

Verificar o SPAN e o ERSPAN nos switches Catalyst 9000 Series

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Introduction

Este documento descreve como verificar o SPAN e o ERSPAN nos Catalyst 9000 Series Switches.

Prerequisites

Requirements

Não existem requisitos específicos para este documento.

Componentes Utilizados

As informações neste documento são baseadas nestas versões de software e hardware:

- Catalyst 9300 (Cisco IOS®-XE 17.3.5)
- Catalyst 9500 (Cisco IOS®-XE 17.3.5)

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. Se a rede estiver ativa, certifique-se de que você entenda o impacto potencial de qualquer comando.

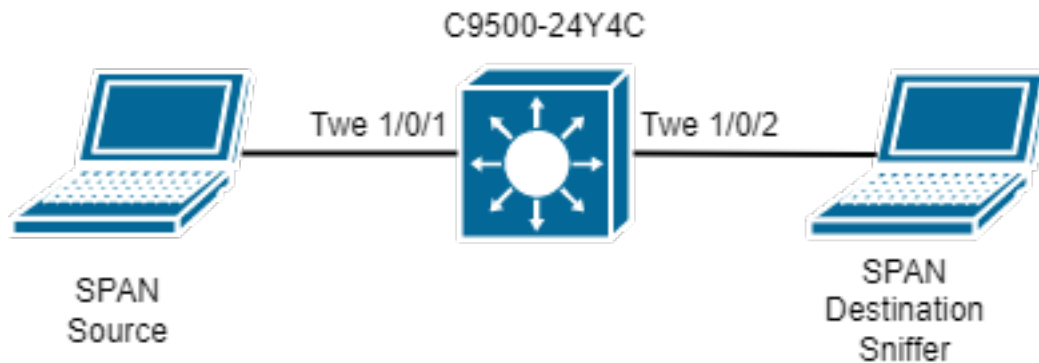
Produtos Relacionados

Este documento também pode ser usado com as seguintes versões de hardware e software:

- Catalyst 9200
- Catalyst 9300
- Catalyst 9500
- Catalyst 9400
- Catalyst 9600

Verificar o SPAN

Diagrama de Rede



Configuração de SPAN

```
monitor session 1 source interface Tw1/0/1
monitor session 1 destination interface Tw1/0/2
```

Verifique a configuração do software SPAN. Anote as interfaces SPAN de origem e destino e a direção da captura de SPAN.

```
C9500-SPAN#show monitor session all
Session 1
-----
Type                : Local Session
Source Ports        :
  Both               : Tw1/0/1
Destination Ports   : Tw1/0/2
Encapsulation       : Native
  Ingress             : Disabled
```

Verifique a entrada de hardware de SPAN. Use oID da Sessão FED que é exclusiva por configuração de SPAN. Pode haver até 8 Sessões FED configuradas ao mesmo tempo (de Sessões FED 0 a 7).

```
C9500-SPAN# show platform software monitor session 1
Span Session 1 (FED Session 0):
  Type:          Local SPAN
  Prev type:     Local SPAN
  Ingress Src Ports: Tw1/0/1    <-- Hardware entry for source interface.
  Egress Src Ports:  Tw1/0/1    <-- Hardware entry for source interface.
  Ingress Local Src Ports: (null)
  Egress Local Src Ports: (null)
  Destination Ports: Tw1/0/2    <-- Hardware entry for destination interface.
  Ingress Src Vlans:
```

```

Egress Src Vlans:
Ingress Up Src Vlans: (null)
Egress Up Src Vlans: (null)
Src Trunk filter Vlans:
RSPAN dst vlan: 0
RSPAN src vlan: 0
RSPAN src vlan sav: 0
Dest port encap = 0x0000
Dest port ingress encap = 0xFFFFFFFFFFFFFFFF
Dest port ingress vlan = 0x0
SrcSess: 1 DstSess: 0 DstPortCfgd: 1 RspnDstCfg: 0 RspnSrcVld: 0
DstCliCfg: 0 DstPrtInit: 1 PsLclCfgd: 0
Flags: 0x00000031 PSPAN
Remote dest port: 0 Dest port group: 0
FSPAN disabled
FSPAN not notified

```

Colete números de ASIC, Núcleo e Porta para as portas SPAN de origem e destino configuradas. O número da porta é necessário para confirmar se a interface SPAN de origem está programada corretamente e se o SPAN está apontando para a interface SPAN de destino correta.

Tip: Use a nomenclatura apropriada para dispositivo autônomo **show platform software/hardware fed active** ou stack device **show platform software/hardware fed switch <número>**.

```

C9500-SPAN# show platform software fed active ifm mappings
Interface                IF_ID      Inst Asic Core Port SubPort Mac  Cntx LPN  GPN  Type Active
TwentyFiveGigE1/0/1     0x8        1  0  1   20   0    16   4   1   101  NIF  Y
TwentyFiveGigE1/0/2     0x9        1  0  1   21   0    17   5   2   102  NIF  Y

```

O registro **IlePortLeSpanBitMapTable** Doppler é usado para definir se uma porta está sujeita a SPAN na direção de entrada (RX). Para confirmar se a porta SPAN de origem configurada (porta 20 do ASIC) está atribuída à **Sessão FED** direita (Sessão 0):

```

C9500-SPAN# show platform hardware fed active fwd-asic register read register-name
IlePortLeSpanBitMapTable-20 asic 0 core 1
For asic 0 core 1

Module 0 - IlePortLeSpanBitMapTable[0][20]

ssbm          : 0x1      <-- Convert from Hexadecimal to Binary: 0b00000001. Bit 0 is
set.

```

O mapa de bits da sessão de SPAN é um registro de 8 bits. Cada bit corresponde a uma sessão de FED: O bit menos significativo corresponde à Sessão 0 do FED, o bit mais significativo corresponde à Sessão 7 do FED. Assim, o número máximo de Sessões de SPAN suportadas é 8, como mencionado anteriormente.

