Configuración y verificación de capturas internas de switches Firepower y firewall seguro

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Recopilación de archivos de captura de switches internos de Secure Firewall 3100
Directrices, limitaciones y prácticas recomendadas para la captura de paquetes de switches internos
Información Relacionada

Introducción

Este documento describe la configuración y verificación de las capturas del switch interno Firepower y Secure Firewall.

Prerequisites

Requirements

Conocimiento básico del producto, análisis de captura.

Componentes Utilizados

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. Si tiene una red en vivo, asegúrese de entender el posible impacto de cualquier comando.

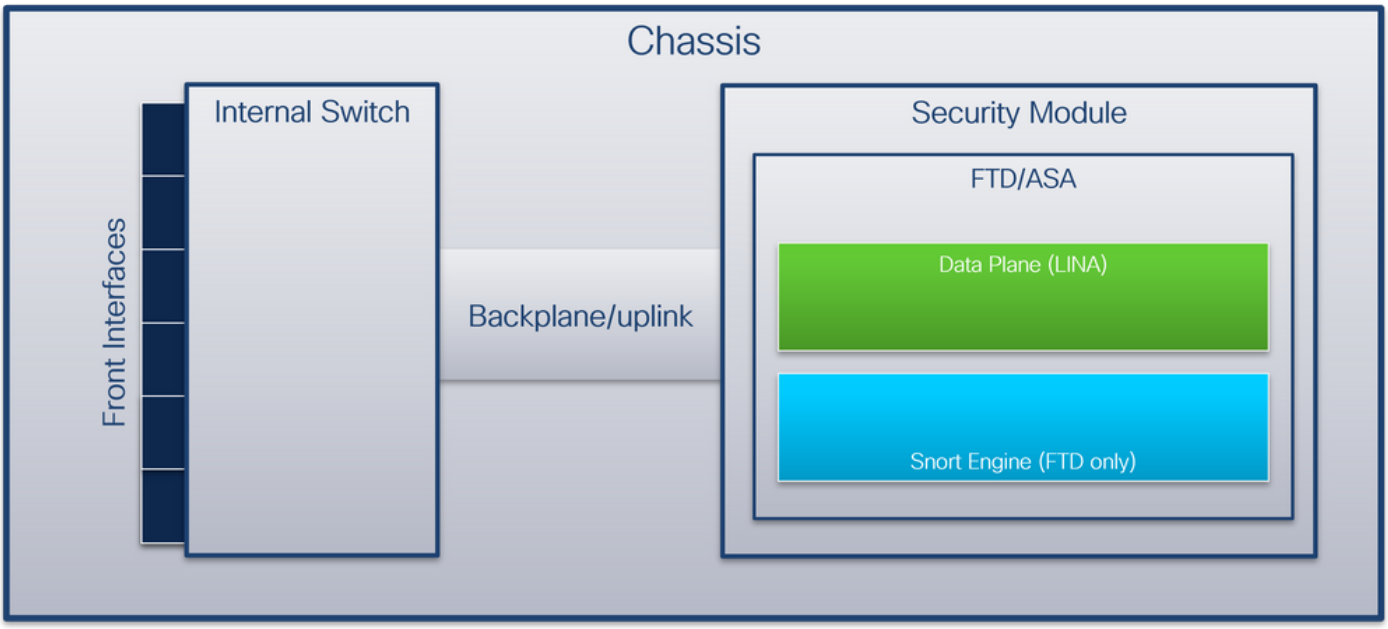
La información que contiene este documento se basa en las siguientes versiones de software y hardware.

- Firewall seguro 31xx
- Firepower 41xx
- Firepower 93xx
- Cisco Secure eXtensible Operating System (FXOS) 2.12.0.x
- Cisco Secure Firewall Threat Defence (FTD) 7.2.0.x
- Cisco Secure Firewall Management Center (FMC) 7.2.0.x
- Cisco Secure Firewall Device Manager (FDM) 7.2.0.x
- Adaptive Security Appliance (ASA) 9.18(1)x
- Adaptive Security Appliance Device Manager (ASDM) 7.18.1.x
- Wireshark 3.6.7 (https://www.wireshark.org/download.html)

Antecedentes

Descripción general de alto nivel de la arquitectura del sistema

Desde la perspectiva del flujo de paquetes, la arquitectura de Firepower 4100/9300 y Secure Firewall 3100 se puede visualizar como se muestra en esta figura:



El chasis incluye estos componentes:

- **Switch interno**: reenvía el paquete de la red a la aplicación y viceversa. El switch interno está conectado a las **interfaces frontales** que residen en el módulo de interfaz integrado o los módulos de red externos y se conecta a dispositivos externos, por ejemplo, switches. Algunos ejemplos de interfaces frontales son Ethernet 1/1, Ethernet 2/4, etc. El "frente" no es una definición técnica fuerte. En este documento, se utiliza para distinguir las interfaces conectadas a dispositivos externos de las interfaces de backplane o uplink.

- **Placa base o enlace ascendente**: interfaz interna que conecta el módulo de seguridad (SM) al switch interno. Esta tabla muestra las interfaces de placa base en Firepower 4100/9300 y la interfaz de enlace ascendente en Secure Firewall 3100:

Platform	Número de módulos de seguridad admitidos	Interfaces de backplane/uplink	Interfaces de aplic asignadas
Firepower 4100 (excepto Firepower 4110/4112)	1	SM1: Ethernet1/9 Ethernet1/10	Internal-Data0/0 Internal-Data0/1
Firepower 4110/4112	1	Ethernet1/9	Internal-Data0/0
Firepower 9300	3	SM1: Ethernet1/9 Ethernet1/10 SM2: Ethernet1/11 Ethernet1/12 SM3: Ethernet1/13 Ethernet1/14	Internal-Data0/0 Internal-Data0/1 Internal-Data0/0 Internal-Data0/1 Internal-Data0/0 Internal-Data0/1
Firewall seguro 3100	1	SM1: in_data_uplink1	Internal-Data0/1

En el caso de 2 interfaces de placa base por módulo, el switch interno y las aplicaciones de los módulos realizan un equilibrio de carga de tráfico en las 2 interfaces.

- **Módulo de seguridad, motor de seguridad** o **blade: el módulo en el que se instalan aplicaciones como FTD o ASA.** Firepower 9300 admite hasta 3 módulos de seguridad.
- **Interfaz de aplicación asignada**: las aplicaciones, como FTD o ASA, asignan la placa base o las interfaces de enlace ascendente a interfaces internas. En otras palabras, las interfaces de placa base o de enlace ascendente son visibles como interfaces internas en las aplicaciones.

Utilice el comando **show interface detail** para verificar las interfaces internas:

```
> show interface detail | grep Interface
Interface Internal-Control0/0 "ha_ctl_nlp_int_tap", is up, line protocol is up
 Control Point Interface States:
       Interface number is 6
       Interface config status is active
       Interface state is active
Interface Internal-Data0/0 "", is up, line protocol is up
 Control Point Interface States:
       Interface number is 2
       Interface config status is active
       Interface state is active
Interface Internal-Data0/1 "", is up, line protocol is up
 Control Point Interface States:
       Interface number is 3
       Interface config status is active
       Interface state is active
Interface Internal-Data0/2 "nlp_int_tap", is up, line protocol is up
 Control Point Interface States:
       Interface number is 4
       Interface config status is active
       Interface state is active
Interface Internal-Data0/3 "ccl_ha_nlp_int_tap", is up, line protocol is up
 Control Point Interface States:
       Interface number is 5
       Interface config status is active
       Interface state is active
Interface Internal-Data0/4 "cmi_mgmt_int_tap", is up, line protocol is up
 Control Point Interface States:
       Interface number is 7
       Interface config status is active
       Interface state is active
Interface Port-channel6.666 "", is up, line protocol is up
Interface Ethernet1/1 "diagnostic", is up, line protocol is up
 Control Point Interface States:
       Interface number is 8
       Interface config status is active
       Interface state is active
```

Descripción general de alto nivel de las operaciones internas del switch

Firepower 4100/9300

Para tomar una decisión de reenvío, el switch interno utiliza una **etiqueta de interfaz VLAN**, o **etiqueta de puerto VLAN**, y una **etiqueta de red virtual (VN-tag)**.

El switch interno utiliza la etiqueta de VLAN de puerto para identificar una interfaz. El switch inserta la etiqueta de VLAN de puerto en cada paquete de ingreso que vino en las interfaces frontales. El sistema configura automáticamente la etiqueta VLAN y no se puede cambiar manualmente. El valor de la etiqueta se puede verificar en el shell de comandos **fxos**:

```
firepower# connect fxos
…
firepower(fxos)# show run int e1/2
!Command: show running-config interface Ethernet1/2
!Time: Tue Jul 12 22:32:11 2022

version 5.0(3)N2(4.120)

interface Ethernet1/2
 description U: Uplink
 no lldp transmit
 no lldp receive
 no cdp enable
 switchport mode dot1q-tunnel
 switchport trunk native vlan 102
 speed 1000
 duplex full
 udld disable
 no shutdown
```

La etiqueta VN también es insertada por el switch interno y utilizada para reenviar los paquetes a la aplicación. El sistema lo configura automáticamente y no se puede cambiar manualmente.

La etiqueta del puerto VLAN y la etiqueta VN se comparten con la aplicación. La aplicación inserta las respectivas etiquetas VLAN de interfaz de salida y las etiquetas VN en cada paquete. Cuando el switch interno recibe un paquete de la aplicación en las interfaces de la placa posterior, el switch lee la etiqueta VLAN de la interfaz de egreso y la etiqueta VN, identifica la aplicación y la interfaz de egreso, elimina la etiqueta VLAN del puerto y la etiqueta VN y reenvía el paquete a la red.

Firewall seguro 3100

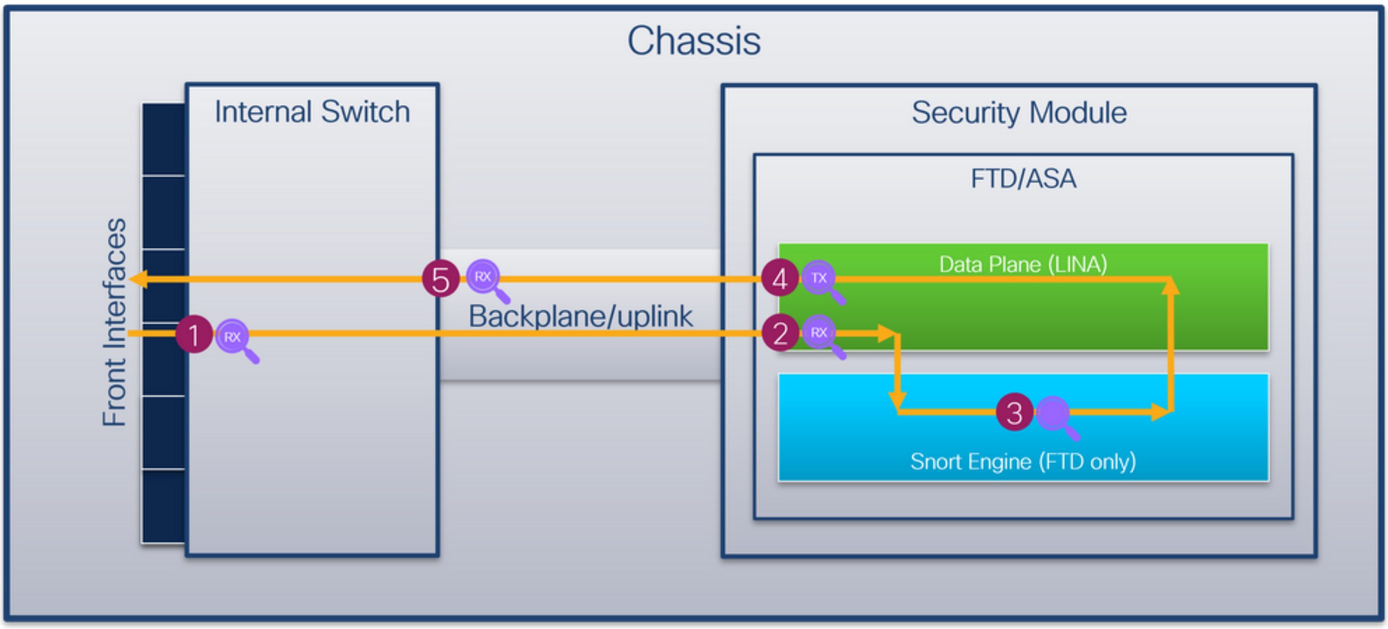
Al igual que en Firepower 4100/9300, el switch interno utiliza la etiqueta de VLAN de puerto para identificar una interfaz.

La etiqueta del puerto VLAN se comparte con la aplicación. La aplicación inserta las respectivas etiquetas VLAN de interfaz de salida en cada paquete. Cuando el switch interno recibe un paquete de la aplicación en la interfaz de enlace ascendente, el switch lee la etiqueta VLAN de la interfaz de egreso, identifica la interfaz de egreso, elimina la etiqueta VLAN del puerto y reenvía el paquete a la red.

Flujo de paquetes y puntos de captura

Los firewalls Firepower 4100/9300 y Secure Firewall 3100 admiten capturas de paquetes en las interfaces del switch interno.

Esta figura muestra los puntos de captura de paquetes a lo largo de la trayectoria del paquete dentro del chasis y la aplicación:



Los puntos de captura son:

1. Punto de captura de entrada de la interfaz frontal del switch interno. Una interfaz frontal es cualquier interfaz conectada a los dispositivos pares, como los switches.
2. Punto de captura de ingreso de interfaz de plano de datos
3. Punto de captura de Snort
4. Punto de captura de salida de interfaz de plano de datos
5. Plano posterior interno del switch o punto de captura de entrada de enlace ascendente. Una placa base o una interfaz de enlace ascendente conecta el switch interno a la aplicación.

El switch interno sólo admite capturas de interfaz de ingreso. Es decir, solo se pueden capturar los paquetes recibidos de la red o de la aplicación ASA/FTD. **No se admiten capturas de paquetes de salida.**

Configuración y verificación en Firepower 4100/9300

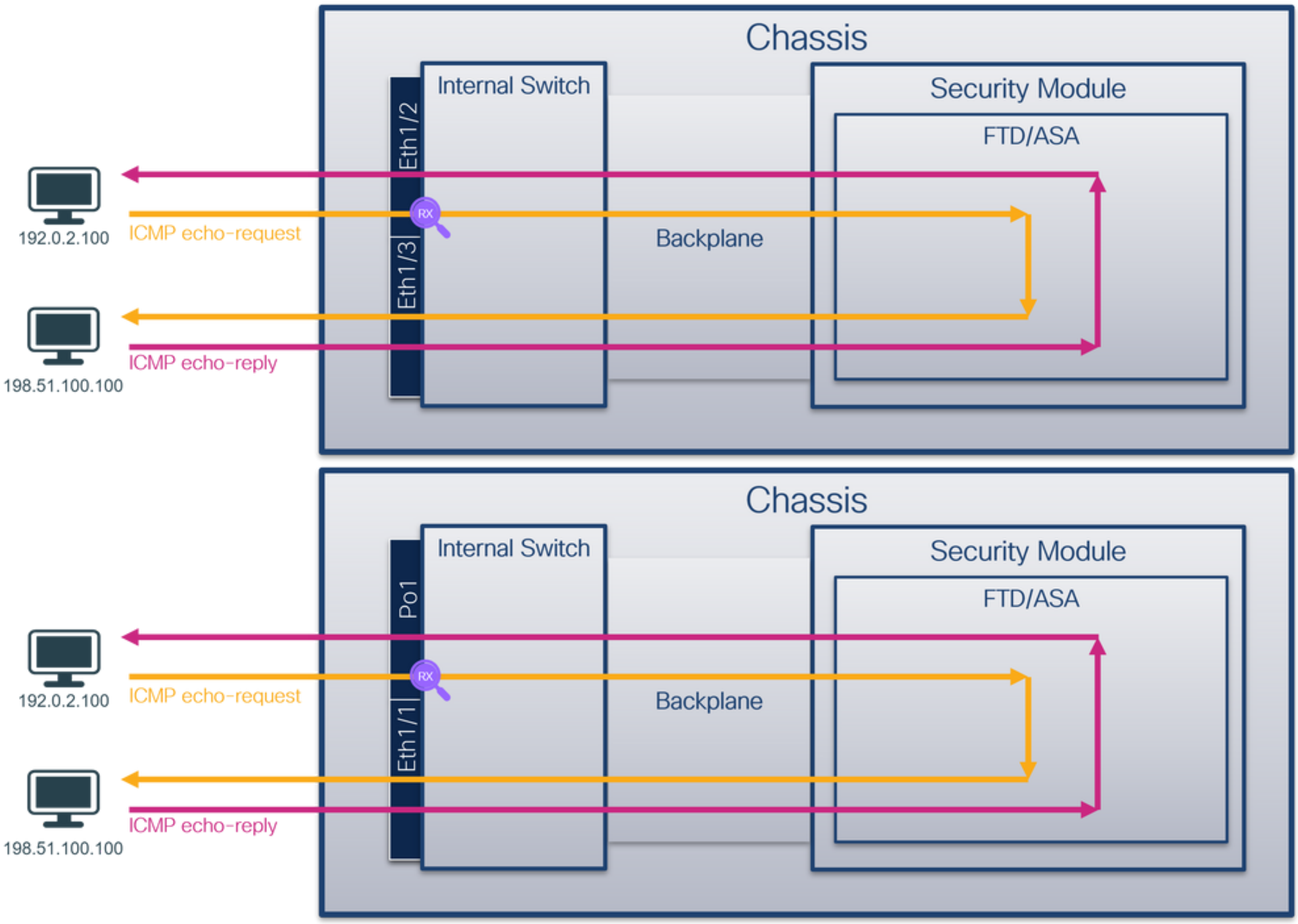
Las capturas internas del switch Firepower 4100/9300 se pueden configurar en **Herramientas > Captura de paquetes** en FCM o en **captura de paquetes de alcance** en FXOS CLI. **Para obtener una descripción de las opciones de captura de paquetes, consulte la** *Guía de configuración del administrador de chasis FXOS de Cisco Firepower 4100/9300* o la *Guía de configuración CLI de FXOS de Cisco Firepower 4100/9300*, capítulo **Resolución de problemas**, sección **Captura de paquetes**.

Estos escenarios abarcan casos prácticos comunes de capturas de switches internos Firepower 4100/9300.

Captura de paquetes en una interfaz física o de canal de puerto

Utilice FCM y CLI para configurar y verificar una captura de paquetes en la interfaz Ethernet1/2 o Portchannel1. En el caso de una interfaz de canal de puerto, asegúrese de seleccionar todas las interfaces de miembro físicas.

Topología, flujo de paquetes y puntos de captura

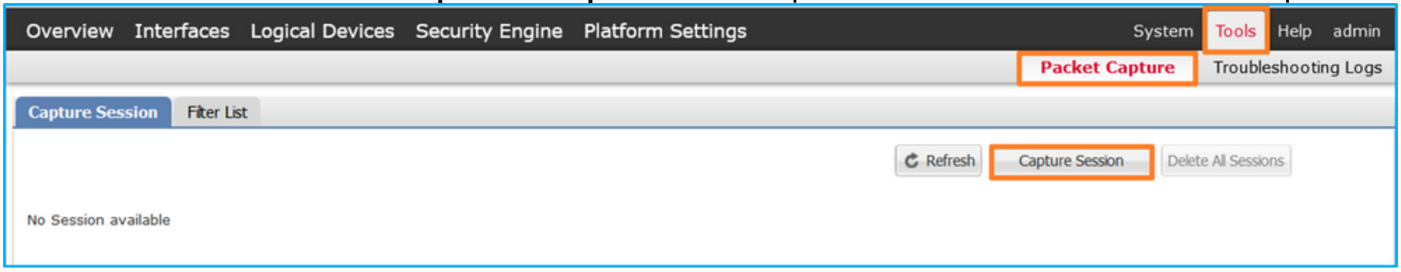


Configuración

FCM

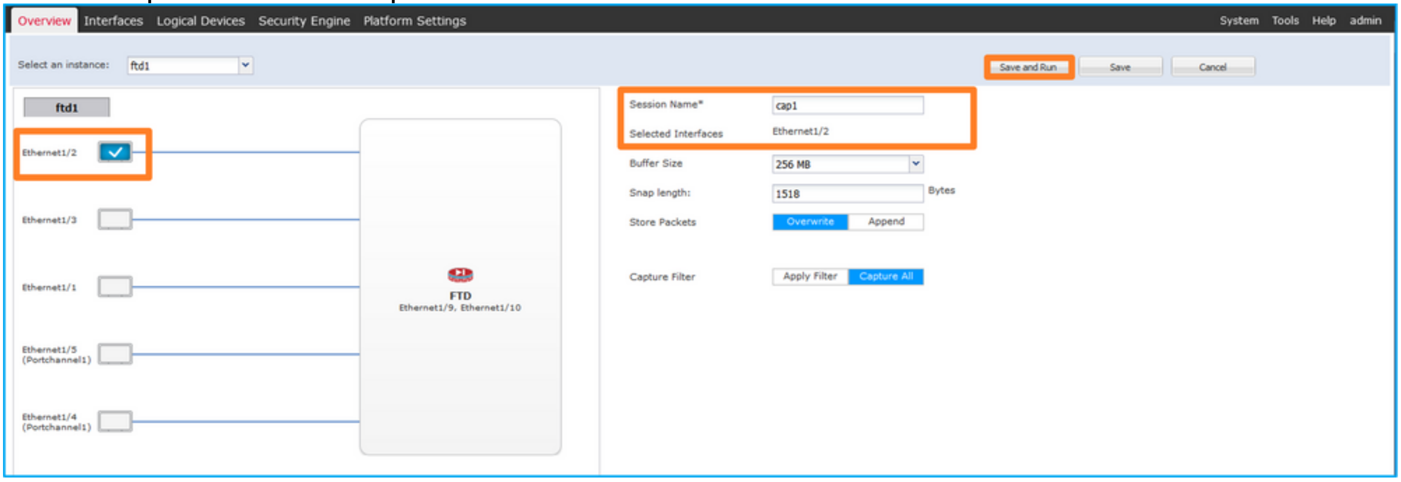
Siga estos pasos en FCM para configurar una captura de paquetes en las interfaces Ethernet1/2 o Portchannel1:

1. Utilice **Tools > Packet Capture > Capture Session** para crear una nueva sesión de captura:



No Session available

2. Seleccione la interfaz **Ethernet1/2**, proporcione el nombre de sesión y haga clic en **Save and Run** para activar la captura:



Select an instance: ftd1

Session Name* cap1

Selected Interfaces Ethernet1/2

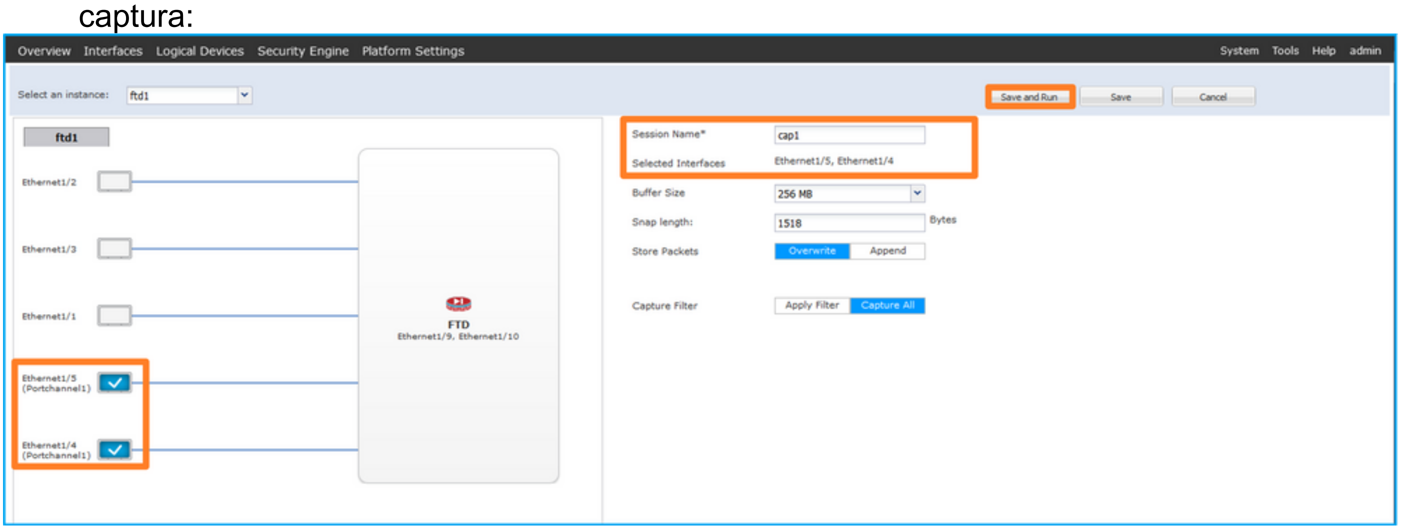
Buffer Size 256 MB

Snap length: 1518 Bytes

Store Packets Overwrite Append

Capture Filter Apply Filter Capture All

3. En el caso de una interfaz de canal de puerto, seleccione todas las interfaces de miembro físicas, proporcione el nombre de sesión y haga clic en **Guardar y Ejecutar** para activar la captura:



Select an instance: ftd1

Session Name* cap1

Selected Interfaces Ethernet1/5, Ethernet1/4

Buffer Size 256 MB

Snap length: 1518 Bytes

Store Packets Overwrite Append

Capture Filter Apply Filter Capture All

CLI FXOS

Siga estos pasos en la CLI de FXOS para configurar una captura de paquetes en las interfaces Ethernet1/2 o Portchannel1:

1. Identifique el tipo de aplicación y el identificador:

```
firepower# scope ssa
firepower /ssa # show app-instance
App Name   Identifier Slot ID    Admin State Oper State       Running Version Startup Version
Deploy Type Turbo Mode Profile Name Cluster State   Cluster Role
---------- ---------- ---------- ----------- ---------------- -------------- -------------- --
--------- ---------- ------------ -------------- -----------
ftd        ftd1       1          Enabled     Online           7.2.0.82        7.2.0.82
Native      No                      Not Applicable  None
```

2. En el caso de una interfaz de canal de puerto, identifique sus interfaces miembro:

```
firepower# connect fxos
<output skipped>
firepower(fxos)# show port-channel summary
Flags:  D - Down        P - Up in port-channel (members)
       I - Individual  H - Hot-standby (LACP only)
       s - Suspended   r - Module-removed
       S - Switched    R - Routed
       U - Up (port-channel)
       M - Not in use. Min-links not met
--------------------------------------------------------------------------------
Group Port-       Type     Protocol  Member Ports
     Channel
--------------------------------------------------------------------------------
1     Po1(SU)     Eth      LACP      Eth1/4(P)    Eth1/5(P)
```

3. Crear una sesión de captura:

```
firepower# scope packet-capture
firepower /packet-capture # create session cap1
firepower /packet-capture/session* # create phy-port Eth1/2
firepower /packet-capture/session/phy-port* # set app ftd
firepower /packet-capture/session/phy-port* # set app-identifier ftd1
firepower /packet-capture/session/phy-port* # up
firepower /packet-capture/session* # enable
firepower /packet-capture/session* # commit
firepower /packet-capture/session #
```

Para las interfaces de canal de puerto, se configura una captura independiente para cada interfaz miembro:

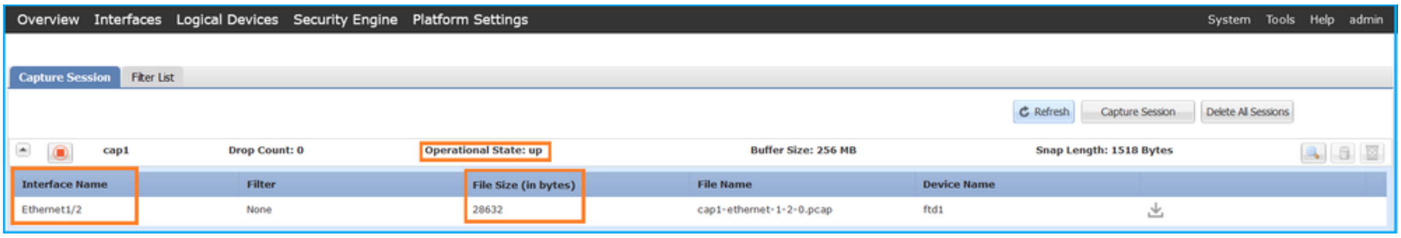
```
firepower# scope packet-capture
firepower /packet-capture # create session cap1
firepower /packet-capture/session* # create phy-port Eth1/4
firepower /packet-capture/session/phy-port* # set app ftd
firepower /packet-capture/session/phy-port* # set app-identifier ftd1
firepower /packet-capture/session/phy-port* # up
firepower /packet-capture/session* # create phy-port Eth1/5
firepower /packet-capture/session/phy-port* # set app ftd
firepower /packet-capture/session/phy-port* # set app-identifier ftd1
firepower /packet-capture/session/phy-port* # up
firepower /packet-capture/session* # enable
firepower /packet-capture/session* # commit
firepower /packet-capture/session #
```

Verificación

FCM

Verifique el **Nombre de la Interfaz**, asegúrese de que el **Estado Operacional** esté activo y que el

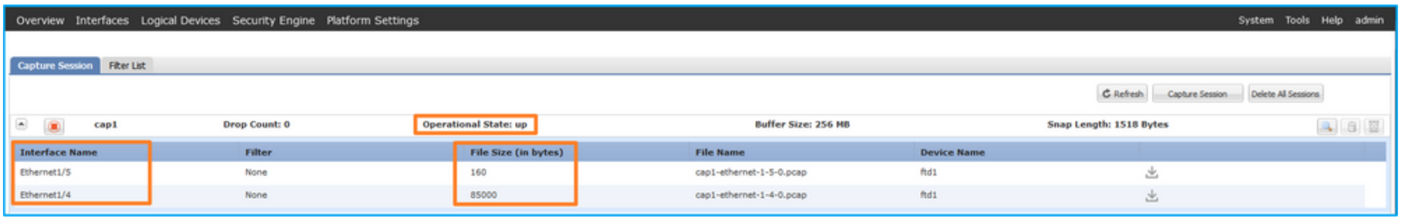
Tamaño del Archivo (en bytes) aumente:



cap1 Drop Count: 0 Operational State: up Buffer Size: 256 MB Snap Length: 1518 Bytes

Interface Name	Filter	File Size (in bytes)	File Name	Device Name
Ethernet1/2	None	28632	cap1-ethernet-1-2-0.pcap	ftd1

Portchannel1 con interfaces miembro Ethernet1/4 y Ethernet1/5:



cap1 Drop Count: 0 Operational State: up Buffer Size: 256 MB Snap Length: 1518 Bytes

Interface Name	Filter	File Size (in bytes)	File Name	Device Name
Ethernet1/5	None	160	cap1-ethernet-1-5-0.pcap	ftd1
Ethernet1/4	None	85000	cap1-ethernet-1-4-0.pcap	ftd1

CLI FXOS

Verifique los detalles de la captura en **scope packet-capture**:

```
firepower# scope packet-capture
firepower /packet-capture # show session cap1

Traffic Monitoring Session:
    Packet Capture Session Name: cap1
   Session: 1
    Admin State: Enabled
    Oper State: Up
    Oper State Reason: Active
   Config Success: Yes
   Config Fail Reason:
   Append Flag: Overwrite
   Session Mem Usage: 256  MB
   Session Pcap Snap Len: 1518  Bytes
   Error Code: 0
   Drop Count: 0

Physical ports involved in Packet Capture:
    Slot Id: 1
    Port Id: 2
    Pcapfile: /workspace/packet-capture/session-1/cap1-ethernet-1-2-0.pcap
    Pcapsize: 75136  bytes
   Filter:
   Sub Interface: 0
    Application Instance Identifier: ftd1
    Application Name: ftd
```

Canal de puerto 1 con interfaces miembro Ethernet1/4 y Ethernet1/5:

```
firepower# scope packet-capture
firepower /packet-capture # show session cap1

Traffic Monitoring Session:
    Packet Capture Session Name: cap1
   Session: 1
    Admin State: Enabled
    Oper State: Up
    Oper State Reason: Active
   Config Success: Yes
   Config Fail Reason:
   Append Flag: Overwrite
   Session Mem Usage: 256  MB
   Session Pcap Snap Len: 1518  Bytes
   Error Code: 0
   Drop Count: 0

Physical ports involved in Packet Capture:
   Slot Id: 1
    Port Id: 4
    Pcapfile: /workspace/packet-capture/session-1/cap1-ethernet-1-4-0.pcap
    Pcapsize: 310276  bytes
   Filter:
   Sub Interface: 0
    Application Instance Identifier: ftd1
    Application Name: ftd

   Slot Id: 1
    Port Id: 5
    Pcapfile: /workspace/packet-capture/session-1/cap1-ethernet-1-5-0.pcap
    Pcapsize: 160  bytes
   Filter:
   Sub Interface: 0
    Application Instance Identifier: ftd1
    Application Name: ftd
```

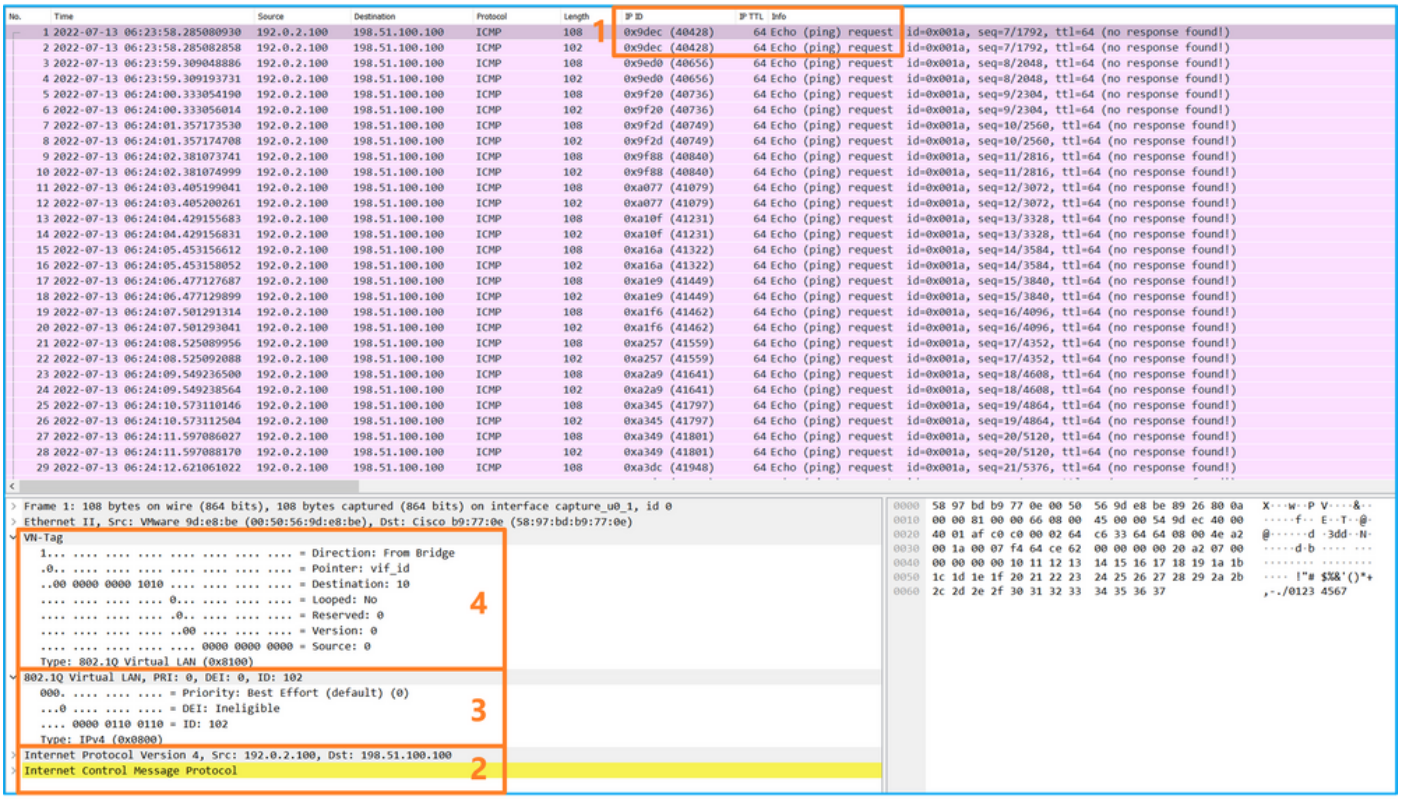
Recopilar archivos de captura

Siga los pasos de la sección **Recopilación de archivos de captura de switch internos de Firepower 4100/9300**.

Capturar análisis de archivos

Utilice una aplicación de lector de archivos de captura de paquetes para abrir el archivo de captura para Ethernet1/2. Seleccione el primer paquete y compruebe los puntos clave:

1. Solo se capturan los paquetes de solicitud de eco ICMP. Cada paquete se captura y se muestra 2 veces.
2. El encabezado del paquete original no tiene la etiqueta VLAN.
3. El switch interno inserta la etiqueta adicional del puerto VLAN **102** que identifica la interfaz de ingreso Ethernet1/2.
4. El switch interno inserta una etiqueta VN adicional.



