Configuring ERSPAN

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This module describes how to configure the Encapsulated Remote Switched Port Analyzer (ERSPAN). The Cisco ERSPAN feature allows you to monitor traffic on ports or VLANs and send the monitored traffic to destination ports.

Prerequisites for Configuring ERSPAN

• Access control list (ACL) filter is applied before sending the monitored traffic on to the tunnel.

• Only supports Type-II ERSPAN header.

Restrictions for Configuring ERSPAN

The following restrictions apply for this feature:

• Destination sessions are not supported.

• You can configure either a list of ports or a list of VLANs as a source, but cannot configure both for a given session.

• When a session is configured through the ERSPAN CLI, the session ID and the session type cannot be changed. To change them, you must use the **no** form of the commands to remove the session and then reconfigure it.

• ERSPAN source sessions do not copy locally-sourced RSPAN VLAN traffic from source trunk ports that carry RSPAN VLANs.

• ERSPAN source sessions do not copy locally-sourced ERSPAN Generic routing encapsulation (GRE)-encapsulated traffic from source ports.

• Disabling the **ip routing** command for IPv4 connections and **ipv6 unicast-routing** command for IPv6 connections stops ERSPAN traffic flow to the destination port.

Information for Configuring ERSPAN

ERSPAN Overview

The Cisco ERSPAN feature allows you to monitor traffic on ports or VLANs, and send the monitored traffic to destination ports. ERSPAN sends traffic to a network analyzer, such as a Switch Probe device or a Remote Monitoring (RMON) probe. ERSPAN supports source ports, source VLANs, and destination ports on different devices, which helps remote monitoring of multiple devices across a network.

ERSPAN supports encapsulated packets of up to 9180 bytes. ERSPAN consists of an ERSPAN source session, routable ERSPAN GRE-encapsulated traffic, and an ERSPAN destination session.

You can configure an ERSPAN source session, an ERSPAN destination session, or both on a device. A device on which only an ERSPAN source session is configured is called an ERSPAN source device, and a device on which only an ERSPAN destination session is configured is called an ERSPAN termination device. A device can act as both; an ERSPAN source device and a termination device. To avoid over-subscription of traffic, which can lead to drop in management traffic on the destination device, ensure that the destination session is configured and is working on the destination device, before configuring a source session on the source device.

For a source port or a source VLAN, the ERSPAN can monitor the ingress, egress, or both ingress and egress traffic. By default, ERSPAN monitors all traffic, including multicast, and Bridge Protocol Data Unit (BPDU) frames.

A device supports up to 66 sessions. A maximum of 8 source sessions can be configured and the remaining sessions can be configured as RSPAN destinations sessions. A source session can be a local SPAN source session or an RSPAN source session or an ERSPAN source session.

An ERSPAN source session is defined by the following parameters:

- A session ID

- ERSPAN flow ID

- List of source ports or source VLANs to be monitored by the session

- Optional attributes, such as, IP type of service (ToS) and IP Time to Live (TTL), related to the GRE envelope

- The destination and origin IP addresses, which are used as the destination and source IP addresses of the generic routing encapsulation (GRE) envelope for the captured traffic, respectively

Note

- ERSPAN source sessions do not copy ERSPAN GRE-encapsulated traffic from source ports. Each ERSPAN source session can have either ports or VLANs as sources, but not both.

- Only IPv4 delivery/transport header is supported.

Figure 1: ERSPAN Configuration
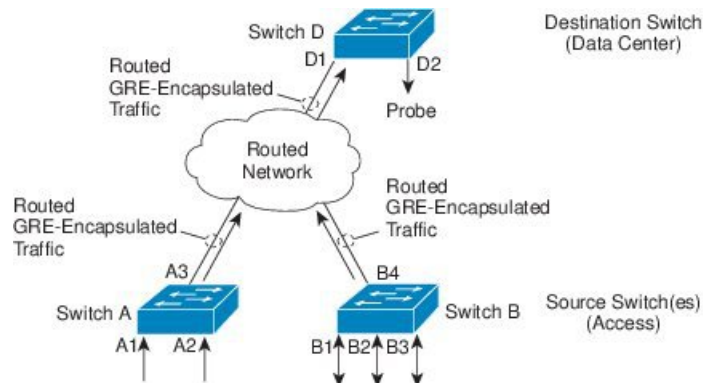
ERSPAN Sources

The Cisco ERSPAN feature supports the following sources:

- Source ports—A source port that is monitored for traffic analysis. Source ports in any VLAN can be configured and trunk ports can be configured as source ports along with nontrunk source ports.

