CHAPTER 9

Configuring Local SPAN and ERSPAN

This chapter describes how to configure the Local and ER Ethernet switched port analyzer (SPAN) feature to monitor traffic and includes the following topics:

Information About SPAN and ERSPAN

The Switched Port Analyzer (SPAN) feature (sometimes called port mirroring or port monitoring) allows network traffic to be analyzed by a network analyzer such as a Cisco SwitchProbe or other Remote Monitoring (RMON) probe.

SPAN lets you monitor traffic on one or more ports, or one or more VLANs, and send the monitored traffic to one or more destination ports where the network analyzer is attached.

This section includes the following topics:

SPAN Sources

The interfaces from which traffic can be monitored are called SPAN sources. These include Ethernet, virtual Ethernet, port-channel, and VLAN. When a VLAN is specified as a SPAN source, all supported interfaces in the VLAN are SPAN sources. Traffic can be monitored in the receive direction, the transmit direction, or both directions for Ethernet and virtual Ethernet source interfaces.

- Receive source (Rx)—Traffic that enters the switch through this source port is copied to the SPAN destination port.

- Transmit source (Tx)—Traffic that exits the switch through this source port is copied to the SPAN destination port.

Characteristics of Source Ports

A source port has these characteristics:

- Can be port type Ethernet, virtual Ethernet, port-channel, or VLAN.
- Cannot be a destination port.
- Can be configured to monitor the direction of traffic —receive, transmit, or both.
- Source ports can be in the same or different VLANs.
- For VLAN SPAN sources, all active ports in the source VLAN are included as source ports.
- Local SPAN sources must be on the same host (linecard) as the destination port.

SPAN Destinations

SPAN destinations refer to the interfaces that monitor source ports. This section includes the following topics:

- Characteristics of Local SPAN Destination Ports, page 9-2
- Characteristics of ERSPAN Destination Ports, page 9-2

Characteristics of Local SPAN Destination Ports

Each local SPAN session must have at least one destination port (also called a monitoring port) that receives a copy of traffic from the source ports or VLANs. A destination port has these characteristics:

- Can be any physical or virtual Ethernet port or a port channel.
- Cannot be a source port.
- Is excluded from the source list and is not monitored if it belongs to a source VLAN of any SPAN session.
- Receive copies of transmitted and received traffic for all monitored source ports. If a destination port is oversubscribed, it can become congested. This congestion can affect traffic forwarding on one or more of the source ports.
- Do not receive any forwarded traffic except copies of transmitted and received traffic for all monitored source ports.
- Must be on the same host (linecard) as the source port.
- In Local SPAN, the source interface and destination interface are on the same device. See Figure 9-1, Local SPAN.

Characteristics of ERSPAN Destination Ports

- An ERSPAN destination is specified by an IP address.
- In ERSPAN, source SPAN interface and destination SPAN interface may be on different devices interconnected by an IP network. ERSPAN traffic is GRE-encapsulated. See Figure 9-2, ERSPAN.

Local SPAN

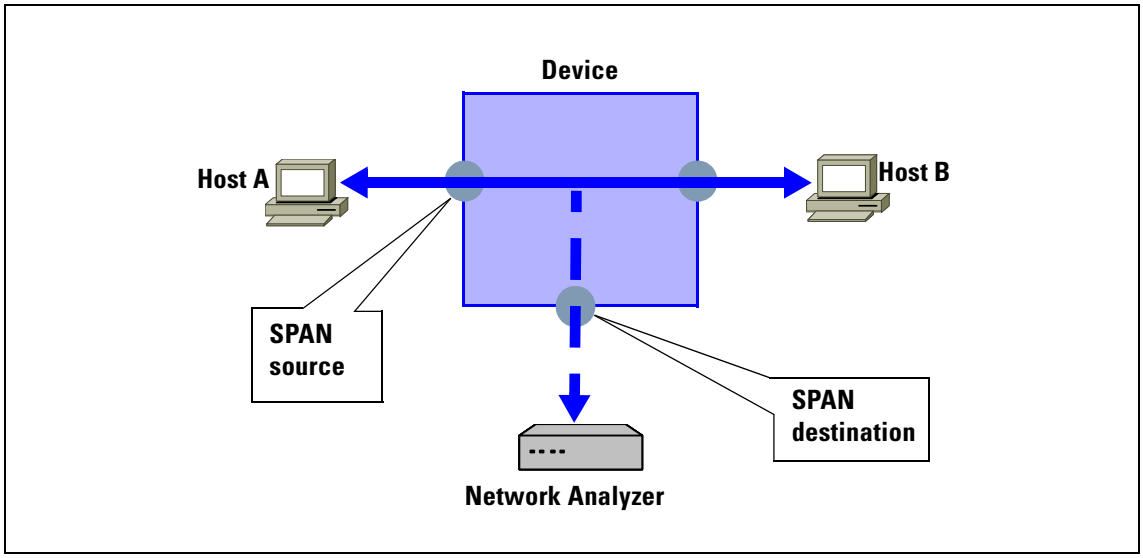
In Local SPAN, the source interface and destination interface are on the same device. The network analyzer is attached directly to the SPAN destination port. The SPAN source can be a port or a VLAN interface.The destination, although usually a port, could also be a VLAN.

