two tags and pushes one tag; 2 to 2) changes the value for two tags
- Forwarding commands—Each EFP specifies the forwarding command for the frames that enter the EFP. Only one forwarding command can be configured per EFP. The forwarding options are as follows:
  - Layer 2 point-to-point forwarding to a pseudowire tunnel
  - Multipoint bridge forwarding to a bridge domain entity
  - Local switch-to-switch forwarding between two different interfaces
- Feature commands—In each EFP, the QoS features or parameters can be changed and the ACL can be updated.

## Trunk Ports

An Ethernet interface can be configured as a trunk port (interface). A trunk port, also known as a trunk, is a point-to-point link between a networking device and another networking device. Trunks carry the traffic of multiple VLANs over a single link and allow you to extend VLANs across an entire network. A trunk port configured on the interface with two or more VLANs can carry traffic for several VLANs simultaneously.

To correctly deliver the traffic on a trunk port with several VLANs, the device uses the IEEE 802.1Q encapsulation or tagging method.

## How to Enable Trunk EFP Support

### Enabling Trunk EFP Support

To enable Ethernet flow point (EFP) support on a trunk port or trunk interface, complete the following steps.

## SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface *type number***
4. **service instance trunk *id* ethernet**
5. **encapsulation dot1q *vlan-id* [, *vlan-id* [- *vlan-d*]]**
6. **rewrite ingress tag pop 1 symmetric**
7. **bridge-domain from-encapsulation**
8. **no shutdown**
9. **end**

## DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b>  <b>Example:</b> Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
Step 2	<b>configure terminal</b>  <b>Example:</b> Device# configure terminal	Enters global configuration mode.
Step 3	<b>interface <i>type number</i></b>  <b>Example:</b> Device(config)# interface gigabitethernet2/0/1	Configures the interface and enters interface configuration mode.
Step 4	<b>service instance trunk <i>id</i> ethernet</b>  <b>Example:</b> Device(config-if)# service instance trunk 1 ethernet	Configures an Ethernet service instance on an interface and enters Ethernet service configuration mode.
Step 5	<b>encapsulation dot1q <i>vlan-id</i> [, <i>vlan-id</i> [- <i>vlan-d</i>]]</b>  <b>Example:</b> Device(config-if-srv)# encapsulation dot1q 1-5, 7, 9-12	Defines the matching criteria to map 802.1Q frames ingress on an interface to the appropriate service instance.

	Command or Action	Purpose
<b>Step 6</b>	<b>rewrite ingress tag pop 1 symmetric</b>  <b>Example:</b> <pre>Device(config-if-srv)# rewrite ingress tag pop 1 symmetric</pre>	Specifies the encapsulation adjustment to be performed on a frame that is entering a service instance.
<b>Step 7</b>	<b>bridge-domain from-encapsulation</b>  <b>Example:</b> <pre>Device(config-if-srv)# bridge-domain from-encapsulation</pre>	Creates a list of bridge domains for an EFP trunk port using the bridge-domain IDs derived from the encapsulation VLAN numbers.
<b>Step 8</b>	<b>no shutdown</b>  <b>Example:</b> <pre>Device(config-if-srv)# no shutdown</pre>	Disables shutdown and keeps the interface or port active.
<b>Step 9</b>	<b>end</b>  <b>Example:</b> <pre>Device(config-if-srv)# end</pre>	Returns to privileged EXEC mode.

## Verifying the Trunk EFP Support Configuration

Use one or more of the commands listed below to verify the Trunk EFP Support feature configuration.

### SUMMARY STEPS

1. **enable**
2. **show ethernet service instance**
3. **show ethernet service instance interface** [*interface*]
4. **show bridge-domain**
5. **exit**

### DETAILED STEPS

**Step 1**      **enable**

**Example:**

```
Device> enable
```

Enables privileged EXEC mode.

- Enter your password if prompted.

## Step 2 **show ethernet service instance**

### Example:

```
Device# show ethernet service instance
```

Displays information about Ethernet service instances.

## Step 3 **show ethernet service instance interface** [*interface*]

### Example:

```
Device# show ethernet service instance interface gigabitethernet2/0/1
```

Displays interface-only information about Ethernet service instances for all interfaces or for a specified interface.

## Step 4 **show bridge-domain**

### Example:

```
Device# show bridge-domain
```

Displays bridge-domain information.

## Step 5 **exit**

### Example:

```
Device# exit
```

Exits privileged EXEC mode.