- Source VLANs—A VLAN that is monitored for traffic analysis.

How to Configure ERSPAN

Configuring an ERSPAN Source Session

The ERSPAN source session defines the session configuration parameters and the ports or VLANs to be monitored.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** *interface-type interface-number*
4. **monitor session** *span-session-number* **type erspan-source**
5. **description** *string*
6. **source** {**interface** *interface-type interface-number* | **vlan** *vlan-id*} [**,** | **-** | **both** | **rx** | **tx**]
7. **filter** {**ip access-group** {*standard-access-list* | *expanded-access-list* | *acl-name* } | **ipv6 access-group** *acl-name* | **mac access-group** *acl-name* | **vlan** *vlan-ID* [**,** | **-**]}
8. **destination**
9. **erspan-id** *erspan-flow-id*
10. **ip address** *ip-address*
11. **ip ttl** *ttl-value*
12. **origin ip-address** *ip-address*
13. **exit**
14. **no shutdown**
15. **end**

DETAILED STEPS

	Command or Action	**Purpose**
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**interface** *interface-type* *interface-number* **Example:** `Device(config)# interface GigabitEthernet 1/0/1`	Specifies the interface on which ERSPAN source session is configured.
Step 4	**monitor session** *span-session-number* **type erspan-source** **Example:** `Device(config)# monitor session 1 type erspan-source`	Defines an ERSPAN source session using the session ID and the session type, and enters ERSPAN monitor source session configuration mode. • The *span-session-number* argument range is from 1 to 66. The same session number cannot be used more than once. • The session IDs for source sessions or destination sessions are in the same global ID space, so each session ID is globally unique for both session types. • The session ID (configured by the *span-session-number* argument) and the session type (configured by the **erspan-source** keyword) cannot be changed once entered. Use the **no** form of this command to remove the session and then re-create the session, with a new session ID or a new session type.
Step 5	**description** *string* **Example:** `Device(config-mon-erspan-src)# description source1`	(Optional) Describes the ERSPAN source session. • The *string* argument can be up to 240 characters and cannot contain special characters or spaces.
Step 6	**source** {**interface** *interface-type interface-number* | **vlan** *vlan-id*} [**,** | **-** | **both** | **rx** | **tx**] **Example:** `Device(config-mon-erspan-src)# source interface fastethernet 0/1 rx`	Configures the source interface or the VLAN, and the traffic direction to be monitored.
Step 7	**filter** {**ip access-group** {*standard-access-list* | *expanded-access-list* | *acl-name* } | **ipv6 access-group** *acl-name* | **mac access-group** *acl-name* | **vlan** *vlan-ID* [**,** | **-**]}	(Optional) Configures source VLAN filtering when the ERSPAN source is a trunk port. **Note** You cannot include source VLANs and filter VLANs in the same session.

	Command or Action	Purpose
	Example:	
	Switch(config-mon-erspan-src)# filter vlan 3	
Step 8	**destination**	Enters ERSPAN source session destination configuration mode.
	Example:	
	Device(config-mon-erspan-src)# destination	
Step 9	**erspan-id** *erspan-flow-id*	Configures the ID used by source and destination sessions to identify the ERSPAN traffic, which must also be entered in the ERSPAN destination session configuration.
	Example:	
	Device(config-mon-erspan-src-dst)# erspan-id 100	
Step 10	**ip address** *ip-address*	Configures the IP address that is used as the destination of the ERSPAN traffic.
	Example:	
	Device(config-mon-erspan-src-dst)# ip address 10.1.0.2	
Step 11	**ip ttl** *ttl-value*	(Optional) Configures the IP TTL value of packets in the ERSPAN traffic.
	Example:	
	Device(config-mon-erspan-src-dst)# ip ttl 32	
Step 12	**origin ip-address** *ip-address*	Configures the IP address used as the source of the ERSPAN traffic.
	Example:	
	Device(config-mon-erspan-src-dst)# origin ip address 10.10.0.1	
Step 13	**exit**	Exits ERSPAN source session destination configuration mode, and returns to ERSPAN source session configuration mode.
	Example:	
	Device(config-mon-erspan-src-dst)# exit	
Step 14	**no shutdown**	Enables the configured sessions on an interface.
	Example:	
	Device(config-mon-erspan-src)# no shutdown	
Step 15	**end**	Exits ERSPAN source session configuration mode, and returns to privileged EXEC mode.
	Example:	
	Device(config-mon-erspan-src)# end	