Figure 9-1 shows that traffic transmitted by host A is received on the SPAN source interface. Traffic (ACLs, QoS, and so forth) is processed as usual. Traffic is then replicated. The original packet is forwarded on toward host B. The replicated packet is then sent to the destination SPAN interface where the monitor is attached.

Local SPAN can replicate to one or more destination ports. Traffic can be filtered so that only traffic of interest is sent out the destination SPAN interface.

Local SPAN can monitor all traffic received on the source interface including BPDUs.

Figure 9-1 Local SPAN

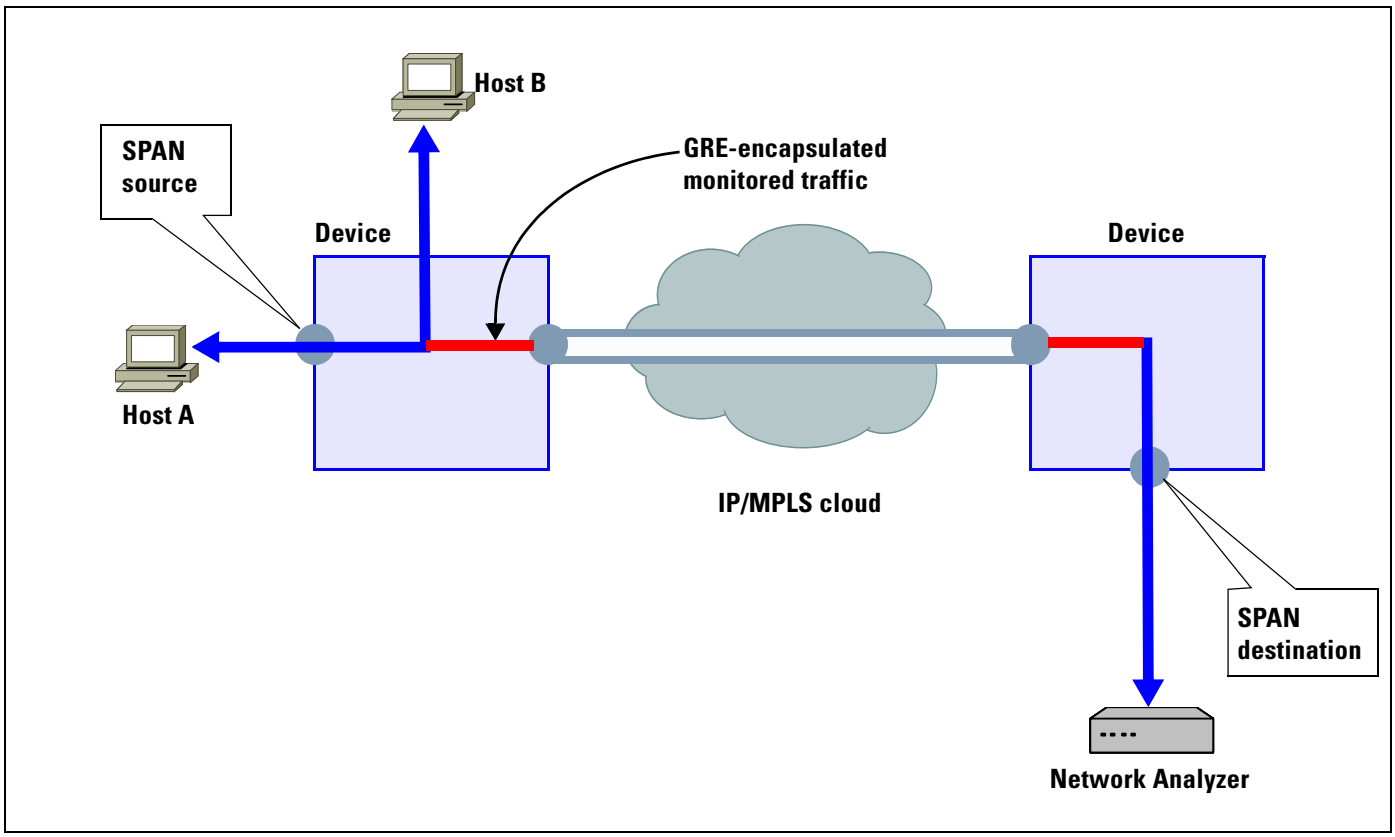


Encapsulated Remote SPAN

Encapsulated remote (ER) SPAN monitors traffic in multiple network devices across an IP network and sends that traffic in an encapsulated envelope to destination analyzers. In contrast, Local SPAN cannot forward traffic through the IP network. ERSPAN can be used to monitor traffic remotely. ERSPAN sources can be ports or VLANs.