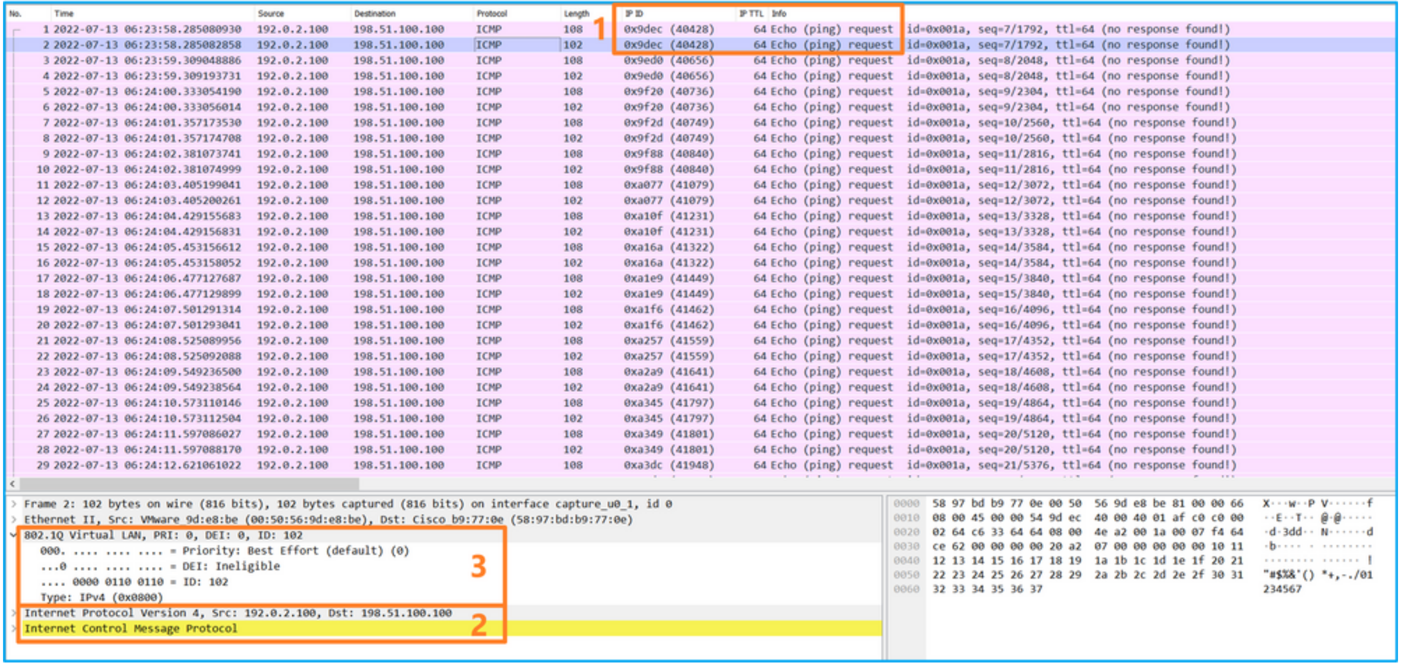
```
No.  Time                           Source        Destination     Protocol  Length  IP ID           IP TTL  Info
  1 2022-07-13 06:23:58.285080930  192.0.2.100  198.51.100.100  ICMP      108     0x9dec (40428)  64 Echo (ping) request  id=0x001a, seq=7/1792, ttl=64 (no response found!)
  2 2022-07-13 06:23:58.285082858  192.0.2.100  198.51.100.100  ICMP      102     0x9dec (40428)  64 Echo (ping) request  id=0x001a, seq=7/1792, ttl=64 (no response found!)
  3 2022-07-13 06:23:59.309048886  192.0.2.100  198.51.100.100  ICMP      108     0x9ed0 (40656)  64 Echo (ping) request  id=0x001a, seq=8/2048, ttl=64 (no response found!)
  4 2022-07-13 06:23:59.309193731  192.0.2.100  198.51.100.100  ICMP      102     0x9ed0 (40656)  64 Echo (ping) request  id=0x001a, seq=8/2048, ttl=64 (no response found!)
  5 2022-07-13 06:24:00.333054190  192.0.2.100  198.51.100.100  ICMP      108     0x9f20 (40736)  64 Echo (ping) request  id=0x001a, seq=9/2304, ttl=64 (no response found!)
  6 2022-07-13 06:24:00.333056014  192.0.2.100  198.51.100.100  ICMP      102     0x9f20 (40736)  64 Echo (ping) request  id=0x001a, seq=9/2304, ttl=64 (no response found!)
  7 2022-07-13 06:24:01.357173530  192.0.2.100  198.51.100.100  ICMP      108     0x9f2d (40749)  64 Echo (ping) request  id=0x001a, seq=10/2560, ttl=64 (no response found!)
  8 2022-07-13 06:24:01.357174708  192.0.2.100  198.51.100.100  ICMP      102     0x9f2d (40749)  64 Echo (ping) request  id=0x001a, seq=10/2560, ttl=64 (no response found!)
  9 2022-07-13 06:24:02.381073741  192.0.2.100  198.51.100.100  ICMP      108     0x9f88 (40840)  64 Echo (ping) request  id=0x001a, seq=11/2816, ttl=64 (no response found!)
 10 2022-07-13 06:24:02.381074999  192.0.2.100  198.51.100.100  ICMP      102     0x9f88 (40840)  64 Echo (ping) request  id=0x001a, seq=11/2816, ttl=64 (no response found!)
 11 2022-07-13 06:24:03.405199041  192.0.2.100  198.51.100.100  ICMP      108     0xa077 (41079)  64 Echo (ping) request  id=0x001a, seq=12/3072, ttl=64 (no response found!)
 12 2022-07-13 06:24:03.405200261  192.0.2.100  198.51.100.100  ICMP      102     0xa077 (41079)  64 Echo (ping) request  id=0x001a, seq=12/3072, ttl=64 (no response found!)
 13 2022-07-13 06:24:04.429155683  192.0.2.100  198.51.100.100  ICMP      108     0xa10f (41231)  64 Echo (ping) request  id=0x001a, seq=13/3328, ttl=64 (no response found!)
 14 2022-07-13 06:24:04.429156831  192.0.2.100  198.51.100.100  ICMP      102     0xa10f (41231)  64 Echo (ping) request  id=0x001a, seq=13/3328, ttl=64 (no response found!)
 15 2022-07-13 06:24:05.453156612  192.0.2.100  198.51.100.100  ICMP      108     0xa16a (41322)  64 Echo (ping) request  id=0x001a, seq=14/3584, ttl=64 (no response found!)
 16 2022-07-13 06:24:05.453158052  192.0.2.100  198.51.100.100  ICMP      102     0xa16a (41322)  64 Echo (ping) request  id=0x001a, seq=14/3584, ttl=64 (no response found!)
 17 2022-07-13 06:24:06.477127687  192.0.2.100  198.51.100.100  ICMP      108     0xa1e9 (41449)  64 Echo (ping) request  id=0x001a, seq=15/3840, ttl=64 (no response found!)
 18 2022-07-13 06:24:06.477129899  192.0.2.100  198.51.100.100  ICMP      102     0xa1e9 (41449)  64 Echo (ping) request  id=0x001a, seq=15/3840, ttl=64 (no response found!)
 19 2022-07-13 06:24:07.501291314  192.0.2.100  198.51.100.100  ICMP      108     0xa1f6 (41462)  64 Echo (ping) request  id=0x001a, seq=16/4096, ttl=64 (no response found!)
 20 2022-07-13 06:24:07.501293041  192.0.2.100  198.51.100.100  ICMP      102     0xa1f6 (41462)  64 Echo (ping) request  id=0x001a, seq=16/4096, ttl=64 (no response found!)
 21 2022-07-13 06:24:08.525089956  192.0.2.100  198.51.100.100  ICMP      108     0xa257 (41559)  64 Echo (ping) request  id=0x001a, seq=17/4352, ttl=64 (no response found!)
 22 2022-07-13 06:24:08.525092088  192.0.2.100  198.51.100.100  ICMP      102     0xa257 (41559)  64 Echo (ping) request  id=0x001a, seq=17/4352, ttl=64 (no response found!)
 23 2022-07-13 06:24:09.549236500  192.0.2.100  198.51.100.100  ICMP      108     0xa2a9 (41641)  64 Echo (ping) request  id=0x001a, seq=18/4608, ttl=64 (no response found!)
 24 2022-07-13 06:24:09.549238564  192.0.2.100  198.51.100.100  ICMP      102     0xa2a9 (41641)  64 Echo (ping) request  id=0x001a, seq=18/4608, ttl=64 (no response found!)
 25 2022-07-13 06:24:10.573110146  192.0.2.100  198.51.100.100  ICMP      108     0xa345 (41797)  64 Echo (ping) request  id=0x001a, seq=19/4864, ttl=64 (no response found!)
 26 2022-07-13 06:24:10.573112504  192.0.2.100  198.51.100.100  ICMP      102     0xa345 (41797)  64 Echo (ping) request  id=0x001a, seq=19/4864, ttl=64 (no response found!)
 27 2022-07-13 06:24:11.597086027  192.0.2.100  198.51.100.100  ICMP      108     0xa349 (41801)  64 Echo (ping) request  id=0x001a, seq=20/5120, ttl=64 (no response found!)
 28 2022-07-13 06:24:11.597088170  192.0.2.100  198.51.100.100  ICMP      102     0xa349 (41801)  64 Echo (ping) request  id=0x001a, seq=20/5120, ttl=64 (no response found!)
 29 2022-07-13 06:24:12.621061022  192.0.2.100  198.51.100.100  ICMP      108     0xa3dc (41948)  64 Echo (ping) request  id=0x001a, seq=21/5376, ttl=64 (no response found!)
```

```
> Frame 1: 108 bytes on wire (864 bits), 108 bytes captured (864 bits) on interface capture_u0_1, id 0
> Ethernet II, Src: VMware_9d:e8:be (00:50:56:9d:e8:be), Dst: Cisco_b9:77:0e (58:97:bd:b9:77:0e)
v VN-Tag
    1... .... .... .... .... .... .... .... = Direction: From Bridge
    .0.. .... .... .... .... .... .... .... = Pointer: vif_id
    ..00 0000 0000 1010 .... .... .... .... = Destination: 10
    .... .... .... .... 0... .... .... .... = Looped: No
    .... .... .... .... .0.. .... .... .... = Reserved: 0
    .... .... .... .... ..00 .... .... .... = Version: 0
    .... .... .... .... .... 0000 0000 0000 = Source: 0
    Type: 802.1Q Virtual LAN (0x8100)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 102
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0000 0110 0110 = ID: 102
    Type: IPv4 (0x0800)
> Internet Protocol Version 4, Src: 192.0.2.100, Dst: 198.51.100.100
> Internet Control Message Protocol
```

```
0000  58 97 bd b9 77 0e 00 50  56 9d e8 be 89 26 80 0a   X···w··P V····&··
0010  00 00 81 00 00 66 08 00  45 00 00 54 9d ec 40 00   ·····f·· E··T··@·
0020  40 01 af c0 c0 00 02 64  c6 33 64 64 08 00 4e a2   @······d ·3dd··N·
0030  00 1a 00 07 f4 64 ce 62  00 00 00 00 20 a2 07 00   ·····d·b ···· ···
0040  00 00 00 00 10 11 12 13  14 15 16 17 18 19 1a 1b   ········ ········
0050  1c 1d 1e 1f 20 21 22 23  24 25 26 27 28 29 2a 2b   ···· !"# $%&'()*+
0060  2c 2d 2e 2f 30 31 32 33  34 35 36 37               ,-./0123 4567
```

Seleccione el segundo paquete y verifique los puntos clave:

1. Solo se capturan los paquetes de solicitud de eco ICMP. Cada paquete se captura y se muestra 2 veces.
2. El encabezado del paquete original no tiene la etiqueta VLAN.
3. El switch interno inserta la etiqueta adicional del puerto VLAN **102** que identifica la interfaz de ingreso Ethernet1/2.



```
No.  Time                           Source        Destination     Protocol  Length  IP ID           IP TTL  Info
  1 2022-07-13 06:23:58.285080930  192.0.2.100  198.51.100.100  ICMP      108     0x9dec (40428)  64 Echo (ping) request  id=0x001a, seq=7/1792, ttl=64 (no response found!)
  2 2022-07-13 06:23:58.285082858  192.0.2.100  198.51.100.100  ICMP      102     0x9dec (40428)  64 Echo (ping) request  id=0x001a, seq=7/1792, ttl=64 (no response found!)
  3 2022-07-13 06:23:59.309048886  192.0.2.100  198.51.100.100  ICMP      108     0x9ed0 (40656)  64 Echo (ping) request  id=0x001a, seq=8/2048, ttl=64 (no response found!)
  4 2022-07-13 06:23:59.309193731  192.0.2.100  198.51.100.100  ICMP      102     0x9ed0 (40656)  64 Echo (ping) request  id=0x001a, seq=8/2048, ttl=64 (no response found!)
  5 2022-07-13 06:24:00.333054190  192.0.2.100  198.51.100.100  ICMP      108     0x9f20 (40736)  64 Echo (ping) request  id=0x001a, seq=9/2304, ttl=64 (no response found!)
  6 2022-07-13 06:24:00.333056014  192.0.2.100  198.51.100.100  ICMP      102     0x9f20 (40736)  64 Echo (ping) request  id=0x001a, seq=9/2304, ttl=64 (no response found!)
  7 2022-07-13 06:24:01.357173530  192.0.2.100  198.51.100.100  ICMP      108     0x9f2d (40749)  64 Echo (ping) request  id=0x001a, seq=10/2560, ttl=64 (no response found!)
  8 2022-07-13 06:24:01.357174708  192.0.2.100  198.51.100.100  ICMP      102     0x9f2d (40749)  64 Echo (ping) request  id=0x001a, seq=10/2560, ttl=64 (no response found!)
  9 2022-07-13 06:24:02.381073741  192.0.2.100  198.51.100.100  ICMP      108     0x9f88 (40840)  64 Echo (ping) request  id=0x001a, seq=11/2816, ttl=64 (no response found!)
 10 2022-07-13 06:24:02.381074999  192.0.2.100  198.51.100.100  ICMP      102     0x9f88 (40840)  64 Echo (ping) request  id=0x001a, seq=11/2816, ttl=64 (no response found!)
 11 2022-07-13 06:24:03.405199041  192.0.2.100  198.51.100.100  ICMP      108     0xa077 (41079)  64 Echo (ping) request  id=0x001a, seq=12/3072, ttl=64 (no response found!)
 12 2022-07-13 06:24:03.405200261  192.0.2.100  198.51.100.100  ICMP      102     0xa077 (41079)  64 Echo (ping) request  id=0x001a, seq=12/3072, ttl=64 (no response found!)
 13 2022-07-13 06:24:04.429155683  192.0.2.100  198.51.100.100  ICMP      108     0xa10f (41231)  64 Echo (ping) request  id=0x001a, seq=13/3328, ttl=64 (no response found!)
 14 2022-07-13 06:24:04.429156831  192.0.2.100  198.51.100.100  ICMP      102     0xa10f (41231)  64 Echo (ping) request  id=0x001a, seq=13/3328, ttl=64 (no response found!)
 15 2022-07-13 06:24:05.453156612  192.0.2.100  198.51.100.100  ICMP      108     0xa16a (41322)  64 Echo (ping) request  id=0x001a, seq=14/3584, ttl=64 (no response found!)
 16 2022-07-13 06:24:05.453158052  192.0.2.100  198.51.100.100  ICMP      102     0xa16a (41322)  64 Echo (ping) request  id=0x001a, seq=14/3584, ttl=64 (no response found!)
 17 2022-07-13 06:24:06.477127687  192.0.2.100  198.51.100.100  ICMP      108     0xa1e9 (41449)  64 Echo (ping) request  id=0x001a, seq=15/3840, ttl=64 (no response found!)
 18 2022-07-13 06:24:06.477129899  192.0.2.100  198.51.100.100  ICMP      102     0xa1e9 (41449)  64 Echo (ping) request  id=0x001a, seq=15/3840, ttl=64 (no response found!)
 19 2022-07-13 06:24:07.501291314  192.0.2.100  198.51.100.100  ICMP      108     0xa1f6 (41462)  64 Echo (ping) request  id=0x001a, seq=16/4096, ttl=64 (no response found!)
 20 2022-07-13 06:24:07.501293041  192.0.2.100  198.51.100.100  ICMP      102     0xa1f6 (41462)  64 Echo (ping) request  id=0x001a, seq=16/4096, ttl=64 (no response found!)
 21 2022-07-13 06:24:08.525089956  192.0.2.100  198.51.100.100  ICMP      108     0xa257 (41559)  64 Echo (ping) request  id=0x001a, seq=17/4352, ttl=64 (no response found!)
 22 2022-07-13 06:24:08.525092088  192.0.2.100  198.51.100.100  ICMP      102     0xa257 (41559)  64 Echo (ping) request  id=0x001a, seq=17/4352, ttl=64 (no response found!)
 23 2022-07-13 06:24:09.549236500  192.0.2.100  198.51.100.100  ICMP      108     0xa2a9 (41641)  64 Echo (ping) request  id=0x001a, seq=18/4608, ttl=64 (no response found!)
 24 2022-07-13 06:24:09.549238564  192.0.2.100  198.51.100.100  ICMP      102     0xa2a9 (41641)  64 Echo (ping) request  id=0x001a, seq=18/4608, ttl=64 (no response found!)
 25 2022-07-13 06:24:10.573110146  192.0.2.100  198.51.100.100  ICMP      108     0xa345 (41797)  64 Echo (ping) request  id=0x001a, seq=19/4864, ttl=64 (no response found!)
 26 2022-07-13 06:24:10.573112504  192.0.2.100  198.51.100.100  ICMP      102     0xa345 (41797)  64 Echo (ping) request  id=0x001a, seq=19/4864, ttl=64 (no response found!)
 27 2022-07-13 06:24:11.597086027  192.0.2.100  198.51.100.100  ICMP      108     0xa349 (41801)  64 Echo (ping) request  id=0x001a, seq=20/5120, ttl=64 (no response found!)
 28 2022-07-13 06:24:11.597088170  192.0.2.100  198.51.100.100  ICMP      102     0xa349 (41801)  64 Echo (ping) request  id=0x001a, seq=20/5120, ttl=64 (no response found!)
 29 2022-07-13 06:24:12.621061022  192.0.2.100  198.51.100.100  ICMP      108     0xa3dc (41948)  64 Echo (ping) request  id=0x001a, seq=21/5376, ttl=64 (no response found!)
```

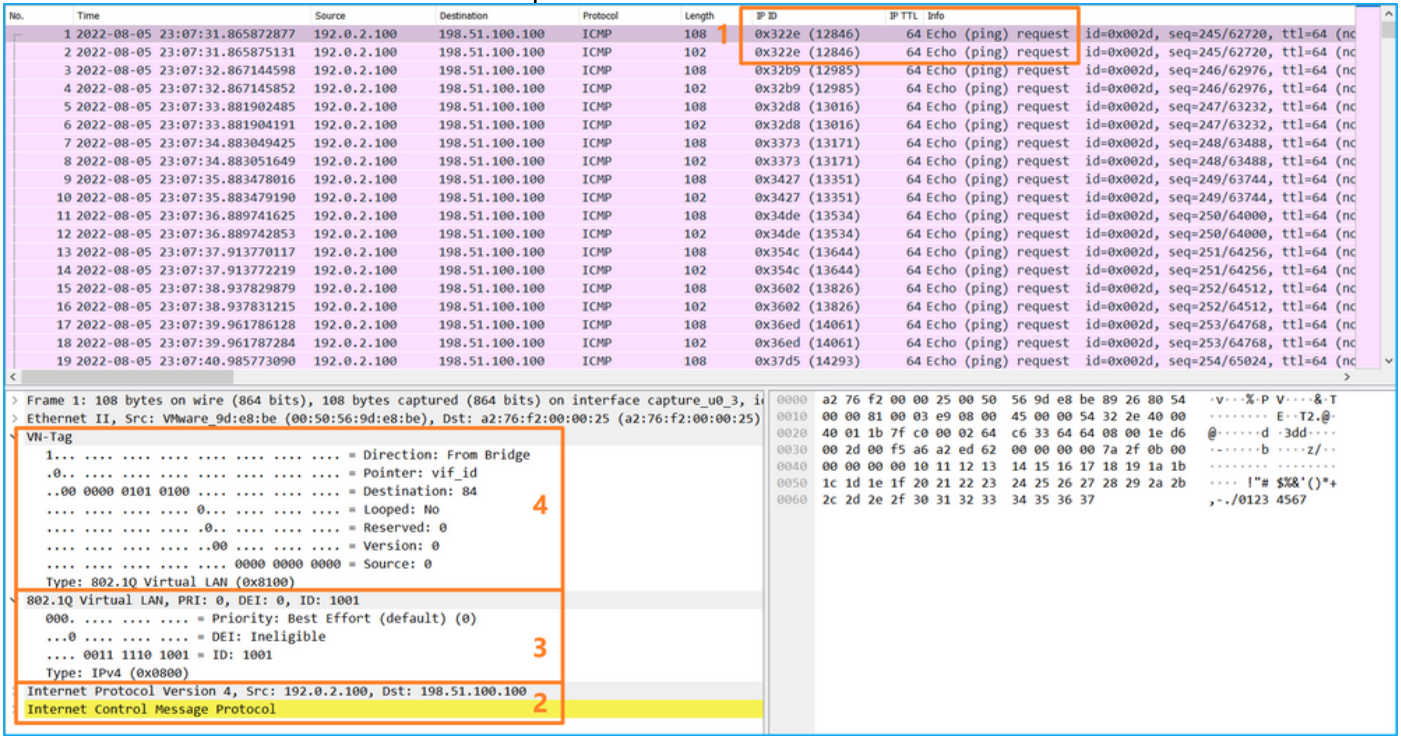
```
> Frame 2: 102 bytes on wire (816 bits), 102 bytes captured (816 bits) on interface capture_u0_1, id 0
> Ethernet II, Src: VMware_9d:e8:be (00:50:56:9d:e8:be), Dst: Cisco_b9:77:0e (58:97:bd:b9:77:0e)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 102
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0000 0110 0110 = ID: 102
    Type: IPv4 (0x0800)
> Internet Protocol Version 4, Src: 192.0.2.100, Dst: 198.51.100.100
> Internet Control Message Protocol
```

```
0000  58 97 bd b9 77 0e 00 50  56 9d e8 be 81 00 00 66   X···w··P V······f
0010  08 00 45 00 00 54 9d ec  40 00 40 01 af c0 c0 00   ··E··T·· @·@·····
0020  02 64 c6 33 64 64 08 00  4e a2 00 1a 00 07 f4 64   ·d·3dd·· N······d
0030  ce 62 00 00 00 00 20 a2  07 00 00 00 00 00 10 11   ·b···· · ········
0040  12 13 14 15 16 17 18 19  1a 1b 1c 1d 1e 1f 20 21   ········ ······ !
0050  22 23 24 25 26 27 28 29  2a 2b 2c 2d 2e 2f 30 31   "#$%&'() *+,-./01
0060  32 33 34 35 36 37                                  234567
```

Abra los archivos de captura para las interfaces de miembro Portchannel1. Seleccione el primer paquete y verifique los puntos clave:

1. Solo se capturan los paquetes de solicitud de eco ICMP. Cada paquete se captura y se muestra 2 veces.

2. El encabezado del paquete original no tiene la etiqueta VLAN.
3. El switch interno inserta una etiqueta de VLAN de puerto adicional **1001** que identifica la interfaz de ingreso Portchannel1.
4. El switch interno inserta una etiqueta VN adicional.



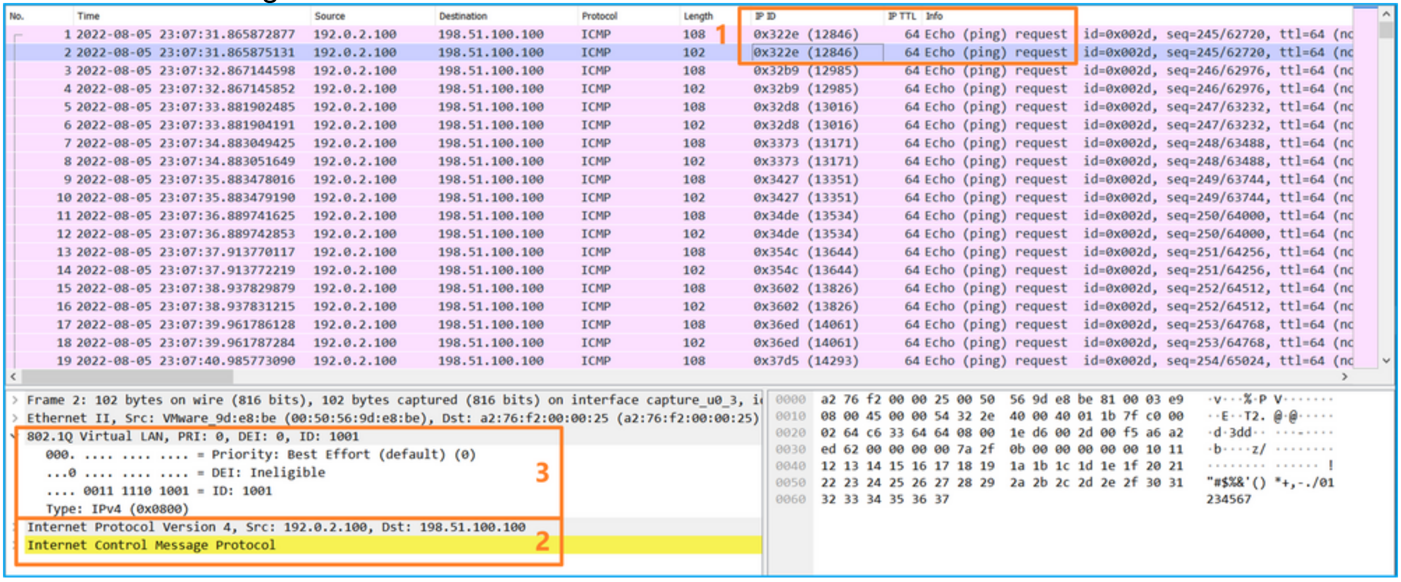
```
No.  Time                          Source       Destination      Protocol  Length  IP ID            IP TTL  Info
   1 2022-08-05 23:07:31.865872877  192.0.2.100  198.51.100.100   ICMP      108     0x322e (12846)   64 Echo (ping) request  id=0x002d, seq=245/62720, ttl=64 (nc
   2 2022-08-05 23:07:31.865875131  192.0.2.100  198.51.100.100   ICMP      102     0x322e (12846)   64 Echo (ping) request  id=0x002d, seq=245/62720, ttl=64 (nc
   3 2022-08-05 23:07:32.867144598  192.0.2.100  198.51.100.100   ICMP      108     0x32b9 (12985)   64 Echo (ping) request  id=0x002d, seq=246/62976, ttl=64 (nc
   4 2022-08-05 23:07:32.867145852  192.0.2.100  198.51.100.100   ICMP      102     0x32b9 (12985)   64 Echo (ping) request  id=0x002d, seq=246/62976, ttl=64 (nc
   5 2022-08-05 23:07:33.881902485  192.0.2.100  198.51.100.100   ICMP      108     0x32d8 (13016)   64 Echo (ping) request  id=0x002d, seq=247/63232, ttl=64 (nc
   6 2022-08-05 23:07:33.881904191  192.0.2.100  198.51.100.100   ICMP      102     0x32d8 (13016)   64 Echo (ping) request  id=0x002d, seq=247/63232, ttl=64 (nc
   7 2022-08-05 23:07:34.883049425  192.0.2.100  198.51.100.100   ICMP      108     0x3373 (13171)   64 Echo (ping) request  id=0x002d, seq=248/63488, ttl=64 (nc
   8 2022-08-05 23:07:34.883051649  192.0.2.100  198.51.100.100   ICMP      102     0x3373 (13171)   64 Echo (ping) request  id=0x002d, seq=248/63488, ttl=64 (nc
   9 2022-08-05 23:07:35.883478016  192.0.2.100  198.51.100.100   ICMP      108     0x3427 (13351)   64 Echo (ping) request  id=0x002d, seq=249/63744, ttl=64 (nc
  10 2022-08-05 23:07:35.883479190  192.0.2.100  198.51.100.100   ICMP      102     0x3427 (13351)   64 Echo (ping) request  id=0x002d, seq=249/63744, ttl=64 (nc
  11 2022-08-05 23:07:36.889741625  192.0.2.100  198.51.100.100   ICMP      108     0x34de (13534)   64 Echo (ping) request  id=0x002d, seq=250/64000, ttl=64 (nc
  12 2022-08-05 23:07:36.889742853  192.0.2.100  198.51.100.100   ICMP      102     0x34de (13534)   64 Echo (ping) request  id=0x002d, seq=250/64000, ttl=64 (nc
  13 2022-08-05 23:07:37.913770117  192.0.2.100  198.51.100.100   ICMP      108     0x354c (13644)   64 Echo (ping) request  id=0x002d, seq=251/64256, ttl=64 (nc
  14 2022-08-05 23:07:37.913772219  192.0.2.100  198.51.100.100   ICMP      102     0x354c (13644)   64 Echo (ping) request  id=0x002d, seq=251/64256, ttl=64 (nc
  15 2022-08-05 23:07:38.937829879  192.0.2.100  198.51.100.100   ICMP      108     0x3602 (13826)   64 Echo (ping) request  id=0x002d, seq=252/64512, ttl=64 (nc
  16 2022-08-05 23:07:38.937831215  192.0.2.100  198.51.100.100   ICMP      102     0x3602 (13826)   64 Echo (ping) request  id=0x002d, seq=252/64512, ttl=64 (nc
  17 2022-08-05 23:07:39.961786128  192.0.2.100  198.51.100.100   ICMP      108     0x36ed (14061)   64 Echo (ping) request  id=0x002d, seq=253/64768, ttl=64 (nc
  18 2022-08-05 23:07:39.961787284  192.0.2.100  198.51.100.100   ICMP      102     0x36ed (14061)   64 Echo (ping) request  id=0x002d, seq=253/64768, ttl=64 (nc
  19 2022-08-05 23:07:40.985773090  192.0.2.100  198.51.100.100   ICMP      108     0x37d5 (14293)   64 Echo (ping) request  id=0x002d, seq=254/65024, ttl=64 (nc
```

```
> Frame 1: 108 bytes on wire (864 bits), 108 bytes captured (864 bits) on interface capture_u0_3, i
> Ethernet II, Src: VMware_9d:e8:be (00:50:56:9d:e8:be), Dst: a2:76:f2:00:00:25 (a2:76:f2:00:00:25)
v VN-Tag
    1... .... .... .... .... .... .... .... = Direction: From Bridge
    .0.. .... .... .... .... .... .... .... = Pointer: vif_id
    ..00 0000 0101 0100 .... .... .... .... = Destination: 84
    .... .... .... .... 0... .... .... .... = Looped: No
    .... .... .... .... .0.. .... .... .... = Reserved: 0
    .... .... .... .... ..00 .... .... .... = Version: 0
    .... .... .... .... .... 0000 0000 0000 = Source: 0
    Type: 802.1Q Virtual LAN (0x8100)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 1001
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0011 1110 1001 = ID: 1001
    Type: IPv4 (0x0800)
> Internet Protocol Version 4, Src: 192.0.2.100, Dst: 198.51.100.100
> Internet Control Message Protocol
```

```
0000  a2 76 f2 00 00 25 00 50  56 9d e8 be 89 26 80 54   ·v···%·P V····&·T
0010  00 00 81 00 03 e9 08 00  45 00 00 54 32 2e 40 00   ········ E··T2.@·
0020  40 01 1b 7f c0 00 02 64  c6 33 64 64 08 00 1e d6   @······d ·3dd····
0030  00 2d 00 f5 a6 a2 ed 62  00 00 00 00 7a 2f 0b 00   ·-·····b ····z/··
0040  00 00 00 00 10 11 12 13  14 15 16 17 18 19 1a 1b   ········ ········
0050  1c 1d 1e 1f 20 21 22 23  24 25 26 27 28 29 2a 2b   ···· !"# $%&'()*+
0060  2c 2d 2e 2f 30 31 32 33  34 35 36 37               ,-./0123 4567
```

Seleccione el segundo paquete y verifique los puntos clave:

1. Solo se capturan los paquetes de solicitud de eco ICMP. Cada paquete se captura y se muestra 2 veces.
2. El encabezado del paquete original no tiene la etiqueta VLAN.
3. El switch interno inserta una etiqueta de VLAN de puerto adicional **1001** que identifica la interfaz de ingreso Portchannel1.



```
No.  Time                          Source       Destination      Protocol  Length  IP ID            IP TTL  Info
   1 2022-08-05 23:07:31.865872877  192.0.2.100  198.51.100.100   ICMP      108     0x322e (12846)   64 Echo (ping) request  id=0x002d, seq=245/62720, ttl=64 (nc
   2 2022-08-05 23:07:31.865875131  192.0.2.100  198.51.100.100   ICMP      102     0x322e (12846)   64 Echo (ping) request  id=0x002d, seq=245/62720, ttl=64 (nc
   3 2022-08-05 23:07:32.867144598  192.0.2.100  198.51.100.100   ICMP      108     0x32b9 (12985)   64 Echo (ping) request  id=0x002d, seq=246/62976, ttl=64 (nc
   4 2022-08-05 23:07:32.867145852  192.0.2.100  198.51.100.100   ICMP      102     0x32b9 (12985)   64 Echo (ping) request  id=0x002d, seq=246/62976, ttl=64 (nc
   5 2022-08-05 23:07:33.881902485  192.0.2.100  198.51.100.100   ICMP      108     0x32d8 (13016)   64 Echo (ping) request  id=0x002d, seq=247/63232, ttl=64 (nc
   6 2022-08-05 23:07:33.881904191  192.0.2.100  198.51.100.100   ICMP      102     0x32d8 (13016)   64 Echo (ping) request  id=0x002d, seq=247/63232, ttl=64 (nc
   7 2022-08-05 23:07:34.883049425  192.0.2.100  198.51.100.100   ICMP      108     0x3373 (13171)   64 Echo (ping) request  id=0x002d, seq=248/63488, ttl=64 (nc
   8 2022-08-05 23:07:34.883051649  192.0.2.100  198.51.100.100   ICMP      102     0x3373 (13171)   64 Echo (ping) request  id=0x002d, seq=248/63488, ttl=64 (nc
   9 2022-08-05 23:07:35.883478016  192.0.2.100  198.51.100.100   ICMP      108     0x3427 (13351)   64 Echo (ping) request  id=0x002d, seq=249/63744, ttl=64 (nc
  10 2022-08-05 23:07:35.883479190  192.0.2.100  198.51.100.100   ICMP      102     0x3427 (13351)   64 Echo (ping) request  id=0x002d, seq=249/63744, ttl=64 (nc
  11 2022-08-05 23:07:36.889741625  192.0.2.100  198.51.100.100   ICMP      108     0x34de (13534)   64 Echo (ping) request  id=0x002d, seq=250/64000, ttl=64 (nc
  12 2022-08-05 23:07:36.889742853  192.0.2.100  198.51.100.100   ICMP      102     0x34de (13534)   64 Echo (ping) request  id=0x002d, seq=250/64000, ttl=64 (nc
  13 2022-08-05 23:07:37.913770117  192.0.2.100  198.51.100.100   ICMP      108     0x354c (13644)   64 Echo (ping) request  id=0x002d, seq=251/64256, ttl=64 (nc
  14 2022-08-05 23:07:37.913772219  192.0.2.100  198.51.100.100   ICMP      102     0x354c (13644)   64 Echo (ping) request  id=0x002d, seq=251/64256, ttl=64 (nc
  15 2022-08-05 23:07:38.937829879  192.0.2.100  198.51.100.100   ICMP      108     0x3602 (13826)   64 Echo (ping) request  id=0x002d, seq=252/64512, ttl=64 (nc
  16 2022-08-05 23:07:38.937831215  192.0.2.100  198.51.100.100   ICMP      102     0x3602 (13826)   64 Echo (ping) request  id=0x002d, seq=252/64512, ttl=64 (nc
  17 2022-08-05 23:07:39.961786128  192.0.2.100  198.51.100.100   ICMP      108     0x36ed (14061)   64 Echo (ping) request  id=0x002d, seq=253/64768, ttl=64 (nc
  18 2022-08-05 23:07:39.961787284  192.0.2.100  198.51.100.100   ICMP      102     0x36ed (14061)   64 Echo (ping) request  id=0x002d, seq=253/64768, ttl=64 (nc
  19 2022-08-05 23:07:40.985773090  192.0.2.100  198.51.100.100   ICMP      108     0x37d5 (14293)   64 Echo (ping) request  id=0x002d, seq=254/65024, ttl=64 (nc
```

```
> Frame 2: 102 bytes on wire (816 bits), 102 bytes captured (816 bits) on interface capture_u0_3, i
> Ethernet II, Src: VMware_9d:e8:be (00:50:56:9d:e8:be), Dst: a2:76:f2:00:00:25 (a2:76:f2:00:00:25)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 1001
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0011 1110 1001 = ID: 1001
    Type: IPv4 (0x0800)
> Internet Protocol Version 4, Src: 192.0.2.100, Dst: 198.51.100.100
> Internet Control Message Protocol
```

```
0000  a2 76 f2 00 00 25 00 50  56 9d e8 be 81 00 03 e9   ·v···%·P V·······
0010  08 00 45 00 00 54 32 2e  40 00 40 01 1b 7f c0 00   ··E··T2. @·@·····
0020  02 64 c6 33 64 64 08 00  1e d6 00 2d 00 f5 a6 a2   ·d·3dd·· ···-····
0030  ed 62 00 00 00 00 7a 2f  0b 00 00 00 00 00 10 11   ·b····z/ ········
0040  12 13 14 15 16 17 18 19  1a 1b 1c 1d 1e 1f 20 21   ········ ······ !
0050  22 23 24 25 26 27 28 29  2a 2b 2c 2d 2e 2f 30 31   "#$%&'() *+,-./01
0060  32 33 34 35 36 37                                  234567
```

Explicación

Cuando se configura una captura de paquetes en una interfaz frontal, el switch captura simultáneamente cada paquete dos veces:

- Después de la inserción de la etiqueta de VLAN de puerto.
- Después de la inserción de la etiqueta VN.

En el orden de las operaciones, la etiqueta VN se inserta en una etapa posterior a la inserción de la etiqueta VLAN del puerto. Sin embargo, en el archivo de captura, el paquete con la etiqueta VN se muestra antes que el paquete con la etiqueta de puerto VLAN.

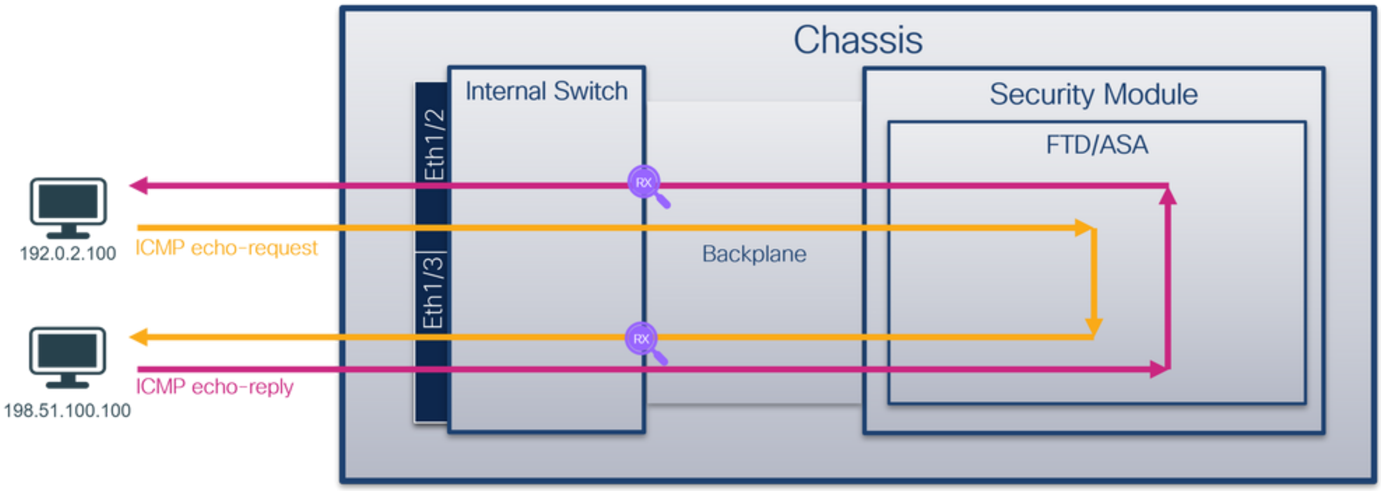
Esta tabla resume la tarea:

Tarea	**Punto de captura**	**VLAN de puerto interno en paquetes capturados**	**Dirección:**	**Tráfico capturado**
Configurar y verificar una captura de paquetes en la interfaz Ethernet1/2	Ethernet1/2	102	Solo entrada	Solicitudes de eco ICMP del host 192.0.2.100 al host 198.51.100.1
Configure y verifique una captura de paquetes en la interfaz Portchannel1 con las interfaces miembro Ethernet1/4 y Ethernet1/5	Ethernet1/4 Ethernet1/5	1001	Solo entrada	Solicitudes de eco ICMP del host 192.0.2.100 al host 198.51.100.1

Capturas de paquetes en interfaces de backplane

Utilice FCM y CLI para configurar y verificar una captura de paquetes en interfaces de placa base.