Se uma interface for configurada como porta de origem de SPAN para várias sessões de SPAN, todas as sessões de FED deverão aparecer no registro SSBM. Por exemplo, SSBM com valor 0x5 (0b00000101) significa que a interface é uma origem de SPAN para a Sessão FED 0 e a Sessão FED 2.

Da mesma forma, o registro Doppler **ElePortLeSpanBitMapTable** determina se uma porta está sujeita a SPAN na direção de saída (TX). A análise é a mesma que o registro **IlePortLeSpanBitMapTable**. Para confirmar se a porta SPAN de origem configurada (porta 20 do ASIC) está atribuída à **Sessão FED** direita (Sessão 0):

```
C9500-SPAN# show platform hardware fed active fwd-asic register read register-name
ElePortLeSpanBitMapTable-20 asic 0 core 1
For asic 0 core 1
```

```
Module 0 - ElePortLeSpanBitMapTable[0][20]
```

```
ssbm : 0x1
```

Isso confirma que a interface de SPAN de origem está mapeada para a sessão de alimentação direita para a direção RX e TX.

Com o ID de sessão de FED, podemos encontrar a(s) porta(s) de destino para o SPAN dentro do registro Doppler **AqmRepSpanPortMap**. Para confirmar a Sessão 0 do FED aponta para a porta de destino de SPAN direita (porta 21 do ASIC):

```
C9500-SPAN# show platform hardware fed active fwd-asic register read register-name
AqmRepSpanPortMap-0 asic 0 core 1
For asic 0 core 1
```

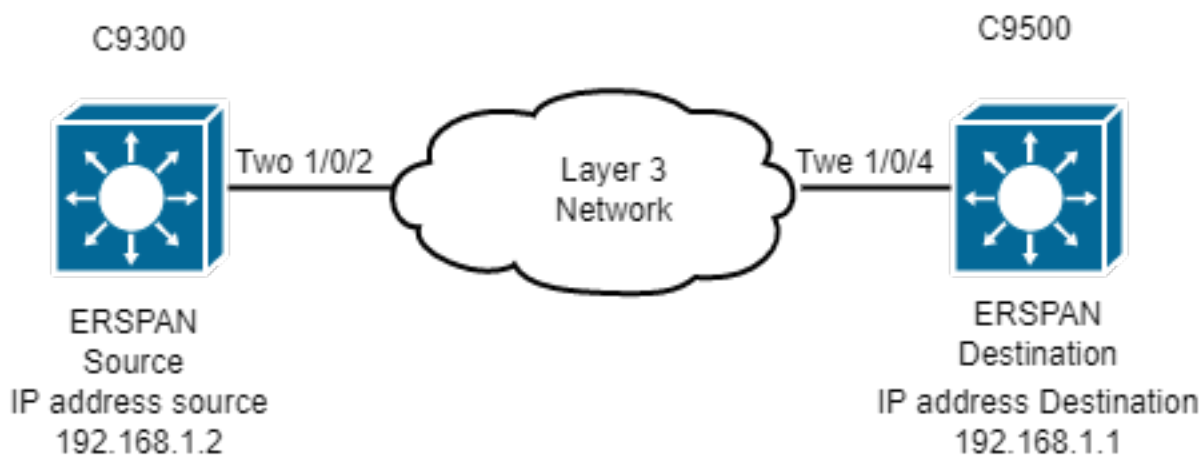
```
Module 0 - AqmRepSpanPortMap[0][0]
```

```
cpuQueueNum : 0x0
cpuSpanValid : 0x0
indirectApPortMap : 0x0
portMap0 : 0x200000 <-- Convert from Hexadecimal to Binary:
0b00100000000000000000000000000000. Bit 21 is set.
rcpPortMap : 0x0
spanCtiLo : 0x0
```

Isso confirma que os pacotes capturados com o SPAN devem ser mostrados replicados fora da interface Tw1/0/2 (porta 21 do ASIC). Se houver mais portas de destino de SPAN configuradas, elas serão mostradas no registro **AqmRepSpanPortMap**.

Verificar o ERSPAN

Diagrama de Rede



Note: O Catalyst C9200 não suporta ERSPAN.

Note: É necessária uma licença do DNA-Advantage.

Configuração de ERSPAN

Source ERSPAN Device

```
C9300-ERSPAN# show run | section monitor
monitor session 1 type erspan-source
  source vlan 10
  destination
    erspan-id 3 <-- ERSPAN id must be identical on source and destination.
    ip address 192.168.1.1 <-- GRE tunnel destination IP (IP addr configured on ERSPAN
destination switch).
    origin ip address 192.168.1.2 <-- GRE tunnel source IP (IP addr configured on ERSPAN source
switch).
```

```
C9300-ERSPAN# show ip interface brief | exclude unassigned
Interface IP-Address OK? Method Status Protocol
<snip>
Loopback0 192.168.1.2 YES NVRAM up up
```

Destination ERSPAN Device

```
C9500-ERSPAN# show run | section monitor
monitor session 1 type erspan-destination
destination interface Twel1/0/3
source
erspan-id 3 <-- ERSPAN id must be identical on source and destination.
ip address 192.168.1.1 <-- GRE tunnel destination IP (IP addr configured on ERSPAN destination
switch).
```

```
C9500-ERSPAN# show ip interface brief | exclude unassigned
Interface IP-Address OK? Method Status Protocol
<snip>
Loopback0 192.168.1.1 YES NVRAM up up
```

Dispositivo de Origem

Verifique a acessibilidade entre o IP de origem e de destino.

```
C9300-ERSPAN#ping 192.168.1.1 source 192.168.1.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.1, timeout is 2 seconds:
Packet sent with a source address of 192.168.1.2
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/2 ms
```

