دقق تفسح فحة بين دعامتين و ERSPAN على مادة حجازة 9000 sery مفتاح

المحتويات

المقدمة

يصف هذا وثيقة كيف أن يدقق فسحة بين دعامتين و ERSPAN على مادة حجازة 9000 sery مفتاح.

المتطلبات الأساسية

المتطلبات

لا توجد متطلبات خاصة لهذا المستند.

المكونات المستخدمة

تستند المعلومات الواردة في هذا المستند إلى إصدارات البرامج والمكونات المادية التالية:

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

تم إنشاء المعلومات الواردة في هذا المستند من الأجهزة الموجودة في بيئة معملية خاصة. بدأت جميع الأجهزة المُستخدمة في هذا المستند بتكوين ممسوح (افتراضي). إذا كانت شبكتك قيد التشغيل، فتأكد من فهمك للتأثير المحتمل لأي أمر.

المنتجات ذات الصلة

هذا وثيقة يستطيع أيضا كنت استعملت مع هذا جهاز وبرمجية صيغة:

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

دقت فسحة بين دعامتين

الرسم التخطيطي للشبكة

C9500-24Y4C

Twe 1/0/1   Twe 1/0/2

SPAN
Source

SPAN
Destination
Sniffer

فسحة بين دعامتين تشكيل
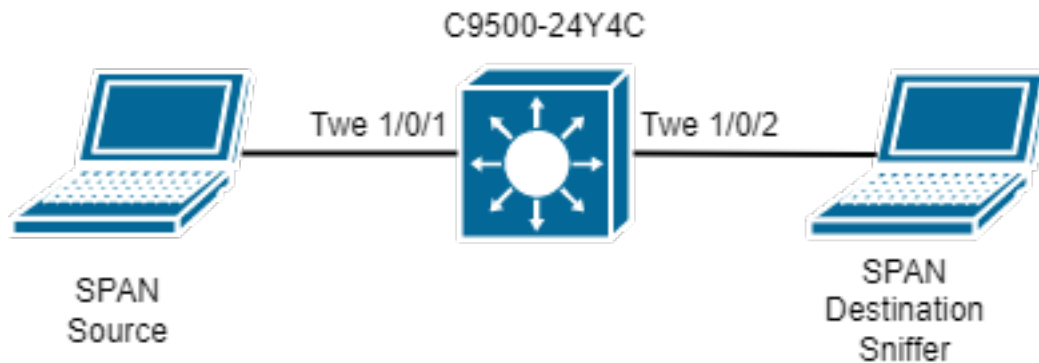
```
monitor session 1 source interface Twe1/0/1
monitor session 1 destination interface Twe1/0/2
```

دقت الفسحة بين دعامتين برمجيجة تشكيل. الحظت من المصدر وغاياة فسحة بين
دعامتين. دقق الفسحة بين دعامتين من الاتجاه وقاران من الفسحة بين دعامتين التقاط
الطاقة.

```
C9500-SPAN#show monitor session all
Session 1
---------
Type                    : Local Session
Source Ports            :
    Both                : Twe1/0/1
Destination Ports       : Twe1/0/2
    Encapsulation       : Native
            Ingress     : Disabled
```

دقق الفسحة بين دعامتين جلسة FED لكل فريد يكون نون id أي جلسة FED يستخدممدخل جهاز فسحة لكل
بين دعامتين تشكيل. يمكن أن نكون ما هناك يصل إلى 8 جلسات بتهيئة عمل في FED
نفس الوقت (من جلسات FED 0 إلى 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: Twe1/0/1     <-- Hardware entry for source interface.
  Egress Src Ports:  Twe1/0/1     <-- Hardware entry for source interface.
  Ingress Local Src Ports: (null)
  Egress Local Src Ports: (null)
  Destination Ports:  Twe1/0/2    <-- 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
```

تجمعت ASIC، لبل، وأرقام أي رسأ للمصدر يشكل وغلوغاية فسحة بين دعامتين ميناء. يتطلب
للمقرر أي رسأ نأ دكؤي إن المصدر فسحة بين دعامتين برمجت نراق لكشب صحيحوإن
.نراق دعامتين بين فسحة غاية نيميلا ىلإ نقطة نوكين دعامتين بين فسحة لفل.

تلميح: أحد استخدم ضرع برامج/أجهزة النظام الأساسي يتي يتم تعذيذتها بشكل نشط **أو**
زاهج مكدس show platform software/hardware fed switch <number>.