Topología, flujo de paquetes y puntos de captura

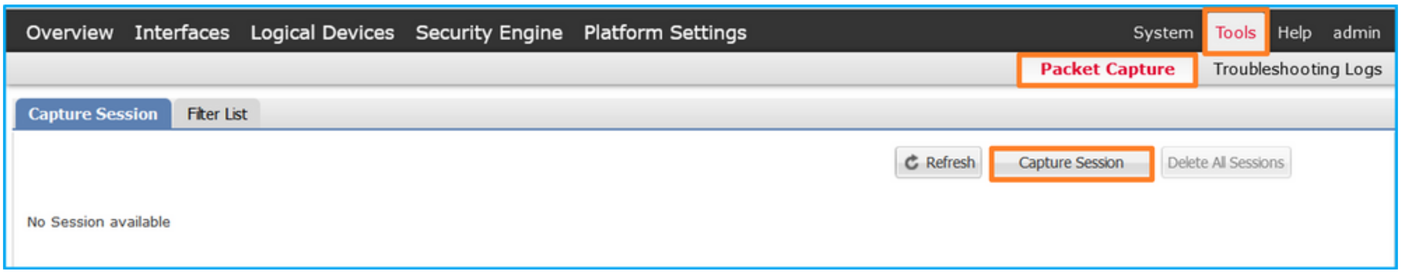


Configuración

FCM

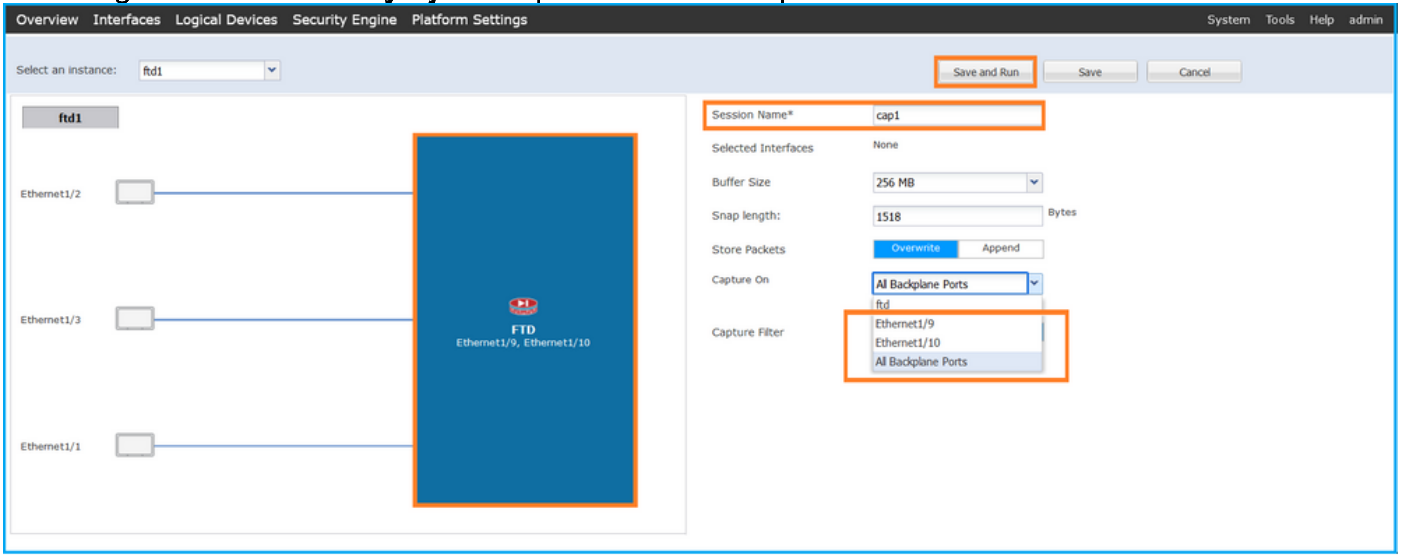
Siga estos pasos en FCM para configurar capturas de paquetes en interfaces de backplane:

1. Utilice **Tools > Packet Capture > Capture Session** para crear una nueva sesión de captura**:**



No Session available

2. Para capturar paquetes en todas las interfaces de backplane, seleccione la aplicación y, a continuación, **Todos los puertos de backplane** en la lista desplegable **Capturar en**. También puede elegir la interfaz de backplane específica. En este caso, están disponibles las interfaces de placa base Ethernet1/9 y Ethernet1/10. Proporcione el **Nombre de la Sesión** y haga clic en **Guardar y Ejecutar** para activar la captura**:**



Select an instance: ftd1

Session Name* cap1

Selected Interfaces None

Buffer Size 256 MB

Snap length: 1518 Bytes

Store Packets Overwrite Append

Capture On All Backplane Ports

Capture Filter

ftd
Ethernet1/9
Ethernet1/10
All Backplane Ports

CLI FXOS

Siga estos pasos en la CLI de FXOS para configurar las capturas de paquetes en las interfaces de la placa posterior:

1. Identifique el tipo de aplicación y el identificador:

```
firepower# scope ssa
firepower /ssa# show app-instance
App Name   Identifier Slot ID    Admin State Oper State       Running Version Startup Version
Deploy Type Turbo Mode Profile Name Cluster State   Cluster Role
---------- ---------- ---------- ----------- ---------------- --------------- --------------- --
--------- ---------- ------------ -------------- -----------
ftd        ftd1       1          Enabled     Online           7.2.0.82        7.2.0.82
Native      No                        Not Applicable  None
```

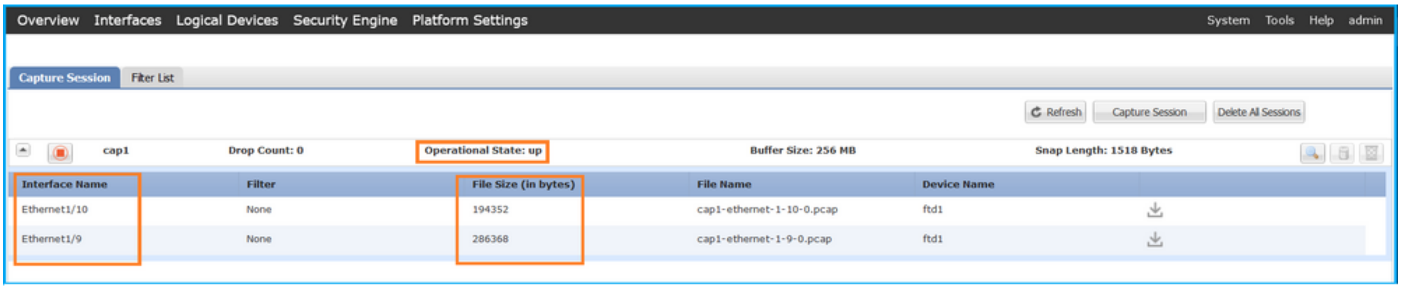
2. Crear una sesión de captura:

```
firepower# scope packet-capture
firepower /packet-capture # create session cap1
firepower /packet-capture/session* # create phy-port Eth1/9
firepower /packet-capture/session/phy-port* # set app ftd
firepower /packet-capture/session/phy-port* # set app-identifier ftd1
firepower /packet-capture/session/phy-port* # up
firepower /packet-capture/session* #  create phy-port Eth1/10
firepower /packet-capture/session/phy-port* # set app ftd
firepower /packet-capture/session/phy-port* # set app-identifier ftd1
firepower /packet-capture/session/phy-port* # up
firepower /packet-capture/session* # enable
firepower /packet-capture/session* # commit
firepower /packet-capture/session #
```

Verificación

FCM

Verifique el **Nombre de la Interfaz**, asegúrese de que el **Estado Operacional** esté activo y que el **Tamaño del Archivo (en bytes)** aumente:



cap1 Drop Count: 0 Operational State: up Buffer Size: 256 MB Snap Length: 1518 Bytes

Interface Name	Filter	File Size (in bytes)	File Name	Device Name
Ethernet1/10	None	194352	cap1-ethernet-1-10-0.pcap	ftd1
Ethernet1/9	None	286368	cap1-ethernet-1-9-0.pcap	ftd1

CLI FXOS

Verifique los detalles de la captura en **scope packet-capture**:

```
firepower# scope packet-capture
firepower /packet-capture #  show session cap1

Traffic Monitoring Session:
    Packet Capture Session Name: cap1
   Session: 1
   Admin State: Enabled
    Oper State: Up
    Oper State Reason: Active
   Config Success: Yes
   Config Fail Reason:
   Append Flag: Overwrite
   Session Mem Usage: 256  MB
   Session Pcap Snap Len: 1518  Bytes
   Error Code: 0
   Drop Count: 0

Physical ports involved in Packet Capture:
   Slot Id: 1
    Port Id: 10
    Pcapfile: /workspace/packet-capture/session-1/cap1-ethernet-1-10-0.pcap
    Pcapsize: 1017424  bytes
   Filter:
   Sub Interface: 0
    Application Instance Identifier: ftd1
    Application Name: ftd

    Slot Id: 1
    Port Id: 9
    Pcapfile: /workspace/packet-capture/session-1/cap1-ethernet-1-9-0.pcap
    Pcapsize: 1557432  bytes
   Filter:
   Sub Interface: 0
    Application Instance Identifier: ftd1
    Application Name: ftd
```

Recopilar archivos de captura

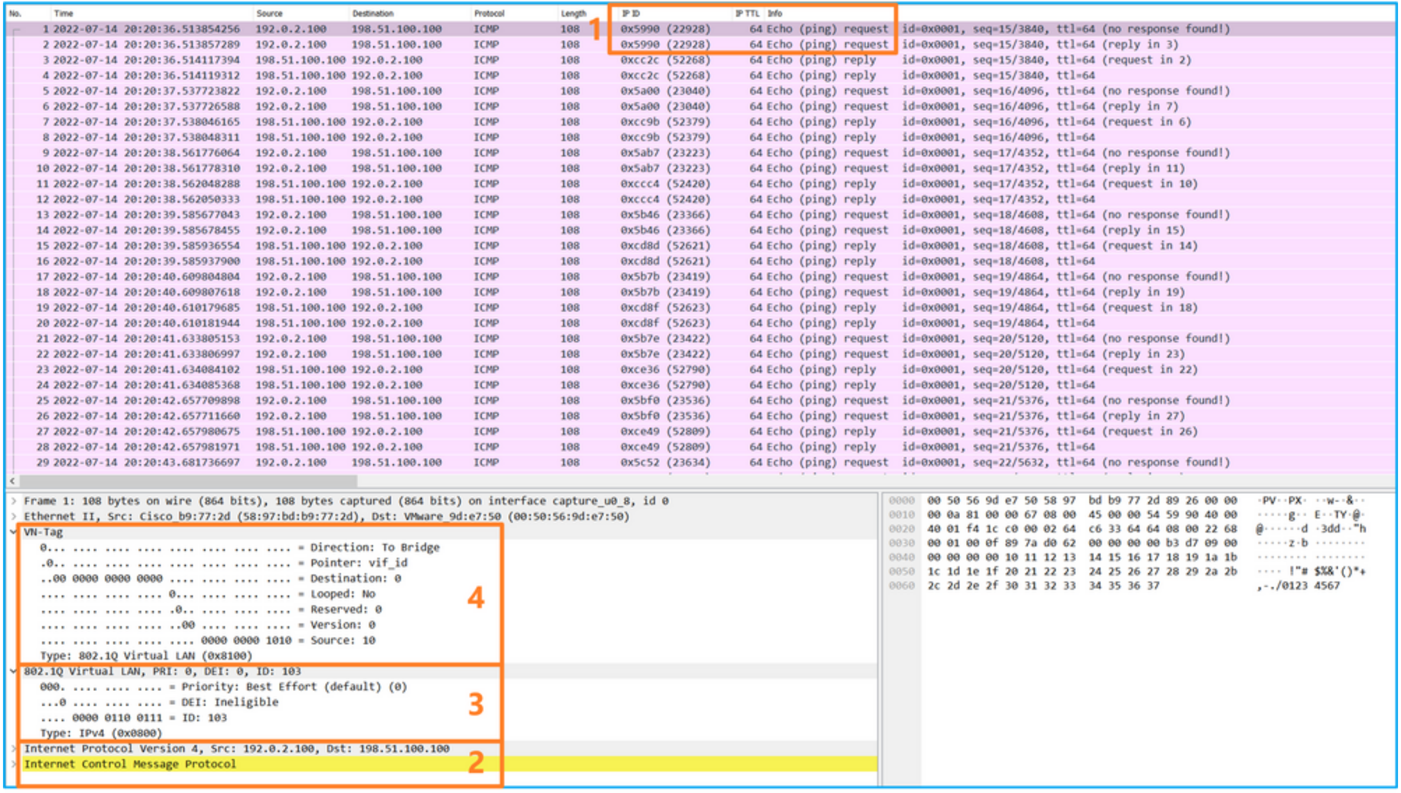
Siga los pasos de la sección **Recopilación de archivos de captura de switch internos de Firepower 4100/9300**.

Capturar análisis de archivos

Utilice una aplicación de lector de archivos de captura de paquetes para abrir los archivos de captura. En el caso de más de una interfaz de backplane, asegúrese de abrir todos los archivos de captura para cada interfaz de backplane. En este caso, los paquetes se capturan en la interfaz Ethernet1/9 de la placa de interconexiones.

Seleccione el primer y el segundo paquete y verifique los puntos clave:

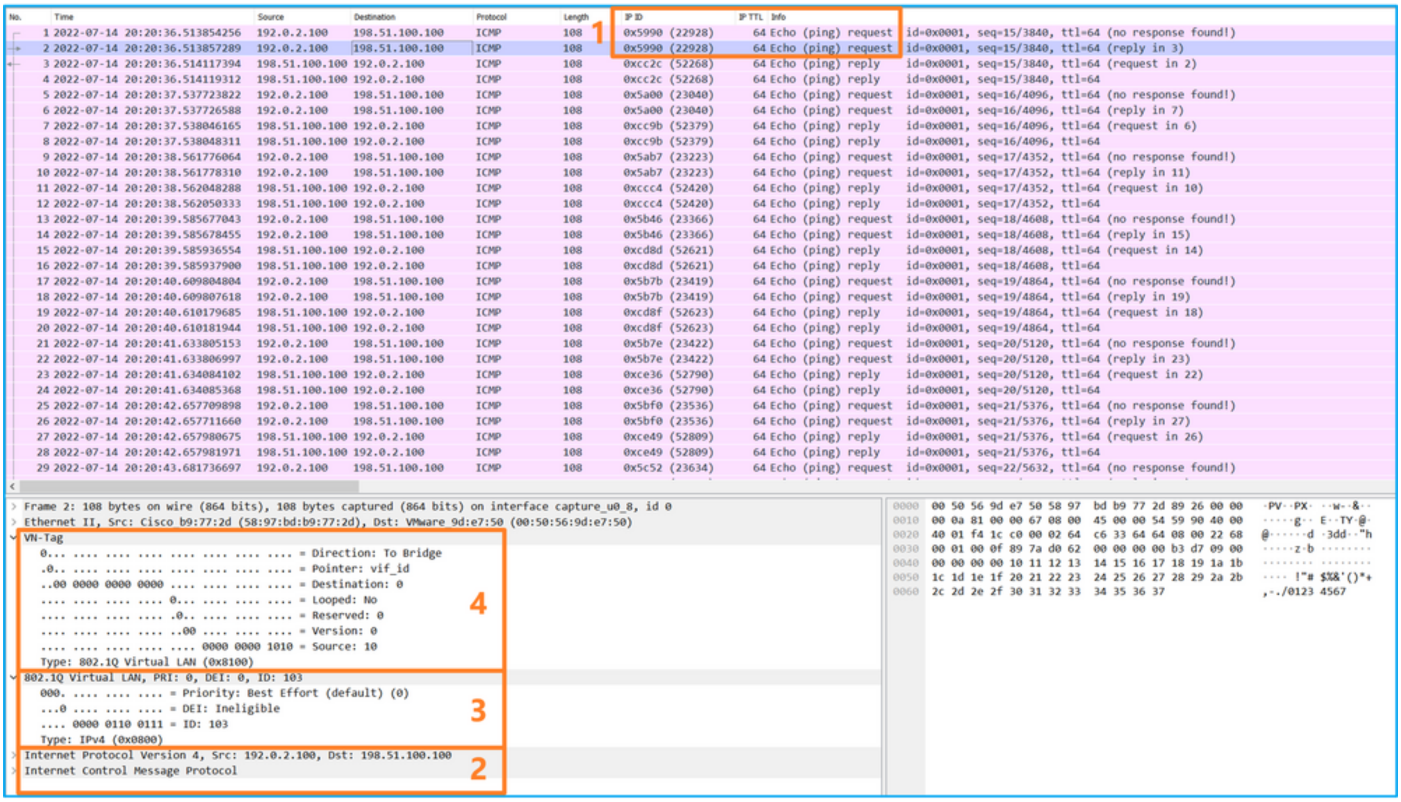
1. Cada paquete de solicitud de eco ICMP se captura y se muestra 2 veces.
2. El encabezado del paquete original no tiene la etiqueta VLAN.
3. El switch interno inserta la etiqueta adicional del puerto VLAN **103** que identifica la interfaz de salida Ethernet1/3.
4. El switch interno inserta una etiqueta VN adicional.



```
No.  Time                          Source          Destination     Protocol  Length  IP ID          IP TTL Info
   1 2022-07-14 20:20:36.513854256 192.0.2.100     198.51.100.100  ICMP      108     0x5990 (22928)     64 Echo (ping) request  id=0x0001, seq=15/3840, ttl=64 (no response found!)
   2 2022-07-14 20:20:36.513857289 192.0.2.100     198.51.100.100  ICMP      108     0x5990 (22928)     64 Echo (ping) request  id=0x0001, seq=15/3840, ttl=64 (reply in 3)
   3 2022-07-14 20:20:36.514117394 198.51.100.100 192.0.2.100      ICMP      108     0xcc2c (52268)     64 Echo (ping) reply    id=0x0001, seq=15/3840, ttl=64 (request in 2)
   4 2022-07-14 20:20:36.514119312 198.51.100.100 192.0.2.100      ICMP      108     0xcc2c (52268)     64 Echo (ping) reply    id=0x0001, seq=15/3840, ttl=64
   5 2022-07-14 20:20:37.537723822 192.0.2.100     198.51.100.100  ICMP      108     0x5a00 (23040)     64 Echo (ping) request  id=0x0001, seq=16/4096, ttl=64 (no response found!)
   6 2022-07-14 20:20:37.537726588 192.0.2.100     198.51.100.100  ICMP      108     0x5a00 (23040)     64 Echo (ping) request  id=0x0001, seq=16/4096, ttl=64 (reply in 7)
   7 2022-07-14 20:20:37.538046165 198.51.100.100 192.0.2.100      ICMP      108     0xcc9b (52379)     64 Echo (ping) reply    id=0x0001, seq=16/4096, ttl=64 (request in 6)
   8 2022-07-14 20:20:37.538048311 198.51.100.100 192.0.2.100      ICMP      108     0xcc9b (52379)     64 Echo (ping) reply    id=0x0001, seq=16/4096, ttl=64
   9 2022-07-14 20:20:38.561776064 192.0.2.100     198.51.100.100  ICMP      108     0x5ab7 (23223)     64 Echo (ping) request  id=0x0001, seq=17/4352, ttl=64 (no response found!)
  10 2022-07-14 20:20:38.561778310 192.0.2.100     198.51.100.100  ICMP      108     0x5ab7 (23223)     64 Echo (ping) request  id=0x0001, seq=17/4352, ttl=64 (reply in 11)
  11 2022-07-14 20:20:38.562048288 198.51.100.100 192.0.2.100      ICMP      108     0xccc4 (52420)     64 Echo (ping) reply    id=0x0001, seq=17/4352, ttl=64 (request in 10)
  12 2022-07-14 20:20:38.562050333 198.51.100.100 192.0.2.100      ICMP      108     0xccc4 (52420)     64 Echo (ping) reply    id=0x0001, seq=17/4352, ttl=64
  13 2022-07-14 20:20:39.585677043 192.0.2.100     198.51.100.100  ICMP      108     0x5b46 (23366)     64 Echo (ping) request  id=0x0001, seq=18/4608, ttl=64 (no response found!)
  14 2022-07-14 20:20:39.585678455 192.0.2.100     198.51.100.100  ICMP      108     0x5b46 (23366)     64 Echo (ping) request  id=0x0001, seq=18/4608, ttl=64 (reply in 15)
  15 2022-07-14 20:20:39.585936554 198.51.100.100 192.0.2.100      ICMP      108     0xcd8d (52621)     64 Echo (ping) reply    id=0x0001, seq=18/4608, ttl=64 (request in 14)
  16 2022-07-14 20:20:39.585937900 198.51.100.100 192.0.2.100      ICMP      108     0xcd8d (52621)     64 Echo (ping) reply    id=0x0001, seq=18/4608, ttl=64
  17 2022-07-14 20:20:40.609804804 192.0.2.100     198.51.100.100  ICMP      108     0x5b7b (23419)     64 Echo (ping) request  id=0x0001, seq=19/4864, ttl=64 (no response found!)
  18 2022-07-14 20:20:40.609807618 192.0.2.100     198.51.100.100  ICMP      108     0x5b7b (23419)     64 Echo (ping) request  id=0x0001, seq=19/4864, ttl=64 (reply in 19)
  19 2022-07-14 20:20:40.610179685 198.51.100.100 192.0.2.100      ICMP      108     0xcd8f (52623)     64 Echo (ping) reply    id=0x0001, seq=19/4864, ttl=64 (request in 18)
  20 2022-07-14 20:20:40.610181944 198.51.100.100 192.0.2.100      ICMP      108     0xcd8f (52623)     64 Echo (ping) reply    id=0x0001, seq=19/4864, ttl=64
  21 2022-07-14 20:20:41.633805153 192.0.2.100     198.51.100.100  ICMP      108     0x5b7e (23422)     64 Echo (ping) request  id=0x0001, seq=20/5120, ttl=64 (no response found!)
  22 2022-07-14 20:20:41.633806997 192.0.2.100     198.51.100.100  ICMP      108     0x5b7e (23422)     64 Echo (ping) request  id=0x0001, seq=20/5120, ttl=64 (reply in 23)
  23 2022-07-14 20:20:41.634084102 198.51.100.100 192.0.2.100      ICMP      108     0xce36 (52790)     64 Echo (ping) reply    id=0x0001, seq=20/5120, ttl=64 (request in 22)
  24 2022-07-14 20:20:41.634085368 198.51.100.100 192.0.2.100      ICMP      108     0xce36 (52790)     64 Echo (ping) reply    id=0x0001, seq=20/5120, ttl=64
  25 2022-07-14 20:20:42.657709898 192.0.2.100     198.51.100.100  ICMP      108     0x5bf0 (23536)     64 Echo (ping) request  id=0x0001, seq=21/5376, ttl=64 (no response found!)
  26 2022-07-14 20:20:42.657711660 192.0.2.100     198.51.100.100  ICMP      108     0x5bf0 (23536)     64 Echo (ping) request  id=0x0001, seq=21/5376, ttl=64 (reply in 27)
  27 2022-07-14 20:20:42.657980675 198.51.100.100 192.0.2.100      ICMP      108     0xce49 (52809)     64 Echo (ping) reply    id=0x0001, seq=21/5376, ttl=64 (request in 26)
  28 2022-07-14 20:20:42.657981971 198.51.100.100 192.0.2.100      ICMP      108     0xce49 (52809)     64 Echo (ping) reply    id=0x0001, seq=21/5376, ttl=64
  29 2022-07-14 20:20:43.681736697 192.0.2.100     198.51.100.100  ICMP      108     0x5c52 (23634)     64 Echo (ping) request  id=0x0001, seq=22/5632, ttl=64 (no response found!)
```

```
> Frame 1: 108 bytes on wire (864 bits), 108 bytes captured (864 bits) on interface capture_u0_8, id 0
> Ethernet II, Src: Cisco_b9:77:2d (58:97:bd:b9:77:2d), Dst: VMware_9d:e7:50 (00:50:56:9d:e7:50)
v VN-Tag
    0... .... .... .... .... .... .... .... = Direction: To Bridge
    .0.. .... .... .... .... .... .... .... = Pointer: vif_id
    ..00 0000 0000 0000 .... .... .... .... = Destination: 0
    .... .... .... .... 0... .... .... .... = Looped: No
    .... .... .... .... .0.. .... .... .... = Reserved: 0
    .... .... .... .... ..00 .... .... .... = Version: 0
    .... .... .... .... .... 0000 0000 1010 = Source: 10
    Type: 802.1Q Virtual LAN (0x8100)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 103
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0000 0110 0111 = ID: 103
    Type: IPv4 (0x0800)
> Internet Protocol Version 4, Src: 192.0.2.100, Dst: 198.51.100.100
> Internet Control Message Protocol
```

```
0000  00 50 56 9d e7 50 58 97  bd b9 77 2d 89 26 00 00   ·PV··PX· ··w-·&··
0010  00 0a 81 00 00 67 08 00  45 00 00 54 59 90 40 00   ·····g·· E··TY·@·
0020  40 01 f4 1c c0 00 02 64  c6 33 64 64 08 00 22 68   @······d ·3dd··"h
0030  00 01 00 0f 89 7a d0 62  00 00 00 00 b3 d7 09 00   ·····z·b ········
0040  00 00 00 00 10 11 12 13  14 15 16 17 18 19 1a 1b   ········ ········
0050  1c 1d 1e 1f 20 21 22 23  24 25 26 27 28 29 2a 2b   ···· !"# $%&'()*+
0060  2c 2d 2e 2f 30 31 32 33  34 35 36 37               ,-./0123 4567
```



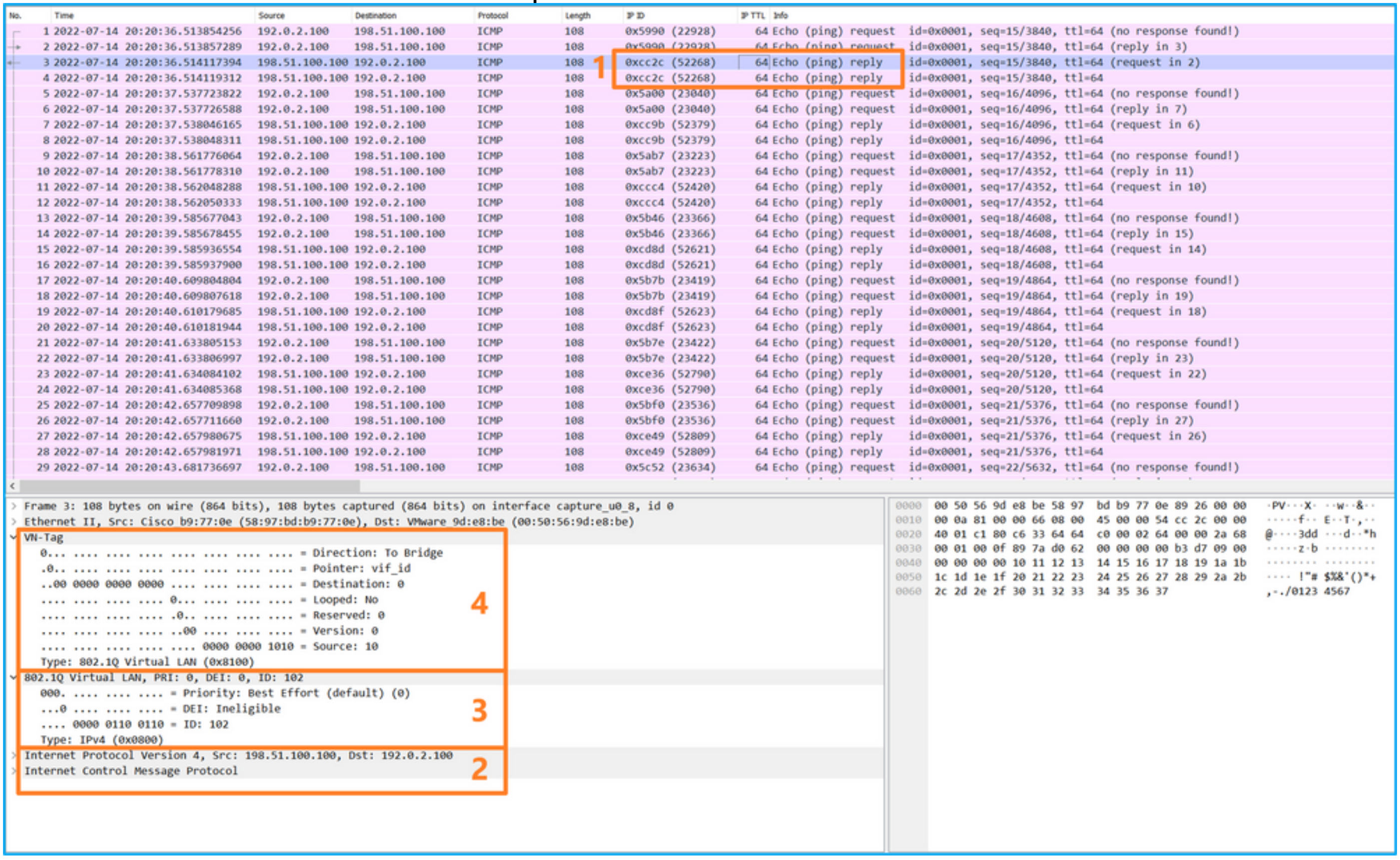
```
No.  Time                           Source          Destination     Protocol  Length  IP ID           IP TTL Info
   1 2022-07-14 20:20:36.513854256  192.0.2.100     198.51.100.100  ICMP      108     0x5990 (22928)  64 Echo (ping) request  id=0x0001, seq=15/3840, ttl=64 (no response found!)
   2 2022-07-14 20:20:36.513857289  192.0.2.100     198.51.100.100  ICMP      108     0x5990 (22928)  64 Echo (ping) request  id=0x0001, seq=15/3840, ttl=64 (reply in 3)
   3 2022-07-14 20:20:36.514117394  198.51.100.100  192.0.2.100     ICMP      108     0xcc2c (52268)  64 Echo (ping) reply    id=0x0001, seq=15/3840, ttl=64 (request in 2)
   4 2022-07-14 20:20:36.514119312  198.51.100.100  192.0.2.100     ICMP      108     0xcc2c (52268)  64 Echo (ping) reply    id=0x0001, seq=15/3840, ttl=64
   5 2022-07-14 20:20:37.537723822  192.0.2.100     198.51.100.100  ICMP      108     0x5a00 (23040)  64 Echo (ping) request  id=0x0001, seq=16/4096, ttl=64 (no response found!)
   6 2022-07-14 20:20:37.537726588  192.0.2.100     198.51.100.100  ICMP      108     0x5a00 (23040)  64 Echo (ping) request  id=0x0001, seq=16/4096, ttl=64 (reply in 7)
   7 2022-07-14 20:20:37.538046165  198.51.100.100  192.0.2.100     ICMP      108     0xcc9b (52379)  64 Echo (ping) reply    id=0x0001, seq=16/4096, ttl=64 (request in 6)
   8 2022-07-14 20:20:37.538048311  198.51.100.100  192.0.2.100     ICMP      108     0xcc9b (52379)  64 Echo (ping) reply    id=0x0001, seq=16/4096, ttl=64
   9 2022-07-14 20:20:38.561776064  192.0.2.100     198.51.100.100  ICMP      108     0x5ab7 (23223)  64 Echo (ping) request  id=0x0001, seq=17/4352, ttl=64 (no response found!)
  10 2022-07-14 20:20:38.561778310  192.0.2.100     198.51.100.100  ICMP      108     0x5ab7 (23223)  64 Echo (ping) request  id=0x0001, seq=17/4352, ttl=64 (reply in 11)
  11 2022-07-14 20:20:38.562048288  198.51.100.100  192.0.2.100     ICMP      108     0xccc4 (52420)  64 Echo (ping) reply    id=0x0001, seq=17/4352, ttl=64 (request in 10)
  12 2022-07-14 20:20:38.562050333  198.51.100.100  192.0.2.100     ICMP      108     0xccc4 (52420)  64 Echo (ping) reply    id=0x0001, seq=17/4352, ttl=64
  13 2022-07-14 20:20:39.585677043  192.0.2.100     198.51.100.100  ICMP      108     0x5b46 (23366)  64 Echo (ping) request  id=0x0001, seq=18/4608, ttl=64 (no response found!)
  14 2022-07-14 20:20:39.585678455  192.0.2.100     198.51.100.100  ICMP      108     0x5b46 (23366)  64 Echo (ping) request  id=0x0001, seq=18/4608, ttl=64 (reply in 15)
  15 2022-07-14 20:20:39.585936554  198.51.100.100  192.0.2.100     ICMP      108     0xcd8d (52621)  64 Echo (ping) reply    id=0x0001, seq=18/4608, ttl=64 (request in 14)
  16 2022-07-14 20:20:39.585937900  198.51.100.100  192.0.2.100     ICMP      108     0xcd8d (52621)  64 Echo (ping) reply    id=0x0001, seq=18/4608, ttl=64
  17 2022-07-14 20:20:40.609804804  192.0.2.100     198.51.100.100  ICMP      108     0x5b7b (23419)  64 Echo (ping) request  id=0x0001, seq=19/4864, ttl=64 (no response found!)
  18 2022-07-14 20:20:40.609807618  192.0.2.100     198.51.100.100  ICMP      108     0x5b7b (23419)  64 Echo (ping) request  id=0x0001, seq=19/4864, ttl=64 (reply in 19)
  19 2022-07-14 20:20:40.610179685  198.51.100.100  192.0.2.100     ICMP      108     0xcd8f (52623)  64 Echo (ping) reply    id=0x0001, seq=19/4864, ttl=64 (request in 18)
  20 2022-07-14 20:20:40.610181944  198.51.100.100  192.0.2.100     ICMP      108     0xcd8f (52623)  64 Echo (ping) reply    id=0x0001, seq=19/4864, ttl=64
  21 2022-07-14 20:20:41.633805153  192.0.2.100     198.51.100.100  ICMP      108     0x5b7e (23422)  64 Echo (ping) request  id=0x0001, seq=20/5120, ttl=64 (no response found!)
  22 2022-07-14 20:20:41.633806997  192.0.2.100     198.51.100.100  ICMP      108     0x5b7e (23422)  64 Echo (ping) request  id=0x0001, seq=20/5120, ttl=64 (reply in 23)
  23 2022-07-14 20:20:41.634084102  198.51.100.100  192.0.2.100     ICMP      108     0xce36 (52790)  64 Echo (ping) reply    id=0x0001, seq=20/5120, ttl=64 (request in 22)
  24 2022-07-14 20:20:41.634085368  198.51.100.100  192.0.2.100     ICMP      108     0xce36 (52790)  64 Echo (ping) reply    id=0x0001, seq=20/5120, ttl=64
  25 2022-07-14 20:20:42.657709898  192.0.2.100     198.51.100.100  ICMP      108     0x5bf0 (23536)  64 Echo (ping) request  id=0x0001, seq=21/5376, ttl=64 (no response found!)
  26 2022-07-14 20:20:42.657711660  192.0.2.100     198.51.100.100  ICMP      108     0x5bf0 (23536)  64 Echo (ping) request  id=0x0001, seq=21/5376, ttl=64 (reply in 27)
  27 2022-07-14 20:20:42.657980675  198.51.100.100  192.0.2.100     ICMP      108     0xce49 (52809)  64 Echo (ping) reply    id=0x0001, seq=21/5376, ttl=64 (request in 26)
  28 2022-07-14 20:20:42.657981971  198.51.100.100  192.0.2.100     ICMP      108     0xce49 (52809)  64 Echo (ping) reply    id=0x0001, seq=21/5376, ttl=64
  29 2022-07-14 20:20:43.681736697  192.0.2.100     198.51.100.100  ICMP      108     0x5c52 (23634)  64 Echo (ping) request  id=0x0001, seq=22/5632, ttl=64 (no response found!)
```

```
> Frame 2: 108 bytes on wire (864 bits), 108 bytes captured (864 bits) on interface capture_u0_8, id 0
> Ethernet II, Src: Cisco_b9:77:2d (58:97:bd:b9:77:2d), Dst: VMware_9d:e7:50 (00:50:56:9d:e7:50)
v VN-Tag
    0... .... .... .... .... .... .... .... = Direction: To Bridge
    .0.. .... .... .... .... .... .... .... = Pointer: vif_id
    ..00 0000 0000 0000 .... .... .... .... = Destination: 0
    .... .... .... .... 0... .... .... .... = Looped: No
    .... .... .... .... .0.. .... .... .... = Reserved: 0
    .... .... .... .... ..00 .... .... .... = Version: 0
    .... .... .... .... .... 0000 0000 1010 = Source: 10
    Type: 802.1Q Virtual LAN (0x8100)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 103
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0000 0110 0111 = ID: 103
    Type: IPv4 (0x0800)
> Internet Protocol Version 4, Src: 192.0.2.100, Dst: 198.51.100.100
> Internet Control Message Protocol
```

```
0000  00 50 56 9d e7 50 58 97  bd b9 77 2d 89 26 00 00   ·PV··PX· ··w··&··
0010  00 0a 81 00 00 67 08 00  45 00 00 54 59 90 40 00   ·····g·· E··TY·@·
0020  40 01 f4 1c c0 00 02 64  c6 33 64 64 08 00 22 68   @······d ·3dd··"h
0030  00 01 00 0f 89 7a d0 62  00 00 00 00 b3 d7 09 00   ·····z·b ········
0040  00 00 00 00 10 11 12 13  14 15 16 17 18 19 1a 1b   ········ ········
0050  1c 1d 1e 1f 20 21 22 23  24 25 26 27 28 29 2a 2b   ···· !"# $%&'()*+
0060  2c 2d 2e 2f 30 31 32 33  34 35 36 37               ,-./0123 4567
```

Seleccione el tercer y el cuarto paquetes y verifique los puntos clave:

