

### Objective

This tech note outlines the main differences in the Switched Port Analyzer (SPAN) between Cisco® NX-OS Software and Cisco IOS® Software. Sample configurations are included for Cisco NX-OS and Cisco IOS Software for some common features to demonstrate the similarities and differences. Please refer to the [NX-OS documentation on Cisco.com](#) for a complete list of supported features.

### SPAN Overview

The SPAN feature allows traffic to be mirrored from within a switch from a specified source to a specified destination. This feature is typically used when detailed packet information is required for troubleshooting, traffic analysis, and security-threat prevention.

### Important Cisco NX-OS and Cisco IOS Software Differences

In Cisco NX-OS:

- Local SPAN and Encapsulated Remote SPAN (ERSPAN) are supported.
- Remote SPAN (RSPAN) VLANs can be configured only as SPAN sources.
- 48 monitor sessions can be configured. Only 2 SPAN sessions (SPAN, ERSPAN source) sessions can be active simultaneously (23 ERSPAN destination sessions can be active simultaneously).
- Cisco NX-OS uses a hierarchical configuration based on the **monitor session <#>** command, whereas Cisco IOS Software has the option for flat for hierarchical configuration in Cisco IOS Software release 12.2SXH and later.
- A single SPAN session can include mixed sources (Ethernet ports, Ethernet Port-Channels, RSPAN sources, VLANs, and the CPU control-plane interface).
- Destination SPAN interfaces must be configured as a layer-2 interface with the **switchport** and the **switchport monitor** interface commands.
- The SPAN feature supports stateless and stateful process restarts.

### Things You Should Know

The following list provides some additional facts about Cisco NX-OS that should be helpful when configuring the SPAN feature.

- Two active sessions are supported for all virtual device contexts (VDCs).
- 128 source interfaces can be configured per session.
- 32 source VLANs can be configured per session.
- 32 destination interfaces can be configured per session.
- Monitor sessions are disabled by default. They can be enabled with the **no shut** command.
- An active SPAN session uses hardware resources and should always be disabled with the **shut** command when monitoring is not required.
- The supervisor module management interface (**mgmt0**) cannot be configured as a SPAN source or destination interface.
- An interface cannot be configured as both a source and destination interface.
- Ethernet and Port-Channel sub-interfaces cannot be configured as source or destination interfaces. When configuring a source interface, specify the primary interface as the source interface and use the **filter-vlan** command to specify the 802.1q tag associated to the sub-interface.

## Cisco\_NX-OS/IOS\_SPAN\_Comparison

- The in-band control-plane interface to the CPU can be monitored only from the default VDC. (All traffic to and from the CPU for all VDC's is visible.)
- The source traffic direction can be configured as **rx**, **tx**, or **both**. The default is **both**.
- When a VLAN is specified as a source, traffic to and from the layer-2 physical interfaces associated to the specified VLAN are sent to the SPAN destination (Ingress and egress traffic between SVI/VLANs are not captured if the traffic does not go in or out a physical interface).
- By default, SPAN does not copy the IEEE 802.1q tag from trunk source interfaces.
- A destination interface can be configured in **switchport access** or **switchport trunk** mode. (Trunk mode allows you to tag traffic toward a destination or to perform destination VLAN filtering.)
- A destination interface does not participate in a spanning-tree instance.
- A destination interface can be configured with the **switchport monitor ingress** interface command to allow the destination device (IE: IDS) to disrupt packet flows.
- A destination port can be configured in only one SPAN session at a time.
- ERSPAN is VRF aware. The **vrf** command can be configured under the monitor session to specify which VRF instance the source and destination addresses belong too.
- ERSPAN uses the **erspan-id <#>** monitor session command to associate the source and destination ERSPAN monitors sessions.
- An ERSPAN source can be configured with an extended ACL to preserve bandwidth by filtering unwanted traffic prior to sending the interesting traffic to the remote destination.

### Configuration Comparison

The following sample code shows the configuration similarities and differences between the Cisco NX-OS and Cisco IOS Software command-line interfaces (CLIs). The Cisco IOS Software syntax shown here is from Cisco IOS Software release 12.2SXH, so its hierarchy is similar to the Cisco NX-OS Software. Older versions of Cisco IOS Software only support a flat configuration.

#### *Cisco IOS CLI*

#### *Cisco NX-OS CLI*

##### Configuring the Destination Switchport Mode

```
interface ethernet 2/2
```

```
switchport
```

```
switchport monitor
```

##### Configuring Destination Port Ingress Forwarding and Learning

```
interface ethernet 2/2
```

```
switchport
```

```
switchport monitor ingress learning
```

##### Configuring a SPAN Monitor (Ethernet Source and Destination)

```
monitor session 1
```

```
source interface ethernet 2/1 both
```

```
destination interface ethernet 2/2
```

**Configuring a SPAN Monitor (VLAN Source)**

no shut

**monitor session 1**

source vlan 10,20 both

destination interface ethernet 2/2

no shut

**Filtering VLANs for IEEE 802.1q Trunk Sources**

**interface ethernet 2/1**

switchport

switchport mode trunk

switchport trunk allowed vlan 10-20

monitor session 1

source interface ethernet 2/1 both

destination interface ethernet 2/2

filter vlan 15-20

no shut

**Configuring a SPAN Monitor (CPU Source)**

**monitor session 1**

source interface sup-eth0 rx

destination interface ethernet 2/2

no shut

**Configuring an ERSPAN Monitor (Source)**

**monitor erspan origin ip-address 192.168.1.1  
global**

monitor session 1 type erspan-source

destination ip 192.168.2.1

erspan-id 1

vrf default

## Cisco\_NX-OS/IOS\_SPAN\_Comparison

source interface ethernet 1/26 both

no shut

### Configuring an ERSPAN Monitor (Destination)

**interface ethernet 1/26**

switchport

switchport monitor

monitor session 1 type erspan-destination

source ip 192.168.2.1

destination interface ethernet 1/26

erspan-id 1

vrf default

no shut

### Verification Command Comparison

The following table compares some useful **show** commands for verifying and troubleshooting the SPAN feature.

Cisco NX-OS SPAN	Cisco IOS Software SPAN	Command Description
<b>show interface</b>	show interface	Displays interface status and characteristics
<b>show monitor session &lt;#&gt;</b>	show monitor session <#>	Displays a specific monitor session
<b>show monitor session &lt;#&gt; brief</b>	-	Displays brief information for a specific monitor session
<b>show monitor session all</b>	show monitor session all	Displays all SPAN and monitor sessions
<b>show monitor session all brief</b>	-	Displays brief information for all monitor sessions
<b>show monitor range &lt;#-#&gt;</b>	show monitor range <#-#>	Displays a range of specific monitor sessions
<b>show monitor range &lt;#-#&gt; brief</b>	-	Displays brief information for a range of specific monitor sessions