```
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
```

يتم إستخدام مادخت سجل Doppler **IlePortLeSpanBitMapTable** لتحديد ما إذا كان المنفذ خارجا عضاعا
للفسحة بين دعامتين في إتجاه المدخل (Rx). أن دكؤي لا يشكل لكصدر فسحة بين
دعامتين ميناء (ASIC ميناء 20) عينت إلى نيميلا **سلجة** FED (0 ةسلج):

```
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.
```

للأقل تب FED: ةسلجة FED لثامل تب كل .لجس تب-8 ةطيرخ تب ةسلج دعامتين بين لفسحةا
قيمة لثامل ةسلج 0 FED، هم تب لثامل ةسلج FED 7. كلذل، العدد من ىصقلأا فسحة بين
.اقباس ركذ امك 8، دناسي ةسلج دعامتين.

إن لكشت نراق نوكي كفسحة بين دعامتين مصدر ل عاننيم ل تعدد فسحة بين دعامتين
مع SSBM، لثملا ليبس ىلع .لجس SSBM لا يف ترهظ ينبغي ةسلج FED all the ،ةسلج
قيمة 0x5 (0b0000101) ينعي نوكي نراق دعامتين بين فسحة مصدر لكل من ةسلج لمع
FED 2 ةسلجو FED 0.

بالمثل، ددحي لجس Doppler **ElportLeSpanBitMapTable** ما اذا كان ميناء خارجا عضاعا للفسحة بين
دعامتين في إتجاه مخرج (TX). التحليل هو سفن سجل IlePortLeSpanBitMapTable. أن دكؤي لا
يشكل لمصدر فسحة بين دعامتين ميناء (ASIC ميناء 20) عينت إلى نيميلا FED ةسلج
(ةسلج 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
```

هذا يؤكد المصدر فسحة بين دعامتين خطط تطط قاران إلى ال يمين جلسة ل FED على حد سواء
.إتجاه Tx و Rx.

نحن نستطيع وجدت الغاية ميناء (منافذ) للفسحة بين دعامتين مع **FED id جلسة**، **ال** مع
ضمن **AqmRepSpanPortMap** Doppler سجل. لتأكيد جلسة عمل Fed 0 يشير إلى الفسحة
بين دعامتين يمين غاية ميناء (ASIC ميناء 21):

```
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:
0b00100000000000000000000. Bit 21 is set.
rcpPortMap              : 0x0
spanCtiLo               : 0x0
```

هذا يؤكد الربط على قبض مع فسحة بين دعامتين ينبغي أن تبدأ منسوخ من قاران
tw1/0/2 (ASIC ميناء 21). إن هناك كثير فسحة بين دعامتين غاية ميناء يشكل، هذا أبديت
.سجل **AqmRepSpanPortMap** في **ال** في.

ERSPAN تقق د

الرسم التخطيطي للشبكة

ملاحظة: ال يساند مادة حفازة C9200 ERSPAN.

ملاحظة: ترخيص ميزة الحمض النووي مطلوب.

تشكيل ERSPAN
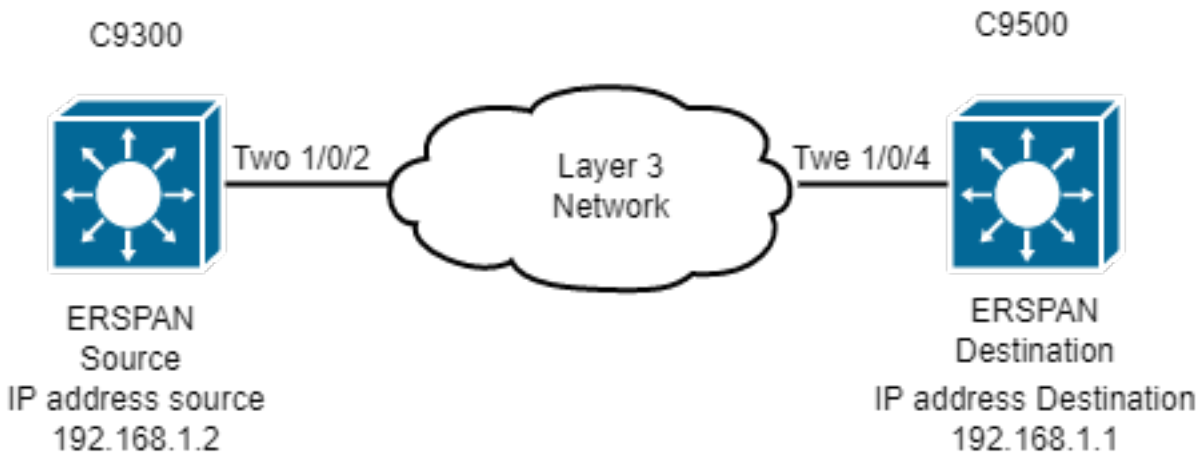
Source ESRPAN Device

```
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 Twe1/0/3
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
```