1. Cada respuesta de eco ICMP se captura y se muestra 2 veces.
2. El encabezado del paquete original no tiene la etiqueta VLAN.
3. El switch interno inserta la etiqueta adicional del puerto VLAN **102** que identifica la interfaz de salida Ethernet1/2.
4. El switch interno inserta una etiqueta VN adicional.



```
No.  Time                           Source          Destination     Protocol  Length  IP ID           IP TTL Info
   1 2022-07-14 20:20:36.513854256  192.0.2.100     198.51.100.100  ICMP      108     0x5990 (22928)  64 Echo (ping) request  id=0x0001, seq=15/3840, ttl=64 (no response found!)
   2 2022-07-14 20:20:36.513857289  192.0.2.100     198.51.100.100  ICMP      108     0x5990 (22928)  64 Echo (ping) request  id=0x0001, seq=15/3840, ttl=64 (reply in 3)
   3 2022-07-14 20:20:36.514117394  198.51.100.100  192.0.2.100     ICMP      108     0xcc2c (52268)  64 Echo (ping) reply    id=0x0001, seq=15/3840, ttl=64 (request in 2)
   4 2022-07-14 20:20:36.514119312  198.51.100.100  192.0.2.100     ICMP      108     0xcc2c (52268)  64 Echo (ping) reply    id=0x0001, seq=15/3840, ttl=64
   5 2022-07-14 20:20:37.537723822  192.0.2.100     198.51.100.100  ICMP      108     0x5a00 (23040)  64 Echo (ping) request  id=0x0001, seq=16/4096, ttl=64 (no response found!)
   6 2022-07-14 20:20:37.537726588  192.0.2.100     198.51.100.100  ICMP      108     0x5a00 (23040)  64 Echo (ping) request  id=0x0001, seq=16/4096, ttl=64 (reply in 7)
   7 2022-07-14 20:20:37.538046165  198.51.100.100  192.0.2.100     ICMP      108     0xcc9b (52379)  64 Echo (ping) reply    id=0x0001, seq=16/4096, ttl=64 (request in 6)
   8 2022-07-14 20:20:37.538048311  198.51.100.100  192.0.2.100     ICMP      108     0xcc9b (52379)  64 Echo (ping) reply    id=0x0001, seq=16/4096, ttl=64
   9 2022-07-14 20:20:38.561776064  192.0.2.100     198.51.100.100  ICMP      108     0x5ab7 (23223)  64 Echo (ping) request  id=0x0001, seq=17/4352, ttl=64 (no response found!)
  10 2022-07-14 20:20:38.561778310  192.0.2.100     198.51.100.100  ICMP      108     0x5ab7 (23223)  64 Echo (ping) request  id=0x0001, seq=17/4352, ttl=64 (reply in 11)
  11 2022-07-14 20:20:38.562048288  198.51.100.100  192.0.2.100     ICMP      108     0xccc4 (52420)  64 Echo (ping) reply    id=0x0001, seq=17/4352, ttl=64 (request in 10)
  12 2022-07-14 20:20:38.562050333  198.51.100.100  192.0.2.100     ICMP      108     0xccc4 (52420)  64 Echo (ping) reply    id=0x0001, seq=17/4352, ttl=64
  13 2022-07-14 20:20:39.585677043  192.0.2.100     198.51.100.100  ICMP      108     0x5b46 (23366)  64 Echo (ping) request  id=0x0001, seq=18/4608, ttl=64 (no response found!)
  14 2022-07-14 20:20:39.585678455  192.0.2.100     198.51.100.100  ICMP      108     0x5b46 (23366)  64 Echo (ping) request  id=0x0001, seq=18/4608, ttl=64 (reply in 15)
  15 2022-07-14 20:20:39.585936554  198.51.100.100  192.0.2.100     ICMP      108     0xcd8d (52621)  64 Echo (ping) reply    id=0x0001, seq=18/4608, ttl=64 (request in 14)
  16 2022-07-14 20:20:39.585937900  198.51.100.100  192.0.2.100     ICMP      108     0xcd8d (52621)  64 Echo (ping) reply    id=0x0001, seq=18/4608, ttl=64
  17 2022-07-14 20:20:40.609804804  192.0.2.100     198.51.100.100  ICMP      108     0x5b7b (23419)  64 Echo (ping) request  id=0x0001, seq=19/4864, ttl=64 (no response found!)
  18 2022-07-14 20:20:40.609807618  192.0.2.100     198.51.100.100  ICMP      108     0x5b7b (23419)  64 Echo (ping) request  id=0x0001, seq=19/4864, ttl=64 (reply in 19)
  19 2022-07-14 20:20:40.610179685  198.51.100.100  192.0.2.100     ICMP      108     0xcd8f (52623)  64 Echo (ping) reply    id=0x0001, seq=19/4864, ttl=64 (request in 18)
  20 2022-07-14 20:20:40.610181944  198.51.100.100  192.0.2.100     ICMP      108     0xcd8f (52623)  64 Echo (ping) reply    id=0x0001, seq=19/4864, ttl=64
  21 2022-07-14 20:20:41.633805153  192.0.2.100     198.51.100.100  ICMP      108     0x5b7e (23422)  64 Echo (ping) request  id=0x0001, seq=20/5120, ttl=64 (no response found!)
  22 2022-07-14 20:20:41.633806997  192.0.2.100     198.51.100.100  ICMP      108     0x5b7e (23422)  64 Echo (ping) request  id=0x0001, seq=20/5120, ttl=64 (reply in 23)
  23 2022-07-14 20:20:41.634084102  198.51.100.100  192.0.2.100     ICMP      108     0xce36 (52790)  64 Echo (ping) reply    id=0x0001, seq=20/5120, ttl=64 (request in 22)
  24 2022-07-14 20:20:41.634085368  198.51.100.100  192.0.2.100     ICMP      108     0xce36 (52790)  64 Echo (ping) reply    id=0x0001, seq=20/5120, ttl=64
  25 2022-07-14 20:20:42.657709898  192.0.2.100     198.51.100.100  ICMP      108     0x5bf0 (23536)  64 Echo (ping) request  id=0x0001, seq=21/5376, ttl=64 (no response found!)
  26 2022-07-14 20:20:42.657711660  192.0.2.100     198.51.100.100  ICMP      108     0x5bf0 (23536)  64 Echo (ping) request  id=0x0001, seq=21/5376, ttl=64 (reply in 27)
  27 2022-07-14 20:20:42.657980675  198.51.100.100  192.0.2.100     ICMP      108     0xce49 (52809)  64 Echo (ping) reply    id=0x0001, seq=21/5376, ttl=64 (request in 26)
  28 2022-07-14 20:20:42.657981971  198.51.100.100  192.0.2.100     ICMP      108     0xce49 (52809)  64 Echo (ping) reply    id=0x0001, seq=21/5376, ttl=64
  29 2022-07-14 20:20:43.681736697  192.0.2.100     198.51.100.100  ICMP      108     0x5c52 (23634)  64 Echo (ping) request  id=0x0001, seq=22/5632, ttl=64 (no response found!)
```

```
> Frame 3: 108 bytes on wire (864 bits), 108 bytes captured (864 bits) on interface capture_u0_8, id 0
> Ethernet II, Src: Cisco_b9:77:0e (58:97:bd:b9:77:0e), Dst: VMware_9d:e8:be (00:50:56:9d:e8:be)
v VN-Tag
    0... .... .... .... .... .... .... .... = Direction: To Bridge
    .0.. .... .... .... .... .... .... .... = Pointer: vif_id
    ..00 0000 0000 0000 .... .... .... .... = Destination: 0
    .... .... .... .... 0... .... .... .... = Looped: No
    .... .... .... .... .0.. .... .... .... = Reserved: 0
    .... .... .... .... ..00 .... .... .... = Version: 0
    .... .... .... .... .... 0000 0000 1010 = Source: 10
    Type: 802.1Q Virtual LAN (0x8100)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 102
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0000 0110 0110 = ID: 102
    Type: IPv4 (0x0800)
> Internet Protocol Version 4, Src: 198.51.100.100, Dst: 192.0.2.100
> Internet Control Message Protocol
```

```
0000  00 50 56 9d e8 be 58 97  bd b9 77 0e 89 26 00 00   ·PV···X· ··w··&··
0010  00 0a 81 00 00 66 08 00  45 00 00 54 cc 2c 00 00   ·····f·· E··T·,··
0020  40 01 c1 80 c6 33 64 64  c0 00 02 64 00 00 2a 68   @····3dd ···d··*h
0030  00 01 00 0f 89 7a d0 62  00 00 00 00 b3 d7 09 00   ·····z·b ········
0040  00 00 00 00 10 11 12 13  14 15 16 17 18 19 1a 1b   ········ ········
0050  1c 1d 1e 1f 20 21 22 23  24 25 26 27 28 29 2a 2b   ···· !"# $%&'()*+
0060  2c 2d 2e 2f 30 31 32 33  34 35 36 37               ,-./0123 4567
```

Explicación

Cuando se configura una captura de paquetes en una interfaz de backplane, el switch captura simultáneamente cada paquete dos veces. En este caso, el switch interno recibe paquetes que ya están etiquetados por la aplicación en el módulo de seguridad con la etiqueta de VLAN de puerto y la etiqueta VPN. La etiqueta VLAN identifica la interfaz de salida que el chasis interno utiliza para reenviar los paquetes a la red. La etiqueta VLAN 103 en los paquetes de solicitud de eco ICMP identifica Ethernet1/3 como la interfaz de salida, mientras que la etiqueta VLAN 102 en los paquetes de respuesta de eco ICMP identifica Ethernet1/2 como la interfaz de salida. El switch interno quita la etiqueta VN y la etiqueta VLAN de la interfaz interna antes de que los paquetes se reenvíen a la red.

Esta tabla resume la tarea:

Tarea	Punto de captura	VLAN de puerto interno en paquetes capturados	Dirección:	Tráfico capturado
Configuración y verificación de capturas de paquetes en interfaces de backplane	Interfaces de backplane	102 103	Solo entrada	Solicitudes de eco ICMP del ho 192.0.2.100 al host 198.51.100. Respuestas de eco ICMP del h 198.51.100.100 al host 192.0.2.

Capturas de paquetes en puertos de aplicaciones y aplicaciones

Las capturas de paquetes de puertos de aplicaciones o aplicaciones siempre se configuran en las interfaces de la placa de interconexiones y, además, en las interfaces frontales si el usuario especifica la dirección de captura de la aplicación.

Hay principalmente 2 casos prácticos:

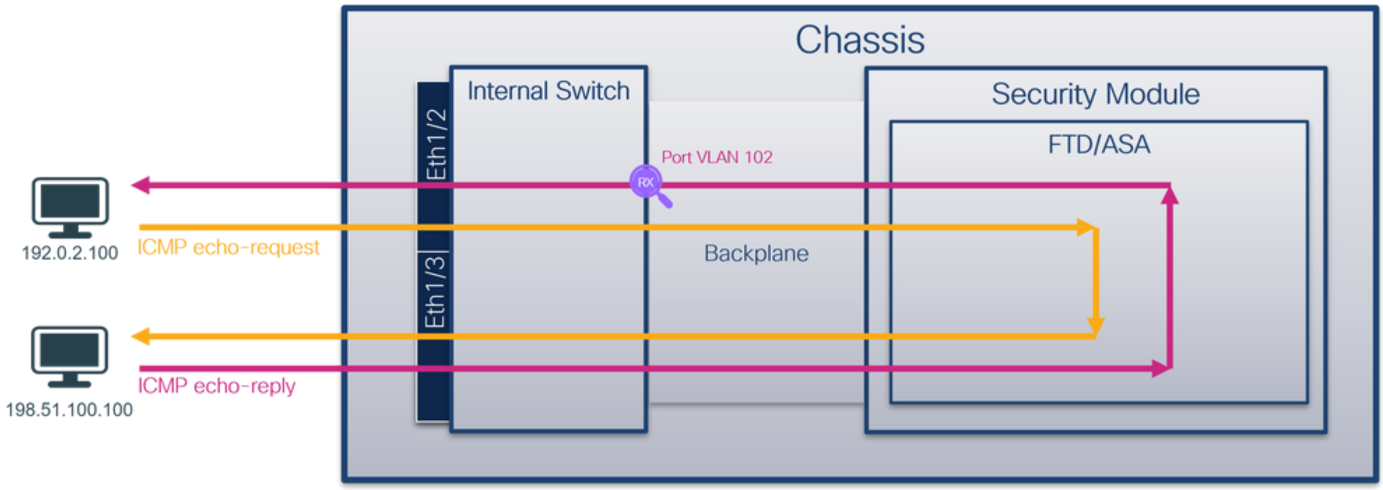
- Configure las capturas de paquetes en las interfaces de la placa de interconexiones para los paquetes que salen de una interfaz frontal específica. Por ejemplo, configure las capturas de paquetes en la interfaz Ethernet1/9 de la placa de interconexiones para los paquetes que salen de la interfaz Ethernet1/2.
- Configure capturas simultáneas de paquetes en una interfaz frontal específica y en las interfaces de la placa posterior. Por ejemplo, configure capturas simultáneas de paquetes en la interfaz Ethernet1/2 y en la interfaz de placa de interconexiones Ethernet1/9 para paquetes que salgan de la interfaz Ethernet1/2.

Esta sección abarca ambos casos prácticos.

Tarea 1

Utilice FCM y CLI para configurar y verificar una captura de paquetes en la interfaz de la placa posterior. Se capturan los paquetes para los que el puerto de aplicación Ethernet1/2 se identifica como la interfaz de salida. En este caso, se capturan las respuestas ICMP.

Topología, flujo de paquetes y puntos de captura

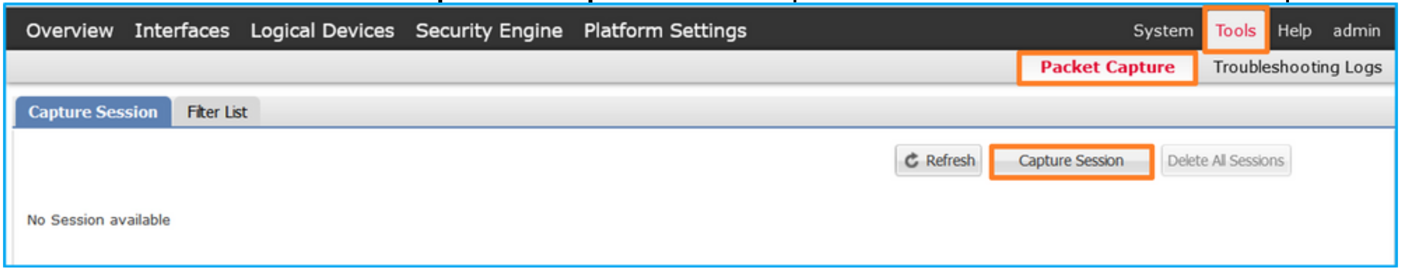


Configuración

FCM

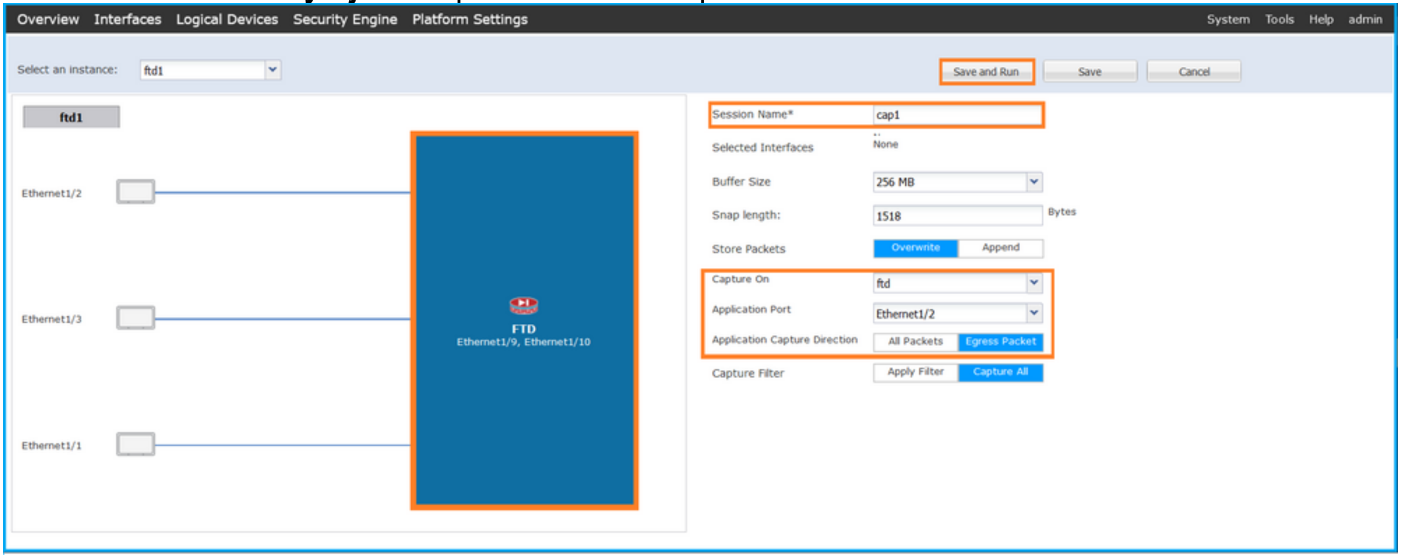
Siga estos pasos en FCM para configurar una captura de paquetes en la aplicación FTD y el puerto Ethernet1/2 de la aplicación:

1. Utilice **Tools > Packet Capture > Capture Session** para crear una nueva sesión de captura:



No Session available

2. Seleccione la aplicación **Ethernet1/2** en la lista desplegable **Application Port** y seleccione **Egress Packet** en **Application Capture Direction**. Proporcione el **Nombre de la Sesión** y haga clic en **Guardar y Ejecutar** para activar la captura:



Select an instance: ftd1

Session Name* cap1

Selected Interfaces None

Buffer Size 256 MB

Snap length: 1518 Bytes

Store Packets [Overwrite] Append

Capture On ftd

Application Port Ethernet1/2

Application Capture Direction All Packets [Egress Packet]

Capture Filter Apply Filter [Capture All]

CLI FXOS

Siga estos pasos en la CLI de FXOS para configurar las capturas de paquetes en las interfaces de la placa posterior:

1. Identifique el tipo de aplicación y el identificador:

```
firepower# scope ssa
firepower /ssa#  show app-instance
App Name   Identifier Slot ID    Admin State Oper State       Running Version Startup Version
Deploy Type Turbo Mode Profile Name Cluster State   Cluster Role
---------- ---------- ---------- ----------- ---------------- --------------- --------------- --
--------- ---------- ------------ -------------- ------------
ftd        ftd1       1          Enabled     Online           7.2.0.82        7.2.0.82
Native      No                     Not Applicable  None
```

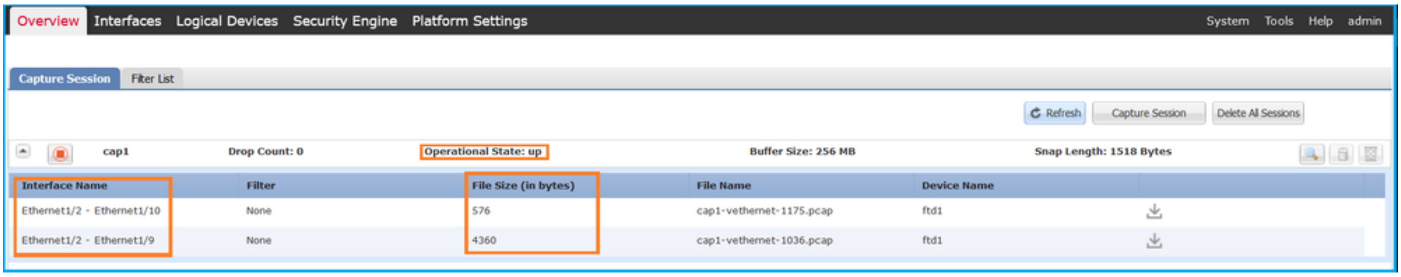
2. Crear una sesión de captura:

```
firepower# scope packet-capture
firepower /packet-capture # create session cap1
firepower /packet-capture/session* # create app-port 1 112 Ethernet1/2 ftd
firepower /packet-capture/session/app-port* # set app-identifier ftd1
firepower /packet-capture/session/app-port* # set filter ""
firepower /packet-capture/session/app-port* # set subinterface 0
firepower /packet-capture/session/app-port* # up
firepower /packet-capture/session* # commit
firepower /packet-capture/session #
```

Verificación

FCM

Verifique el **Nombre de la Interfaz**, asegúrese de que el **Estado Operacional** esté activo y que el **Tamaño del Archivo (en bytes)** aumente:



cap1 Drop Count: 0 Operational State: up Buffer Size: 256 MB Snap Length: 1518 Bytes

Interface Name	Filter	File Size (in bytes)	File Name	Device Name
Ethernet1/2 - Ethernet1/10	None	576	cap1-vethernet-1175.pcap	ftd1
Ethernet1/2 - Ethernet1/9	None	4360	cap1-vethernet-1036.pcap	ftd1

CLI FXOS

Verifique los detalles de la captura en **scope packet-capture**:

```
firepower# scope packet-capture
firepower /packet-capture #  show session cap1

Traffic Monitoring Session:
    Packet Capture Session Name: cap1
   Session: 1
    Admin State: Enabled
    Oper State: Up
    Oper State Reason: Active
   Config Success: Yes
   Config Fail Reason:
   Append Flag: Overwrite
   Session Mem Usage: 256  MB
   Session Pcap Snap Len: 1518  Bytes
   Error Code: 0
   Drop Count: 0
```

```
Application ports involved in Packet Capture:
    Slot Id: 1
    Link Name: l12
    Port Name: Ethernet1/2
   App Name: ftd
   Sub Interface: 0
    Application Instance Identifier: ftd1

Application ports resolved to:
    Name: vnic1
    Eq Slot Id: 1
    Eq Port Id: 9
    Pcapfile: /workspace/packet-capture/session-1/cap1-vethernet-1036.pcap
    Pcapsize: 53640  bytes
   Vlan: 102
   Filter:

   Name: vnic2
    Eq Slot Id: 1
    Eq Port Id: 10
    Pcapfile: /workspace/packet-capture/session-1/cap1-vethernet-1175.pcap
    Pcapsize: 1824  bytes
   Vlan: 102
   Filter:
```

Recopilar archivos de captura

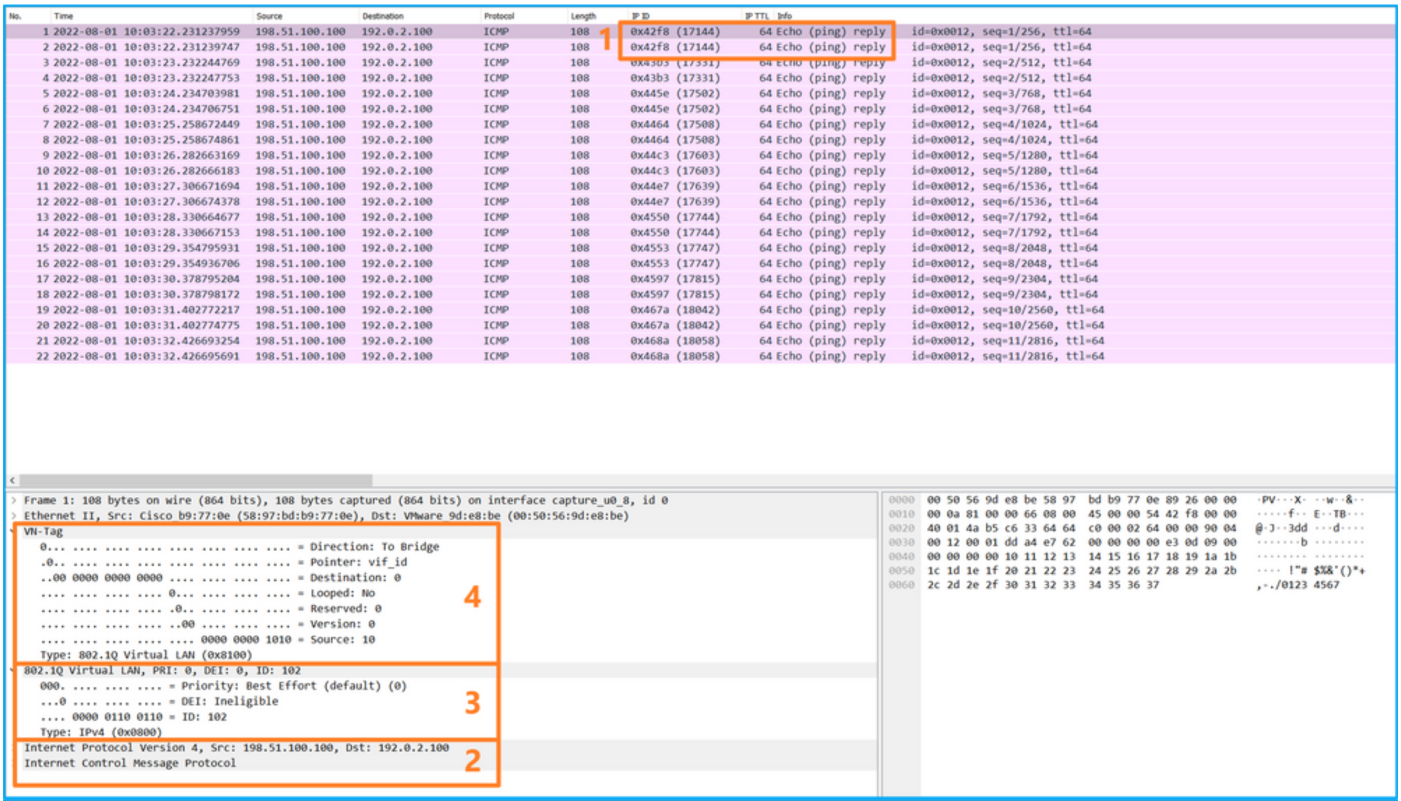
Siga los pasos de la sección **Recopilación de archivos de captura de switch internos de Firepower 4100/9300**.

Capturar análisis de archivos

Utilice una aplicación de lector de archivos de captura de paquetes para abrir los archivos de captura. En el caso de varias interfaces de backplane, asegúrese de abrir todos los archivos de captura para cada interfaz de backplane. En este caso, los paquetes se capturan en la interfaz Ethernet1/9 de la placa de interconexiones.

Seleccione el primer y el segundo paquete y verifique los puntos clave:

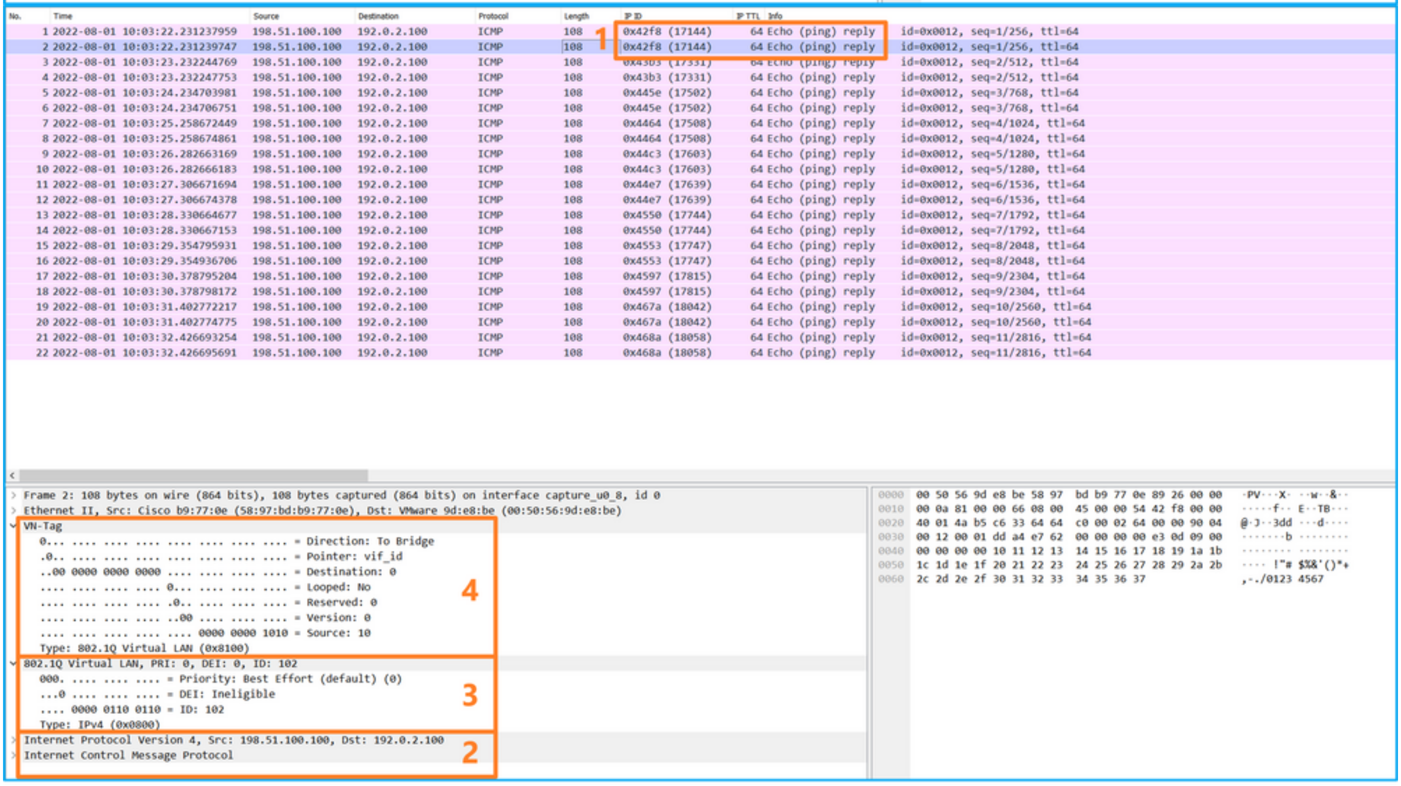
1. Cada respuesta de eco ICMP se captura y se muestra 2 veces.
2. El encabezado del paquete original no tiene la etiqueta VLAN.
3. El switch interno inserta la etiqueta adicional del puerto VLAN **102** que identifica la interfaz de salida Ethernet1/2.
4. El switch interno inserta una etiqueta VN adicional.



```
No.  Time                           Source          Destination  Protocol  Length  IP ID           IP TTL  Info
   1 2022-08-01 10:03:22.231237959  198.51.100.100  192.0.2.100  ICMP      108     0x42f8 (17144)  64 Echo (ping) reply   id=0x0012, seq=1/256, ttl=64
   2 2022-08-01 10:03:22.231239747  198.51.100.100  192.0.2.100  ICMP      108     0x42f8 (17144)  64 Echo (ping) reply   id=0x0012, seq=1/256, ttl=64
   3 2022-08-01 10:03:23.232244769  198.51.100.100  192.0.2.100  ICMP      108     0x43b3 (17331)  64 Echo (ping) reply   id=0x0012, seq=2/512, ttl=64
   4 2022-08-01 10:03:23.232247753  198.51.100.100  192.0.2.100  ICMP      108     0x43b3 (17331)  64 Echo (ping) reply   id=0x0012, seq=2/512, ttl=64
   5 2022-08-01 10:03:24.234703981  198.51.100.100  192.0.2.100  ICMP      108     0x445e (17502)  64 Echo (ping) reply   id=0x0012, seq=3/768, ttl=64
   6 2022-08-01 10:03:24.234706751  198.51.100.100  192.0.2.100  ICMP      108     0x445e (17502)  64 Echo (ping) reply   id=0x0012, seq=3/768, ttl=64
   7 2022-08-01 10:03:25.258672449  198.51.100.100  192.0.2.100  ICMP      108     0x4464 (17508)  64 Echo (ping) reply   id=0x0012, seq=4/1024, ttl=64
   8 2022-08-01 10:03:25.258674861  198.51.100.100  192.0.2.100  ICMP      108     0x4464 (17508)  64 Echo (ping) reply   id=0x0012, seq=4/1024, ttl=64
   9 2022-08-01 10:03:26.282663169  198.51.100.100  192.0.2.100  ICMP      108     0x44c3 (17603)  64 Echo (ping) reply   id=0x0012, seq=5/1280, ttl=64
  10 2022-08-01 10:03:26.282666183  198.51.100.100  192.0.2.100  ICMP      108     0x44c3 (17603)  64 Echo (ping) reply   id=0x0012, seq=5/1280, ttl=64
  11 2022-08-01 10:03:27.306671694  198.51.100.100  192.0.2.100  ICMP      108     0x44e7 (17639)  64 Echo (ping) reply   id=0x0012, seq=6/1536, ttl=64
  12 2022-08-01 10:03:27.306674378  198.51.100.100  192.0.2.100  ICMP      108     0x44e7 (17639)  64 Echo (ping) reply   id=0x0012, seq=6/1536, ttl=64
  13 2022-08-01 10:03:28.330664677  198.51.100.100  192.0.2.100  ICMP      108     0x4550 (17744)  64 Echo (ping) reply   id=0x0012, seq=7/1792, ttl=64
  14 2022-08-01 10:03:28.330667153  198.51.100.100  192.0.2.100  ICMP      108     0x4550 (17744)  64 Echo (ping) reply   id=0x0012, seq=7/1792, ttl=64
  15 2022-08-01 10:03:29.354795931  198.51.100.100  192.0.2.100  ICMP      108     0x4553 (17747)  64 Echo (ping) reply   id=0x0012, seq=8/2048, ttl=64
  16 2022-08-01 10:03:29.354936706  198.51.100.100  192.0.2.100  ICMP      108     0x4553 (17747)  64 Echo (ping) reply   id=0x0012, seq=8/2048, ttl=64
  17 2022-08-01 10:03:30.378795204  198.51.100.100  192.0.2.100  ICMP      108     0x4597 (17815)  64 Echo (ping) reply   id=0x0012, seq=9/2304, ttl=64
  18 2022-08-01 10:03:30.378798172  198.51.100.100  192.0.2.100  ICMP      108     0x4597 (17815)  64 Echo (ping) reply   id=0x0012, seq=9/2304, ttl=64
  19 2022-08-01 10:03:31.402772217  198.51.100.100  192.0.2.100  ICMP      108     0x467a (18042)  64 Echo (ping) reply   id=0x0012, seq=10/2560, ttl=64
  20 2022-08-01 10:03:31.402774775  198.51.100.100  192.0.2.100  ICMP      108     0x467a (18042)  64 Echo (ping) reply   id=0x0012, seq=10/2560, ttl=64
  21 2022-08-01 10:03:32.426693254  198.51.100.100  192.0.2.100  ICMP      108     0x468a (18058)  64 Echo (ping) reply   id=0x0012, seq=11/2816, ttl=64
  22 2022-08-01 10:03:32.426695691  198.51.100.100  192.0.2.100  ICMP      108     0x468a (18058)  64 Echo (ping) reply   id=0x0012, seq=11/2816, ttl=64
```

```
> Frame 1: 108 bytes on wire (864 bits), 108 bytes captured (864 bits) on interface capture_u0_8, id 0
> Ethernet II, Src: Cisco_b9:77:0e (58:97:bd:b9:77:0e), Dst: VMware_9d:e8:be (00:50:56:9d:e8:be)
v VN-Tag
    0... .... .... .... .... .... .... .... = Direction: To Bridge
    .0.. .... .... .... .... .... .... .... = Pointer: vif_id
    ..00 0000 0000 0000 .... .... .... .... = Destination: 0
    .... .... .... .... 0... .... .... .... = Looped: No
    .... .... .... .... .0.. .... .... .... = Reserved: 0
    .... .... .... .... ..00 .... .... .... = Version: 0
    .... .... .... .... .... 0000 0000 1010 = Source: 10
    Type: 802.1Q Virtual LAN (0x8100)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 102
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0000 0110 0110 = ID: 102
    Type: IPv4 (0x0800)
> Internet Protocol Version 4, Src: 198.51.100.100, Dst: 192.0.2.100
> Internet Control Message Protocol
```

```
0000  00 50 56 9d e8 be 58 97  bd b9 77 0e 89 26 00 00   ·PV···X· ··w··&··
0010  00 0a 81 00 00 66 08 00  45 00 00 54 42 f8 00 00   ·····f·· E··TB···
0020  40 01 4a b5 c6 33 64 64  c0 00 02 64 00 00 90 04   @·J··3dd ···d····
0030  00 12 00 01 dd a4 e7 62  00 00 00 00 e3 0d 09 00   ·······b ········
0040  00 00 00 00 10 11 12 13  14 15 16 17 18 19 1a 1b   ········ ········
0050  1c 1d 1e 1f 20 21 22 23  24 25 26 27 28 29 2a 2b   ···· !"# $%&'()*+
0060  2c 2d 2e 2f 30 31 32 33  34 35 36 37               ,-./0123 4567
```



```
No.  Time                           Source          Destination  Protocol  Length  IP ID           IP TTL  Info
   1 2022-08-01 10:03:22.231237959  198.51.100.100  192.0.2.100  ICMP      108     0x42f8 (17144)  64 Echo (ping) reply   id=0x0012, seq=1/256, ttl=64
   2 2022-08-01 10:03:22.231239747  198.51.100.100  192.0.2.100  ICMP      108     0x42f8 (17144)  64 Echo (ping) reply   id=0x0012, seq=1/256, ttl=64
   3 2022-08-01 10:03:23.232244769  198.51.100.100  192.0.2.100  ICMP      108     0x43b3 (17331)  64 Echo (ping) reply   id=0x0012, seq=2/512, ttl=64
   4 2022-08-01 10:03:23.232247753  198.51.100.100  192.0.2.100  ICMP      108     0x43b3 (17331)  64 Echo (ping) reply   id=0x0012, seq=2/512, ttl=64
   5 2022-08-01 10:03:24.234703981  198.51.100.100  192.0.2.100  ICMP      108     0x445e (17502)  64 Echo (ping) reply   id=0x0012, seq=3/768, ttl=64
   6 2022-08-01 10:03:24.234706751  198.51.100.100  192.0.2.100  ICMP      108     0x445e (17502)  64 Echo (ping) reply   id=0x0012, seq=3/768, ttl=64
   7 2022-08-01 10:03:25.258672449  198.51.100.100  192.0.2.100  ICMP      108     0x4464 (17508)  64 Echo (ping) reply   id=0x0012, seq=4/1024, ttl=64
   8 2022-08-01 10:03:25.258674861  198.51.100.100  192.0.2.100  ICMP      108     0x4464 (17508)  64 Echo (ping) reply   id=0x0012, seq=4/1024, ttl=64
   9 2022-08-01 10:03:26.282663169  198.51.100.100  192.0.2.100  ICMP      108     0x44c3 (17603)  64 Echo (ping) reply   id=0x0012, seq=5/1280, ttl=64
  10 2022-08-01 10:03:26.282666183  198.51.100.100  192.0.2.100  ICMP      108     0x44c3 (17603)  64 Echo (ping) reply   id=0x0012, seq=5/1280, ttl=64
  11 2022-08-01 10:03:27.306671694  198.51.100.100  192.0.2.100  ICMP      108     0x44e7 (17639)  64 Echo (ping) reply   id=0x0012, seq=6/1536, ttl=64
  12 2022-08-01 10:03:27.306674378  198.51.100.100  192.0.2.100  ICMP      108     0x44e7 (17639)  64 Echo (ping) reply   id=0x0012, seq=6/1536, ttl=64
  13 2022-08-01 10:03:28.330664677  198.51.100.100  192.0.2.100  ICMP      108     0x4550 (17744)  64 Echo (ping) reply   id=0x0012, seq=7/1792, ttl=64
  14 2022-08-01 10:03:28.330667153  198.51.100.100  192.0.2.100  ICMP      108     0x4550 (17744)  64 Echo (ping) reply   id=0x0012, seq=7/1792, ttl=64
  15 2022-08-01 10:03:29.354795931  198.51.100.100  192.0.2.100  ICMP      108     0x4553 (17747)  64 Echo (ping) reply   id=0x0012, seq=8/2048, ttl=64
  16 2022-08-01 10:03:29.354936706  198.51.100.100  192.0.2.100  ICMP      108     0x4553 (17747)  64 Echo (ping) reply   id=0x0012, seq=8/2048, ttl=64
  17 2022-08-01 10:03:30.378795204  198.51.100.100  192.0.2.100  ICMP      108     0x4597 (17815)  64 Echo (ping) reply   id=0x0012, seq=9/2304, ttl=64
  18 2022-08-01 10:03:30.378798172  198.51.100.100  192.0.2.100  ICMP      108     0x4597 (17815)  64 Echo (ping) reply   id=0x0012, seq=9/2304, ttl=64
  19 2022-08-01 10:03:31.402772217  198.51.100.100  192.0.2.100  ICMP      108     0x467a (18042)  64 Echo (ping) reply   id=0x0012, seq=10/2560, ttl=64
  20 2022-08-01 10:03:31.402774775  198.51.100.100  192.0.2.100  ICMP      108     0x467a (18042)  64 Echo (ping) reply   id=0x0012, seq=10/2560, ttl=64
  21 2022-08-01 10:03:32.426693254  198.51.100.100  192.0.2.100  ICMP      108     0x468a (18058)  64 Echo (ping) reply   id=0x0012, seq=11/2816, ttl=64
  22 2022-08-01 10:03:32.426695691  198.51.100.100  192.0.2.100  ICMP      108     0x468a (18058)  64 Echo (ping) reply   id=0x0012, seq=11/2816, ttl=64
```

```
> Frame 2: 108 bytes on wire (864 bits), 108 bytes captured (864 bits) on interface capture_u0_8, id 0
> Ethernet II, Src: Cisco_b9:77:0e (58:97:bd:b9:77:0e), Dst: VMware_9d:e8:be (00:50:56:9d:e8:be)
v VN-Tag
    0... .... .... .... .... .... .... .... = Direction: To Bridge
    .0.. .... .... .... .... .... .... .... = Pointer: vif_id
    ..00 0000 0000 0000 .... .... .... .... = Destination: 0
    .... .... .... .... 0... .... .... .... = Looped: No
    .... .... .... .... .0.. .... .... .... = Reserved: 0
    .... .... .... .... ..00 .... .... .... = Version: 0
    .... .... .... .... .... 0000 0000 1010 = Source: 10
    Type: 802.1Q Virtual LAN (0x8100)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 102
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0000 0110 0110 = ID: 102
    Type: IPv4 (0x0800)
> Internet Protocol Version 4, Src: 198.51.100.100, Dst: 192.0.2.100
> Internet Control Message Protocol
```

```
0000  00 50 56 9d e8 be 58 97  bd b9 77 0e 89 26 00 00   ·PV···X· ··w··&··
0010  00 0a 81 00 00 66 08 00  45 00 00 54 42 f8 00 00   ·····f·· E··TB···
0020  40 01 4a b5 c6 33 64 64  c0 00 02 64 00 00 90 04   @·J··3dd ···d····
0030  00 12 00 01 dd a4 e7 62  00 00 00 00 e3 0d 09 00   ·······b ········
0040  00 00 00 00 10 11 12 13  14 15 16 17 18 19 1a 1b   ········ ········
0050  1c 1d 1e 1f 20 21 22 23  24 25 26 27 28 29 2a 2b   ···· !"# $%&'()*+
0060  2c 2d 2e 2f 30 31 32 33  34 35 36 37               ,-./0123 4567
```

Explicación

En este caso, Ethernet1/2 con la etiqueta VLAN de puerto 102 es la interfaz de salida para los paquetes de respuesta de eco ICMP.