In Figure 9-2, the ingress and egress traffic for host A are monitored using ERSPAN. Encapsulated ERSPAN packets are routed from host A through the routed network to the destination device where they are de-capsulated and forwarded to the attached network analyzer. The destination may also be on the same L2 network as the source.

Figure 9-2 ERSPAN



SPAN Sessions

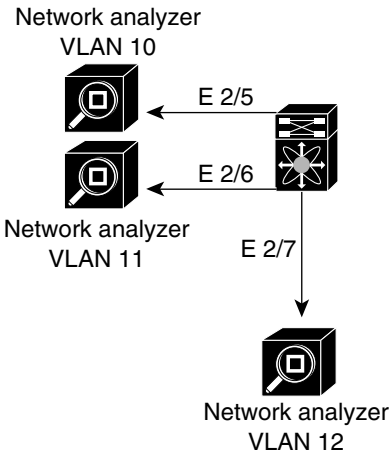
You can create up to 64 total SPAN sessions (Local SPAN plus ERSPAN) on your local device.

You can also create a SPAN session to monitor multiple VLAN sources and choose only VLANs of interest to transmit on multiple destination ports. For example, you can configure SPAN on a trunk port and monitor traffic from different VLANs on different destination ports.

Figure 9-3 shows a VLAN-based SPAN configuration that copies traffic from three VLANs to three specified destination ports. You can choose which VLANs to allow on each destination port to limit the traffic transmitted. In Figure 9-3, the device transmits packets from one VLAN at each destination port.

Note VLAN-based SPAN sessions cause all source packets to be copied to all destinations, whether the packets are required at the destination or not. VLAN traffic filtering occurs at transmit destination ports.

Figure 9-3 VLAN-based SPAN Configuration



Source VLAN	Traffic Direction	Destination Ports
10	Rx	E 2/5 E 2/6 E 2/7
11	Rx, Tx	
12	Tx	

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Rx is ingress
Tx is egress

SPAN Guidelines and Limitations

SPAN has the following configuration guidelines and limitations:

- A maximum of 64 SPAN sessions (Local SPAN plus ERSPAN) can be configured on the VSM.
- A maximum of 32 source VLANs are allowed in a session.
- A maximum of 128 source interfaces are allowed in a session.

Caution **Overload Potential**
To avoid an overload on uplink ports, use caution when configuring ERSPAN, especially when sourcing VLANs.

- A port can be configured in a maximum of 4 SPAN sessions.
- The destination port used in one SPAN session cannot also be used as the destination port for another SPAN session.
- You cannot configure a port as both a source and destination port.
- In a SPAN session, packets that source ports receive may be replicated even though they are not transmitted on the ports. The following are examples of this behavior:
  - Traffic that results from flooding
  - Broadcast and multicast traffic
- For VLAN SPAN sessions switched on the same VLAN with both receive and transmit configured, two packets (one from receive and one from transmit) are forwarded from the destination port.

Configuring SPAN

This section describes how to configure SPAN and includes the following procedures.

Configuring a Local SPAN Session

Use this procedure to configure a SPAN session.

Note If you are configuring ERSPAN, see the "Configuring an ERSPAN Session" procedure on page 9-12.

BEFORE YOU BEGIN

- You are logged in to the CLI in EXEC mode.
- You know the number of the SPAN session you are going to configure.
- The source and destination ports are already configured in either access or trunk mode. For more information, see the *Cisco Nexus 1000V Interface Configuration Guide, Release 4.0(4)SV1(1)*.
- SPAN sessions are created in the shut state by default.
- When you create a SPAN session that already exists, any additional configuration is added to that session. To make sure the session is cleared of any previous configuration, you can delete the session first (see Step 2, **no monitor session**).
- This procedure involves creating the SPAN session in Monitor Configuration mode; and then, optionally, configuring allowed VLANs in Interface Configuration mode.

SUMMARY STEPS

1. **config t**
2. **no monitor session** *session-number*
3. **monitor session** *session-number*
4. **description** *description*
5. **source** {**interface** *type* | **vlan**} {*number* | *range*} [**rx** | **tx** | **both**]
6. (Optional) Repeat Step 5 to configure additional SPAN sources.
7. (Optional) **filter vlan** {*number* | *range*}
8. (Optional) Repeat Step 7 to configure all source VLANs to filter.
9. **destination interface** *type* {*number* | *range*}
10. (Optional) Repeat Step 9 to configure all SPAN destination ports.