Programação do Cisco IOS Software

Verifique no software Cisco IOS a entrada para a sessão ERSPAN.

```
C9300-ERSPAN#show monitor session 1
Session 1
-----
Type : ERSPAN Source Session
Status : Admin Enabled
```

```
Source VLANs          :
  Both                : 10
Destination IP Address : 192.168.1.1
Destination ERSPAN ID  : 3
Origin IP Address      : 192.168.1.2
```

Programação SHIM

Verifique o que o software envia ao hardware do programa (objeto SHIM).

```
C9300-ERSPAN#show platform software monitor session 1
```

```
Span Session 1 (FED Session 0):
```

```
Type:          ERSPAN Source
Prev type:     Unknown
Ingress Src Ports:
Egress Src Ports:
Ingress Local Src Ports: (null)
Egress Local Src Ports: (null)
Destination Ports:
Ingress Src Vlans: 10      <-- Replicate Traffic.
Egress Src Vlans: 10      <-- Replicate Traffic.
Ingress Up Src Vlans: 10
Egress Up Src Vlans: 10
Src Trunk filter Vlans:
RSPAN dst vlan: 0
RSPAN src vlan: 0
RSPAN src vlan sav: 0
Dest port encap = 0x0000
Dest port ingress encap = 0x0000
Dest port ingress vlan = 0x0
SrcSess: 1  DstPortCfgd: 0  RspnDstCfg: 0  RspnSrcVld: 0      <-- Monitor session number.
DstCliCfg: 0  DstPrtInit: 0  PsLclCfgd: 0
Flags: 0x00000002 VSPAN
Remote dest port: 0  Dest port group: 0
FSPAN disabled
FSPAN not notified
ERSPAN Id      : 3          <-- Value match with the software setting.
ERSPAN Org Ip: 192.168.1.2 <-- Value match with the software setting.
ERSPAN Dst Ip: 192.168.1.1 <-- Value match with the software setting.
ERSPAN Ip Ttl: 255
ERSPAN State  : Enabled
ERSPAN Tun id: 77
```

Forwarding Manager Route Processor

Verifique o que o software envia para o hardware do programa (Camada FMAN RP).

```
C9300-ERSPAN#show platform software swspan switch active R0 source
```

```
Showing SPAN source table summary info
```

Sess-id	IF-type	IF-id	Sess-type	Dir
0	VLAN	10	ERSPAN SRC	Ingress
0	VLAN	10	ERSPAN SRC	Egress

```
C9300-ERSPAN#show platform software swspan switch active R0 source sess-id 0
```

```
Showing SPAN source detail info
```

```
Session ID : 0 Intf Type : VLAN Vlan id : 10 <-- Vlan entry
PD Sess ID : 0
Session Type : ERSPAN SRC
```

Direction : Ingress
Filter Enabled : No
ACL Configured : No
ERSPAN Enable : Yes

Session ID : 0
Intf Type : VLAN
Vlan id : 10 <-- Match with the Vlan/Interface SPAN.
PD Sess ID : 0
Session Type : ERSPAN SRC
Direction : Egress
Filter Enabled : No
ACL Configured : No
ERSPAN Enable : Yes

Gerenciador de encaminhamento-Processador de encaminhamento

Verifique o que o software envia para o hardware do programa (FMAN FP Layer).

C9300-ERSPAN#**show platform software swspan switch active F0 source**
Showing SPAN source table summary info

Sess-id	IF-type	IF-id	Sess-type	Dir
0	VLAN	10	ERSPAN SRC	Ingress
0	VLAN	10	ERSPAN SRC	Egress

C9300-ERSPAN#**show platform software swspan switch active F0 source sess-id 0**
Showing SPAN source detail info

Session ID : 0
Intf Type : VLAN
Vlan id : 10
PD Sess ID : 0
Session Type : ERSPAN SRC <-- Source Interface.
Direction : Ingress
Filter Enabled : No
ACL Configured : No
AOM Object id : 519
AOM Object Status : Done
Parent AOM object Id : 30
Parent AOM object Status : Done

Session ID : 0
Intf Type : VLAN
Vlan id : 10
PD Sess ID : 0
Session Type : ERSPAN SRC <-- Source Interface.
Direction : Egress
Filter Enabled : No
ACL Configured : No
AOM Object id : 520
AOM Object Status : Done
Parent AOM object Id : 30
Parent AOM object Status : Done

C9300-ERSPAN#**show platform software swspan switch active F0 counters** <-- Check for any error counters that increment on PI/PD/HW
Dump Switch SPAN FP operation counters <-- Operational Counters.

Source SPAN Config Counters

PI: Create 2 (err 0), Modify 0 (err 0), Delete 0 (err 0) <-- PI = platform independent (Software/IOS).

PD: Create 2 (err 0), Modify 0 (err 0), Delete 0 (err 0) <-- PD = platform dependent (SHIM/FMAN/FED).

HW: Create 2 (err 0), Modify 0 (err 0), Delete 0 (err 0) <-- HW = hardware (FED/ASIC).