الجهاز المصدر

تحقق من إمكانية الوصول بين عنوان IP للمصدر والوجهة.

```
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
```

برمجة برنامج IOS من Cisco

دقق في برمجية cisco ios الإدخال لـ ERSPAN جلسة.

```
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
```

برمجة SHIM

تحقق من ما يرسله البرنامج إلى جهاز البرنامج (كائن 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
```

معالج توجيه مدير إعادة التوجيه

تحقق من ما يرسله البرنامج إلى جهاز البرنامج (طبقة 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
```

Forward Manager معالج إعادة توجيه

دققت ما برمجية يرسل إلى برمجية جهاز (**FMAN fp** طبقة).


```
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 err
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)
```

محرك إعادة التوجيه

دقق تحقق أن الطبقة أن يبرمج الـ 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) :
```

التحقق من برمجة نفق الأجهزة (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 : 0x000000000000035
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 hardwware 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
==============================================================
```

ركضت مدم جمع ربط طبقة الطاقة على المخرج مينة تجاه هاج مفتاحية الإغلاق. يمكن تطبيق عامل
تصفية، أنوان مدختسم عناوين IP المصدر والوجهة لنفق GRE (الحزمة هي حزمة مغلفة).

```
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)
```

غاية أداة ERSPAN

برمجة IOS من Cisco

```
C9500-ERSPAN#show monitor session 1
Session 1
---------
Type                    : ERSPAN Destination Session
Status                  : Admin Enabled
Destination Ports       : Twe1/0/3
Source IP Address       : 192.168.1.1
Source ERSPAN ID        : 3
```

برمجة SHIM

تحقق من ما يرسله البرنامج إلى جهاز البرنامج (كائن 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:  Twe1/0/3
  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
```

معالج إعادة توجيه Forward Manager

دقق ما برمجية يرسل إلى برمجية جهاز (FMAN FP طبقة).

```
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 Twe1/0/3 (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 Encape : 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
```

Forward Manager معالج إعادة توجيه

دققت ما برمجية يرسل إلى برمجية جهاز (FMAN FP طبقة).

```
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
```

هيجوتلا ةداعإ كرحم

دقق تت الطبقة أن يبرمج لا 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)            :
```

التحقق من برمجة نفق الأجهزة (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-L3ifle.......[0x7f2cd4904e08]     <-- Same number as previous highlighted
output.
Decap-L3ifle.......[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-le | 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 00 01 6b 33 00
```

```
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 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 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 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
```

عمليات تصحيح الأخطاء والتأثيرات ذات الصلة

Cisco من IOS XE

```
debug monitor all
debug platform monitor
```
إف مان-آر بي

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

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

إ ف مان-fp

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

أطعمتم

```
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 <>
```

معلومات ذات صلة

- الدعم التقني والمستندات - Cisco Systems
- Network Management Configuration Guide، Cisco IOS XE Amsterdam الإصدار 17.3.x
  (محولات Catalyst 9500 Switches) ERSPAN
- دليل تكوين إدارة الشبكة، Cisco IOS XE Amsterdam الإصدار 17.3.x (محولات Catalyst
  9500 Switches) فسحة بين دعامتين
- المدونة: كيف يقوم Cisco TAC بتحويل الوثائق وتبسيط الخدمة الذاتية

حول هذه الترجمة

ترجمت Cisco هذا المستند باستخدام مجموعة من التقنيات الآلية
والبشرية لتقديم دعم للمستخدمين في جميع أنحاء العالم
بلغتهم الخاصة. يُرجى ملاحظة أن أفضل ترجمة آلية لن تكون دقيقة كما
هو الحال مع الترجمة الاحترافية التي يقدمها مترجم محترف. تخلي Cisco
Systems مسؤوليتها عن دقة هذه الترجمات وتوصي بالرجوع دائمًا إلى
المستند الإنجليزي الأصلي (الرابط متوفر).