Configuration Examples for ERSPAN

Example: Configuring an ERSPAN Source Session

The following example shows how to configure an ERSPAN source session:

```
Device> enable
Device# configure terminal
Device(config)# monitor session 1 type erspan-source
```

```
Device(config-mon-erspan-src)# description source1
Device(config-mon-erspan-src)# source interface fastethernet 0/1 rx
Device(config-mon-erspan-src)# filter vlan 3
Device(config-mon-erspan-src)# no shutdown
Device(config-mon-erspan-src)# destination
Device(config-mon-erspan-src-dst)# ip address 10.1.0.2
Device(config-mon-erspan-src-dst)# erspan-id 2
Device(config-mon-erspan-src-dst)# origin ip-address 203.0.113.2
Device(config-mon-erspan-src-dst)# ip ttl 32
Device(config-mon-erspan-src-dst)# end
```

Verifying ERSPAN

To verify the ERSPAN configuration, use the following commands:

The following is sample output from the **show monitor session erspan-source** command:

```
Device# show monitor session erspan-source

Type : ERSPAN Source Session
Status : Admin Enabled
Source Ports :
RX Only : Gi1/4/33
Destination IP Address : 192.0.2.1
Destination ERSPAN ID : 110
Origin IP Address : 10.10.10.216
IPv6 Flow Label : None
```

The following is sample output from the **show monitor session erspan-source detail** command:

```
Device# show monitor session erspan-source detail

Type : ERSPAN Source Session
Status : Admin Enabled
Description : -
Source Ports :
RX Only : Gi1/4/33
TX Only : None
Both : None
Source VLANs :
RX Only : None
TX Only : None
Both : None
Source RSPAN VLAN : None
Destination Ports : None
Filter VLANs : None
Filter Addr Type :
RX Only : None
TX Only : None
Both : None
Filter Pkt Type :
RX Only : None
Dest RSPAN VLAN : None
IP Access-group : None
IPv6 Access-group : None
Destination IP Address : 192.0.2.1
Destination IPv6 Address : None
Destination IP VRF : None
Destination ERSPAN ID : 110
Origin IP Address : 10.10.10.216
```

```
IP QOS PREC : 0
IP TTL : 255
```

The following output from the **show capability feature monitor erspan-source** command displays information about the configured ERSPAN source sessions:

```
Device# show capability feature monitor erspan-source

ERSPAN Source Session Supported: true
No of Rx ERSPAN source session: 8
No of Tx ERSPAN source session: 8
ERSPAN Header Type supported: II and III
ACL filter Supported: true
Fragmentation Supported: true
Truncation Supported: false
Sequence number Supported: false
QOS Supported: true
```

The following output from the **show capability feature monitor erspan-destination** command displays all the configured global built-in templates:

```
Device# show capability feature monitor erspan-destination

ERSPAN Destination Session Supported: false
```

Additional References

RFCs

Standard/RFC	Title
RFC 2784	Generic Routing Encapsulation (GRE)

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies.	http://www.cisco.com/support
To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds.	
Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.	

Feature Information for Configuring ERSPAN

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 https://cfnng.cisco.com/. An account on Cisco.com is not required.

Table 1: Feature Information for Configuring ERSPAN

Feature Name	Releases	Feature Information
ERSPAN	Cisco IOS XE Everest 16.5.1a	This feature was introduced.
ERSPAN	Cisco IOS XE Gibraltar 16.11.1	Support of destination sessions was introduced. The **vrf** and **ip dscp** commands, and the **sgt** keyword were introduced. ERSPAN has been enhanced to configure a device to Type-III header. The **header-type 3** command was introduced. Support of ERSPAN truncation and timestamp was introduced. The **mtu** command was introduced.