Destination SPAN Config Counters

PI: Create 1 (err 0), Modify 0 (err 0), Delete 0 (err 0)

PD: Create 1 (err 0), Modify 0 (err 0), Delete 0 (err 0)

HW: Create 1 (err 0), Modify 0 (err 0), Delete 0 (err 0)

Filter SPAN Config Counters

PI: Create 0 (err 0), Modify 0 (err 0), Delete 0 (err 0)

PD: Create 0 (err 0), Modify 0 (err 0), Delete 0 (err 0)

HW: Create 0 (err 0), Modify 0 (err 0), Delete 0 (err 0)

Driver do mecanismo de encaminhamento

Verifique a camada que programa o ASIC (FED).

```
C9300-ERSPAN#show platform software fed switch active monitor 0
```

```
Session 0
```

```
-----
```

```
Session Type      : ERSPAN Source Session
Source Ports      : RX: None TX: None
Destination Ports : None
Source VLANs     : VLAN-10
Destination VLANs : VLAN-10
Source RSPAN VLAN : 0
DST RSPAN VLAN   : 0
Encap             : Native
Ingress Forwarding : Disabled
Filter VLANs     : None
ERSPAN Enable    : 1          <-- 1 = On/Completed.
ERSPAN Hw Programmed : 1      <-- 1 = On/Completed.
ERSPAN Mandatory Cfg : 1      <-- 1 = On/Completed.
ERSPAN Id        : 3
Gre Prot         : 88be
MTU              : 9000
Ip Tos           : 0
Ip Ttl           : 255
Cos              : 0
Vrf Id           : 0
Dst Ip           : 192.168.1.1
```

```
Org Ip : 192.168.1.2
```

```
Dst Ipv6 : ::
```

```
Org Ipv6 : ::
```

```
SGT count : 0
```

```
SGT Tag(s) :
```

Verifique a programação do túnel de hardware (FED).

```
C9300-ERSPAN#show platform software fed switch active ifm interfaces tunnel
```

```
Interface          IF_ID          State
-----
```


Tunnel1000000000 0x00000035 READY <-- 0x35 in Hex is 53 in
Decimal (tunnel number 53).

C9300-ERSPAN#show platform software fed switch active ifm if-id 0x35 <-- Hardware tunnel number
0x35.

Interface IF_ID : 0x0000000000000035
Interface Name : Tunnel1000000000
Interface Block Pointer : 0x55d0ff5b6c98
Interface Block State : READY
Interface State : Enabled
Interface Status : ADD
Interface Ref-Cnt : 4
Interface Type : TUNNEL
Unit : 0
SNMP IF Index : 0
Encap L3If LE Handle : 0x7f00e0a50a28 <-- Hardware handle info (used to check final Hardware
program state).
Decap L3If LE Handle : 0x7f00e0a50bd8 <-- Hardware handle info (used to check final Hardware
program state).
Tunnel Mode : 0 [gre] <-- Tunnel Protocol Enable.
Tunnel Sub-mode: 0 [none]
Hw Support : Yes
Tunnel Vrf : 0
IPv4 MTU : 0
IPv6 MTU : 0
IPv4 VRF ID : 0
IPv6 VRF ID : 0
Protocol flags : 0x0001 [ipv4]
Misc flags : 0x0000 [None]
ICMPv4 flags : 0x03 [unreachable redirect]
ICMPv6 flags : 0x03 [unreachable redirect]

Port Information

Handle [0xcf000051]
Type [L3-Tunnel]
Identifier [0x35]
Unit [53]
Port Logical Tunnel Subblock
Encap-L3ifle.....[0x7f00e0a50a28] <-- Same number as previous highlighted output.
Decap-L3ifle.....[0x7f00e0a50bd8] <-- Same number as previous highlighted output.
decap-portle.....[0x0]
RI-decap.....[0x7f00e0a5a1a8]
SI-decap.....[0x7f00e0a5a678]
Decap-Tcam_handle..[0x7f00e0a5a9a8]
Tunnel_capability..[0x3]
Encap-RCP-PMAP.....[0x0]
GPN.....[0]

C9300-ERSPAN#show platform software fed switch active ifm mappings l3if-le | include L3IF|Tunnel

L3IF_LE	Interface	IF_ID	Type
0x00007f00e0a50a28	Tunnel1000000000	0x00000035	ENCAP_L3_LE <-- L3IF + IF_ID (ENCAP) match here.
0x00007f00e0a50bd8	Tunnel1000000000	0x00000035	DECAP_L3_LE <-- L3IF + IF_ID (DECAP) match here.

Encapsulation LE

C9300-ERSPAN#show platform hardware fed switch active fwd-asic abstraction print-resource-
handle 0x00007f00e0a50a28 0 <-- ENCAP.
Handle:0x7f00e0a50a28 Res-Type:ASIC_RSC_L3IF_LE Res-Switch-Num:255 Asic-Num:255 Feature-
ID:AL_FID_IFM Lkp-ftr-id:LKP_FEAT_INVALID ref_count:1
priv_ri/priv_si Handle: (nil)Hardware Indices/Handles: index0:0x27 mtu_index/l3u_ri_index0:0x5

```
sm handle [ASIC 0]: 0x7f00e0a56d08 index1:0x27 mtu_index/l3u_ri_index1:0x5
```

Decapsulation LE

```
C9300-ERSPAN#show platform hardware fed switch active fwd-asic abstraction print-resource-handle 0x00007f00e0a50a28 0 <-- DECAP.
```

```
Handle:0x7f00e0a50bd8 Res-Type:ASIC_RSC_L3IF_LE Res-Switch-Num:255 Asic-Num:255 Feature-ID:AL_FID_IFM Lkp-ftr-id:LKP_FEAT_INVALID ref_count:1
```

```
priv_ri/priv_si Handle: (nil)Hardware Indices/Handles: index0:0x28 mtu_index/l3u_ri_index0:0x0
```

```
sm handle [ASIC 0]: 0x7f00e0a559c8 index1:0x28 mtu_index/l3u_ri_index1:0x0
```