11. **no shut**
12. (Optional) **exit**
13. (Optional) **interface ethernet** *slot*/*port*[-*port*]
14. (Optional) **switchport trunk allowed vlan** {*vlan-range* | **add** *vlan-range* | **except** *vlan-range* | **remove** *vlan-range* | **all** | **none**}
15. (Optional) Repeat Step 13 and Step 14 to configure the allowed VLANs on each destination port.
16. (Optional) **show interface ethernet** *slot*/*port*[-*port*] **trunk**
17. (Optional) **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** n1000v# config t n1000v(config)#	Places you in the CLI Global Configuration mode.
Step 2	**no monitor session** *session-number* **Example:** n1000v(config)# no monitor session 3	Clears the specified session.
Step 3	**monitor session** *session-number* **Example:** n1000v(config)# monitor session 3 n1000v(config-monitor)#	Creates a session with the given session number and places you in the CLI Monitor Configuration mode to further configure the session.
Step 4	**description** *description* **Example:** n1000v(config-monitor)# description my_span_session_3	For the specified SPAN session, adds a description. • description: up to 32 alphanumeric characters default = blank (no description)
Step 5	**source** {**interface** *type* | **vlan**} {*number* | *range*} [**rx** | **tx** | **both**] **Example 1:** n1000v(config-monitor)# source interface ethernet 2/1-3, ethernet 3/1 rx **Example 2:** n1000v(config-monitor)# source interface port-channel 2 **Example 3:** n1000v(config-monitor)# source interface vethernet 12 both **Example 4:** n1000v(config-monitor)# source vlan 3, 6-8 tx	For the specified session, configures the sources and the direction of traffic to monitor. • type: Specify the interface type—ethernet, port-channel, vethernet. • number: Specify the interface slot/port or range; or the VLAN number or range to monitor. • traffic direction: Specify traffic monitoring to be in one of the following directions: – receive (rx) (the VLAN default) – transmit (tx) – both (the interface default)
Step 6	(Optional) Repeat Step 5 to configure additional SPAN sources.	

	Command	Purpose
Step 7	**filter vlan** {*number* | *range*} **Example:** `n1000v(config-monitor)# filter vlan 3-5, 7`	(Optional) For the specified SPAN session, configures the filter from among the source VLANs.
Step 8	(Optional) Repeat Step 7 to configure all source VLANs to filter.	
Step 9	**destination interface** *type* {*number* | *range*} **Example:** `n1000v(config-monitor)# destination interface ethernet 2/5, ethernet 3/7`	For the specified SPAN session, configures the port(s) to act as destination(s) for copied source packets. • type: Specify the interface type—ethernet or vethernet. • number: Specify the interface slot/port to monitor. • range: Specify the interface range to monitor. **Note** SPAN destination ports must already be configured as either access or trunk ports.
Step 10	(Optional) Repeat Step 9 to configure all SPAN destination ports.	

Step 11	`no shut`
	
	Example:
	`n1000v(config-monitor)# no shut`
		Enables the SPAN session. By default, the session is created in the shut state.

Step 12	**exit**
	
	Example:
	`n1000v(config-monitor)# exit`
	`n1000v(config)#`
		(Optional) Exits Monitor Configuration mode and places you in CLI Configuration mode.

Step 13	**interface ethernet** *slot/port*[*-port*]
	
	Example:
	`n1000v(config)# interface ethernet 2/5`
	`n1000v(config-if)#`
		(Optional) Places you in CLI Interface Configuration mode for the specified interface.

Step 14	**switchport trunk allowed vlan** {*vlan-range* | **add** *vlan-range* | **except** *vlan-range* | **remove** *vlan-range* | **all** | **none**} **Example:** `n1000v(config-if)# switchport trunk allowed vlan 3-5`	(Optional) For the specified interface. configures the range of VLANS that are allowed on the interface. By default all VLANs are allowed on the interface. • **vlan-range**: Specify a range of VLANs to be allowed on the interface. • **add vlan-range**: Add to the existing VLANs allowed on the interface. • **except vlan-range**: Exclude a range of VLANs from those allowed on the interface • **remove vlan-range**: Remove a range of VLANs from those allowed on the interface. • **all**: Allow all VLANs on the interface. This is the default. • **none**: Allow no VLANs on the interface.
Step 15	(Optional) Repeat Step 13 and Step 14 to configure the allowed VLANs on each destination port.	

	Command	Purpose
Step 16	**show interface ethernet** *slot/port[-port]* **trunk** **Example:** `n1000v(config-if)# show interface ethernet 2/5 trunk`	(Optional) Displays the interface trunking configuration for the selected slot and port or range of ports.
Step 17	**copy running-config startup-config** **Example:** `n1000v(config-if)# copy running-config startup-config`	(Optional) Saves the running configuration persistently through reboots and restarts by copying it to the startup configuration.