Cuando la dirección de captura de la aplicación se establece en **Egress** en las opciones de captura, los paquetes con la etiqueta de VLAN de puerto 102 en el encabezado Ethernet se capturan en las interfaces de placa base en la dirección de ingreso.

Esta tabla resume la tarea:

Tarea	Punto de captura	VLAN de puerto interno en paquetes capturados	Dirección:	Tráfico capturado
Configurar y verificar capturas en la aplicación y el puerto de aplicación Ethernet1/2	Interfaces de backplane	102	Solo entrada	Respuestas de eco ICMP del 198.51.100.100 al host 192.0.

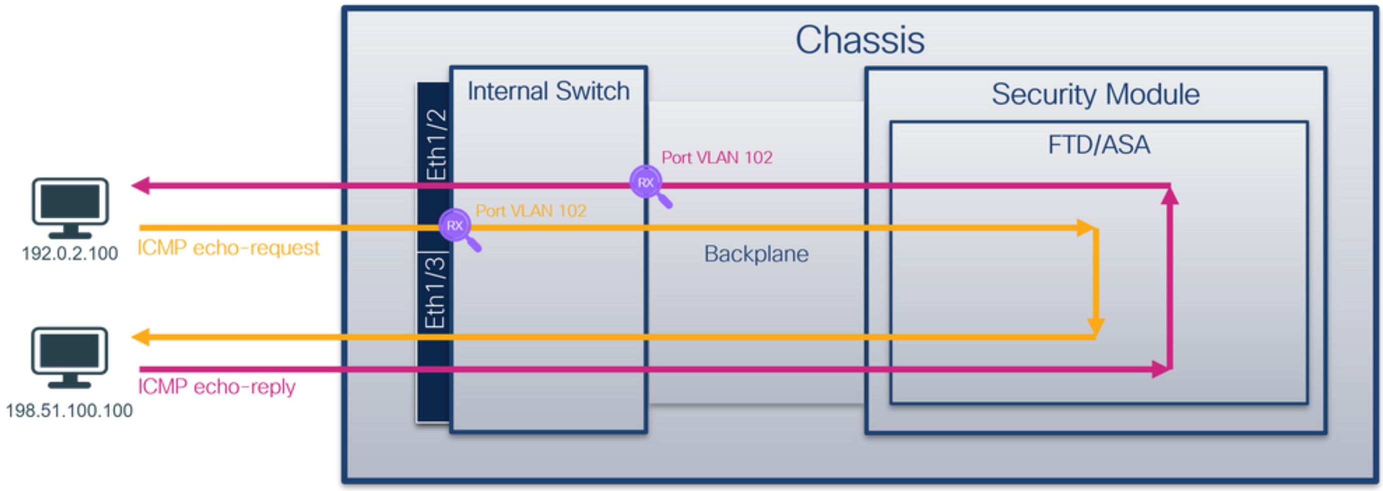
Tarea 2:

Utilice FCM y CLI para configurar y verificar una captura de paquetes en la interfaz de la placa de interconexiones y la interfaz Ethernet1/2 frontal.

Las capturas de paquetes simultáneas se configuran en:

- Interfaz frontal: se capturan los paquetes con el puerto VLAN 102 en la interfaz Ethernet1/2. Los paquetes capturados son solicitudes de eco ICMP.
- Interfaces de placa base: se capturan los paquetes para los que Ethernet1/2 se identifica como la interfaz de salida o los paquetes con el puerto VLAN 102. Los paquetes capturados son respuestas de eco ICMP.

Topología, flujo de paquetes y puntos de captura

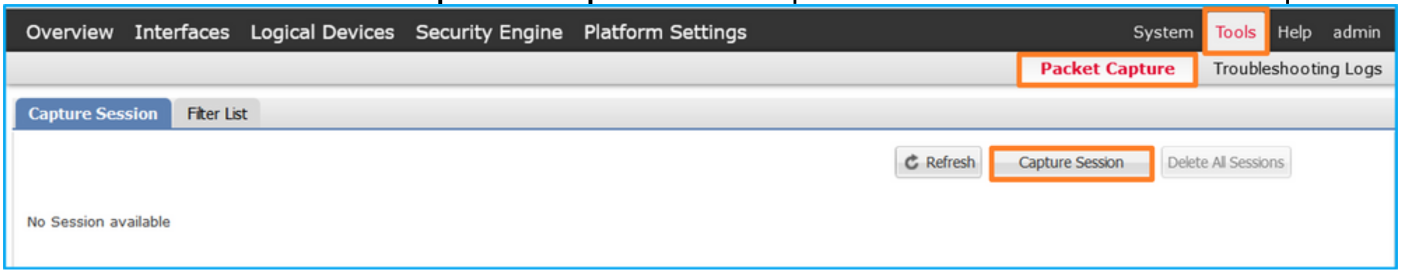


Configuración

FCM

Siga estos pasos en FCM para configurar una captura de paquetes en la aplicación FTD y el puerto Ethernet1/2 de la aplicación:

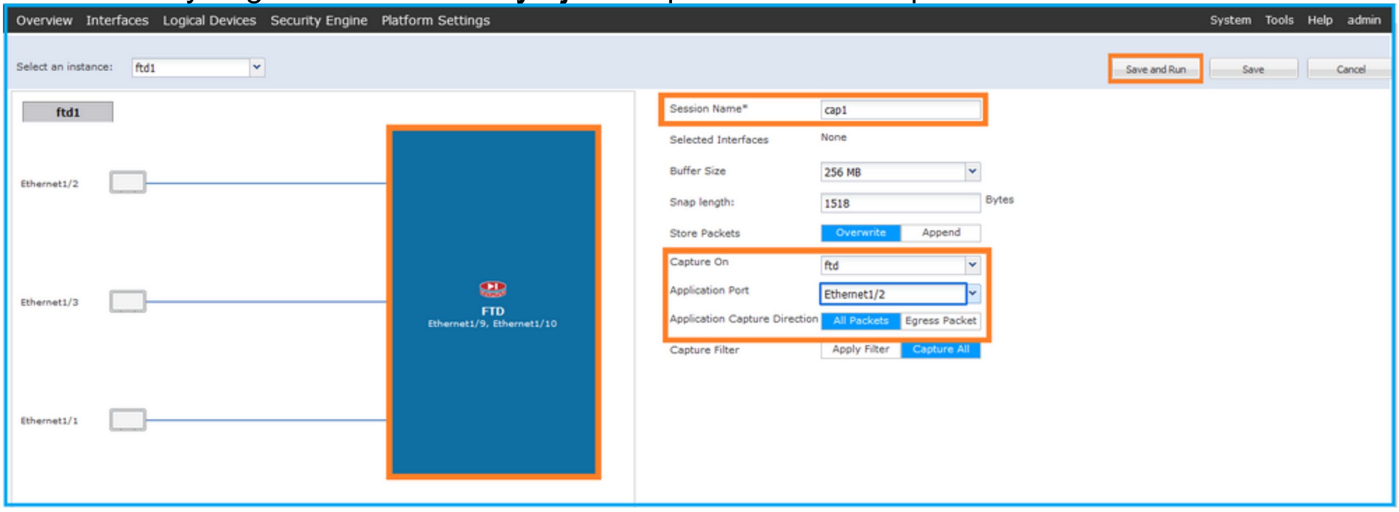
1. Utilice **Tools > Packet Capture > Capture Session** para crear una nueva sesión de captura:



No Session available

2. Seleccione la aplicación FTD, **Ethernet1/2**, en la lista desplegable **Application Port** y

seleccione **All Packets** en la **Application Capture Direction**. Proporcione el **Nombre de la Sesión** y haga clic en **Guardar y Ejecutar** para activar la captura:



Select an instance: ftd1

Session Name* cap1
Selected Interfaces None
Buffer Size 256 MB
Snap length: 1518 Bytes
Store Packets: Overwrite | Append
Capture On: ftd
Application Port: Ethernet1/2
Application Capture Direction: All Packets | Egress Packet
Capture Filter: Apply Filter | Capture All

CLI FXOS

Siga estos pasos en la CLI de FXOS para configurar las capturas de paquetes en las interfaces de la placa posterior:

1. Identifique el tipo de aplicación y el identificador:

```
firepower# scope ssa
firepower /ssa#  show app-instance
App Name   Identifier Slot ID    Admin State Oper State       Running Version Startup Version
Deploy Type Turbo Mode Profile Name Cluster State   Cluster Role
---------- ---------- ---------- ----------- ---------------- --------------- --------------- --
--------- ---------- ------------ --------------- ------------
ftd        ftd1       1          Enabled     Online           7.2.0.82        7.2.0.82
Native      No                         Not Applicable  None
```

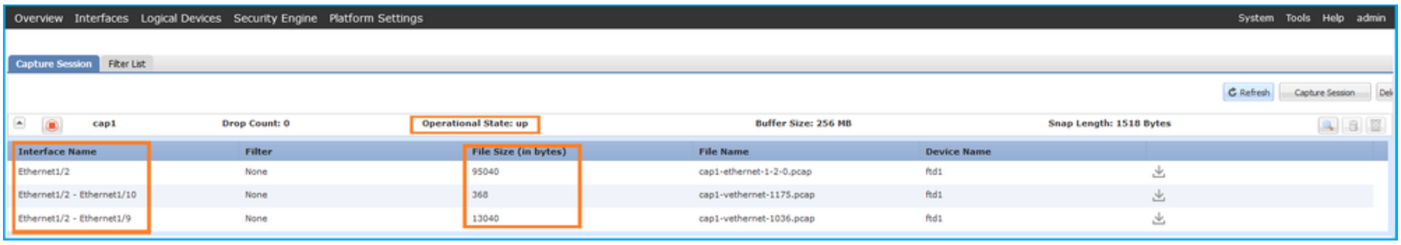
2. Crear una sesión de captura:

```
firepower# scope packet-capture
firepower /packet-capture # create session cap1
firepower /packet-capture/session* # create phy-port eth1/2
firepower /packet-capture/session/phy-port* # set app-identifier ftd1
firepower /packet-capture/session/phy-port* # exit
firepower /packet-capture/session* # create app-port 1 link12 Ethernet1/2 ftd
firepower /packet-capture/session/app-port* # set app-identifier ftd1
firepower /packet-capture/session* # enable
firepower /packet-capture/session* # commit
firepower /packet-capture/session # commit
```

Verificación

FCM

Verifique el **Nombre de la Interfaz**, asegúrese de que el **Estado Operacional** esté activo y que el **Tamaño del Archivo (en bytes)** aumente:



cap1 Drop Count: 0 Operational State: up Buffer Size: 256 MB Snap Length: 1518 Bytes

Interface Name	Filter	File Size (in bytes)	File Name	Device Name
Ethernet1/2	None	95040	cap1-ethernet-1-2-0.pcap	ftd1
Ethernet1/2 - Ethernet1/10	None	368	cap1-vethernet-1175.pcap	ftd1
Ethernet1/2 - Ethernet1/9	None	13040	cap1-vethernet-1036.pcap	ftd1

CLI FXOS

Verifique los detalles de la captura en **scope packet-capture**:

```
firepower# scope packet-capture
firepower /packet-capture #  show session cap1

Traffic Monitoring Session:
    Packet Capture Session Name: cap1
   Session: 1
    Admin State: Enabled
    Oper State: Up
    Oper State Reason: Active
   Config Success: Yes
   Config Fail Reason:
   Append Flag: Overwrite
   Session Mem Usage: 256  MB
   Session Pcap Snap Len: 1518  Bytes
   Error Code: 0
   Drop Count: 0

Physical ports involved in Packet Capture:
    Slot Id: 1
    Port Id: 2
    Pcapfile: /workspace/packet-capture/session-1/cap1-ethernet-1-2-0.pcap
    Pcapsize: 410444  bytes
   Filter:
   Sub Interface: 0
    Application Instance Identifier: ftd1
    Application Name: ftd

Application ports involved in Packet Capture:
   Slot Id: 1
    Link Name: link12
    Port Name: Ethernet1/2
    App Name: ftd
   Sub Interface: 0
    Application Instance Identifier: ftd1

Application ports resolved to:
   Name: vnic1
   Eq Slot Id: 1
    Eq Port Id: 9
    Pcapfile: /workspace/packet-capture/session-1/cap1-vethernet-1036.pcap
    Pcapsize: 128400  bytes
    Vlan: 102
   Filter:

   Name: vnic2
   Eq Slot Id: 1
    Eq Port Id: 10
    Pcapfile: /workspace/packet-capture/session-1/cap1-vethernet-1175.pcap
    Pcapsize: 2656  bytes
    Vlan: 102
  Filter:
```

Recopilar archivos de captura

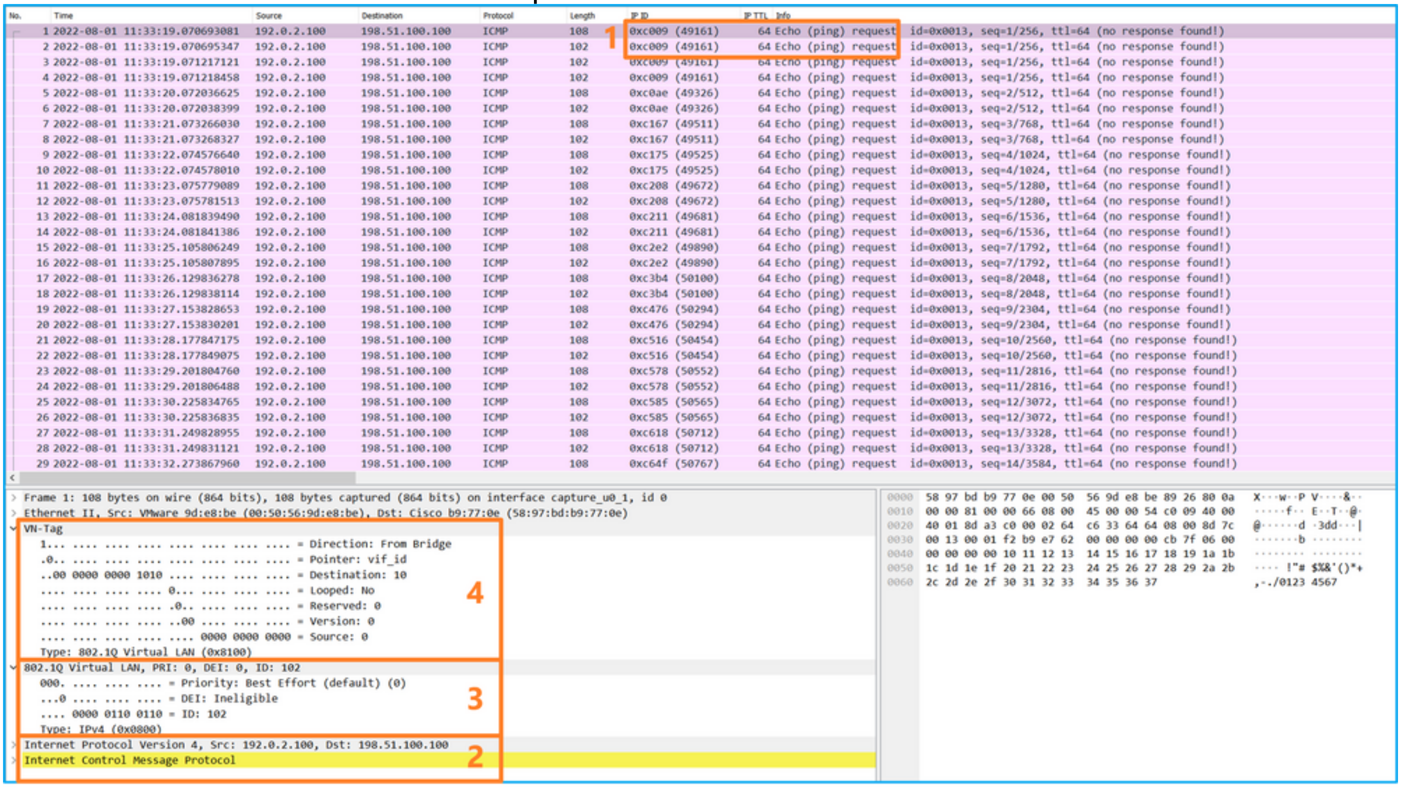
Siga los pasos de la sección **Recopilación de archivos de captura de switch internos de Firepower 4100/9300**.

Capturar análisis de archivos

Utilice una aplicación de lector de archivos de captura de paquetes para abrir los archivos de captura. En el caso de varias interfaces de backplane, asegúrese de abrir todos los archivos de captura para cada interfaz de backplane. En este caso, los paquetes se capturan en la interfaz Ethernet1/9 de la placa de interconexiones.

Abra el archivo de captura para la interfaz Ethernet1/2, seleccione el primer paquete y verifique los puntos clave:

1. Solo se capturan los paquetes de solicitud de eco ICMP. Cada paquete se captura y se muestra 2 veces.
2. El encabezado del paquete original no tiene la etiqueta VLAN.
3. El switch interno inserta la etiqueta adicional del puerto VLAN **102** que identifica la interfaz de ingreso Ethernet1/2.
4. El switch interno inserta una etiqueta VN adicional.



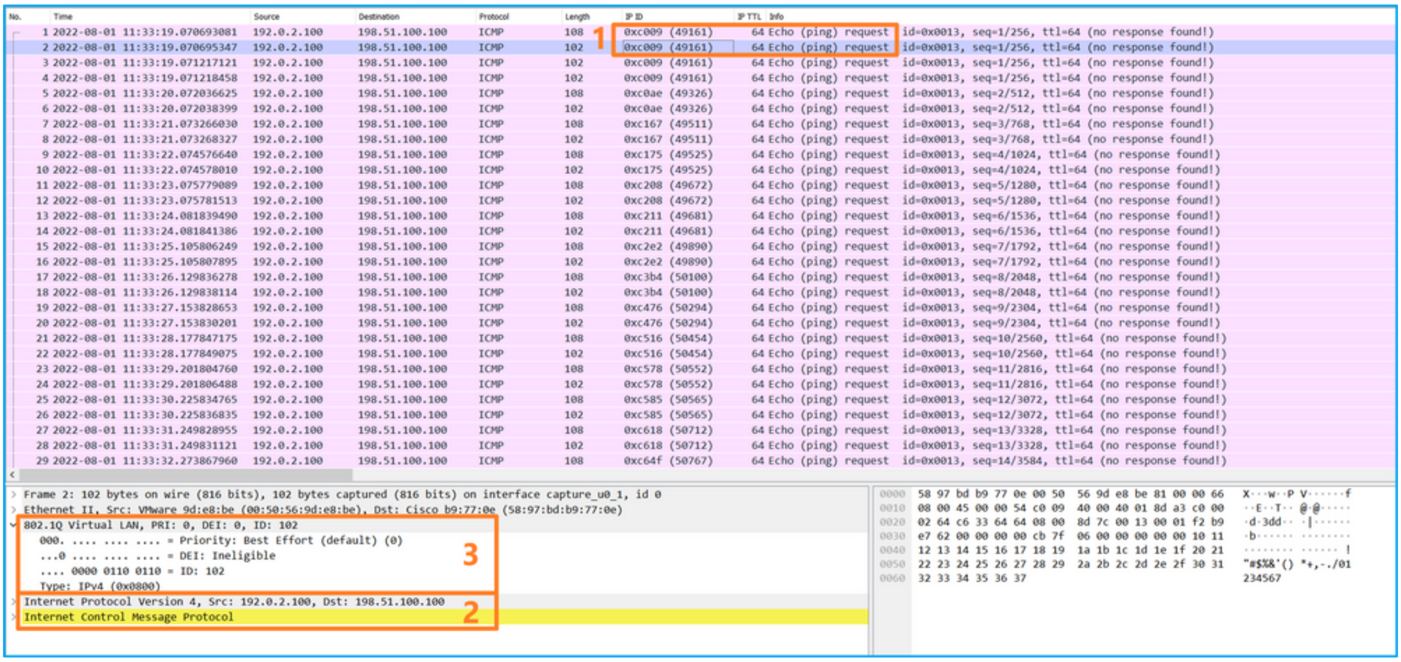
```
No.  Time                           Source       Destination     Protocol  Length  IP ID           IP TTL  Info
   1 2022-08-01 11:33:19.070693081  192.0.2.100  198.51.100.100  ICMP      108     0xc009 (49161)  64 Echo (ping) request  id=0x0013, seq=1/256, ttl=64 (no response found!)
   2 2022-08-01 11:33:19.070695347  192.0.2.100  198.51.100.100  ICMP      102     0xc009 (49161)  64 Echo (ping) request  id=0x0013, seq=1/256, ttl=64 (no response found!)
   3 2022-08-01 11:33:19.071217121  192.0.2.100  198.51.100.100  ICMP      102     0xc009 (49161)  64 Echo (ping) request  id=0x0013, seq=1/256, ttl=64 (no response found!)
   4 2022-08-01 11:33:19.071218458  192.0.2.100  198.51.100.100  ICMP      102     0xc009 (49161)  64 Echo (ping) request  id=0x0013, seq=1/256, ttl=64 (no response found!)
   5 2022-08-01 11:33:20.072036625  192.0.2.100  198.51.100.100  ICMP      108     0xc0ae (49326)  64 Echo (ping) request  id=0x0013, seq=2/512, ttl=64 (no response found!)
   6 2022-08-01 11:33:20.072038399  192.0.2.100  198.51.100.100  ICMP      102     0xc0ae (49326)  64 Echo (ping) request  id=0x0013, seq=2/512, ttl=64 (no response found!)
   7 2022-08-01 11:33:21.073266030  192.0.2.100  198.51.100.100  ICMP      108     0xc167 (49511)  64 Echo (ping) request  id=0x0013, seq=3/768, ttl=64 (no response found!)
   8 2022-08-01 11:33:21.073268327  192.0.2.100  198.51.100.100  ICMP      102     0xc167 (49511)  64 Echo (ping) request  id=0x0013, seq=3/768, ttl=64 (no response found!)
   9 2022-08-01 11:33:22.074576640  192.0.2.100  198.51.100.100  ICMP      108     0xc175 (49525)  64 Echo (ping) request  id=0x0013, seq=4/1024, ttl=64 (no response found!)
  10 2022-08-01 11:33:22.074578010  192.0.2.100  198.51.100.100  ICMP      102     0xc175 (49525)  64 Echo (ping) request  id=0x0013, seq=4/1024, ttl=64 (no response found!)
  11 2022-08-01 11:33:23.075779089  192.0.2.100  198.51.100.100  ICMP      108     0xc208 (49672)  64 Echo (ping) request  id=0x0013, seq=5/1280, ttl=64 (no response found!)
  12 2022-08-01 11:33:23.075781513  192.0.2.100  198.51.100.100  ICMP      102     0xc208 (49672)  64 Echo (ping) request  id=0x0013, seq=5/1280, ttl=64 (no response found!)
  13 2022-08-01 11:33:24.081839490  192.0.2.100  198.51.100.100  ICMP      108     0xc211 (49681)  64 Echo (ping) request  id=0x0013, seq=6/1536, ttl=64 (no response found!)
  14 2022-08-01 11:33:24.081841386  192.0.2.100  198.51.100.100  ICMP      102     0xc211 (49681)  64 Echo (ping) request  id=0x0013, seq=6/1536, ttl=64 (no response found!)
  15 2022-08-01 11:33:25.105806249  192.0.2.100  198.51.100.100  ICMP      108     0xc2e2 (49890)  64 Echo (ping) request  id=0x0013, seq=7/1792, ttl=64 (no response found!)
  16 2022-08-01 11:33:25.105807895  192.0.2.100  198.51.100.100  ICMP      102     0xc2e2 (49890)  64 Echo (ping) request  id=0x0013, seq=7/1792, ttl=64 (no response found!)
  17 2022-08-01 11:33:26.129836278  192.0.2.100  198.51.100.100  ICMP      108     0xc3b4 (50100)  64 Echo (ping) request  id=0x0013, seq=8/2048, ttl=64 (no response found!)
  18 2022-08-01 11:33:26.129838114  192.0.2.100  198.51.100.100  ICMP      102     0xc3b4 (50100)  64 Echo (ping) request  id=0x0013, seq=8/2048, ttl=64 (no response found!)
  19 2022-08-01 11:33:27.153828653  192.0.2.100  198.51.100.100  ICMP      108     0xc476 (50294)  64 Echo (ping) request  id=0x0013, seq=9/2304, ttl=64 (no response found!)
  20 2022-08-01 11:33:27.153830201  192.0.2.100  198.51.100.100  ICMP      102     0xc476 (50294)  64 Echo (ping) request  id=0x0013, seq=9/2304, ttl=64 (no response found!)
  21 2022-08-01 11:33:28.177847175  192.0.2.100  198.51.100.100  ICMP      108     0xc516 (50454)  64 Echo (ping) request  id=0x0013, seq=10/2560, ttl=64 (no response found!)
  22 2022-08-01 11:33:28.177849075  192.0.2.100  198.51.100.100  ICMP      102     0xc516 (50454)  64 Echo (ping) request  id=0x0013, seq=10/2560, ttl=64 (no response found!)
  23 2022-08-01 11:33:29.201804760  192.0.2.100  198.51.100.100  ICMP      108     0xc578 (50552)  64 Echo (ping) request  id=0x0013, seq=11/2816, ttl=64 (no response found!)
  24 2022-08-01 11:33:29.201806488  192.0.2.100  198.51.100.100  ICMP      102     0xc578 (50552)  64 Echo (ping) request  id=0x0013, seq=11/2816, ttl=64 (no response found!)
  25 2022-08-01 11:33:30.225834765  192.0.2.100  198.51.100.100  ICMP      108     0xc585 (50565)  64 Echo (ping) request  id=0x0013, seq=12/3072, ttl=64 (no response found!)
  26 2022-08-01 11:33:30.225836835  192.0.2.100  198.51.100.100  ICMP      102     0xc585 (50565)  64 Echo (ping) request  id=0x0013, seq=12/3072, ttl=64 (no response found!)
  27 2022-08-01 11:33:31.249828955  192.0.2.100  198.51.100.100  ICMP      108     0xc618 (50712)  64 Echo (ping) request  id=0x0013, seq=13/3328, ttl=64 (no response found!)
  28 2022-08-01 11:33:31.249831121  192.0.2.100  198.51.100.100  ICMP      102     0xc618 (50712)  64 Echo (ping) request  id=0x0013, seq=13/3328, ttl=64 (no response found!)
  29 2022-08-01 11:33:32.273867960  192.0.2.100  198.51.100.100  ICMP      108     0xc64f (50767)  64 Echo (ping) request  id=0x0013, seq=14/3584, ttl=64 (no response found!)
```

```
> Frame 1: 108 bytes on wire (864 bits), 108 bytes captured (864 bits) on interface capture_u0_1, id 0
> Ethernet II, Src: VMware_9d:e8:be (00:50:56:9d:e8:be), Dst: Cisco_b9:77:0e (58:97:bd:b9:77:0e)
v VN-Tag
    1... .... .... .... .... .... .... .... = Direction: From Bridge
    .0.. .... .... .... .... .... .... .... = Pointer: vif_id
    ..00 0000 0000 1010 .... .... .... .... = Destination: 10
    .... .... .... .... 0... .... .... .... = Looped: No
    .... .... .... .... .0.. .... .... .... = Reserved: 0
    .... .... .... .... ..00 .... .... .... = Version: 0
    .... .... .... .... .... 0000 0000 0000 = Source: 0
    Type: 802.1Q Virtual LAN (0x8100)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 102
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0000 0110 0110 = ID: 102
    Type: IPv4 (0x0800)
> Internet Protocol Version 4, Src: 192.0.2.100, Dst: 198.51.100.100
> Internet Control Message Protocol
```

```
0000  58 97 bd b9 77 0e 00 50  56 9d e8 be 89 26 80 0a   X···w··P V····&··
0010  00 00 81 00 00 66 08 00  45 00 00 54 c0 09 40 00   ·····f·· E··T··@·
0020  40 01 8d a3 c0 00 02 64  c6 33 64 64 08 00 8d 7c   @······d ·3dd···|
0030  00 13 00 01 f2 b9 e7 62  00 00 00 00 cb 7f 06 00   ·······b ········
0040  00 00 00 00 10 11 12 13  14 15 16 17 18 19 1a 1b   ········ ········
0050  1c 1d 1e 1f 20 21 22 23  24 25 26 27 28 29 2a 2b   ···· !"# $%&'()*+
0060  2c 2d 2e 2f 30 31 32 33  34 35 36 37               ,-./0123 4567
```

Seleccione el segundo paquete y verifique los puntos clave:

1. Solo se capturan los paquetes de solicitud de eco ICMP. Cada paquete se captura y se muestra 2 veces.
2. El encabezado del paquete original no tiene la etiqueta VLAN.
3. El switch interno inserta la etiqueta adicional del puerto VLAN **102** que identifica la interfaz de ingreso Ethernet1/2.



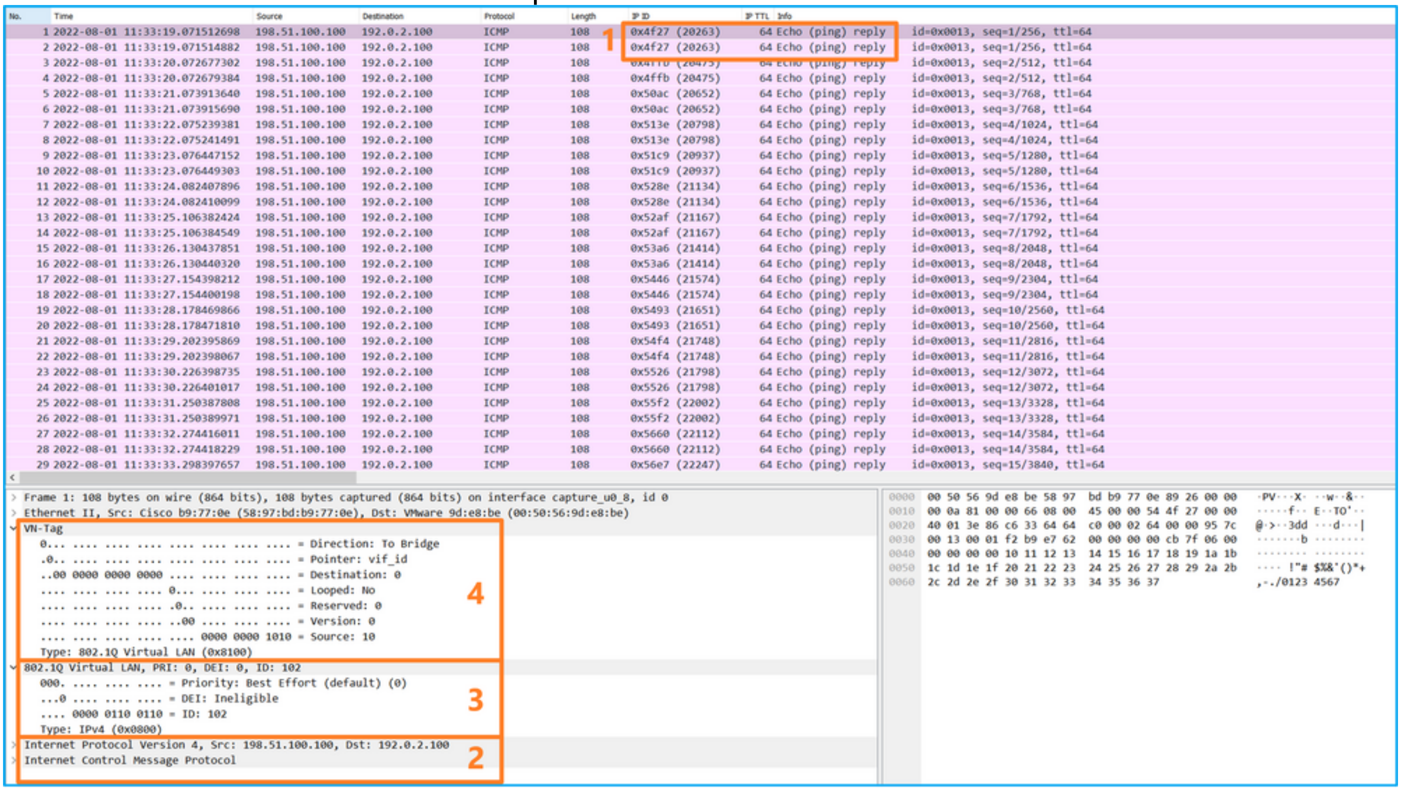
```
No.  Time                           Source         Destination      Protocol  Length  IP ID           IP TTL  Info
   1 2022-08-01 11:33:19.070693081  192.0.2.100    198.51.100.100   ICMP      108     0xc009 (49161)  64 Echo (ping) request  id=0x0013, seq=1/256, ttl=64 (no response found!)
   2 2022-08-01 11:33:19.070695347  192.0.2.100    198.51.100.100   ICMP      102     0xc009 (49161)  64 Echo (ping) request  id=0x0013, seq=1/256, ttl=64 (no response found!)
   3 2022-08-01 11:33:19.071217121  192.0.2.100    198.51.100.100   ICMP      102     0xc009 (49161)  64 Echo (ping) request  id=0x0013, seq=1/256, ttl=64 (no response found!)
   4 2022-08-01 11:33:19.071218458  192.0.2.100    198.51.100.100   ICMP      102     0xc009 (49161)  64 Echo (ping) request  id=0x0013, seq=1/256, ttl=64 (no response found!)
   5 2022-08-01 11:33:20.072036625  192.0.2.100    198.51.100.100   ICMP      108     0xc0ae (49326)  64 Echo (ping) request  id=0x0013, seq=2/512, ttl=64 (no response found!)
   6 2022-08-01 11:33:20.072038399  192.0.2.100    198.51.100.100   ICMP      102     0xc0ae (49326)  64 Echo (ping) request  id=0x0013, seq=2/512, ttl=64 (no response found!)
   7 2022-08-01 11:33:21.073266030  192.0.2.100    198.51.100.100   ICMP      108     0xc167 (49511)  64 Echo (ping) request  id=0x0013, seq=3/768, ttl=64 (no response found!)
   8 2022-08-01 11:33:21.073268327  192.0.2.100    198.51.100.100   ICMP      102     0xc167 (49511)  64 Echo (ping) request  id=0x0013, seq=3/768, ttl=64 (no response found!)
   9 2022-08-01 11:33:22.074576640  192.0.2.100    198.51.100.100   ICMP      108     0xc175 (49525)  64 Echo (ping) request  id=0x0013, seq=4/1024, ttl=64 (no response found!)
  10 2022-08-01 11:33:22.074578010  192.0.2.100    198.51.100.100   ICMP      102     0xc175 (49525)  64 Echo (ping) request  id=0x0013, seq=4/1024, ttl=64 (no response found!)
  11 2022-08-01 11:33:23.075779089  192.0.2.100    198.51.100.100   ICMP      108     0xc208 (49672)  64 Echo (ping) request  id=0x0013, seq=5/1280, ttl=64 (no response found!)
  12 2022-08-01 11:33:23.075781513  192.0.2.100    198.51.100.100   ICMP      102     0xc208 (49672)  64 Echo (ping) request  id=0x0013, seq=5/1280, ttl=64 (no response found!)
  13 2022-08-01 11:33:24.081839490  192.0.2.100    198.51.100.100   ICMP      108     0xc211 (49681)  64 Echo (ping) request  id=0x0013, seq=6/1536, ttl=64 (no response found!)
  14 2022-08-01 11:33:24.081841386  192.0.2.100    198.51.100.100   ICMP      102     0xc211 (49681)  64 Echo (ping) request  id=0x0013, seq=6/1536, ttl=64 (no response found!)
  15 2022-08-01 11:33:25.105806249  192.0.2.100    198.51.100.100   ICMP      108     0xc2e2 (49890)  64 Echo (ping) request  id=0x0013, seq=7/1792, ttl=64 (no response found!)
  16 2022-08-01 11:33:25.105807895  192.0.2.100    198.51.100.100   ICMP      102     0xc2e2 (49890)  64 Echo (ping) request  id=0x0013, seq=7/1792, ttl=64 (no response found!)
  17 2022-08-01 11:33:26.129836278  192.0.2.100    198.51.100.100   ICMP      108     0xc3b4 (50100)  64 Echo (ping) request  id=0x0013, seq=8/2048, ttl=64 (no response found!)
  18 2022-08-01 11:33:26.129838114  192.0.2.100    198.51.100.100   ICMP      102     0xc3b4 (50100)  64 Echo (ping) request  id=0x0013, seq=8/2048, ttl=64 (no response found!)
  19 2022-08-01 11:33:27.153828653  192.0.2.100    198.51.100.100   ICMP      108     0xc476 (50294)  64 Echo (ping) request  id=0x0013, seq=9/2304, ttl=64 (no response found!)
  20 2022-08-01 11:33:27.153830201  192.0.2.100    198.51.100.100   ICMP      102     0xc476 (50294)  64 Echo (ping) request  id=0x0013, seq=9/2304, ttl=64 (no response found!)
  21 2022-08-01 11:33:28.177847175  192.0.2.100    198.51.100.100   ICMP      108     0xc516 (50454)  64 Echo (ping) request  id=0x0013, seq=10/2560, ttl=64 (no response found!)
  22 2022-08-01 11:33:28.177849075  192.0.2.100    198.51.100.100   ICMP      102     0xc516 (50454)  64 Echo (ping) request  id=0x0013, seq=10/2560, ttl=64 (no response found!)
  23 2022-08-01 11:33:29.201804760  192.0.2.100    198.51.100.100   ICMP      108     0xc578 (50552)  64 Echo (ping) request  id=0x0013, seq=11/2816, ttl=64 (no response found!)
  24 2022-08-01 11:33:29.201806488  192.0.2.100    198.51.100.100   ICMP      102     0xc578 (50552)  64 Echo (ping) request  id=0x0013, seq=11/2816, ttl=64 (no response found!)
  25 2022-08-01 11:33:30.225834765  192.0.2.100    198.51.100.100   ICMP      108     0xc585 (50565)  64 Echo (ping) request  id=0x0013, seq=12/3072, ttl=64 (no response found!)
  26 2022-08-01 11:33:30.225836835  192.0.2.100    198.51.100.100   ICMP      102     0xc585 (50565)  64 Echo (ping) request  id=0x0013, seq=12/3072, ttl=64 (no response found!)
  27 2022-08-01 11:33:31.249828955  192.0.2.100    198.51.100.100   ICMP      108     0xc618 (50712)  64 Echo (ping) request  id=0x0013, seq=13/3328, ttl=64 (no response found!)
  28 2022-08-01 11:33:31.249831121  192.0.2.100    198.51.100.100   ICMP      102     0xc618 (50712)  64 Echo (ping) request  id=0x0013, seq=13/3328, ttl=64 (no response found!)
  29 2022-08-01 11:33:32.273867960  192.0.2.100    198.51.100.100   ICMP      108     0xc64f (50767)  64 Echo (ping) request  id=0x0013, seq=14/3584, ttl=64 (no response found!)
```

```
> Frame 2: 102 bytes on wire (816 bits), 102 bytes captured (816 bits) on interface capture_u0_1, id 0
> Ethernet II, Src: VMware 9d:e8:be (00:50:56:9d:e8:be), Dst: Cisco b9:77:0e (58:97:bd:b9:77:0e)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 102
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0000 0110 0110 = ID: 102
    Type: IPv4 (0x0800)
> Internet Protocol Version 4, Src: 192.0.2.100, Dst: 198.51.100.100
> Internet Control Message Protocol
```

```
0000  58 97 bd b9 77 0e 00 50  56 9d e8 be 81 00 00 66   X···w··P V······f
0010  08 00 45 00 00 54 c0 09  40 00 40 01 8d a3 c0 00   ··E··T·· @·@·····
0020  02 64 c6 33 64 64 08 00  8d 7c 00 13 00 01 f2 b9   ·d·3dd·· ·|······
0030  e7 62 00 00 00 00 cb 7f  06 00 00 00 00 00 10 11   ·b······ ········
0040  12 13 14 15 16 17 18 19  1a 1b 1c 1d 1e 1f 20 21   ········ ······ !
0050  22 23 24 25 26 27 28 29  2a 2b 2c 2d 2e 2f 30 31   "#$%&'() *+,-./01
0060  32 33 34 35 36 37                                  234567
```