Execute a Captura de pacote incorporada na porta de saída em direção ao switch de destino. Um filtro pode ser aplicado, use o IP origem e destino do túnel GRE (o pacote é um pacote encapsulado).

```
Frame 1: 110 bytes on wire (880 bits), 110 bytes captured (880 bits) on interface 0 <snip>
```

```
Internet Protocol Version 4, Src: 192.168.1.2, Dst: 192.168.1.1 <-- ERSPAN IP HEADER.
```

```
0100 .... = Version: 4
```

```
.... 0101 = Header Length: 20 bytes (5)
```

```
Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
```

```
0000 00.. = Differentiated Services Codepoint: Default (0)
```

```
.... ..00 = Explicit Congestion Notification: Not ECN-Capable Transport (0)
```

```
Total Length: 96
```

```
Identification: 0x1018 (4120)
```

```
Flags: 0x00
```

```
0... .... = Reserved bit: Not set
```

```
.0.. .... = Don't fragment: Not set
```

```
..0. .... = More fragments: Not set
```

```
Fragment offset: 0
```

```
Time to live: 255
```

```
Protocol: Generic Routing Encapsulation (47) <-- GRE tunnel encapsulation.
```

```
Header checksum: 0x9c56 [validation disabled]
```

```
[Good: False]
```

```
[Bad: False]
```

```
Source: 192.168.1.2
```

```
<-- Source GRE IP tunnel.
```

```
Destination: 192.168.1.1
```

```
<-- Destination GRE IP tunnel.
```

```
Generic Routing Encapsulation (ERSPAN)
```

```
Flags and Version: 0x1000
```

```
0... .... = Checksum Bit: No
```

```
.0.. .... = Routing Bit: No
```

```
..0. .... = Key Bit: No
```

```
...1 .... = Sequence Number Bit: Yes
```

```
.... 0... = Strict Source Route Bit: No
```

```
.... .000 = Recursion control: 0
```

```
.... .... 0000 0... = Flags (Reserved): 0
```

```
.... .... .... .000 = Version: GRE (0)
```

```
Protocol Type: ERSPAN (0x88be)
```

```
<--ERSPAN enable.
```

```
Sequence Number: 0
```

Encapsulated Remote Switch Packet Analysis

```
0001 .... = Version: Type II (1)
```

```
.... 0000 0001 1000 = Vlan: 10
```

```
000. .... = Priority: 0
```

```
...1 .... = Unknown2: 1
```

```
.... 1... = Direction: Outgoing (1)
```

```
.... .0.. = Truncated: Not truncated (0)
```

```
.... ..00 0000 0011 = SpanID: 3
```

```
<--ERSPAN ID.
```

```
Unknown7: 00000002
```

```
Ethernet II, Src: Xerox_00:02:00 (00:00:08:00:02:00), Dst: Cisco_eb:90:68 (00:9e:1e:eb:90:68)
```

```
<snip>
```

```
(Internal data packet comes here, output truncated)
```

Dispositivo de destino ERSPAN

Programação do software Cisco IOS

```
C9500-ERSPAN#show monitor session 1
```

```
Session 1
```

```
-----
```

```
Type                : ERSPAN Destination Session
Status              : Admin Enabled
Destination Ports   : Twel/0/3
Source IP Address   : 192.168.1.1
Source ERSPAN ID    : 3
```

Programação SHIM

Verifique o que o software envia ao hardware do programa (objeto SHIM).

```
C9500-ERSPAN#show platform software monitor session 1
```

```
Span Session 1 (FED Session 0):
```

```
Type:          ERSPAN Destination
Prev type:     Unknown
Ingress Src Ports:
Egress Src Ports:
Ingress Local Src Ports: (null)
Egress Local Src Ports: (null)
Destination Ports: Twel/0/3
Ingress Src Vlans:
Egress Src Vlans:
Ingress Up Src Vlans: (null)
Egress Up Src Vlans: (null)
Src Trunk filter Vlans:
RSPAN dst vlan: 0
RSPAN src vlan: 0
RSPAN src vlan sav: 0
Dest port encap = 0x0004
Dest port ingress encap = 0x0000
Dest port ingress vlan = 0x0
SrcSess: 0  DstSess: 1  DstPortCfgd: 1  RspnDstCfg: 0  RspnSrcVld: 0
DstCliCfg: 0  DstPrtInit: 1  PsLclCfgd: 0
Flags: 0x00000000
Remote dest port: 0  Dest port group: 0
FSPAN disabled
FSPAN not notified
ERSPAN Id      : 3
ERSPAN Dst Ip: 192.168.1.1
ERSPAN Vrf     : 0
```

Gerenciador de encaminhamento-Processador de encaminhamento

Verifique o que o software envia para o hardware do programa (FMAN FP Layer).

```
C9500-ERSPAN#show platform software swspan switch active r0 destination
```

```
Showing SPAN destination table summary info Sess-id IF-type IF-id Sess-type -----
```

```
----- 0 PORT 11 Local <-- IF-if 0xb maps to Twel/0/3 (Check under 'show
platform software fed active ifm mapping').
```

```
0 ERSPAN ERSPAN DST
```

C9500-ERSPAN#**show platform software swspan R0 destination sess-id 0**
Showing SPAN destination detail info

Session ID : 0
Intf Type : PORT
Port dpidx :11 <--Match with IF-id
PD Sess Id : 0
Session Type : Local <-- Type of monitor session
Ingress Fwd : No
Ingress Encap : Disabled
Ingress Vlan : 0
Encap Value : Replicate
RSPAN Vlan : 0

Session ID : 0
Intf Type : ERSPAN
Vlan id :
PD Sess Id : 0
Session Type : ERSPAN DST
ERSPAN Id : 3
ERSPAN Dst Ip: 192.168.1.1
ERSPAN Src Ip: 0.0.0.0
GRE Prot : 35006
MTU : 0
IP Tos : 0
IP Ttl : 255
Cos : 0
Vrf Id : 0
Tunnel Ifid: 38 <-- 38 in Decimal is 0x26 in Hex which is the IF_ID of Tunnel1
ERSPAN En : TDL_TRUE

Gerenciador de encaminhamento-Processador de encaminhamento

Verifique o que o software envia para o hardware do programa (FMAN FP Layer).

C9500-ERSPAN#**show platform software swspan switch active F0 counters** <-- (check for any error counters on PI/PD/HW).