Configuring an ERSPAN Port Profile

Use this procedure to configure a port profile on the VSM to carry ERSPAN packets through the IP network to a remote destination analyzer.

BEFORE YOU BEGIN

- You are logged in to the CLI in EXEC mode.
- This configuration must be completed for all hosts in the vCenter Server.
- You know the name to be used for this port profile.

Note The port profile name is used to configure the VMKNIC that is required on each of the ESX hosts.

- You know the name of the VMware port group to which this profile maps.
- You have the VMware documentation for adding a new virtual adapter.
- You have already created the system VLAN and you know its VLAN ID which will be used in this configuration.

  For information about creating a system VLAN, see the *Cisco Nexus 1000V Layer 2 Switching Configuration Guide, Release 4.0(4)SV1(1)*.

  For more information about system port profiles, see the *Cisco Nexus 1000V Port Profile Configuration Guide, Release 4.0(4)SV1(1)*.

SUMMARY STEPS

1. **config t**
2. **port-profile** *port_profile_name*
3. **capability l3control**
4. **vmware port-group** *pg_name*
5. **switchport mode access**
6. **switchport access vlan** *vlan_id*
7. **no shutdown**
8. **system vlan** *vlan_id*

9. **state enabled**
10. (Optional) **show port-profile name** *port_profile_name*
11. (Optional) **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose

Step 1	**config t**
	
	Example:
	`n1000v# config t`
	`n1000v(config)#`
		Places you in the CLI Global Configuration mode.

Step 2	**port-profile** *port_profile_name*
	
	Example:
	`n1000v(config)# port-profile erspan_profile`
	`n1000v(config-port-prof)#`
		Creates the port profile and places you into CLI Global Configuration mode for the specified port profile. Saves the port profile in the running configuration.
		
		The port-profile name can be up to 80 characters and must be unique for each port profile on the Cisco Nexus 1000V.

Step 3	**capability l3control**
	
	Example:
	`n1000v(config-port-prof)# capability l3control`
	`n1000v(config-port-prof)#`
		Configures the port-profile to carry ERSPAN traffic and saves this in the running configuration.

Step 4	**vmware port-group** *pg_name*
	
	Example:
	`n1000v(config-port-prof)#vmware port-group erspan`
	`n1000v(config-port-prof)#`
		Designates the port profile as a VMware port group and adds the name of the VMware port group to which this profile maps. Saves the settings in the running configuration.
		
		The port profile is mapped to a VMware port group of the same name. When a vCenter Server connection is established, the port group created in Cisco Nexus 1000V is then distributed to the virtual switch on the vCenter Server.
		
		• **pg-name**: Port group name. If you do not specify a pg-name, then the port group name will be the same as the port profile name. If you want to map the port profile to a different port group name, use the pg-name option followed by the alternate name.

Step 5	**switchport mode access**
	
	Example:
	`n1000v(config-port-prof)# switchport mode access`
	`n1000v(config-port-prof)#`
		Designates the interfaces as switch access ports (the default).

	Command	Purpose

Step 6	**switchport access vlan** *vlan_id*
	
	Example 1:
	`n1000v(config-port-prof)# switchport access vlan 2`
	`n1000v(config-port-prof)#`
		Assigns a VLAN ID to the access port for this port profile and saves the setting in the running configuration.

Step 7	**no shutdown**
	
	Example:
	`n1000v(config-port-prof)# no shutdown`
	`n1000v(config-port-prof)#`
		Enables the interface in the running configuration.

Step 8	**system vlan** *vlan_id*
	
	Example:
	`n1000v(config-port-prof)# system vlan 2`
	`n1000v(config-port-prof)#`
		Associates the system VLAN ID with the port profile and saves it in the running configuration.
		Must match the VLAN ID assigned to the access port. If it does not match, then the following error message is generated:
		ERROR: System vlan being set does not match the switchport access vlan 2

Step 9	**state enabled**
	
	Example:
	`n1000v(config-port-prof)# state enabled`
	`n1000v(config-port-prof)#`
		Enables the port profile in the running configuration.
		This port profile is now ready to send out ERSPAN packets on all ESX Hosts with ERSPAN sources

Step 10	**show port-profile name** *port_profile_name*
	
	Example:
	`n1000v(config-port-prof)# show port-profile name erspan`
	`port-profile erspan`
	`  description:`
	`  status: enabled`
	`  capability uplink: no`
	`  capability l3control: yes`
	`  system vlans: 2`
	`  port-group: access`
	`  max-ports: 32`
	`  inherit:`
	`  config attributes:`
	`  switchport access vlan 2`
	`  no shutdown`
	`  evaluated config attributes:`
	`  switchport access vlan 2`
	`  no shutdown`
	`  assigned interfaces:`
	
	`n1000v(config-port-prof)#`
		(Optional) Displays the configuration for the specified port profile as it exists in the running configuration.