Abra el archivo de captura para la interfaz Ethernet1/9, seleccione el primer y el segundo paquete y verifique los puntos clave:

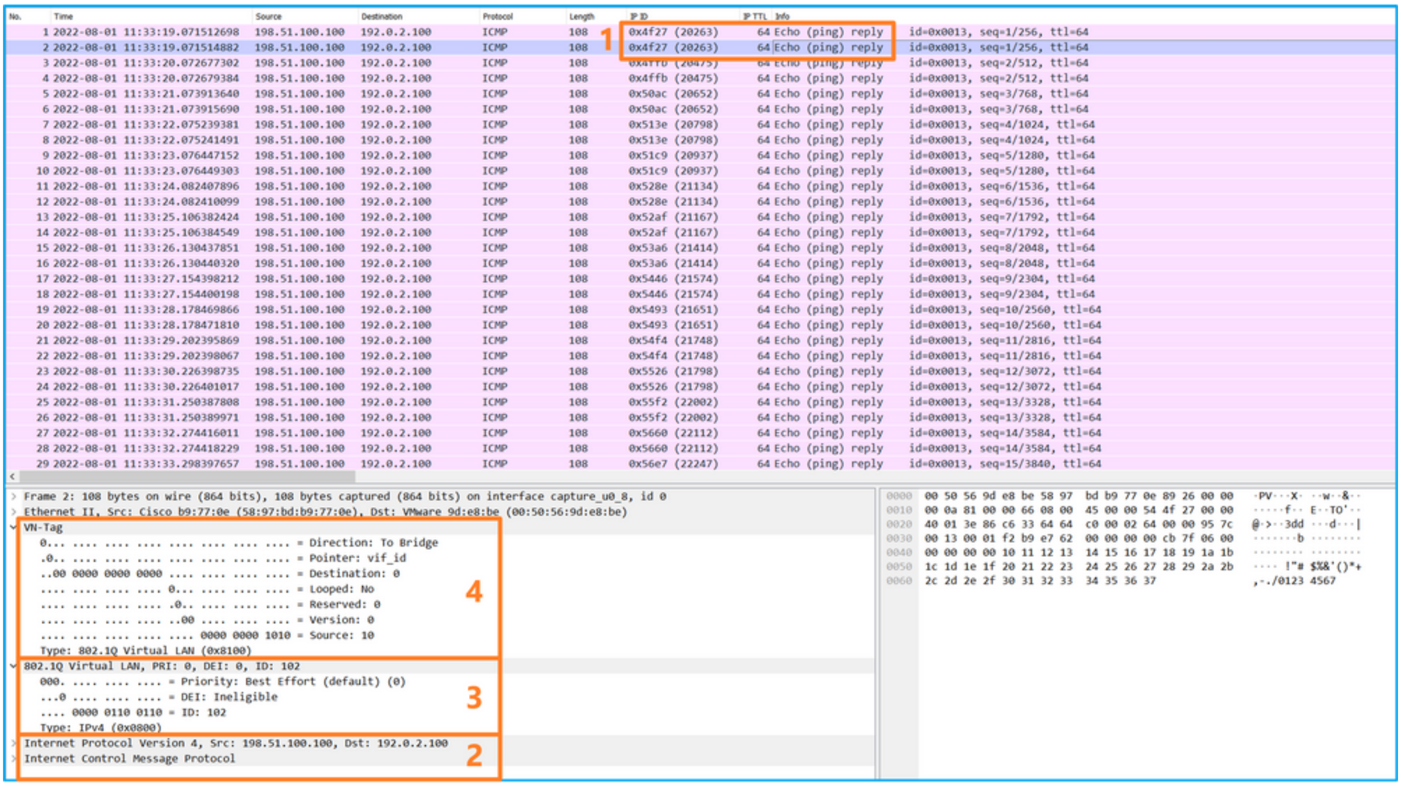
1. Cada respuesta de eco ICMP se captura y se muestra 2 veces.
2. El encabezado del paquete original no tiene la etiqueta VLAN.
3. El switch interno inserta la etiqueta adicional del puerto VLAN **102** que identifica la interfaz de salida Ethernet1/2.
4. El switch interno inserta una etiqueta VN adicional.



```
No.  Time                           Source          Destination   Protocol  Length  IP ID           IP TTL  Info
   1 2022-08-01 11:33:19.071512698  198.51.100.100  192.0.2.100   ICMP      108     0x4f27 (20263)  64 Echo (ping) reply  id=0x0013, seq=1/256, ttl=64
   2 2022-08-01 11:33:19.071514882  198.51.100.100  192.0.2.100   ICMP      108     0x4f27 (20263)  64 Echo (ping) reply  id=0x0013, seq=1/256, ttl=64
   3 2022-08-01 11:33:20.072677302  198.51.100.100  192.0.2.100   ICMP      108     0x4ffb (20475)  64 Echo (ping) reply  id=0x0013, seq=2/512, ttl=64
   4 2022-08-01 11:33:20.072679384  198.51.100.100  192.0.2.100   ICMP      108     0x4ffb (20475)  64 Echo (ping) reply  id=0x0013, seq=2/512, ttl=64
   5 2022-08-01 11:33:21.073913640  198.51.100.100  192.0.2.100   ICMP      108     0x50ac (20652)  64 Echo (ping) reply  id=0x0013, seq=3/768, ttl=64
   6 2022-08-01 11:33:21.073915690  198.51.100.100  192.0.2.100   ICMP      108     0x50ac (20652)  64 Echo (ping) reply  id=0x0013, seq=3/768, ttl=64
   7 2022-08-01 11:33:22.075239381  198.51.100.100  192.0.2.100   ICMP      108     0x513e (20798)  64 Echo (ping) reply  id=0x0013, seq=4/1024, ttl=64
   8 2022-08-01 11:33:22.075241491  198.51.100.100  192.0.2.100   ICMP      108     0x513e (20798)  64 Echo (ping) reply  id=0x0013, seq=4/1024, ttl=64
   9 2022-08-01 11:33:23.076447152  198.51.100.100  192.0.2.100   ICMP      108     0x51c9 (20937)  64 Echo (ping) reply  id=0x0013, seq=5/1280, ttl=64
  10 2022-08-01 11:33:23.076449303  198.51.100.100  192.0.2.100   ICMP      108     0x51c9 (20937)  64 Echo (ping) reply  id=0x0013, seq=5/1280, ttl=64
  11 2022-08-01 11:33:24.082407896  198.51.100.100  192.0.2.100   ICMP      108     0x528e (21134)  64 Echo (ping) reply  id=0x0013, seq=6/1536, ttl=64
  12 2022-08-01 11:33:24.082410099  198.51.100.100  192.0.2.100   ICMP      108     0x528e (21134)  64 Echo (ping) reply  id=0x0013, seq=6/1536, ttl=64
  13 2022-08-01 11:33:25.106382424  198.51.100.100  192.0.2.100   ICMP      108     0x52af (21167)  64 Echo (ping) reply  id=0x0013, seq=7/1792, ttl=64
  14 2022-08-01 11:33:25.106384549  198.51.100.100  192.0.2.100   ICMP      108     0x52af (21167)  64 Echo (ping) reply  id=0x0013, seq=7/1792, ttl=64
  15 2022-08-01 11:33:26.130437851  198.51.100.100  192.0.2.100   ICMP      108     0x53a6 (21414)  64 Echo (ping) reply  id=0x0013, seq=8/2048, ttl=64
  16 2022-08-01 11:33:26.130440320  198.51.100.100  192.0.2.100   ICMP      108     0x53a6 (21414)  64 Echo (ping) reply  id=0x0013, seq=8/2048, ttl=64
  17 2022-08-01 11:33:27.154398212  198.51.100.100  192.0.2.100   ICMP      108     0x5446 (21574)  64 Echo (ping) reply  id=0x0013, seq=9/2304, ttl=64
  18 2022-08-01 11:33:27.154400198  198.51.100.100  192.0.2.100   ICMP      108     0x5446 (21574)  64 Echo (ping) reply  id=0x0013, seq=9/2304, ttl=64
  19 2022-08-01 11:33:28.178469866  198.51.100.100  192.0.2.100   ICMP      108     0x5493 (21651)  64 Echo (ping) reply  id=0x0013, seq=10/2560, ttl=64
  20 2022-08-01 11:33:28.178471810  198.51.100.100  192.0.2.100   ICMP      108     0x5493 (21651)  64 Echo (ping) reply  id=0x0013, seq=10/2560, ttl=64
  21 2022-08-01 11:33:29.202395869  198.51.100.100  192.0.2.100   ICMP      108     0x54f4 (21748)  64 Echo (ping) reply  id=0x0013, seq=11/2816, ttl=64
  22 2022-08-01 11:33:29.202398067  198.51.100.100  192.0.2.100   ICMP      108     0x54f4 (21748)  64 Echo (ping) reply  id=0x0013, seq=11/2816, ttl=64
  23 2022-08-01 11:33:30.226398735  198.51.100.100  192.0.2.100   ICMP      108     0x5526 (21798)  64 Echo (ping) reply  id=0x0013, seq=12/3072, ttl=64
  24 2022-08-01 11:33:30.226401017  198.51.100.100  192.0.2.100   ICMP      108     0x5526 (21798)  64 Echo (ping) reply  id=0x0013, seq=12/3072, ttl=64
  25 2022-08-01 11:33:31.250387808  198.51.100.100  192.0.2.100   ICMP      108     0x55f2 (22002)  64 Echo (ping) reply  id=0x0013, seq=13/3328, ttl=64
  26 2022-08-01 11:33:31.250389971  198.51.100.100  192.0.2.100   ICMP      108     0x55f2 (22002)  64 Echo (ping) reply  id=0x0013, seq=13/3328, ttl=64
  27 2022-08-01 11:33:32.274416011  198.51.100.100  192.0.2.100   ICMP      108     0x5660 (22112)  64 Echo (ping) reply  id=0x0013, seq=14/3584, ttl=64
  28 2022-08-01 11:33:32.274418229  198.51.100.100  192.0.2.100   ICMP      108     0x5660 (22112)  64 Echo (ping) reply  id=0x0013, seq=14/3584, ttl=64
  29 2022-08-01 11:33:33.298397657  198.51.100.100  192.0.2.100   ICMP      108     0x56e7 (22247)  64 Echo (ping) reply  id=0x0013, seq=15/3840, ttl=64
```

```
> Frame 1: 108 bytes on wire (864 bits), 108 bytes captured (864 bits) on interface capture_u0_8, id 0
> Ethernet II, Src: Cisco b9:77:0e (58:97:bd:b9:77:0e), Dst: VMware 9d:e8:be (00:50:56:9d:e8:be)
v VN-Tag
    0... .... .... .... .... .... .... .... = Direction: To Bridge
    .0.. .... .... .... .... .... .... .... = Pointer: vif_id
    ..00 0000 0000 0000 .... .... .... .... = Destination: 0
    .... .... .... .... 0... .... .... .... = Looped: No
    .... .... .... .... .0.. .... .... .... = Reserved: 0
    .... .... .... .... ..00 .... .... .... = Version: 0
    .... .... .... .... .... 0000 0000 1010 = Source: 10
    Type: 802.1Q Virtual LAN (0x8100)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 102
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0000 0110 0110 = ID: 102
    Type: IPv4 (0x0800)
> Internet Protocol Version 4, Src: 198.51.100.100, Dst: 192.0.2.100
> Internet Control Message Protocol
```

```
0000  00 50 56 9d e8 be 58 97  bd b9 77 0e 89 26 00 00   ·PV···X· ··w··&··
0010  00 0a 81 00 00 66 08 00  45 00 00 54 4f 27 00 00   ·····f·· E··TO'··
0020  40 01 3e 86 c6 33 64 64  c0 00 02 64 00 00 95 7c   @·>··3dd ···d···|
0030  00 13 00 01 f2 b9 e7 62  00 00 00 00 cb 7f 06 00   ·······b ········
0040  00 00 00 00 10 11 12 13  14 15 16 17 18 19 1a 1b   ········ ········
0050  1c 1d 1e 1f 20 21 22 23  24 25 26 27 28 29 2a 2b   ···· !"# $%&'()*+
0060  2c 2d 2e 2f 30 31 32 33  34 35 36 37               ,-./0123 4567
```



```
No.  Time                           Source          Destination   Protocol  Length  IP ID           IP TTL  Info
   1 2022-08-01 11:33:19.071512698  198.51.100.100  192.0.2.100   ICMP      108     0x4f27 (20263)  64 Echo (ping) reply   id=0x0013, seq=1/256, ttl=64
   2 2022-08-01 11:33:19.071514882  198.51.100.100  192.0.2.100   ICMP      108     0x4f27 (20263)  64 Echo (ping) reply   id=0x0013, seq=1/256, ttl=64
   3 2022-08-01 11:33:20.072677302  198.51.100.100  192.0.2.100   ICMP      108     0x4ffb (20475)  64 Echo (ping) reply   id=0x0013, seq=2/512, ttl=64
   4 2022-08-01 11:33:20.072679384  198.51.100.100  192.0.2.100   ICMP      108     0x4ffb (20475)  64 Echo (ping) reply   id=0x0013, seq=2/512, ttl=64
   5 2022-08-01 11:33:21.073913640  198.51.100.100  192.0.2.100   ICMP      108     0x50ac (20652)  64 Echo (ping) reply   id=0x0013, seq=3/768, ttl=64
   6 2022-08-01 11:33:21.073915690  198.51.100.100  192.0.2.100   ICMP      108     0x50ac (20652)  64 Echo (ping) reply   id=0x0013, seq=3/768, ttl=64
   7 2022-08-01 11:33:22.075239381  198.51.100.100  192.0.2.100   ICMP      108     0x513e (20798)  64 Echo (ping) reply   id=0x0013, seq=4/1024, ttl=64
   8 2022-08-01 11:33:22.075241491  198.51.100.100  192.0.2.100   ICMP      108     0x513e (20798)  64 Echo (ping) reply   id=0x0013, seq=4/1024, ttl=64
   9 2022-08-01 11:33:23.076447152  198.51.100.100  192.0.2.100   ICMP      108     0x51c9 (20937)  64 Echo (ping) reply   id=0x0013, seq=5/1280, ttl=64
  10 2022-08-01 11:33:23.076449303  198.51.100.100  192.0.2.100   ICMP      108     0x51c9 (20937)  64 Echo (ping) reply   id=0x0013, seq=5/1280, ttl=64
  11 2022-08-01 11:33:24.082407896  198.51.100.100  192.0.2.100   ICMP      108     0x528e (21134)  64 Echo (ping) reply   id=0x0013, seq=6/1536, ttl=64
  12 2022-08-01 11:33:24.082410099  198.51.100.100  192.0.2.100   ICMP      108     0x528e (21134)  64 Echo (ping) reply   id=0x0013, seq=6/1536, ttl=64
  13 2022-08-01 11:33:25.106382424  198.51.100.100  192.0.2.100   ICMP      108     0x52af (21167)  64 Echo (ping) reply   id=0x0013, seq=7/1792, ttl=64
  14 2022-08-01 11:33:25.106384549  198.51.100.100  192.0.2.100   ICMP      108     0x52af (21167)  64 Echo (ping) reply   id=0x0013, seq=7/1792, ttl=64
  15 2022-08-01 11:33:26.130437851  198.51.100.100  192.0.2.100   ICMP      108     0x53a6 (21414)  64 Echo (ping) reply   id=0x0013, seq=8/2048, ttl=64
  16 2022-08-01 11:33:26.130440320  198.51.100.100  192.0.2.100   ICMP      108     0x53a6 (21414)  64 Echo (ping) reply   id=0x0013, seq=8/2048, ttl=64
  17 2022-08-01 11:33:27.154398212  198.51.100.100  192.0.2.100   ICMP      108     0x5446 (21574)  64 Echo (ping) reply   id=0x0013, seq=9/2304, ttl=64
  18 2022-08-01 11:33:27.154400198  198.51.100.100  192.0.2.100   ICMP      108     0x5446 (21574)  64 Echo (ping) reply   id=0x0013, seq=9/2304, ttl=64
  19 2022-08-01 11:33:28.178469866  198.51.100.100  192.0.2.100   ICMP      108     0x5493 (21651)  64 Echo (ping) reply   id=0x0013, seq=10/2560, ttl=64
  20 2022-08-01 11:33:28.178471810  198.51.100.100  192.0.2.100   ICMP      108     0x5493 (21651)  64 Echo (ping) reply   id=0x0013, seq=10/2560, ttl=64
  21 2022-08-01 11:33:29.202395869  198.51.100.100  192.0.2.100   ICMP      108     0x54f4 (21748)  64 Echo (ping) reply   id=0x0013, seq=11/2816, ttl=64
  22 2022-08-01 11:33:29.202398067  198.51.100.100  192.0.2.100   ICMP      108     0x54f4 (21748)  64 Echo (ping) reply   id=0x0013, seq=11/2816, ttl=64
  23 2022-08-01 11:33:30.226398735  198.51.100.100  192.0.2.100   ICMP      108     0x5526 (21798)  64 Echo (ping) reply   id=0x0013, seq=12/3072, ttl=64
  24 2022-08-01 11:33:30.226401017  198.51.100.100  192.0.2.100   ICMP      108     0x5526 (21798)  64 Echo (ping) reply   id=0x0013, seq=12/3072, ttl=64
  25 2022-08-01 11:33:31.250387808  198.51.100.100  192.0.2.100   ICMP      108     0x55f2 (22002)  64 Echo (ping) reply   id=0x0013, seq=13/3328, ttl=64
  26 2022-08-01 11:33:31.250389971  198.51.100.100  192.0.2.100   ICMP      108     0x55f2 (22002)  64 Echo (ping) reply   id=0x0013, seq=13/3328, ttl=64
  27 2022-08-01 11:33:32.274416011  198.51.100.100  192.0.2.100   ICMP      108     0x5660 (22112)  64 Echo (ping) reply   id=0x0013, seq=14/3584, ttl=64
  28 2022-08-01 11:33:32.274418229  198.51.100.100  192.0.2.100   ICMP      108     0x5660 (22112)  64 Echo (ping) reply   id=0x0013, seq=14/3584, ttl=64
  29 2022-08-01 11:33:33.298397657  198.51.100.100  192.0.2.100   ICMP      108     0x56e7 (22247)  64 Echo (ping) reply   id=0x0013, seq=15/3840, ttl=64
```

```
> Frame 2: 108 bytes on wire (864 bits), 108 bytes captured (864 bits) on interface capture_u0_8, id 0
> Ethernet II, Src: Cisco_b9:77:0e (58:97:bd:b9:77:0e), Dst: VMware_9d:e8:be (00:50:56:9d:e8:be)
v VN-Tag
    0... .... .... .... .... .... .... .... = Direction: To Bridge
    .0.. .... .... .... .... .... .... .... = Pointer: vif_id
    ..00 0000 0000 0000 .... .... .... .... = Destination: 0
    .... .... .... .... 0... .... .... .... = Looped: No
    .... .... .... .... .0.. .... .... .... = Reserved: 0
    .... .... .... .... ..00 .... .... .... = Version: 0
    .... .... .... .... .... 0000 0000 1010 = Source: 10
    Type: 802.1Q Virtual LAN (0x8100)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 102
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0000 0110 0110 = ID: 102
    Type: IPv4 (0x0800)
> Internet Protocol Version 4, Src: 198.51.100.100, Dst: 192.0.2.100
> Internet Control Message Protocol
```

```
0000  00 50 56 9d e8 be 58 97  bd b9 77 0e 89 26 00 00   ·PV···X· ··w··&··
0010  00 0a 81 00 00 66 08 00  45 00 00 54 4f 27 00 00   ·····f·· E··TO'··
0020  40 01 3e 86 c6 33 64 64  c0 00 02 64 00 00 95 7c   @·>··3dd ···d···|
0030  00 13 00 01 f2 b9 e7 62  00 00 00 00 cb 7f 06 00   ·······b ········
0040  00 00 00 00 10 11 12 13  14 15 16 17 18 19 1a 1b   ········ ········
0050  1c 1d 1e 1f 20 21 22 23  24 25 26 27 28 29 2a 2b   ···· !"# $%&'()*+
0060  2c 2d 2e 2f 30 31 32 33  34 35 36 37               ,-./0123 4567
```

Explicación

Si se selecciona la opción **All Packets** en la **Application Capture Direction**, se configuran 2 capturas de paquetes simultáneas relacionadas con el puerto Ethernet1/2 de la aplicación seleccionada: una captura en la interfaz Ethernet1/2 frontal y una captura en interfaces de backplane seleccionadas.

Cuando se configura una captura de paquetes en una interfaz frontal, el switch captura simultáneamente cada paquete dos veces:

- Después de la inserción de la etiqueta de VLAN de puerto.
- Después de la inserción de la etiqueta VN.

En el orden de las operaciones, la etiqueta VN se inserta en una etapa posterior a la inserción de la etiqueta VLAN del puerto. Sin embargo, en el archivo de captura, el paquete con la etiqueta VN se muestra antes que el paquete con la etiqueta de puerto VLAN. En este ejemplo, la etiqueta VLAN 102 en los paquetes de solicitud de eco ICMP identifica Ethernet1/2 como la interfaz de ingreso.

Cuando se configura una captura de paquetes en una interfaz de backplane, el switch captura simultáneamente cada paquete dos veces. El switch interno recibe paquetes que ya están etiquetados por la aplicación en el módulo de seguridad con la etiqueta de VLAN de puerto y la etiqueta VN. La etiqueta de VLAN de puerto identifica la interfaz de salida que el chasis interno utiliza para reenviar los paquetes a la red. En este ejemplo, la etiqueta VLAN 102 en los paquetes de respuesta de eco ICMP identifica Ethernet1/2 como la interfaz de salida.

El switch interno quita la etiqueta VN y la etiqueta VLAN de la interfaz interna antes de que los paquetes se reenvíen a la red.

Esta tabla resume la tarea:

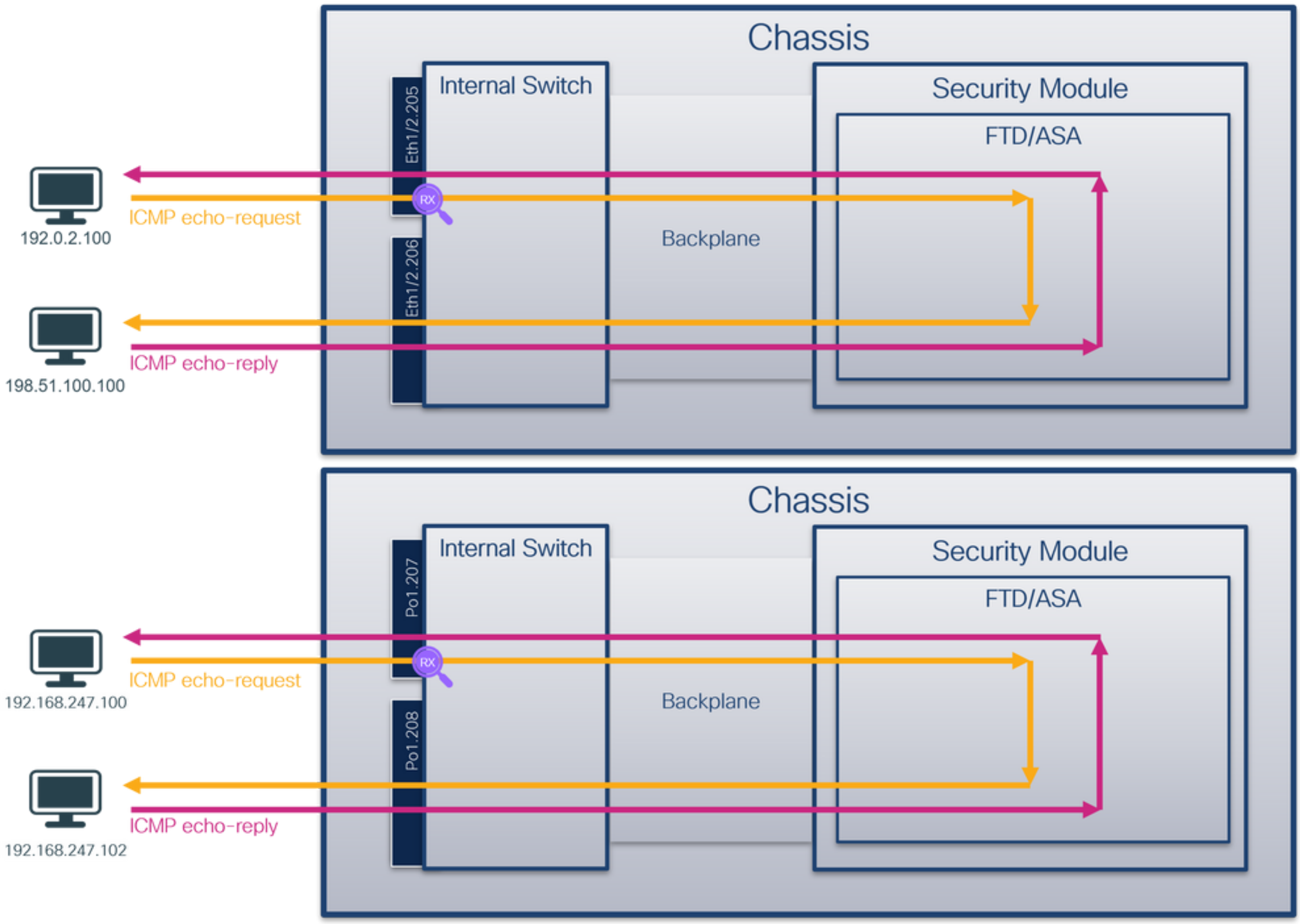
Tarea	Punto de	VLAN de puerto	Dirección	Tráfico capturado

	captura	interno en paquetes capturados	:	
Configurar y verificar capturas en la aplicación y el puerto de aplicación Ethernet1/2	Interfaces de backplane	102	Solo entrada	Respuestas de eco ICMP del 198.51.100.100 al host 192.0.2.100
	Interfaz Ethernet1/2	102	Solo entrada	Solicitudes de eco ICMP del h 192.0.2.100 al host 198.51.100.100

Captura de paquetes en una subinterfaz de una interfaz física o de canal de puerto

Utilice FCM y CLI para configurar y verificar una captura de paquetes en la subinterfaz Ethernet1/2.205 o en la subinterfaz de canal de puerto Portchannel1.207. Las subinterfaces y capturas en las subinterfaces sólo se admiten para la aplicación FTD en modo contenedor. En este caso, se configura una captura de paquetes en Ethernet1/2.205 y Portchannel1.207.

Topología, flujo de paquetes y puntos de captura

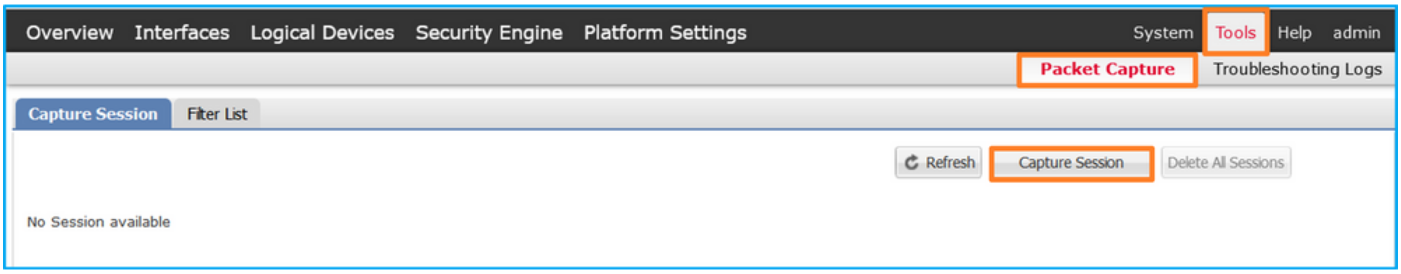


Configuración

FCM

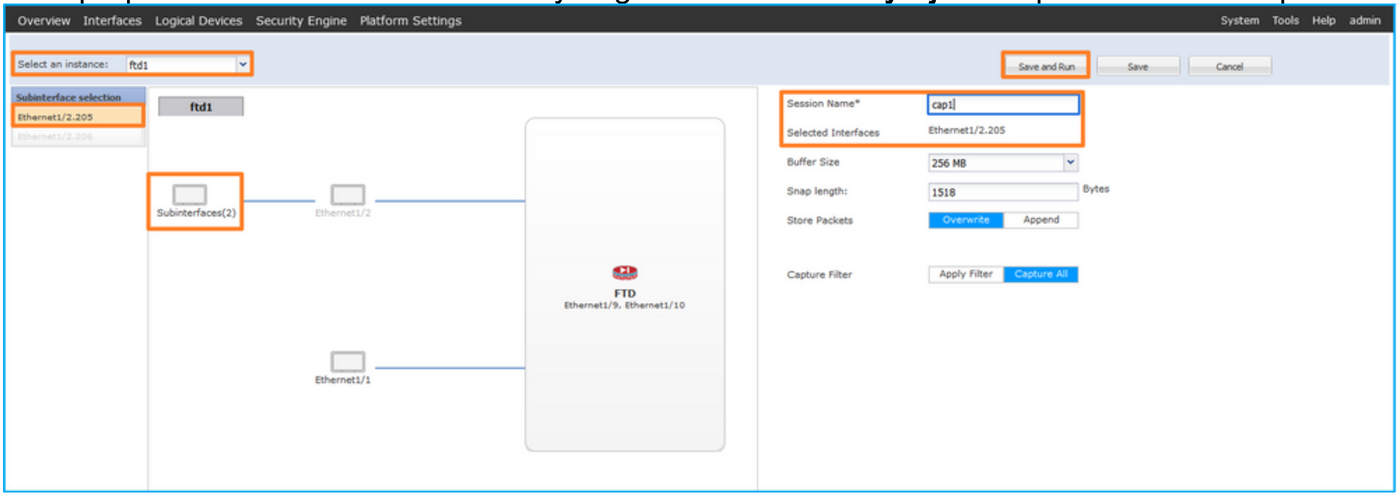
Siga estos pasos en FCM para configurar una captura de paquetes en la aplicación FTD y el puerto Ethernet1/2 de la aplicación:

1. Utilice **Tools > Packet Capture > Capture Session** para crear una nueva sesión de captura**:**



No Session available

2. Seleccione la instancia de aplicación específica ftd1, la subinterfaz Ethernet1/2.205, proporcione el nombre de sesión y haga clic en **Guardar y Ejecutar** para activar la captura:



Select an instance: ftd1

Session Name* cap1

Selected Interfaces Ethernet1/2.205

Buffer Size 256 MB

Snap length: 1518 Bytes

Store Packets Overwrite

Capture Filter Capture All

3. En el caso de una subinterfaz de canal de puerto, debido al ID de bug de Cisco, las subinterfaces CSCvq3119 no son visibles en FCM. Utilice la CLI de FXOS para configurar capturas en subinterfaces de canal de puerto.

CLI FXOS

Siga estos pasos en FXOS CLI para configurar una captura de paquetes en las subinterfaces Ethernet1/2.205 y Portchannel1.207:

1. Identifique el tipo de aplicación y el identificador:

```
firepower# scope ssa
firepower /ssa #  show app-instance
App Name   Identifier Slot ID    Admin State Oper State       Running Version Startup Version
Deploy Type Turbo Mode Profile Name Cluster State   Cluster Role
---------- ---------- ---------- ----------- ---------------- --------------- --------------- --
--------- ---------- ------------ --------------- ------------
ftd        ftd1       1          Enabled     Online           7.2.0.82        7.2.0.82
Container   No         RP20         Not Applicable  None
ftd        ftd2       1          Enabled     Online           7.2.0.82        7.2.0.82
Container   No         RP20         Not Applicable  None
```

2. En el caso de una interfaz de canal de puerto, identifique sus interfaces miembro:

```
firepower# connect fxos
<output skipped>
firepower(fxos)# show port-channel summary
Flags:  D - Down        P - Up in port-channel (members)
       I - Individual  H - Hot-standby (LACP only)
       s - Suspended    r - Module-removed
       S - Switched     R - Routed
       U - Up (port-channel)
       M - Not in use. Min-links not met
--------------------------------------------------------------------------------
Group Port-       Type     Protocol  Member Ports
     Channel
--------------------------------------------------------------------------------
1     Po1(SU)     Eth      LACP      Eth1/3(P)    Eth1/3(P)
```

3. Crear una sesión de captura:

```
firepower# scope packet-capture
firepower /packet-capture # create session cap1
firepower /packet-capture/session* # create phy-port Eth1/2
firepower /packet-capture/session/phy-port* # set app ftd
firepower /packet-capture/session/phy-port* # set app-identifier ftd1
firepower /packet-capture/session/phy-port* # set subinterface 205
firepower /packet-capture/session/phy-port* # up
firepower /packet-capture/session* # enable
firepower /packet-capture/session* # commit
firepower /packet-capture/session #
```

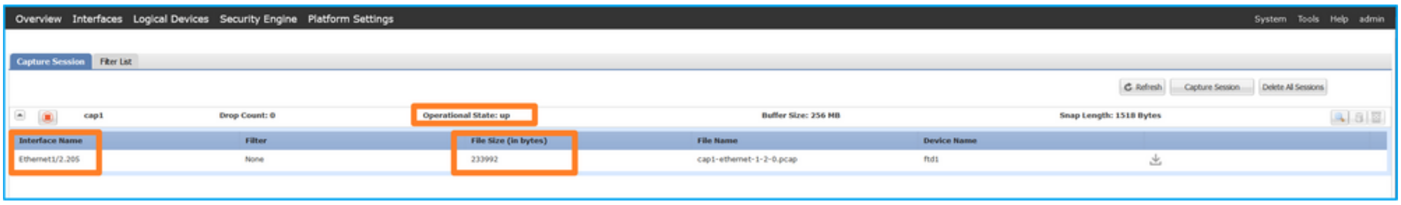
Para subinterfaces de canal de puerto, cree una captura de paquetes para cada interfaz miembro de canal de puerto:

```
firepower#  scope packet-capture
firepower /packet-capture # create filter vlan207
firepower /packet-capture/filter* # set ovlan 207
firepower /packet-capture/filter* # up
firepower /packet-capture* # create session cap1
firepower /packet-capture/session*  create phy-port Eth1/3
firepower /packet-capture/session/phy-port* # set app ftd
firepower /packet-capture/session/phy-port* # set app-identifier ftd1
firepower /packet-capture/session/phy-port* # set subinterface 207
firepower /packet-capture/session/phy-port* # up
firepower /packet-capture/session* # create phy-port Eth1/4
firepower /packet-capture/session/phy-port* # set app ftd
firepower /packet-capture/session/phy-port* # set app-identifier ftd1
firepower /packet-capture/session/phy-port* # set subinterface 207
firepower /packet-capture/session/phy-port* # up
firepower /packet-capture/session* # enable
firepower /packet-capture/session* # commit
firepower /packet-capture/session #
```

Verificación

FCM

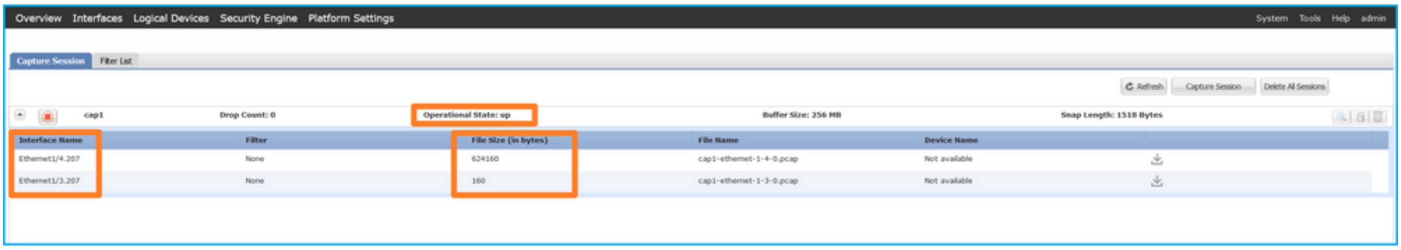
Verifique el **Nombre de la Interfaz**, asegúrese de que el **Estado Operacional** esté activo y que el **Tamaño del Archivo (en bytes)** aumente:



cap1 Drop Count: 0 Operational State: up Buffer Size: 256 MB Snap Length: 1518 Bytes

Interface Name	Filter	File Size (in bytes)	File Name	Device Name
Ethernet1/2.205	None	233992	cap1-ethernet-1-2-0.pcap	ftd1

Las capturas de subinterfaz de canal de puerto configuradas en la CLI de FXOS también son visibles en FCM; sin embargo, no se pueden editar:



cap1 Drop Count: 0 Operational State: up Buffer Size: 256 MB Snap Length: 1518 Bytes

Interface Name	Filter	File Size (in bytes)	File Name	Device Name
Ethernet1/4.207	None	624160	cap1-ethernet-1-4-0.pcap	Not available
Ethernet1/3.207	None	160	cap1-ethernet-1-3-0.pcap	Not available

CLI FXOS

Verifique los detalles de la captura en **scope packet-capture**:

```
firepower# scope packet-capture
firepower /packet-capture # show session cap1

Traffic Monitoring Session:
    Packet Capture Session Name: cap1
   Session: 1
    Admin State: Enabled
    Oper State: Up
    Oper State Reason: Active
   Config Success: Yes
   Config Fail Reason:
   Append Flag: Overwrite
   Session Mem Usage: 256  MB
   Session Pcap Snap Len: 1518  Bytes
   Error Code: 0
   Drop Count: 0

Physical ports involved in Packet Capture:
    Slot Id: 1
    Port Id: 2
    Pcapfile: /workspace/packet-capture/session-1/cap1-ethernet-1-2-0.pcap
    Pcapsize: 9324  bytes
   Filter:
    Sub Interface: 205
    Application Instance Identifier: ftd1
    Application Name: ftd
```

Canal de puerto 1 con interfaces miembro Ethernet1/3 y Ethernet1/4:

```
firepower# scope packet-capture
firepower /packet-capture # show session cap1

Traffic Monitoring Session:
    Packet Capture Session Name: cap1
   Session: 1
   Admin State: Enabled
    Oper State: Up
    Oper State Reason: Active
   Config Success: Yes
   Config Fail Reason:
   Append Flag: Overwrite
   Session Mem Usage: 256  MB
   Session Pcap Snap Len: 1518  Bytes
   Error Code: 0
   Drop Count: 0

Physical ports involved in Packet Capture:
    Slot Id: 1
    Port Id: 3
    Pcapfile: /workspace/packet-capture/session-1/cap1-ethernet-1-3-0.pcap
    Pcapsize: 160  bytes
   Filter:
    Sub Interface: 207
   Application Instance Identifier: ftd1
    Application Name: ftd
   Slot Id: 1
    Port Id: 4
    Pcapfile: /workspace/packet-capture/session-1/cap1-ethernet-1-4-0.pcap
    Pcapsize: 624160  bytes
   Filter:
   Sub Interface: 207
    Application Instance Identifier: ftd1
    Application Name: ftd
```

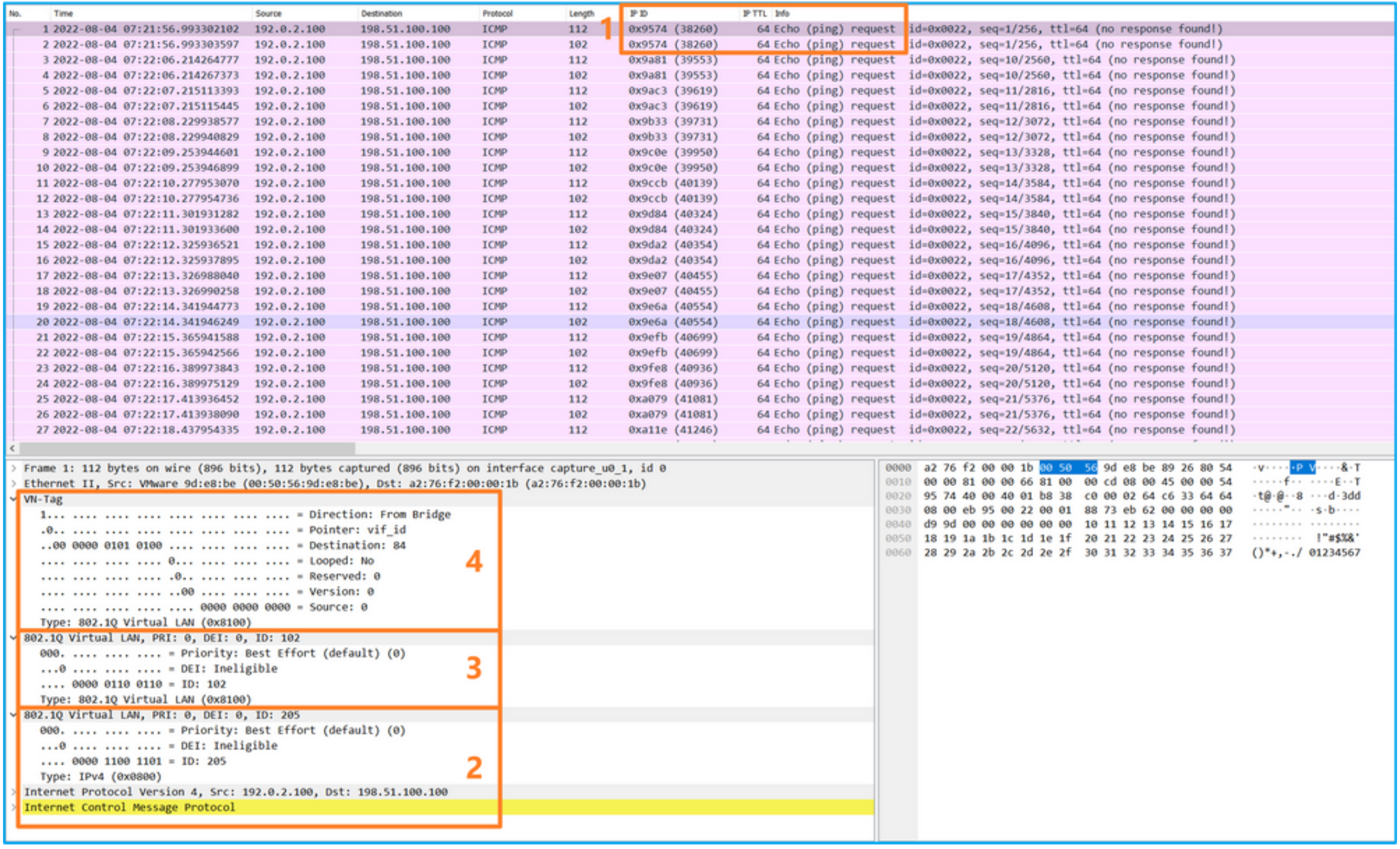
Recopilar archivos de captura

Siga los pasos de la sección **Recopilación de archivos de captura de switch internos de Firepower 4100/9300**.