Dump Switch SPAN FP operation counters

Source SPAN Config Counters

PI: Create 0 (err 0), Modify 0 (err 0), Delete 0 (err 0) <-- **PI = platform independent (Software/IOS).**
PD: Create 0 (err 0), Modify 0 (err 0), Delete 0 (err 0) <-- **PD = platform dependent (SHIM/FMAN/FED).**
HW: Create 0 (err 0), Modify 0 (err 0), Delete 0 (err 0) <-- **HW = hardware (FED/ASIC).**

Destination SPAN Config Counters

PI: Create 10 (err 0), Modify 6 (err 0), Delete 4 (err 0)
PD: Create 4 (err 0), Modify 0 (err 0), Delete 2 (err 0)
HW: Create 4 (err 0), Modify 0 (err 0), Delete 2 (err 0)

Filter SPAN Config Counters

PI: Create 0 (err 0), Modify 0 (err 0), Delete 0 (err 0)
PD: Create 0 (err 0), Modify 0 (err 0), Delete 0 (err 0)
HW: Create 0 (err 0), Modify 0 (err 0), Delete 0 (err 0)

C9500-ERSPAN#**show platform software swspan switch active F0 destination**

Showing SPAN destination table summary info

Sess-id	IF-type	IF-id	Sess-type
0	PORT	11	Local
0	VLAN	0	ERSPAN DST

Driver do mecanismo de encaminhamento

Verifique a camada que programa o ASIC (FED).

```
C9500-ERSPAN#show platform software fed switch active monitor 0
```

```
Session 0
```

```
-----
```

```
Session Type           : ERSPAN Destination Session
Source Ports : RX: None TX: Tunnel1000000000 Destination Ports : TwentyFiveGigE1/0/3
Source VLANs          : None
Destination VLANs     : None
Source RSPAN VLAN     : 0
DST RSPAN VLAN        : 0
Encap                  : Replicate
Ingress Forwarding    : Disabled
Filter VLANs          : None
ERSPAN Enable        : 1
ERSPAN Hw Programmed : 1
ERSPAN Mandatory Cfg  : 1
ERSPAN Id           : 3
Ip Tos                 : 0 (DSCP:0)
Ip Ttl                 : 0
Cos                    : 0
Vrf Id                 : 0
Tunnel IfId         : 38 <-- 38 in Decicmal is 0x26 in Hex which is the IF_ID
of Tunnel1
Dst Ip              : 192.168.1.1
Org Ip                 : 0.0.0.0
SGT count              : 0
SGT Tag(s)            :
```

Verifique a programação do túnel de hardware (FED).

```
C9500-ERSPAN#show platform software fed switch active ifm interfaces tunnel
```

```
Interface IF_ID State
```

```
-----
```

```
Tunnel1000000000 0x00000026 READY
```

```
C9500-ERSPAN#show platform software fed switch active ifm if-id 0x00000026
```

```
Interface IF_ID : 0x0000000000000026
```

```
Interface Name : Tunnel1000000000
```

```
Interface Block Pointer : 0x7f2cd48e9958
```

```
Interface Block State : READY
```

```
Interface State : Enabled
```

```
Interface Status : ADD
```

```
Interface Ref-Cnt : 5
```

```
Interface Type : TUNNEL
```

```
Unit : 0 SNMP IF Index : 0 Encap L3If LE Handle : 0x7f2cd4904e08 <-- Hardware handle info  
(used to check final Hardware program state).
```

```
Decap L3If LE Handle : 0x7f2cd48dabc8 <-- Hardware handle info (used to check final Hardware  
program state).
```

```
Tunnel Mode      : 0 [gre]                <-- Tunnel Protocol Enable.
Hw Support       : Yes
Tunnel Vrf       : 0
IPv4 MTU         : 0
IPv6 MTU         : 0
IPv4 VRF ID      : 0
IPv6 VRF ID      : 0
Protocol flags   : 0x0001 [ ipv4 ]
Misc flags       : 0x0000 [ None ]
ICMPv4 flags     : 0x03 [ unreachable redirect ]
ICMPv6 flags     : 0x03 [ unreachable redirect ]
```

Port Information

```
Handle ..... [0xd4000043]
Type ..... [L3-Tunnel] Identifier ..... [0x26] Unit ..... [38] Port Logical
Tunnel Subblock Encap-L3if1e.....[0x7f2cd4904e08] <-- Same number as previous highlighted
output.
Decap-L3if1e.....[0x7f2cd48dabc8] <-- Same number as previous highlighted output.
decap-portle.....[0x0]
RI-decap.....[0x7f2cd49615d8] <-- Same number as previous highlighted output.
SI-decap.....[0x7f2cd4958dd8] <-- Same number as previous highlighted output.
Decap-Tcam_handle..[0x7f2cd46eee08] <-- Same number as previous highlighted output.
Tunnel_capability..[0x3]
Encap-RCP-PMAP.....[0x0]
GPN.....[0]
<snip>
```

```
C9500-ERSPAN#show platform software fed switch active ifm mappings l3if-1e | include L3IF|Tunnel
L3IF_LE          Interface          IF_ID          Type
0x00007f2cd48dabc8 Tunnel1000000000 0x00000026    DECAP_L3_LE
<-- L3IF + IF_ID (DECAP) match here.
0x00007f2cd4904e08 Tunnel1000000000 0x00000026    ENCAP_L3_LE
<-- L3IF + IF_ID (ENCAP) match here.
```

Encapsulation LE

```
C9500-ERSPAN#show platform hardware fed switch active fwd-asic abstraction print-resource-handle
0x7f2cd4904e08 0 <--ENCAP
Handle:0x7f2cd4904e08 Res-Type:ASIC_RSC_L3IF_LE Res-Switch-Num:255 Asic-Num:255 Feature-
ID:AL_FID_IFM Lkp-ftr-id:LKP_FEAT_INVALID ref_count:1
priv_ri/priv_si Handle: (nil)Hardware Indices/Handles: index0:0x27 mtu_index/l3u_ri_index0:0x2
sm handle [ASIC 0]: 0x7f2cd46ece38 index1:0x27 mtu_index/l3u_ri_index1:0x4
```