Step 11	**copy running-config startup-config**
	
	Example:
	`n1000v(config-port-prof)# copy running-config startup-config`
	`[########################################]`
	`100%`
	`n1000v(config-port-prof)#`
		(Optional) Saves the running configuration persistently through reboots and restarts by copying it to the startup configuration.

Step 12	Using the VMware documentation, go to vSphere Client and configure a VMKNIC on each ESX Host. Make sure the VMKNIC points to this port profile as a **new virtual adapter**.	

Configuring an ERSPAN Session

Use this procedure to configure an ERSPAN session.

Note If you are configuring Local SPAN, see the "Configuring a Local SPAN Session" procedure on page 9-6.

BEFORE YOU BEGIN

- You are logged in to the CLI in EXEC mode.
- You know the number of the SPAN session you are going to configure.
- You have already configured an ERSPAN-capable port profile on the VSM using the "Configuring an ERSPAN Port Profile" procedure on page 9-9.
- Using the VMware documentation for adding a new virtual adapter, you have already configured the required VMKNIC on each of the ESX hosts.
- SPAN sessions are created in the shut state by default.
- When you create a SPAN session that already exists, any additional configuration is added to that session. To make sure the session is cleared of any previous configuration, you can delete the session first (see Step 2, **no monitor session**).
- This procedure involves creating the SPAN session in ERSPAN Source Configuration mode.

SUMMARY STEPS

1. **config t**
2. **no monitor session** *session-number*
3. **monitor session** *session-number* **type erspan-source**
4. **description** *description*
5. **source** {**interface** *type* | **vlan**} {*number* | *range*} [**rx** | **tx** | **both**]
6. (Optional) Repeat Step 5 to configure additional ERSPAN sources.
7. (Optional) **filter vlan** {*number* | *range*}
8. (Optional) Repeat Step 7 to configure all source VLANs to filter.
9. **destination ip** *ip_address*
10. (Optional) **ip ttl** *ttl_value*
11. (Optional) **ip prec** *ipp_value*
12. (Optional) **ip dscp** *dscp_value*
13. (Optional) **mtu** *mtu_value*
14. **(Optional) erspan-id flow_id**
15. **no shut**
16. **(Optional) show monitor session session_id**
17. **(Optional) exit**
18. **(Optional) copy running-config startup-config**

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** n1000v# config t n1000v(config)#	Places you in the CLI Global Configuration mode.
Step 2	**no monitor session** *session-number* **Example:** n1000v(config)# no monitor session 3	Clears the specified session.
Step 3	**monitor session** *session-number* **type erspan-source** **Example:** n1000v(config)# monitor session 3 type erspan n1000v(config-erspan-source)#	Creates a session with the given session number and places you in the CLI ERSPAN Source Configuration mode. This configuration is saved in the running configuration.
Step 4	**description** *description* **Example:** n1000v(config-erspan-src)# description my_erspan_session_3 n1000v(config-erspan-src)#	For the specified ERSPAN session, adds a description and saves it in the running configuration. • description: up to 32 alphanumeric characters default = blank (no description)
Step 5	**source** {**interface** *type* | **vlan**} {*number* | *range*} [**rx** | **tx** | **both**] **Example 1:** n1000v(config-erspan-src)# source interface ethernet 2/1-3, ethernet 3/1 rx **Example 2:** n1000v(config-erspan-src)# source interface port-channel 2 **Example 3:** n1000v(config-erspan-src)# source interface vethernet 12 both **Example 4:** n1000v(config-erspan-src)# source vlan 3, 6-8 tx	For the specified session, configures the source(s) and the direction of traffic to monitor, and saves them in the running configuration. • type: Specify the interface type—ethernet, port-channel, vethernet. • number: Specify the interface slot/port or range; or the VLAN number or range to monitor. • traffic direction: Specify traffic monitoring to be in one of the following directions: – receive (rx) (the VLAN default) – transmit (tx) – both (the interface default)
Step 6	(Optional) Repeat Step 5 to configure additional ERSPAN sources.	
Step 7	**filter vlan** {*number* | *range*} **Example:** n1000v(config-erspan-src)# filter vlan 3-5, 7	(Optional) For the specified ERSPAN session, configures the VLANs, VLAN lists, or VLAN ranges to be monitored; and saves this in the running configuration. On the monitor port, only the traffic from the VLANs which match the VLAN filter list are replicated to the destination.
Step 8	(Optional) Repeat Step 7 to configure all source VLANs to filter.	