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# Configuration Examples for Trunk EFP Support

## Example: Configuring Trunk EFP Support

In the following example, EFP support has been configured on a trunk interface.

```
Device> enable
Device# configure terminal
Device(config)# interface gigabitethernet2/0/1
Device(config-if)# service instance trunk 1 ethernet
Device(config-if-srv)# encapsulation dot1q 1 - 5, 7, 9 - 12
Device(config-if-srv)# rewrite ingress tag pop 1 symmetric
Device(config-if-srv)# bridge-domain from-encapsulation
Device(config-if-srv)# no shutdown
Device(config-if-srv)# end
```

## Example: Verifying the Trunk EFP Support Configuration

The following is sample output from the **show ethernet service instance** command. The output displays trunk as the service instance type and indicates that a bridge domain for VLANs in the range of 12 to 1900 (as specified by the encapsulation parameters) has been created for service instance 4000 on a trunk port (interface).

```
Device# show ethernet service instance id 4000 interface gigabitethernet0/0/5 detail

Service Instance ID: 4000
Service Instance Type: Trunk
Associated Interface: GigabitEthernet0/0/5
Associated EVC:
L2protocol drop
CE-Vlans:
Encapsulation: dot1q 12-1900 vlan protocol type 0x8100
Rewrite: ingress tag pop 1 symmetric
Interface Dot1q Tunnel Ethertype: 0x8100
State: Up
EFP Statistics:
  Pkts In  Bytes In  Pkts Out  Bytes Out
168729725 10798985220 160246675 10255787200
EFP Microblocks:
*****
Microblock type: Bridge-domain
Bridge-domain: 12-1900
```

## Additional References

### Related Documents

Related Topic	Document Title
Ethernet CFM	Configuring Ethernet Connectivity Fault Management in a Service Provider Network
IEEE 802.3ah	<i>IEEE 802.3ah Ethernet in the First Mile</i>
ITU-T Y.1731 fault management functions	<i>Configuring ITU-T Y.1731 Fault Management Functions</i>
Delivering and filtering syslog messages	<i>Reliable Delivery and Filtering for Syslog</i>
Cisco IOS commands: master list of commands with complete command syntax, command mode, command history, defaults, usage guidelines, and examples	<a href="#">Cisco IOS Master Command List, All Releases</a>
Cisco IOS Carrier Ethernet commands: complete command syntax, command mode, command history, defaults, usage guidelines, and examples	<i>Cisco IOS Carrier Ethernet Command Reference</i>

**Standards**

Standard	Title
IEEE P802.1ag/D1.0	<i>Standard for Local and Metropolitan Area Networks - Virtual Bridged Local Area Networks - Amendment 5: Connectivity Fault Management</i>
IETF VPLS OAM	<i>L2VPN OAM Requirements and Framework</i>
ITU-T	ITU-T Y.1731 OAM Mechanisms for Ethernet-Based Networks

**MIBs**

MIB	MIBs Link
<ul style="list-style-type: none"> <li>• CISCO-ETHER-CFM-MIB</li> <li>• CISCO-IEEE-CFM-MIB</li> </ul>	<p>To locate and download MIBs for selected platforms, Cisco software releases, and feature sets, use Cisco MIB Locator found at the following URL:</p> <p><a href="http://www.cisco.com/go/mibs">http://www.cisco.com/go/mibs</a></p>

**RFCs**

RFC	Title
RFC 3164	<i>The BSD syslog Protocol</i>

**Technical Assistance**

Description	Link
<p>The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.</p>	<p><a href="http://www.cisco.com/cisco/web/support/index.html">http://www.cisco.com/cisco/web/support/index.html</a></p>

## Feature Information for Trunk EFP Support

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to [www.cisco.com/go/cfn](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

**Table 1: Feature Information for Trunk EFP Support**

Feature Name	Releases	Feature Information
Trunk EFP Support	Cisco IOS XE Release 3.5S	<p>This feature provides support for Ethernet Flow Points (EFPs) on trunk ports (interfaces).</p> <p>In Cisco IOS XE Release 3.5S, support was added for the Cisco ASR 903 Router.</p> <p>The following commands were introduced or modified:</p> <p><b>bridge-domain from-encapsulation, encapsulation dot1q (service instance), rewrite ingress tag, service instance ethernet, show bridge-domain, show ethernet service instance, and show ethernet service interface.</b></p>