=====

Decapsulation LE

```
C9500-ERSPAN#show platform hardware fed switch active fwd-asic abstraction print-resource-handle
0x7f2cd48dabc8 0 <--DECAP
Handle:0x7f2cd48dabc8 Res-Type:ASIC_RSC_L3IF_LE Res-Switch-Num:255 Asic-Num:255 Feature-
ID:AL_FID_IFM Lkp-ftr-id:LKP_FEAT_INVALID ref_count:1
priv_ri/priv_si Handle: (nil)Hardware Indices/Handles: index0:0x28 mtu_index/l3u_ri_index0:0x0
sm handle [ASIC 0]: 0x7f2cd46d91c8 index1:0x28 mtu_index/l3u_ri_index1:0x0
```

Rewrite Index (decapsulation)

```
C9500-ERSPAN#show platform hardware fed switch active fwd-asic abstraction print-resource-handle
0x7f2cd49615d8 1 <-- RI-decap
Handle:0x7f2cd49615d8 Res-Type:ASIC_RSC_RI Res-Switch-Num:255 Asic-Num:255 Feature-ID:AL_FID_GRE
Lkp-ftr-id:LKP_FEAT_INVALID ref_count:1
priv_ri/priv_si Handle: 0x7f2cd48daf28Hardware Indices/Handles: index0:0x16
mtu_index/l3u_ri_index0:0x0 index1:0x16 mtu_index/l3u_ri_index1:0x0
```

Features sharing this resource:107 (1]
Cookie length: 56
00 00 00 00 00 00 00 00 28 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 01 6b 33 00
00 00

Detailed Resource Information (ASIC# 0) -----
Rewrite Data Table Entry, ASIC#:0 RI:22 Rewrite_type:AL_RRM_REWRITE_IPV4_ERSPAN2_DECAP(61)
Mapped_rii:TUNNEL_IPv4Erspan_DECAP(83) **L3IF LE Index: 40** <-- 64 in Decimal is 0x40
in Hex which matches Decap LE index seen above

Detailed Resource Information (ASIC# 1)

Rewrite Data Table Entry,
ASIC#:1 RI:22 Rewrite_type:AL_RRM_REWRITE_IPV4_ERSPAN2_DECAP(61)
Mapped_rii:TUNNEL_IPv4Erspan_DECAP(83)

L3IF LE Index: 40 =====

Station Index (decapsulation)

C9500-ERSPAN#show platform hardware fed switch active fwd-asic abstraction print-resource-handle
0x7f2cd4958dd8 1 <-- SI-decap

Handle:0x7f2cd4958dd8 Res-Type:ASIC_RSC_SI Res-Switch-Num:255 Asic-Num:255 Feature-ID:AL_FID_GRE
Lkp-ftr-id:LKP_FEAT_INVALID ref_count:1
priv_ri/priv_si Handle: 0x7f2cd49615d8Hardware Indices/Handles: index0:0xae
mtu_index/l3u_ri_index0:0x0 index1:0xae mtu_index/l3u_ri_index1:0x0

Features sharing this resource:107 (1]
Cookie length: 56
00 00 00 00 00 00 00 00 28 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 01 6b 36 00
00 00

Detailed Resource Information (ASIC# 0) ----- Station Index (SI) [0xae]

RI = 0x16 DI = 0x5012 stationTableGenericLabel = 0 stationFdConstructionLabel = 0x7
lookupSkipIdIndex = 0x15 rcpServiceId = 0 dejaVuPreCheckEn = 0 Replication Bitmap: LD Detailed Resource Information (ASIC# 1) ----- Station Index (SI) [0xae]

RI = 0x16 DI = 0x5012 stationTableGenericLabel = 0 stationFdConstructionLabel = 0x7
lookupSkipIdIndex = 0x15 rcpServiceId = 0 dejaVuPreCheckEn = 0 Replication Bitmap: CD
=====

Tunnel Decap (TCAM)

C9500-ERSPAN#show platform hardware fed switch active fwd-asic abstraction print-resource-handle
0x7f2cd46eee08 1 <-- Decap-Tcam_handle.

Handle:0x7f2cd46eee08 Res-Type:ASIC_RSC_HASH_TCAM Res-Switch-Num:0 Asic-Num:255 Feature-ID:AL_FID_GRE
Lkp-ftr-id:LKP_FEAT_TT_IPV4_GRE ref_count:1
priv_ri/priv_si Handle: (nil)Hardware Indices/Handles: handle [ASIC: 0]: 0x7f2cd48db018
Detailed Resource Information (ASIC# 0) ----- Number of HTM

Entries: 3 **Entry 0: (handle 0x7f2cd48db018)**

Labels	Port	Vlan	L3If	Group
M:	0000	0000	0000	0000
V:	0000	0000	0000	0000

M: ffffffff 00000000 00000000 000003ff 00000000 00000100 01000000 00000fff
3f000000 V: **c0a80101** 00000000 00000000 00000003 00000000 00000100 01000000 00000000 <--
c0a80101 in Hex maps to 192.168.1.1
00000000

GREv4 Dst Src Key C S R D E F VRF Fl L3P GreP Misc RCPSVCId
M: ffffffff 00000000 00000000 0 0 0 0 0 1 000 0 00 0000 00 3f <-- F=1

Forwarding

V: **c0a80101** 00000000 00000000 0 0 0 0 0 1 000 0 00 0000 00 00
Action: 00000100 06000000 00000000 00000000 00000000 00000000 000000ad 00000000

00000000 00000000
RL2 RL3 ACF SPK CLPC LKV PRI STL LPC ADC LKI SI

0 1 0 0 0 0 6 0 0 0 0 ad <-- Hexadecimal
value for Station Index.