	Command	Purpose
Step 9	**destination ip** *ip_address* **Example:** n1000v(config-erspan-src)# destination ip 10.54.54.1 n1000v(config-monitor-erspan-src)#	Configures the IP address of the host to which the encapsulated traffic is sent and saves it in the running configuration.
Step 10	**ip ttl** *ttl_value* **Example:** n1000v(config-monitor-erspan-src)# **ip ttl 64** n1000v(config-monitor-erspan-src)#	(Optional) Specifies the IP time-to-live value, from 1-255, for the packets in the ERSPAN traffic, and saves it in the running configuration.
Step 11	**ip prec** *precedence_value* **Example:** n1000v(config-monitor-erspan-src)# **ip prec 1** n1000v(config-monitor-erspan-src)#	(Optional) Specifies the IP precedence value, from 0-7, for the packets in the ERSPAN traffic, and saves it in the running configuration.
Step 12	**ip dscp** *dscp_value* **Example:** n1000v(config-monitor-erspan-src)# **ip dscp 24** n1000v(config-monitor-erspan-src)#	(Optional) Specifies the IP DSCP value, from 0-63. for the packets in the ERSPAN traffic, and saves it in the running configuration.
Step 13	**mtu** *mtu_value* **Example:** n1000v(config-monitor-erspan-src)# **mtu** 1000 n1000v(config-monitor-erspan-src)#	(Optional) Specifies an MTU size for the ERSPAN traffic, and saves it in the running configuration.
Step 14	**erspan-id** *flow_id* **Example:** n1000v(config-erspan-src)# erspan_id 51	Adds an ERSPAN ID (1-1023) to the session configuration and saves it in the running configuration. The session ERSPAN ID is added to the ERSPAN header of the encapsulated frame and can be used at the termination box to differentiate between various ERSPAN streams of traffic.
Step 15	no shut **Example:** n1000v(config-erspan-src)# no shut	Enables the ERSPAN session and saves it in the running configuration. By default, the session is created in the shut state.
Step 16	**show monitor session** *session_id* **Example:** n1000v(config-erspan-src)# show monitor session 3	(Optional) Displays the ERSPAN session configuration as it exists in the running configuration.

	Command	Purpose
Step 17	**exit** **Example:** n1000v(config-erspan-src)# exit n1000v(config)#	(Optional) Exits ERSPAN Source Configuration mode and returns you to CLI Configuration mode.
Step 18	**copy running-config startup-config** **Example:** n1000v(config-if)# copy running-config startup-config	(Optional) Saves the running configuration persistently through reboots and restarts by copying it to the startup configuration.

Shutting Down a SPAN Session

Use this procedure to discontinue the copying of packets for a SPAN session. You can discontinue copying packets from one souce and destination; and then resume for another source and destination.

BEFORE YOU BEGIN

Before beginning this procedure, you must know or do the following:

- You are logged in to the CLI in EXEC mode.
- You know which SPAN session that you want to shut down.
- You can shut down a SPAN session from either Global Configuration mode or Monitor Configuration mode.

SUMMARY STEPS

From Global Configuration mode:

1. **config t**
2. **monitor session** {*session-number* | *session-range* | **all**} **shut**
3. **show monitor**
4. **copy running-config startup-config**

From Monitor Configuration mode:

1. **config t**
2. **monitor session** {*session-number* | *session-range* | **all**} **[type erspan-source]**
3. **shut**
4. **show monitor**
5. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** n1000v# config t n1000v(config)#	Places you into CLI Global Configuration mode.
Step 2	**monitor session** {*session-number* | *session-range* | **all**} **shut** **Example:** n1000v(config)# monitor session 3 shut n1000v(config)# **Example**: n1000v(config)# monitor session 3 n1000v(config-monitor)# shut	Shuts down the specified SPAN monitor session(s)) from either Global Configuration mode or Monitor-Configuration mode. • session-number: Specifies a particular SPAN session number. • session range: Specifies a range of SPAN sessions (allowable = from 1 to 16). • all: Specifies all SPAN monitor sessions.
Step 3	**show monitor** **Example:** n1000v(config-monitor)# show monitor	(Optional) Displays the status of the SPAN sessions.
Step 4	**copy running-config startup-config** **Example:** n1000v(config-monitor)# copy running-config startup-config	(Optional) Saves the running configuration persistently through reboots and restarts by copying it to the startup configuration.

Resuming a SPAN Session

Use this procedure to resume the copying of packets for a SPAN session. You can discontinue copying packets from one souce and destination; and then resume for another source and destination.

BEFORE YOU BEGIN

Before beginning this procedure, you must know or do the following:

- You are logged in to the CLI in EXEC mode.
- You know which SPAN session that you want to configure.
- You can resume the SPAN session from either Global Configuration mode or Monitor Configuration mode.

SUMMARY STEPS

From Global Configuration mode:

1. **config t**
2. **no monitor session** {*session-number* | *session-range* | **all**} **shut**
3. **show monitor**

4. **copy running-config startup-config**

From Monitor Configuration mode:

1. **config t**
2. **monitor session** {*session-number* | *session-range* | **all**} **[type erspan-source]**
3. **no shut**
4. **show monitor**
5. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** n1000v# config t n1000v(config)#	Places you into CLI Global Configuration mode.
Step 2	**[no] monitor session** {*session-number* *session-range* | **all**} **shut** **Example:** n1000v(config)# no monitor session 3 shut n1000v(config)# **Example:** n1000v(config)# monitor session 3 n1000v(config-monitor)# no shut	Starts the specified SPAN monitor session(s) from either Global Configuration mode or Monitor-Configuration mode. • session-number: Specifies a particular SPAN session number. • session range: Specifies a range of SPAN sessions (allowable = from 1 to 16). • all: Specifies all SPAN monitor sessions.
Step 3	**show monitor** **Example:** n1000v(config-monitor)# show monitor	(Optional) Displays the status of the SPAN sessions.
Step 4	**copy running-config startup-config** **Example:** n1000v(config-monitor)# copy running-config startup-config	(Optional) Saves the running configuration persistently through reboots and restarts by copying it to the startup configuration.

Verifying the SPAN Configuration

To display the SPAN configuration, use the following commands:

Command	Purpose
show monitor session {**all** | *session-number* | **range** *session-range*} [**brief**]	Displays the SPAN session configuration.
show monitor	Displays Ethernet SPAN information.

Command	Purpose
module vem *module-number* **execute vemcmd show span**	Displays the configured SPAN sessions on a VEM module.
show port-profile name *port_profile_name*	Displays the Layer 3 capable port profile that is required for ERSPAN.

Example Configurations

This section includes the following example configurations:

Span Session Example Configuration

To configure a SPAN session, follow these steps:

Step 1 Configure destination ports in access or trunk mode, and enable SPAN monitoring.

```
n1000v# config t
  n1000v(config)# interface ethernet 2/5
    n1000v(config-if)# switchport
    n1000v(config-if)# switchport mode trunk
    n1000v(config-if)# no shut
    n1000v(config-if)# exit
  n1000v(config)#
```

Step 2 Configure a SPAN session.

```
  n1000v(config)# no monitor session 3
  n1000v(config)# monitor session 3
    n1000v(config-monitor)# source interface ethernet 2/1-3
    n1000v(config-monitor)# source interface port-channel 2
    n1000v(config-monitor)# source vlan 3, 6-8 tx
    n1000v(config-monitor)# filter vlan 3-5, 7
    n1000v(config-monitor)# destination interface ethernet 2/5
    n1000v(config-monitor)# no shut
    n1000v(config-monitor)# exit
  n1000v(config)# show monitor session 3
  n1000v(config)# copy running-config startup-config
```

ERSPAN Session Example Configuration

The following example shows how to create a bidirectional ERSPAN session for a source Ethernet interface and destination IP address. Packets arriving at the destination IP are identified by the ID 999 in their header.

```
n1000v(config)# monitor session 1 type erspan-source
n1000v(config-erspan-src)# source interface ethernet 3/3
n1000v(config-erspan-src)# destination ip 10.54.54.1
n1000v(config-erspan-src)# erspan-id 999
```

```
n1000v(config-erspan-src)# mtu 1000
n1000v(config-erspan-src)# no shut

n1000v(config)# show monitor session 1
   session 1
---------------
type               : erspan-source
state              : up
source intf        :
    rx             : Eth3/3
    tx             : Eth3/3
    both           : Eth3/3
source VLANs       :
    rx             :
    tx             :
    both           :
filter VLANs       : filter not specified
destination IP     : 10.54.54.1
ERSPAN ID          : 999
ERSPAN TTL         : 64
ERSPAN IP Prec.    : 0
ERSPAN DSCP        : 0
ERSPAN MTU         : 1000

n1000v# module vem 3 execute vemcmd show span

VEM SOURCE IP: 10.54.54.10

HW SSN ID            DST LTL/IP    ERSPAN ID
        0            10.54.54.1          999
        1                    48        local
```

Additional References

For additional information related to implementing SPAN, see the following sections:

- Related Documents, page 9-19
- Standards, page 9-20

Related Documents

Related Topic	Document Title
Port profile configuration	*Cisco Nexus 1000V Port Profile Configuration Guide, Release 4.0(4)SV1(1)*
Interface	*Cisco Nexus 1000V Interface Configuration Guide, Release 4.0(4)SV1(1)*
SPAN Commands	*Cisco Nexus 1000V Command Reference, Release 4.0(4)SV1(1)*

Standards

Standards	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	—

Feature History for SPAN and ERSPAN

This section provides the SPAN and ERSPAN feature release history.

Feature Name	Releases	Feature Information
SPAN and ERSPAN	4.0(4)SV1(1)	This feature was introduced.