Start/Skip Word: 0x00000003
Start Feature, Terminate

Entry 1: (handle 0x7f2cd495c3f8)

Labels Port Vlan L3If Group
M: 0000 0000 0000 0000
V: 0000 0000 0000 0000

M: ffffffff 00000000 00000000 000003ff 00000000 00000100 00000000 000a0000
3f000000
V: c0a80101 00000000 00000000 00000003 00000000 00000100 00000000 00080000
00000000

GREv4 Dst Src Key C S R D E F VRF Fl L3P GreP Misc RCPSVCId
M: ffffffff 00000000 00000000 0 0 0 0 0 0 000 a 00 0000 00 3f
V: c0a80101 00000000 00000000 0 0 0 0 0 0 000 8 00 0000 00 00
Action: 00000100 06000000 00000000 00000000 00000000 00000000 000000ad 00000000
00000000 00000000
RL2 RL3 ACF SPK CLPC LKV PRI STL LPC ADC LKI SI

0 1 0 0 0 0 6 0 0 0 0 ad
Start/Skip Word: 0x00000000
No Start, Terminate

Entry 2: (handle 0x7f2cd46ef568)

Labels Port Vlan L3If Group
M: 0000 0000 0000 0000
V: 0000 0000 0000 0000

M: ffffffff 00000000 00000000 000003ff 00000000 00000100 00000000 00020fff
00000000
V: c0a80101 00000000 00000000 00000003 00000000 00000100 00000000 00000000
00000000

GREv4 Dst Src Key C S R D E F VRF Fl L3P GreP Misc RCPSVCId
M: ffffffff 00000000 00000000 0 0 0 0 0 0 000 2 00 0000 00 00
V: c0a80101 00000000 00000000 0 0 0 0 0 0 000 0 00 0000 00 00
Action: 00000100 06000000 00000000 00000000 00000000 00000000 000000ae 00000000
00000000 00000000
RL2 RL3 ACF SPK CLPC LKV PRI STL LPC ADC LKI SI

0 1 0 0 0 0 6 0 0 0 0 ae <-- Hexadecimal
value for Station Index.

Start/Skip Word: 0x00000000
No Start, Terminate

=====

C9500-ERSPAN#show platform hardware fed switch active fwd-asic resource ASIC 0 station-index
range 0xab 0xab

ASIC#0:
Station Index (SI) [0xad]
RI = 0x14
DI = 0x505a <-- Destination Index
stationTableGenericLabel = 0
stationFdConstructionLabel = 0x7
lookupSkipIdIndex = 0x15


```
rcpServiceId = 0xd
dejaVuPreCheckEn = 0
Replication Bitmap: LD
```

```
C9500-ERSPAN#show platform hardware fed switch active fwd-asic resource asic 0 station-index
range 0xae 0xae
```

```
Station Index (SI) [0xae]
RI = 0x16
DI = 0x5012 <-- Destination Index
stationTableGenericLabel = 0
stationFdConstructionLabel = 0x7
lookupSkipIdIndex = 0x15
rcpServiceId = 0
dejaVuPreCheckEn = 0
Replication Bitmap: LD
```

```
C9500-ERSPAN#show platform hardware fed switch active fwd-asic resource asic 0 destination-index
range 0x505a 0x505a
```

```
Destination index = 0x505a DI_RCP_PORT2
pmap = 0x00000000 0x00000000
cmi = 0x0
```

```
rcp_pmap = 0x2
```

```
al_rsc_cmi
```

```
CPU Map Index (CMI) [0]
```

```
ctiLo0 = 0
```

```
ctiLo1 = 0
```

```
ctiLo2 = 0
```

```
cpuQNum0 = 0
```

```
cpuQNum1 = 0
```

```
cpuQNum2 = 0
```

```
npuIndex = 0
```

```
stripSeg = 0
```

```
copySeg = 0
```

```
C9500-ERSPAN#show platform hardware fed switch active fwd-asic resource asic 0 destination-index
range 0x5012 0x5012
```

```
ASIC#0:
```

```
Destination Index (DI) [0x5012]
```

```
portMap = 0x00000000 00000000
```

```
cmi1 = 0
```

```
rcpPortMap = 0x1
```

```
CPU Map Index (CMI) [0]
```

```
ctiLo0 = 0
```

```
ctiLo1 = 0
```

```
ctiLo2 = 0
```

```
cpuQNum0 = 0
```

```
cpuQNum1 = 0
```

```
cpuQNum2 = 0
```

```
npuIndex = 0
```

```
stripSeg = 0
```

```
copySeg = 0
```

Depurações e rastreamentos relevantes

Cisco IOS XE

```
debug monitor all
```

```
debug platform monitor
```

```
FMAN-RP
```

```
set platform software trace forwarding-manager switch <> R0 switch-span verbose  
show platform software trace message forwarding-manager switch <> R0
```

FMAN-FP

```
set platform software trace forwarding-manager switch <> F0 switch-span verbose  
show platform software trace message forwarding-manager switch <> F0
```

FED

```
set platform software trace fed switch <> swspan verbose  
set platform software trace fed switch <> asic_spn verbose  
set platform software trace fed switch <> acl verbose (Useful when ip/ipv6 filter is  
configured)  
show platform software trace message fed switch <>
```

Informações Relacionadas

- [Suporte Técnico e Documentação - Cisco Systems](#)
- [Guia de configuração de gerenciamento de rede, Cisco IOS XE Amsterdam 17.3.x \(Switches Catalyst 9500\) ERSPAN](#)
- [Guia de configuração de gerenciamento de rede, Cisco IOS XE Amsterdam 17.3.x \(Switches Catalyst 9500\) SPAN](#)
- [Blog: Como o Cisco TAC está transformando a documentação e simplificando o autoatendimento](#)

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