Capturar análisis de archivos

Utilice una aplicación de lector de archivos de captura de paquetes para abrir el archivo de captura. Seleccione el primer paquete y verifique los puntos clave:

1. Solo se capturan los paquetes de solicitud de eco ICMP. Cada paquete se captura y se muestra 2 veces.
2. El encabezado del paquete original tiene la etiqueta VLAN **205**.
3. El switch interno inserta la etiqueta adicional del puerto VLAN **102** que identifica la interfaz de ingreso Ethernet1/2.
4. El switch interno inserta una etiqueta VN adicional.



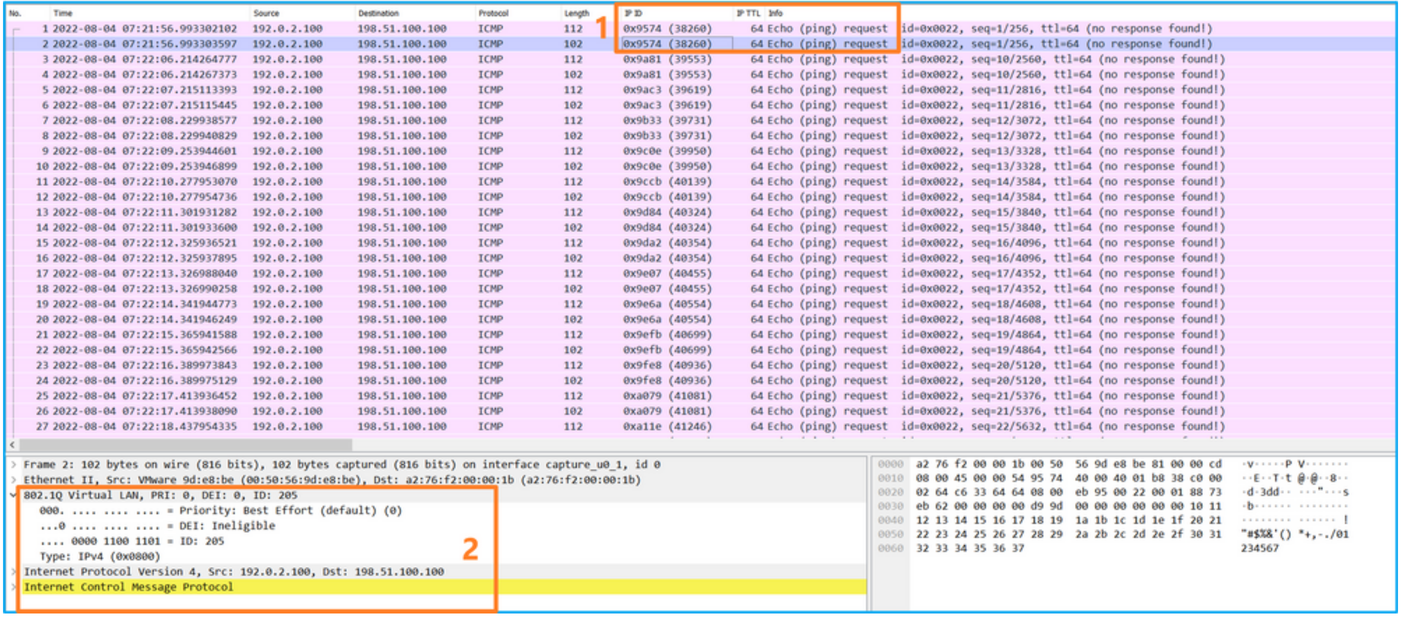
```
No.  Time                          Source       Destination     Protocol  Length  IP ID           IP TTL  Info
  1 2022-08-04 07:21:56.993302102  192.0.2.100  198.51.100.100  ICMP      112     0x9574 (38260)  64 Echo (ping) request  id=0x0022, seq=1/256, ttl=64 (no response found!)
  2 2022-08-04 07:21:56.993303597  192.0.2.100  198.51.100.100  ICMP      102     0x9574 (38260)  64 Echo (ping) request  id=0x0022, seq=1/256, ttl=64 (no response found!)
  3 2022-08-04 07:22:06.214264777  192.0.2.100  198.51.100.100  ICMP      112     0x9a81 (39553)  64 Echo (ping) request  id=0x0022, seq=10/2560, ttl=64 (no response found!)
  4 2022-08-04 07:22:06.214267373  192.0.2.100  198.51.100.100  ICMP      102     0x9a81 (39553)  64 Echo (ping) request  id=0x0022, seq=10/2560, ttl=64 (no response found!)
  5 2022-08-04 07:22:07.215113393  192.0.2.100  198.51.100.100  ICMP      112     0x9ac3 (39619)  64 Echo (ping) request  id=0x0022, seq=11/2816, ttl=64 (no response found!)
  6 2022-08-04 07:22:07.215115445  192.0.2.100  198.51.100.100  ICMP      102     0x9ac3 (39619)  64 Echo (ping) request  id=0x0022, seq=11/2816, ttl=64 (no response found!)
  7 2022-08-04 07:22:08.229938577  192.0.2.100  198.51.100.100  ICMP      112     0x9b33 (39731)  64 Echo (ping) request  id=0x0022, seq=12/3072, ttl=64 (no response found!)
  8 2022-08-04 07:22:08.229940829  192.0.2.100  198.51.100.100  ICMP      102     0x9b33 (39731)  64 Echo (ping) request  id=0x0022, seq=12/3072, ttl=64 (no response found!)
  9 2022-08-04 07:22:09.253944601  192.0.2.100  198.51.100.100  ICMP      112     0x9c0e (39950)  64 Echo (ping) request  id=0x0022, seq=13/3328, ttl=64 (no response found!)
 10 2022-08-04 07:22:09.253946899  192.0.2.100  198.51.100.100  ICMP      102     0x9c0e (39950)  64 Echo (ping) request  id=0x0022, seq=13/3328, ttl=64 (no response found!)
 11 2022-08-04 07:22:10.277953070  192.0.2.100  198.51.100.100  ICMP      112     0x9ccb (40139)  64 Echo (ping) request  id=0x0022, seq=14/3584, ttl=64 (no response found!)
 12 2022-08-04 07:22:10.277954736  192.0.2.100  198.51.100.100  ICMP      102     0x9ccb (40139)  64 Echo (ping) request  id=0x0022, seq=14/3584, ttl=64 (no response found!)
 13 2022-08-04 07:22:11.301931282  192.0.2.100  198.51.100.100  ICMP      112     0x9d84 (40324)  64 Echo (ping) request  id=0x0022, seq=15/3840, ttl=64 (no response found!)
 14 2022-08-04 07:22:11.301933600  192.0.2.100  198.51.100.100  ICMP      102     0x9d84 (40324)  64 Echo (ping) request  id=0x0022, seq=15/3840, ttl=64 (no response found!)
 15 2022-08-04 07:22:12.325936521  192.0.2.100  198.51.100.100  ICMP      112     0x9da2 (40354)  64 Echo (ping) request  id=0x0022, seq=16/4096, ttl=64 (no response found!)
 16 2022-08-04 07:22:12.325937895  192.0.2.100  198.51.100.100  ICMP      102     0x9da2 (40354)  64 Echo (ping) request  id=0x0022, seq=16/4096, ttl=64 (no response found!)
 17 2022-08-04 07:22:13.326988040  192.0.2.100  198.51.100.100  ICMP      112     0x9e07 (40455)  64 Echo (ping) request  id=0x0022, seq=17/4352, ttl=64 (no response found!)
 18 2022-08-04 07:22:13.326990258  192.0.2.100  198.51.100.100  ICMP      102     0x9e07 (40455)  64 Echo (ping) request  id=0x0022, seq=17/4352, ttl=64 (no response found!)
 19 2022-08-04 07:22:14.341944773  192.0.2.100  198.51.100.100  ICMP      112     0x9e6a (40554)  64 Echo (ping) request  id=0x0022, seq=18/4608, ttl=64 (no response found!)
 20 2022-08-04 07:22:14.341946249  192.0.2.100  198.51.100.100  ICMP      102     0x9e6a (40554)  64 Echo (ping) request  id=0x0022, seq=18/4608, ttl=64 (no response found!)
 21 2022-08-04 07:22:15.365941588  192.0.2.100  198.51.100.100  ICMP      112     0x9efb (40699)  64 Echo (ping) request  id=0x0022, seq=19/4864, ttl=64 (no response found!)
 22 2022-08-04 07:22:15.365942566  192.0.2.100  198.51.100.100  ICMP      102     0x9efb (40699)  64 Echo (ping) request  id=0x0022, seq=19/4864, ttl=64 (no response found!)
 23 2022-08-04 07:22:16.389973843  192.0.2.100  198.51.100.100  ICMP      112     0x9fe8 (40936)  64 Echo (ping) request  id=0x0022, seq=20/5120, ttl=64 (no response found!)
 24 2022-08-04 07:22:16.389975129  192.0.2.100  198.51.100.100  ICMP      102     0x9fe8 (40936)  64 Echo (ping) request  id=0x0022, seq=20/5120, ttl=64 (no response found!)
 25 2022-08-04 07:22:17.413936452  192.0.2.100  198.51.100.100  ICMP      112     0xa079 (41081)  64 Echo (ping) request  id=0x0022, seq=21/5376, ttl=64 (no response found!)
 26 2022-08-04 07:22:17.413938090  192.0.2.100  198.51.100.100  ICMP      102     0xa079 (41081)  64 Echo (ping) request  id=0x0022, seq=21/5376, ttl=64 (no response found!)
 27 2022-08-04 07:22:18.437954335  192.0.2.100  198.51.100.100  ICMP      112     0xa11e (41246)  64 Echo (ping) request  id=0x0022, seq=22/5632, ttl=64 (no response found!)
```

```
> Frame 1: 112 bytes on wire (896 bits), 112 bytes captured (896 bits) on interface capture_u0_1, id 0
> Ethernet II, Src: VMware 9d:e8:be (00:50:56:9d:e8:be), Dst: a2:76:f2:00:00:1b (a2:76:f2:00:00:1b)
v VN-Tag
    1... .... .... .... .... .... .... .... = Direction: From Bridge
    .0.. .... .... .... .... .... .... .... = Pointer: vif_id
    ..00 0000 0101 0100 .... .... .... .... = Destination: 84
    .... .... .... .... 0... .... .... .... = Looped: No
    .... .... .... .... .0.. .... .... .... = Reserved: 0
    .... .... .... .... ..00 .... .... .... = Version: 0
    .... .... .... .... .... 0000 0000 0000 = Source: 0
    Type: 802.1Q Virtual LAN (0x8100)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 102
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0000 0110 0110 = ID: 102
    Type: 802.1Q Virtual LAN (0x8100)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 205
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0000 1100 1101 = ID: 205
    Type: IPv4 (0x0800)
> Internet Protocol Version 4, Src: 192.0.2.100, Dst: 198.51.100.100
> Internet Control Message Protocol
```

```
0000  a2 76 f2 00 00 1b 00 50  56 9d e8 be 89 26 80 54   ·v·····P V····&·T
0010  00 00 81 00 00 66 81 00  00 cd 08 00 45 00 00 54   ·····f·· ····E··T
0020  95 74 40 00 40 01 b8 38  c0 00 02 64 c6 33 64 64   ·t@·@··8 ···d·3dd
0030  08 00 eb 95 00 22 00 01  88 73 eb 62 00 00 00 00   ·····"·· ·s·b····
0040  d9 9d 00 00 00 00 00 00  10 11 12 13 14 15 16 17   ········ ········
0050  18 19 1a 1b 1c 1d 1e 1f  20 21 22 23 24 25 26 27   ········  !"#$%&'
0060  28 29 2a 2b 2c 2d 2e 2f  30 31 32 33 34 35 36 37   ()*+,-./ 01234567
```

Seleccione el segundo paquete y verifique los puntos clave:

1. Solo se capturan los paquetes de solicitud de eco ICMP. Cada paquete se captura y se muestra 2 veces.
2. El encabezado del paquete original tiene la etiqueta VLAN **205**.



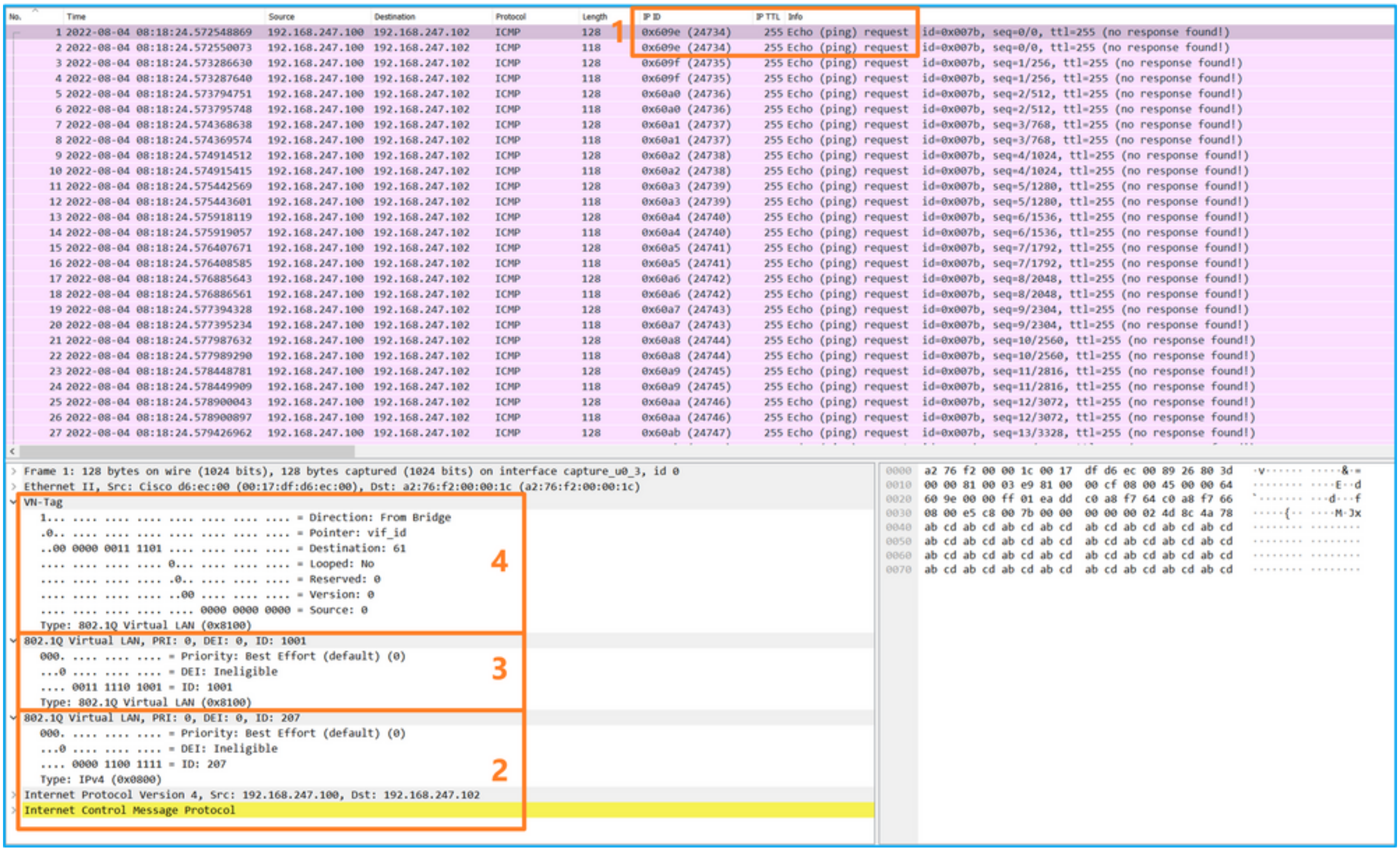
```
No. Time                          Source       Destination      Protocol Length IP ID           IP TTL Info
  1 2022-08-04 07:21:56.993302102 192.0.2.100  198.51.100.100   ICMP     112    0x9574 (38260)  64 Echo (ping) request  id=0x0022, seq=1/256, ttl=64 (no response found!)
  2 2022-08-04 07:21:56.993303597 192.0.2.100  198.51.100.100   ICMP     102    0x9574 (38260)  64 Echo (ping) request  id=0x0022, seq=1/256, ttl=64 (no response found!)
  3 2022-08-04 07:22:06.214264777 192.0.2.100  198.51.100.100   ICMP     112    0x9a81 (39553)  64 Echo (ping) request  id=0x0022, seq=10/2560, ttl=64 (no response found!)
  4 2022-08-04 07:22:06.214267373 192.0.2.100  198.51.100.100   ICMP     102    0x9a81 (39553)  64 Echo (ping) request  id=0x0022, seq=10/2560, ttl=64 (no response found!)
  5 2022-08-04 07:22:07.215113393 192.0.2.100  198.51.100.100   ICMP     112    0x9ac3 (39619)  64 Echo (ping) request  id=0x0022, seq=11/2816, ttl=64 (no response found!)
  6 2022-08-04 07:22:07.215115445 192.0.2.100  198.51.100.100   ICMP     102    0x9ac3 (39619)  64 Echo (ping) request  id=0x0022, seq=11/2816, ttl=64 (no response found!)
  7 2022-08-04 07:22:08.229938577 192.0.2.100  198.51.100.100   ICMP     112    0x9b33 (39731)  64 Echo (ping) request  id=0x0022, seq=12/3072, ttl=64 (no response found!)
  8 2022-08-04 07:22:08.229940829 192.0.2.100  198.51.100.100   ICMP     102    0x9b33 (39731)  64 Echo (ping) request  id=0x0022, seq=12/3072, ttl=64 (no response found!)
  9 2022-08-04 07:22:09.253944601 192.0.2.100  198.51.100.100   ICMP     112    0x9c0e (39950)  64 Echo (ping) request  id=0x0022, seq=13/3328, ttl=64 (no response found!)
 10 2022-08-04 07:22:09.253946899 192.0.2.100  198.51.100.100   ICMP     102    0x9c0e (39950)  64 Echo (ping) request  id=0x0022, seq=13/3328, ttl=64 (no response found!)
 11 2022-08-04 07:22:10.277953070 192.0.2.100  198.51.100.100   ICMP     112    0x9ccb (40139)  64 Echo (ping) request  id=0x0022, seq=14/3584, ttl=64 (no response found!)
 12 2022-08-04 07:22:10.277954736 192.0.2.100  198.51.100.100   ICMP     102    0x9ccb (40139)  64 Echo (ping) request  id=0x0022, seq=14/3584, ttl=64 (no response found!)
 13 2022-08-04 07:22:11.301931282 192.0.2.100  198.51.100.100   ICMP     112    0x9d84 (40324)  64 Echo (ping) request  id=0x0022, seq=15/3840, ttl=64 (no response found!)
 14 2022-08-04 07:22:11.301933600 192.0.2.100  198.51.100.100   ICMP     102    0x9d84 (40324)  64 Echo (ping) request  id=0x0022, seq=15/3840, ttl=64 (no response found!)
 15 2022-08-04 07:22:12.325936521 192.0.2.100  198.51.100.100   ICMP     112    0x9da2 (40354)  64 Echo (ping) request  id=0x0022, seq=16/4096, ttl=64 (no response found!)
 16 2022-08-04 07:22:12.325937895 192.0.2.100  198.51.100.100   ICMP     102    0x9da2 (40354)  64 Echo (ping) request  id=0x0022, seq=16/4096, ttl=64 (no response found!)
 17 2022-08-04 07:22:13.326988040 192.0.2.100  198.51.100.100   ICMP     112    0x9e07 (40455)  64 Echo (ping) request  id=0x0022, seq=17/4352, ttl=64 (no response found!)
 18 2022-08-04 07:22:13.326990258 192.0.2.100  198.51.100.100   ICMP     102    0x9e07 (40455)  64 Echo (ping) request  id=0x0022, seq=17/4352, ttl=64 (no response found!)
 19 2022-08-04 07:22:14.341944773 192.0.2.100  198.51.100.100   ICMP     112    0x9e6a (40554)  64 Echo (ping) request  id=0x0022, seq=18/4608, ttl=64 (no response found!)
 20 2022-08-04 07:22:14.341946249 192.0.2.100  198.51.100.100   ICMP     102    0x9e6a (40554)  64 Echo (ping) request  id=0x0022, seq=18/4608, ttl=64 (no response found!)
 21 2022-08-04 07:22:15.365941588 192.0.2.100  198.51.100.100   ICMP     112    0x9efb (40699)  64 Echo (ping) request  id=0x0022, seq=19/4864, ttl=64 (no response found!)
 22 2022-08-04 07:22:15.365942566 192.0.2.100  198.51.100.100   ICMP     102    0x9efb (40699)  64 Echo (ping) request  id=0x0022, seq=19/4864, ttl=64 (no response found!)
 23 2022-08-04 07:22:16.389973843 192.0.2.100  198.51.100.100   ICMP     112    0x9fe8 (40936)  64 Echo (ping) request  id=0x0022, seq=20/5120, ttl=64 (no response found!)
 24 2022-08-04 07:22:16.389975129 192.0.2.100  198.51.100.100   ICMP     102    0x9fe8 (40936)  64 Echo (ping) request  id=0x0022, seq=20/5120, ttl=64 (no response found!)
 25 2022-08-04 07:22:17.413936452 192.0.2.100  198.51.100.100   ICMP     112    0xa079 (41081)  64 Echo (ping) request  id=0x0022, seq=21/5376, ttl=64 (no response found!)
 26 2022-08-04 07:22:17.413938090 192.0.2.100  198.51.100.100   ICMP     102    0xa079 (41081)  64 Echo (ping) request  id=0x0022, seq=21/5376, ttl=64 (no response found!)
 27 2022-08-04 07:22:18.437954335 192.0.2.100  198.51.100.100   ICMP     112    0xa11e (41246)  64 Echo (ping) request  id=0x0022, seq=22/5632, ttl=64 (no response found!)
```

```
> Frame 2: 102 bytes on wire (816 bits), 102 bytes captured (816 bits) on interface capture_u0_1, id 0
> Ethernet II, Src: VMware_9d:e8:be (00:50:56:9d:e8:be), Dst: a2:76:f2:00:00:1b (a2:76:f2:00:00:1b)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 205
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0000 1100 1101 = ID: 205
    Type: IPv4 (0x0800)
> Internet Protocol Version 4, Src: 192.0.2.100, Dst: 198.51.100.100
> Internet Control Message Protocol
```

```
0000  a2 76 f2 00 00 1b 00 50  56 9d e8 be 81 00 00 cd   ·v·····P V·······
0010  08 00 45 00 00 54 95 74  40 00 40 01 b8 38 c0 00   ··E··T·t @·@··8··
0020  02 64 c6 33 64 64 08 00  eb 95 00 22 00 01 88 73   ·d·3dd·· ···"···s
0030  eb 62 00 00 00 00 d9 9d  00 00 00 00 00 00 10 11   ·b······ ········
0040  12 13 14 15 16 17 18 19  1a 1b 1c 1d 1e 1f 20 21   ········ ······ !
0050  22 23 24 25 26 27 28 29  2a 2b 2c 2d 2e 2f 30 31   "#$%&'() *+,-./01
0060  32 33 34 35 36 37                                 234567
```

Ahora abra los archivos de captura para Portchannel1.207. Seleccione el primer paquete y verifique los puntos clave

1. Solo se capturan los paquetes de solicitud de eco ICMP. Cada paquete se captura y se muestra 2 veces.
2. El encabezado del paquete original tiene la etiqueta VLAN **207**.
3. El switch interno inserta una etiqueta de VLAN de puerto adicional **1001** que identifica la interfaz de ingreso Portchannel1.
4. El switch interno inserta una etiqueta VN adicional.



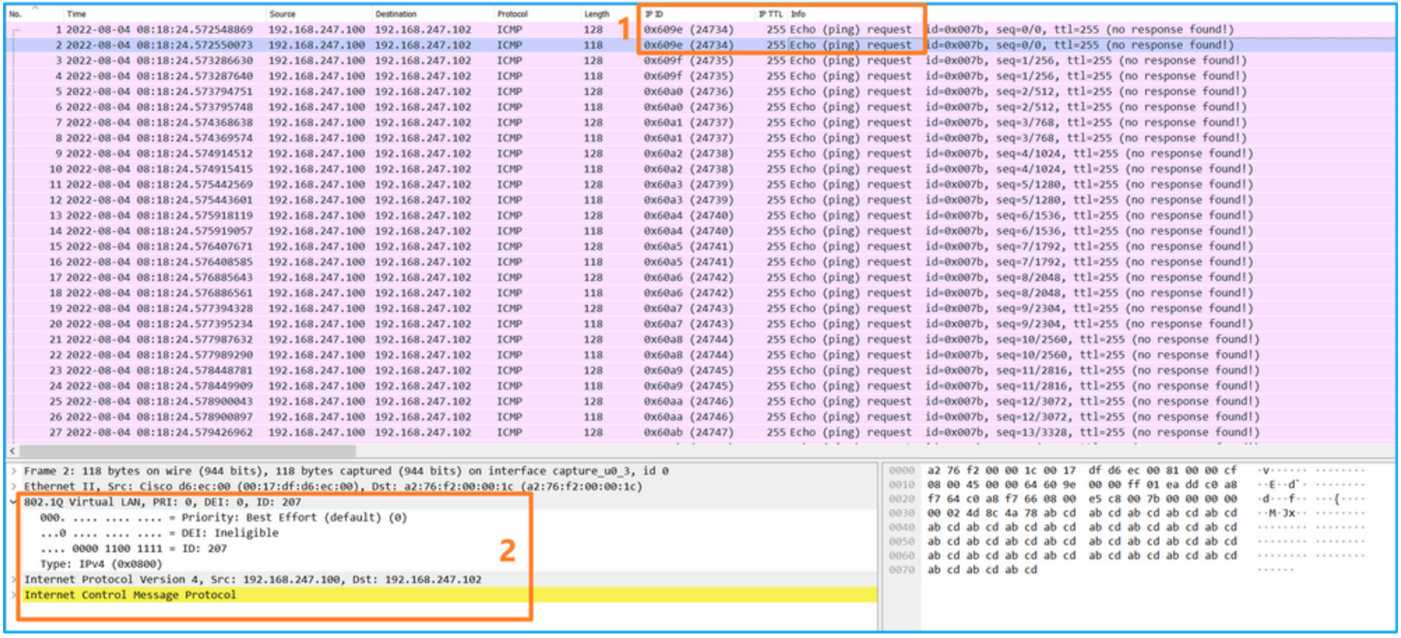
```
No.  Time                           Source           Destination      Protocol  Length  IP ID            IP TTL  Info
   1 2022-08-04 08:18:24.572548869  192.168.247.100  192.168.247.102  ICMP      128     0x609e (24734)   255 Echo (ping) request  id=0x007b, seq=0/0, ttl=255 (no response found!)
   2 2022-08-04 08:18:24.572550073  192.168.247.100  192.168.247.102  ICMP      118     0x609e (24734)   255 Echo (ping) request  id=0x007b, seq=0/0, ttl=255 (no response found!)
   3 2022-08-04 08:18:24.573286630  192.168.247.100  192.168.247.102  ICMP      128     0x609f (24735)   255 Echo (ping) request  id=0x007b, seq=1/256, ttl=255 (no response found!)
   4 2022-08-04 08:18:24.573287640  192.168.247.100  192.168.247.102  ICMP      118     0x609f (24735)   255 Echo (ping) request  id=0x007b, seq=1/256, ttl=255 (no response found!)
   5 2022-08-04 08:18:24.573794751  192.168.247.100  192.168.247.102  ICMP      128     0x60a0 (24736)   255 Echo (ping) request  id=0x007b, seq=2/512, ttl=255 (no response found!)
   6 2022-08-04 08:18:24.573795748  192.168.247.100  192.168.247.102  ICMP      118     0x60a0 (24736)   255 Echo (ping) request  id=0x007b, seq=2/512, ttl=255 (no response found!)
   7 2022-08-04 08:18:24.574368638  192.168.247.100  192.168.247.102  ICMP      128     0x60a1 (24737)   255 Echo (ping) request  id=0x007b, seq=3/768, ttl=255 (no response found!)
   8 2022-08-04 08:18:24.574369574  192.168.247.100  192.168.247.102  ICMP      118     0x60a1 (24737)   255 Echo (ping) request  id=0x007b, seq=3/768, ttl=255 (no response found!)
   9 2022-08-04 08:18:24.574914512  192.168.247.100  192.168.247.102  ICMP      128     0x60a2 (24738)   255 Echo (ping) request  id=0x007b, seq=4/1024, ttl=255 (no response found!)
  10 2022-08-04 08:18:24.574915415  192.168.247.100  192.168.247.102  ICMP      118     0x60a2 (24738)   255 Echo (ping) request  id=0x007b, seq=4/1024, ttl=255 (no response found!)
  11 2022-08-04 08:18:24.575442569  192.168.247.100  192.168.247.102  ICMP      128     0x60a3 (24739)   255 Echo (ping) request  id=0x007b, seq=5/1280, ttl=255 (no response found!)
  12 2022-08-04 08:18:24.575443601  192.168.247.100  192.168.247.102  ICMP      118     0x60a3 (24739)   255 Echo (ping) request  id=0x007b, seq=5/1280, ttl=255 (no response found!)
  13 2022-08-04 08:18:24.575918119  192.168.247.100  192.168.247.102  ICMP      128     0x60a4 (24740)   255 Echo (ping) request  id=0x007b, seq=6/1536, ttl=255 (no response found!)
  14 2022-08-04 08:18:24.575919057  192.168.247.100  192.168.247.102  ICMP      118     0x60a4 (24740)   255 Echo (ping) request  id=0x007b, seq=6/1536, ttl=255 (no response found!)
  15 2022-08-04 08:18:24.576407671  192.168.247.100  192.168.247.102  ICMP      128     0x60a5 (24741)   255 Echo (ping) request  id=0x007b, seq=7/1792, ttl=255 (no response found!)
  16 2022-08-04 08:18:24.576408585  192.168.247.100  192.168.247.102  ICMP      118     0x60a5 (24741)   255 Echo (ping) request  id=0x007b, seq=7/1792, ttl=255 (no response found!)
  17 2022-08-04 08:18:24.576885643  192.168.247.100  192.168.247.102  ICMP      128     0x60a6 (24742)   255 Echo (ping) request  id=0x007b, seq=8/2048, ttl=255 (no response found!)
  18 2022-08-04 08:18:24.576886561  192.168.247.100  192.168.247.102  ICMP      118     0x60a6 (24742)   255 Echo (ping) request  id=0x007b, seq=8/2048, ttl=255 (no response found!)
  19 2022-08-04 08:18:24.577394328  192.168.247.100  192.168.247.102  ICMP      128     0x60a7 (24743)   255 Echo (ping) request  id=0x007b, seq=9/2304, ttl=255 (no response found!)
  20 2022-08-04 08:18:24.577395234  192.168.247.100  192.168.247.102  ICMP      118     0x60a7 (24743)   255 Echo (ping) request  id=0x007b, seq=9/2304, ttl=255 (no response found!)
  21 2022-08-04 08:18:24.577987632  192.168.247.100  192.168.247.102  ICMP      128     0x60a8 (24744)   255 Echo (ping) request  id=0x007b, seq=10/2560, ttl=255 (no response found!)
  22 2022-08-04 08:18:24.577989290  192.168.247.100  192.168.247.102  ICMP      118     0x60a8 (24744)   255 Echo (ping) request  id=0x007b, seq=10/2560, ttl=255 (no response found!)
  23 2022-08-04 08:18:24.578448781  192.168.247.100  192.168.247.102  ICMP      128     0x60a9 (24745)   255 Echo (ping) request  id=0x007b, seq=11/2816, ttl=255 (no response found!)
  24 2022-08-04 08:18:24.578449909  192.168.247.100  192.168.247.102  ICMP      118     0x60a9 (24745)   255 Echo (ping) request  id=0x007b, seq=11/2816, ttl=255 (no response found!)
  25 2022-08-04 08:18:24.578900043  192.168.247.100  192.168.247.102  ICMP      128     0x60aa (24746)   255 Echo (ping) request  id=0x007b, seq=12/3072, ttl=255 (no response found!)
  26 2022-08-04 08:18:24.578900897  192.168.247.100  192.168.247.102  ICMP      118     0x60aa (24746)   255 Echo (ping) request  id=0x007b, seq=12/3072, ttl=255 (no response found!)
  27 2022-08-04 08:18:24.579426962  192.168.247.100  192.168.247.102  ICMP      128     0x60ab (24747)   255 Echo (ping) request  id=0x007b, seq=13/3328, ttl=255 (no response found!)
```

```
> Frame 1: 128 bytes on wire (1024 bits), 128 bytes captured (1024 bits) on interface capture_u0_3, id 0
> Ethernet II, Src: Cisco d6:ec:00 (00:17:df:d6:ec:00), Dst: a2:76:f2:00:00:1c (a2:76:f2:00:00:1c)
v VN-Tag
    1... .... .... .... .... .... .... .... = Direction: From Bridge
    .0.. .... .... .... .... .... .... .... = Pointer: vif_id
    ..00 0000 0011 1101 .... .... .... .... = Destination: 61
    .... .... .... .... 0... .... .... .... = Looped: No
    .... .... .... .... .0.. .... .... .... = Reserved: 0
    .... .... .... .... ..00 .... .... .... = Version: 0
    .... .... .... .... .... 0000 0000 0000 = Source: 0
    Type: 802.1Q Virtual LAN (0x8100)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 1001
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0011 1110 1001 = ID: 1001
    Type: 802.1Q Virtual LAN (0x8100)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 207
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0000 1100 1111 = ID: 207
    Type: IPv4 (0x0800)
> Internet Protocol Version 4, Src: 192.168.247.100, Dst: 192.168.247.102
> Internet Control Message Protocol
```

```
0000  a2 76 f2 00 00 1c 00 17  df d6 ec 00 89 26 80 3d   ·v······ ·····&·=
0010  00 00 81 00 03 e9 81 00  00 cf 08 00 45 00 00 64   ········ ····E··d
0020  60 9e 00 00 ff 01 ea dd  c0 a8 f7 64 c0 a8 f7 66   `······· ···d···f
0030  08 00 e5 c8 00 7b 00 00  00 00 00 02 4d 8c 4a 78   ·····{·· ····M·Jx
0040  ab cd ab cd ab cd ab cd  ab cd ab cd ab cd ab cd   ········ ········
0050  ab cd ab cd ab cd ab cd  ab cd ab cd ab cd ab cd   ········ ········
0060  ab cd ab cd ab cd ab cd  ab cd ab cd ab cd ab cd   ········ ········
0070  ab cd ab cd ab cd ab cd  ab cd ab cd ab cd ab cd   ········ ········
```

Seleccione el segundo paquete y verifique los puntos clave:

1. Solo se capturan los paquetes de solicitud de eco ICMP. Cada paquete se captura y se muestra 2 veces.
2. El encabezado del paquete original tiene la etiqueta VLAN 207.



```
No.  Time                           Source           Destination      Protocol  Length  IP ID            IP TTL  Info
   1 2022-08-04 08:18:24.572548869  192.168.247.100  192.168.247.102  ICMP      128     0x609e (24734)   255 Echo (ping) request  id=0x007b, seq=0/0, ttl=255 (no response found!)
   2 2022-08-04 08:18:24.572550073  192.168.247.100  192.168.247.102  ICMP      118     0x609e (24734)   255 Echo (ping) request  id=0x007b, seq=0/0, ttl=255 (no response found!)
   3 2022-08-04 08:18:24.573286630  192.168.247.100  192.168.247.102  ICMP      128     0x609f (24735)   255 Echo (ping) request  id=0x007b, seq=1/256, ttl=255 (no response found!)
   4 2022-08-04 08:18:24.573287640  192.168.247.100  192.168.247.102  ICMP      118     0x609f (24735)   255 Echo (ping) request  id=0x007b, seq=1/256, ttl=255 (no response found!)
   5 2022-08-04 08:18:24.573794751  192.168.247.100  192.168.247.102  ICMP      128     0x60a0 (24736)   255 Echo (ping) request  id=0x007b, seq=2/512, ttl=255 (no response found!)
   6 2022-08-04 08:18:24.573795748  192.168.247.100  192.168.247.102  ICMP      118     0x60a0 (24736)   255 Echo (ping) request  id=0x007b, seq=2/512, ttl=255 (no response found!)
   7 2022-08-04 08:18:24.574368638  192.168.247.100  192.168.247.102  ICMP      128     0x60a1 (24737)   255 Echo (ping) request  id=0x007b, seq=3/768, ttl=255 (no response found!)
   8 2022-08-04 08:18:24.574369574  192.168.247.100  192.168.247.102  ICMP      118     0x60a1 (24737)   255 Echo (ping) request  id=0x007b, seq=3/768, ttl=255 (no response found!)
   9 2022-08-04 08:18:24.574914512  192.168.247.100  192.168.247.102  ICMP      128     0x60a2 (24738)   255 Echo (ping) request  id=0x007b, seq=4/1024, ttl=255 (no response found!)
  10 2022-08-04 08:18:24.574915415  192.168.247.100  192.168.247.102  ICMP      118     0x60a2 (24738)   255 Echo (ping) request  id=0x007b, seq=4/1024, ttl=255 (no response found!)
  11 2022-08-04 08:18:24.575442569  192.168.247.100  192.168.247.102  ICMP      128     0x60a3 (24739)   255 Echo (ping) request  id=0x007b, seq=5/1280, ttl=255 (no response found!)
  12 2022-08-04 08:18:24.575443601  192.168.247.100  192.168.247.102  ICMP      118     0x60a3 (24739)   255 Echo (ping) request  id=0x007b, seq=5/1280, ttl=255 (no response found!)
  13 2022-08-04 08:18:24.575918119  192.168.247.100  192.168.247.102  ICMP      128     0x60a4 (24740)   255 Echo (ping) request  id=0x007b, seq=6/1536, ttl=255 (no response found!)
  14 2022-08-04 08:18:24.575919057  192.168.247.100  192.168.247.102  ICMP      118     0x60a4 (24740)   255 Echo (ping) request  id=0x007b, seq=6/1536, ttl=255 (no response found!)
  15 2022-08-04 08:18:24.576407671  192.168.247.100  192.168.247.102  ICMP      128     0x60a5 (24741)   255 Echo (ping) request  id=0x007b, seq=7/1792, ttl=255 (no response found!)
  16 2022-08-04 08:18:24.576408585  192.168.247.100  192.168.247.102  ICMP      118     0x60a5 (24741)   255 Echo (ping) request  id=0x007b, seq=7/1792, ttl=255 (no response found!)
  17 2022-08-04 08:18:24.576885643  192.168.247.100  192.168.247.102  ICMP      128     0x60a6 (24742)   255 Echo (ping) request  id=0x007b, seq=8/2048, ttl=255 (no response found!)
  18 2022-08-04 08:18:24.576886561  192.168.247.100  192.168.247.102  ICMP      118     0x60a6 (24742)   255 Echo (ping) request  id=0x007b, seq=8/2048, ttl=255 (no response found!)
  19 2022-08-04 08:18:24.577394328  192.168.247.100  192.168.247.102  ICMP      128     0x60a7 (24743)   255 Echo (ping) request  id=0x007b, seq=9/2304, ttl=255 (no response found!)
  20 2022-08-04 08:18:24.577395234  192.168.247.100  192.168.247.102  ICMP      118     0x60a7 (24743)   255 Echo (ping) request  id=0x007b, seq=9/2304, ttl=255 (no response found!)
  21 2022-08-04 08:18:24.577987632  192.168.247.100  192.168.247.102  ICMP      128     0x60a8 (24744)   255 Echo (ping) request  id=0x007b, seq=10/2560, ttl=255 (no response found!)
  22 2022-08-04 08:18:24.577989290  192.168.247.100  192.168.247.102  ICMP      118     0x60a8 (24744)   255 Echo (ping) request  id=0x007b, seq=10/2560, ttl=255 (no response found!)
  23 2022-08-04 08:18:24.578448781  192.168.247.100  192.168.247.102  ICMP      128     0x60a9 (24745)   255 Echo (ping) request  id=0x007b, seq=11/2816, ttl=255 (no response found!)
  24 2022-08-04 08:18:24.578449909  192.168.247.100  192.168.247.102  ICMP      118     0x60a9 (24745)   255 Echo (ping) request  id=0x007b, seq=11/2816, ttl=255 (no response found!)
  25 2022-08-04 08:18:24.578900043  192.168.247.100  192.168.247.102  ICMP      128     0x60aa (24746)   255 Echo (ping) request  id=0x007b, seq=12/3072, ttl=255 (no response found!)
  26 2022-08-04 08:18:24.578900897  192.168.247.100  192.168.247.102  ICMP      118     0x60aa (24746)   255 Echo (ping) request  id=0x007b, seq=12/3072, ttl=255 (no response found!)
  27 2022-08-04 08:18:24.579426962  192.168.247.100  192.168.247.102  ICMP      128     0x60ab (24747)   255 Echo (ping) request  id=0x007b, seq=13/3328, ttl=255 (no response found!)
```

```
> Frame 2: 118 bytes on wire (944 bits), 118 bytes captured (944 bits) on interface capture_u0_3, id 0
> Ethernet II, Src: Cisco d6:ec:00 (00:17:df:d6:ec:00), Dst: a2:76:f2:00:00:1c (a2:76:f2:00:00:1c)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 207
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0000 1100 1111 = ID: 207
    Type: IPv4 (0x0800)
> Internet Protocol Version 4, Src: 192.168.247.100, Dst: 192.168.247.102
> Internet Control Message Protocol
```

```
0000  a2 76 f2 00 00 1c 00 17  df d6 ec 00 81 00 00 cf   ·v······ ········
0010  08 00 45 00 00 64 60 9e  00 00 ff 01 ea dd c0 a8   ··E··d`· ········
0020  f7 64 c0 a8 f7 66 08 00  e5 c8 00 7b 00 00 00 00   ·d···f·· ···{····
0030  00 02 4d 8c 4a 78 ab cd  ab cd ab cd ab cd ab cd   ··M·Jx·· ········
0040  ab cd ab cd ab cd ab cd  ab cd ab cd ab cd ab cd   ········ ········
0050  ab cd ab cd ab cd ab cd  ab cd ab cd ab cd ab cd   ········ ········
0060  ab cd ab cd ab cd ab cd  ab cd ab cd ab cd ab cd   ········ ········
0070  ab cd ab cd ab cd                                  ······
```

Explicación

Cuando se configura una captura de paquetes en una interfaz frontal, el switch captura simultáneamente cada paquete dos veces:

- Después de la inserción de la etiqueta de VLAN de puerto.
- Después de la inserción de la etiqueta VN.

En el orden de las operaciones, la etiqueta VN se inserta en una etapa posterior a la inserción de la etiqueta VLAN del puerto. Sin embargo, en el archivo de captura, el paquete con la etiqueta VN se muestra antes que el paquete con la etiqueta de puerto VLAN. Además, en el caso de las subinterfaces, en los archivos de captura, cada segundo paquete no contiene la etiqueta de VLAN de puerto.

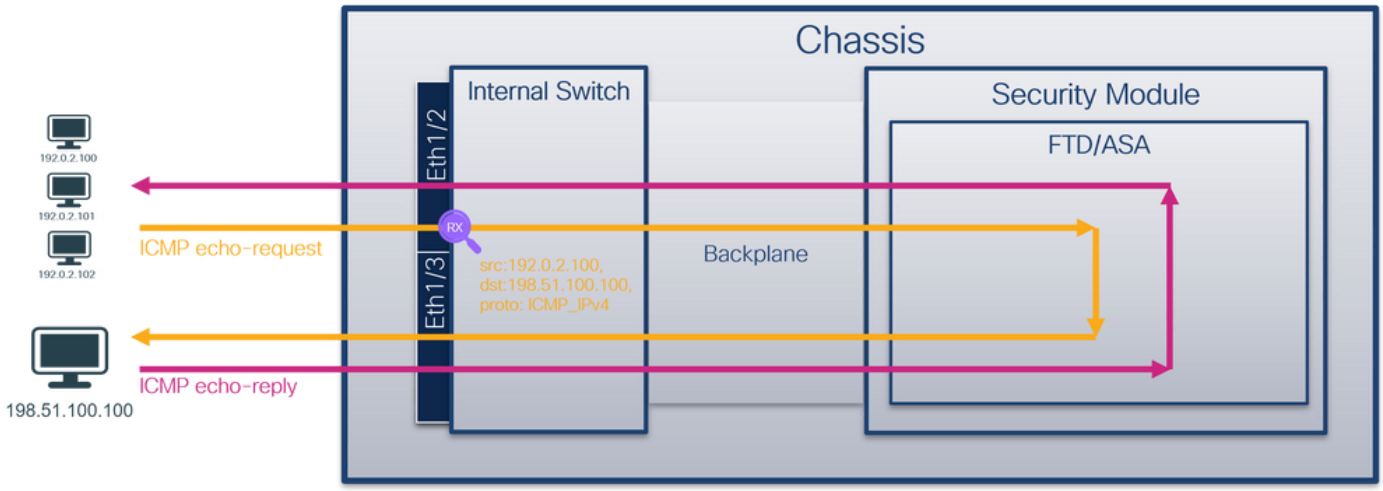
Esta tabla resume la tarea:

Tarea	Punto de captura	VLAN de puerto interno en paquetes capturados	Dirección:	Tráfico capturado
Configurar y verificar una captura de paquetes en la subinterfaz Ethernet1/2.205	Ethernet1/2.205	102	Solo entrada	Solicitudes de eco ICMP del hos 192.0.2.100 al host 198.51.100.1
Configure y verifique una captura de paquetes en la subinterfaz Portchannel1 con las interfaces miembro Ethernet1/3 y Ethernet1/4	Ethernet1/3 Ethernet1/4	1001	Solo entrada	Solicitudes de eco ICMP de 192.168.207.100 al host 192.168.207.102

Filtros de captura de paquetes

Utilice FCM y CLI para configurar y verificar una captura de paquetes en la interfaz Ethernet1/2 con un filtro.

Topología, flujo de paquetes y puntos de captura

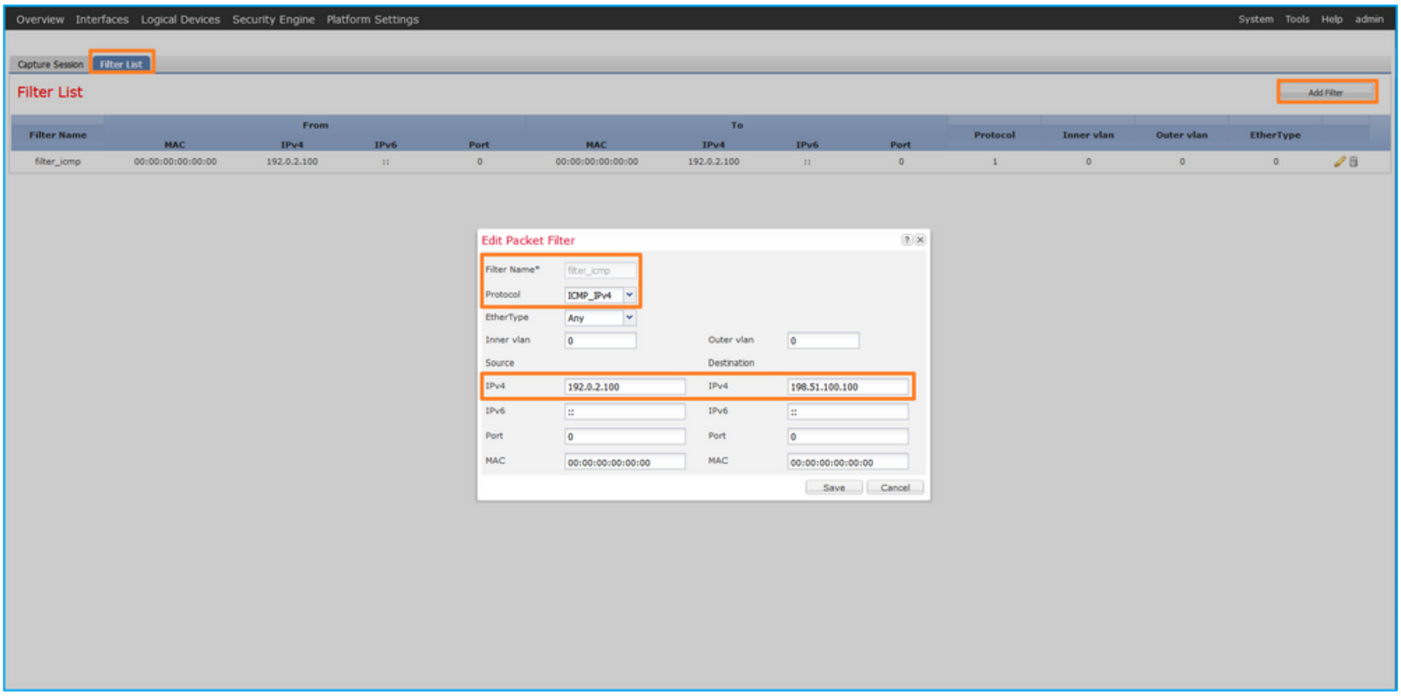


Configuración

FCM

Siga estos pasos en FCM para configurar un filtro de captura para los paquetes de solicitud de eco ICMP del host 192.0.2.100 al host 198.51.100.100 y aplicarlo a la captura de paquetes en la interfaz Ethernet1/2:

1. Utilice **Tools > Packet Capture > Filter List > Add Filter** para crear un filtro de captura**.**
2. Especifique el **Nombre de filtro, Protocolo, IPv4 de origen, IPv4 de destino** y haga clic en **Guardar:**



Filter List

Filter Name	From				To				Protocol	Inner vlan	Outer vlan	EtherType
	MAC	IPv4	IPv6	Port	MAC	IPv4	IPv6	Port				
filter_icmp	00:00:00:00:00:00	192.0.2.100	::	0	00:00:00:00:00:00	192.0.2.100	::	0	1	0	0	0

Edit Packet Filter

Filter Name* filter_icmp

Protocol ICMP_IPv4

EtherType Any

Inner vlan 0 Outer vlan 0

Source

IPv4 192.0.2.100

IPv6 ::

Port 0

MAC 00:00:00:00:00:00

Destination

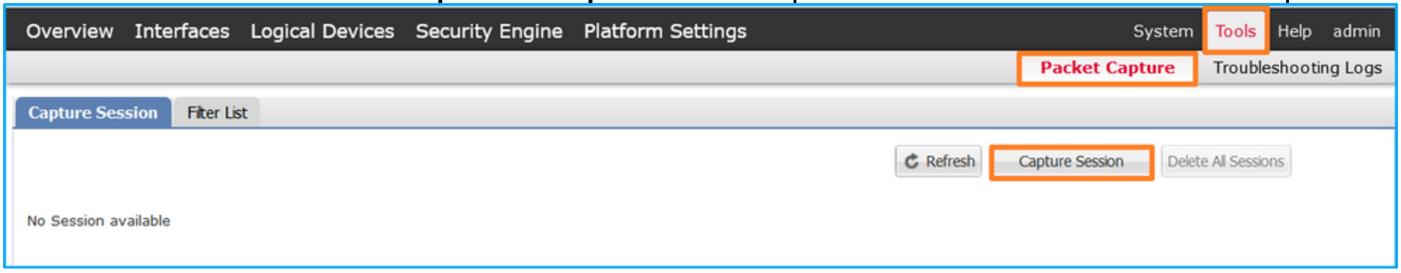
IPv4 198.51.100.100

IPv6 ::

Port 0

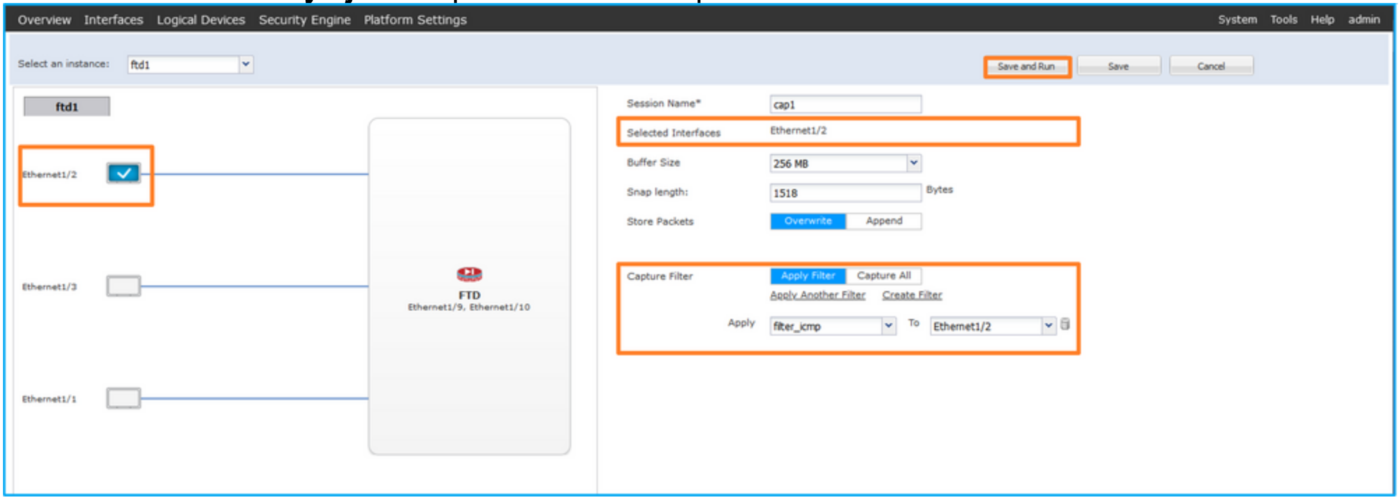
MAC 00:00:00:00:00:00

3. Utilice **Tools > Packet Capture > Capture Session** para crear una nueva sesión de captura:



No Session available

4. Seleccione Ethernet1/2, proporcione el **nombre de sesión,** aplique el filtro de captura y haga clic en **Guardar y ejecutar** para activar la captura:



Select an instance: ftd1

Session Name* cap1

Selected Interfaces Ethernet1/2

Buffer Size 256 MB

Snap length: 1518 Bytes

Store Packets [✓ Overwrite] Append

Capture Filter [✓ Apply Filter] Capture All

Apply filter_icmp To Ethernet1/2

CLI FXOS

Siga estos pasos en la CLI de FXOS para configurar las capturas de paquetes en las interfaces de la placa posterior:

1. Identifique el tipo de aplicación y el identificador:

```
firepower# scope ssa
firepower /ssa#  show app-instance
```

```
App Name   Identifier Slot ID    Admin State Oper State       Running Version Startup Version
Deploy Type Turbo Mode Profile Name Cluster State   Cluster Role
---------- ---------- ---------- ----------- ---------------- --------------- --------------- --
--------- ---------- ------------ --------------- ------------
ftd        ftd1       1          Enabled     Online           7.2.0.82        7.2.0.82
Native      No                          Not Applicable  None
```

2. Identifique el número de protocolo IP en https://www.iana.org/assignments/protocol-numbers/protocol-numbers.xhtml. En este caso, el número de protocolo ICMP es 1.

3. Cree una sesión de captura:

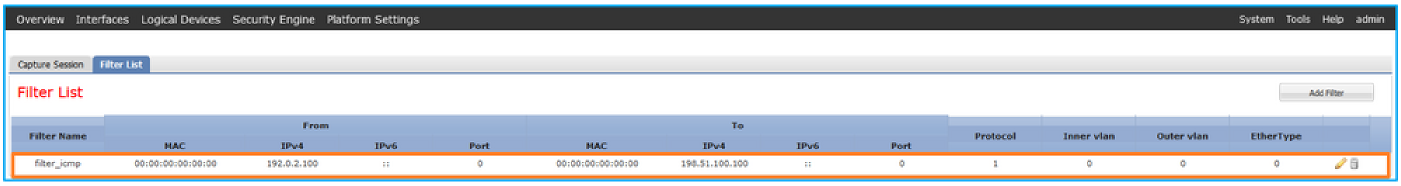
   2.

```
firepower# scope packet-capture
firepower /packet-capture # create filter filter_icmp
firepower /packet-capture/filter* # set destip 198.51.100.100
firepower /packet-capture/filter* # set protocol 1
firepower /packet-capture/filter* # set srcip 192.0.2.100
firepower /packet-capture/filter* # exit
firepower /packet-capture* # create session cap1
firepower /packet-capture/session* # create phy-port Ethernet1/2
firepower /packet-capture/session/phy-port* # set app ftd
firepower /packet-capture/session/phy-port* # set app-identifier ftd1
firepower /packet-capture/session/phy-port* # set filter filter_icmp
firepower /packet-capture/session/phy-port* # exit
firepower /packet-capture/session* # enable
firepower /packet-capture/session* # commit
firepower /packet-capture/session #
```

Verificación

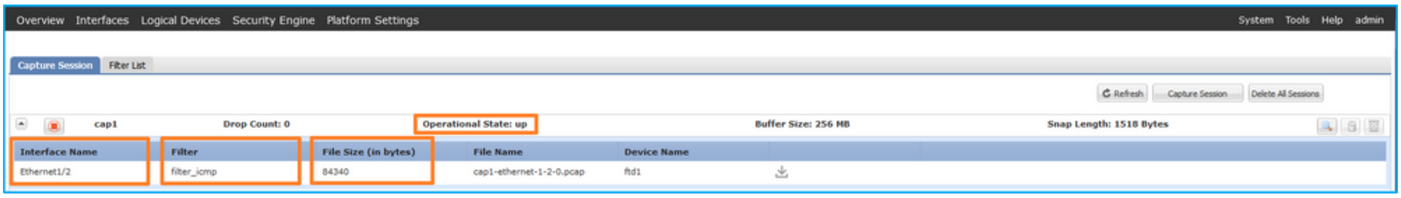
FCM

Verifique el **Nombre de la Interfaz**, asegúrese de que el **Estado Operacional** esté activo y que el **Tamaño del Archivo (en bytes)** aumente:



Filter Name	From				To				Protocol	Inner vlan	Outer vlan	EtherType
	MAC	IPv4	IPv6	Port	MAC	IPv4	IPv6	Port				
filter_icmp	00:00:00:00:00:00	192.0.2.100	::	0	00:00:00:00:00:00	198.51.100.100	::	0	1	0	0	0

Verifique el nombre de la interfaz, el **filtro**, asegúrese de que el **estado operativo** esté activo y el **tamaño del archivo (en bytes)** aumente en **Herramientas > Captura de paquetes > Sesión de captura**:



cap1 Drop Count: 0 Operational State: up Buffer Size: 256 MB Snap Length: 1518 Bytes

Interface Name	Filter	File Size (in bytes)	File Name	Device Name
Ethernet1/2	filter_icmp	84340	cap1-ethernet-1-2-0.pcap	ftd1

CLI FXOS

Verifique los detalles de la captura en **scope packet-capture**:

```
firepower# scope packet-capture
firepower /packet-capture # show filter detail
```

```
Configure a filter for packet capture:
   Name: filter_icmp
    Protocol: 1
   Ivlan: 0
   Ovlan: 0
   Src Ip: 192.0.2.100
    Dest Ip: 198.51.100.100
   Src MAC: 00:00:00:00:00:00
   Dest MAC: 00:00:00:00:00:00
   Src Port: 0
   Dest Port: 0
   Ethertype: 0
   Src Ipv6: ::
   Dest Ipv6: ::
firepower /packet-capture # show session cap1

Traffic Monitoring Session:
    Packet Capture Session Name: cap1
   Session: 1
    Admin State: Enabled
    Oper State: Up
    Oper State Reason: Active
   Config Success: Yes
   Config Fail Reason:
   Append Flag: Overwrite
   Session Mem Usage: 256  MB
   Session Pcap Snap Len: 1518  Bytes
   Error Code: 0
   Drop Count: 0

Physical ports involved in Packet Capture:
   Slot Id: 1
    Port Id: 2
    Pcapfile: /workspace/packet-capture/session-1/cap1-ethernet-1-2-0.pcap
    Pcapsize: 213784  bytes
   Filter: filter_icmp
   Sub Interface: 0
    Application Instance Identifier: ftd1
    Application Name: ftd
```

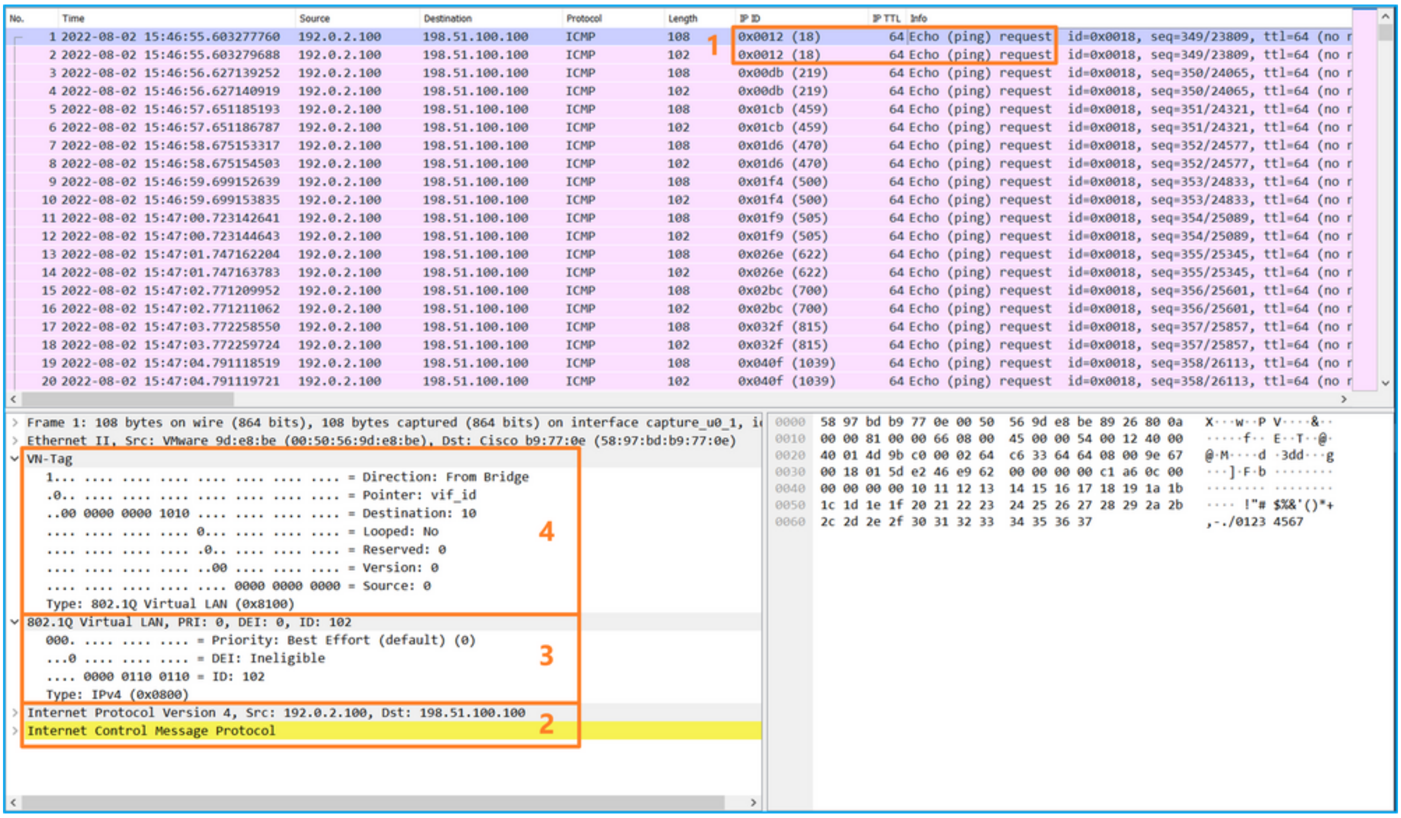
Recopilar archivos de captura

Siga los pasos de la sección **Recopilación de archivos de captura de switch internos de Firepower 4100/9300**.

Capturar análisis de archivos

Utilice una aplicación de lector de archivos de captura de paquetes para abrir el archivo de captura. Seleccione el primer paquete y compruebe los puntos clave

1. Solo se capturan los paquetes de solicitud de eco ICMP. Cada paquete se captura y se muestra 2 veces.
2. El encabezado del paquete original no tiene la etiqueta VLAN.
3. El switch interno inserta la etiqueta adicional del puerto VLAN **102** que identifica la interfaz de ingreso Ethernet1/2.
4. El switch interno inserta una etiqueta VN adicional.



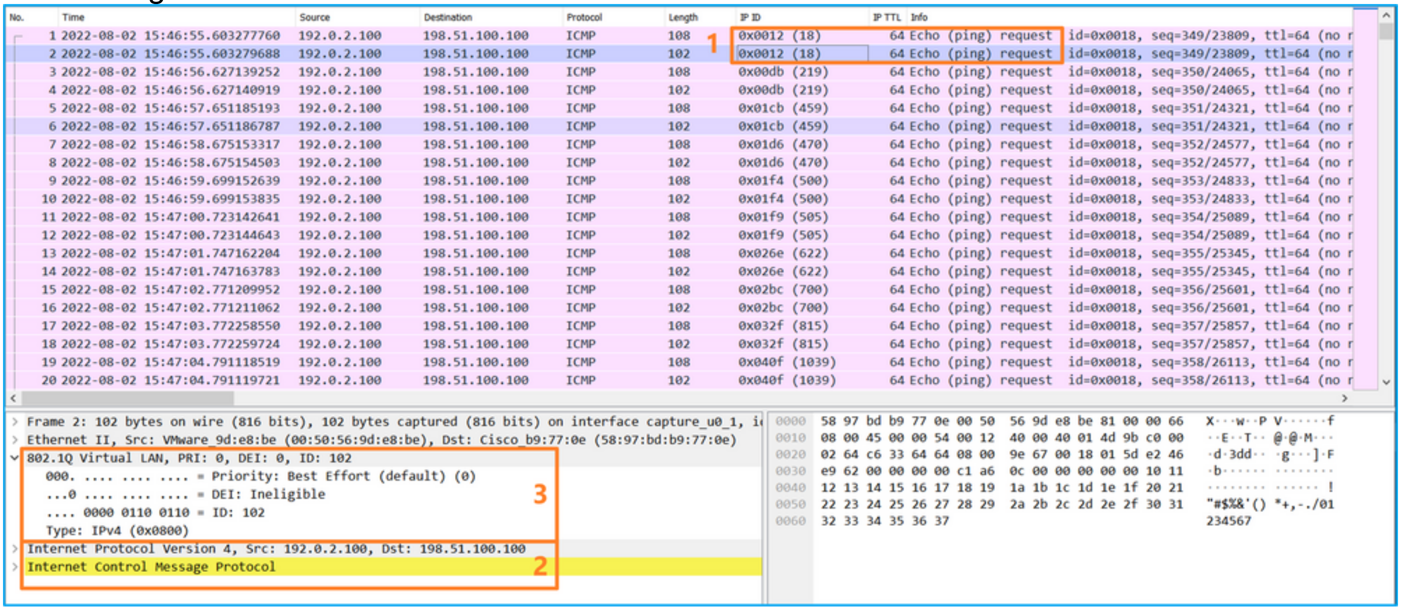
```
No.  Time                           Source       Destination     Protocol  Length  IP ID          IP TTL Info
   1 2022-08-02 15:46:55.603277760  192.0.2.100  198.51.100.100  ICMP      108     0x0012 (18)        64 Echo (ping) request  id=0x0018, seq=349/23809, ttl=64 (no r
   2 2022-08-02 15:46:55.603279688  192.0.2.100  198.51.100.100  ICMP      102     0x0012 (18)        64 Echo (ping) request  id=0x0018, seq=349/23809, ttl=64 (no r
   3 2022-08-02 15:46:56.627139252  192.0.2.100  198.51.100.100  ICMP      108     0x00db (219)       64 Echo (ping) request  id=0x0018, seq=350/24065, ttl=64 (no r
   4 2022-08-02 15:46:56.627140919  192.0.2.100  198.51.100.100  ICMP      102     0x00db (219)       64 Echo (ping) request  id=0x0018, seq=350/24065, ttl=64 (no r
   5 2022-08-02 15:46:57.651185193  192.0.2.100  198.51.100.100  ICMP      108     0x01cb (459)       64 Echo (ping) request  id=0x0018, seq=351/24321, ttl=64 (no r
   6 2022-08-02 15:46:57.651186787  192.0.2.100  198.51.100.100  ICMP      102     0x01cb (459)       64 Echo (ping) request  id=0x0018, seq=351/24321, ttl=64 (no r
   7 2022-08-02 15:46:58.675153317  192.0.2.100  198.51.100.100  ICMP      108     0x01d6 (470)       64 Echo (ping) request  id=0x0018, seq=352/24577, ttl=64 (no r
   8 2022-08-02 15:46:58.675154503  192.0.2.100  198.51.100.100  ICMP      102     0x01d6 (470)       64 Echo (ping) request  id=0x0018, seq=352/24577, ttl=64 (no r
   9 2022-08-02 15:46:59.699152639  192.0.2.100  198.51.100.100  ICMP      108     0x01f4 (500)       64 Echo (ping) request  id=0x0018, seq=353/24833, ttl=64 (no r
  10 2022-08-02 15:46:59.699153835  192.0.2.100  198.51.100.100  ICMP      102     0x01f4 (500)       64 Echo (ping) request  id=0x0018, seq=353/24833, ttl=64 (no r
  11 2022-08-02 15:47:00.723142641  192.0.2.100  198.51.100.100  ICMP      108     0x01f9 (505)       64 Echo (ping) request  id=0x0018, seq=354/25089, ttl=64 (no r
  12 2022-08-02 15:47:00.723144643  192.0.2.100  198.51.100.100  ICMP      102     0x01f9 (505)       64 Echo (ping) request  id=0x0018, seq=354/25089, ttl=64 (no r
  13 2022-08-02 15:47:01.747162204  192.0.2.100  198.51.100.100  ICMP      108     0x026e (622)       64 Echo (ping) request  id=0x0018, seq=355/25345, ttl=64 (no r
  14 2022-08-02 15:47:01.747163783  192.0.2.100  198.51.100.100  ICMP      102     0x026e (622)       64 Echo (ping) request  id=0x0018, seq=355/25345, ttl=64 (no r
  15 2022-08-02 15:47:02.771209952  192.0.2.100  198.51.100.100  ICMP      108     0x02bc (700)       64 Echo (ping) request  id=0x0018, seq=356/25601, ttl=64 (no r
  16 2022-08-02 15:47:02.771211062  192.0.2.100  198.51.100.100  ICMP      102     0x02bc (700)       64 Echo (ping) request  id=0x0018, seq=356/25601, ttl=64 (no r
  17 2022-08-02 15:47:03.772258550  192.0.2.100  198.51.100.100  ICMP      108     0x032f (815)       64 Echo (ping) request  id=0x0018, seq=357/25857, ttl=64 (no r
  18 2022-08-02 15:47:03.772259724  192.0.2.100  198.51.100.100  ICMP      102     0x032f (815)       64 Echo (ping) request  id=0x0018, seq=357/25857, ttl=64 (no r
  19 2022-08-02 15:47:04.791118519  192.0.2.100  198.51.100.100  ICMP      108     0x040f (1039)      64 Echo (ping) request  id=0x0018, seq=358/26113, ttl=64 (no r
  20 2022-08-02 15:47:04.791119721  192.0.2.100  198.51.100.100  ICMP      102     0x040f (1039)      64 Echo (ping) request  id=0x0018, seq=358/26113, ttl=64 (no r
```

```
> Frame 1: 108 bytes on wire (864 bits), 108 bytes captured (864 bits) on interface capture_u0_1, i
> Ethernet II, Src: VMware_9d:e8:be (00:50:56:9d:e8:be), Dst: Cisco_b9:77:0e (58:97:bd:b9:77:0e)
v VN-Tag
    1... .... .... .... .... .... .... .... = Direction: From Bridge
    .0.. .... .... .... .... .... .... .... = Pointer: vif_id
    ..00 0000 0000 1010 .... .... .... .... = Destination: 10
    .... .... .... .... 0... .... .... .... = Looped: No
    .... .... .... .... .0.. .... .... .... = Reserved: 0
    .... .... .... .... ..00 .... .... .... = Version: 0
    .... .... .... .... .... 0000 0000 0000 = Source: 0
    Type: 802.1Q Virtual LAN (0x8100)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 102
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0000 0110 0110 = ID: 102
    Type: IPv4 (0x0800)
> Internet Protocol Version 4, Src: 192.0.2.100, Dst: 198.51.100.100
> Internet Control Message Protocol
```

```
0000  58 97 bd b9 77 0e 00 50  56 9d e8 be 89 26 80 0a   X···w··P V····&··
0010  00 00 81 00 00 66 08 00  45 00 00 54 00 12 40 00   ·····f·· E··T··@·
0020  40 01 4d 9b c0 00 02 64  c6 33 64 64 08 00 9e 67   @·M····d ·3dd···g
0030  00 18 01 5d e2 46 e9 62  00 00 00 00 c1 a6 0c 00   ···]·F·b ········
0040  00 00 00 00 10 11 12 13  14 15 16 17 18 19 1a 1b   ········ ········
0050  1c 1d 1e 1f 20 21 22 23  24 25 26 27 28 29 2a 2b   ···· !"# $%&'()*+
0060  2c 2d 2e 2f 30 31 32 33  34 35 36 37               ,-./0123 4567
```

Seleccione el segundo paquete y verifique los puntos clave:

1. Solo se capturan los paquetes de solicitud de eco ICMP. Cada paquete se captura y se muestra 2 veces.
2. El encabezado del paquete original no tiene la etiqueta VLAN.
3. El switch interno inserta la etiqueta adicional del puerto VLAN **102** que identifica la interfaz de ingreso Ethernet1/2.



```
No.  Time                           Source       Destination     Protocol  Length  IP ID          IP TTL Info
   1 2022-08-02 15:46:55.603277760  192.0.2.100  198.51.100.100  ICMP      108     0x0012 (18)        64 Echo (ping) request  id=0x0018, seq=349/23809, ttl=64 (no r
   2 2022-08-02 15:46:55.603279688  192.0.2.100  198.51.100.100  ICMP      102     0x0012 (18)        64 Echo (ping) request  id=0x0018, seq=349/23809, ttl=64 (no r
   3 2022-08-02 15:46:56.627139252  192.0.2.100  198.51.100.100  ICMP      108     0x00db (219)       64 Echo (ping) request  id=0x0018, seq=350/24065, ttl=64 (no r
   4 2022-08-02 15:46:56.627140919  192.0.2.100  198.51.100.100  ICMP      102     0x00db (219)       64 Echo (ping) request  id=0x0018, seq=350/24065, ttl=64 (no r
   5 2022-08-02 15:46:57.651185193  192.0.2.100  198.51.100.100  ICMP      108     0x01cb (459)       64 Echo (ping) request  id=0x0018, seq=351/24321, ttl=64 (no r
   6 2022-08-02 15:46:57.651186787  192.0.2.100  198.51.100.100  ICMP      102     0x01cb (459)       64 Echo (ping) request  id=0x0018, seq=351/24321, ttl=64 (no r
   7 2022-08-02 15:46:58.675153317  192.0.2.100  198.51.100.100  ICMP      108     0x01d6 (470)       64 Echo (ping) request  id=0x0018, seq=352/24577, ttl=64 (no r
   8 2022-08-02 15:46:58.675154503  192.0.2.100  198.51.100.100  ICMP      102     0x01d6 (470)       64 Echo (ping) request  id=0x0018, seq=352/24577, ttl=64 (no r
   9 2022-08-02 15:46:59.699152639  192.0.2.100  198.51.100.100  ICMP      108     0x01f4 (500)       64 Echo (ping) request  id=0x0018, seq=353/24833, ttl=64 (no r
  10 2022-08-02 15:46:59.699153835  192.0.2.100  198.51.100.100  ICMP      102     0x01f4 (500)       64 Echo (ping) request  id=0x0018, seq=353/24833, ttl=64 (no r
  11 2022-08-02 15:47:00.723142641  192.0.2.100  198.51.100.100  ICMP      108     0x01f9 (505)       64 Echo (ping) request  id=0x0018, seq=354/25089, ttl=64 (no r
  12 2022-08-02 15:47:00.723144643  192.0.2.100  198.51.100.100  ICMP      102     0x01f9 (505)       64 Echo (ping) request  id=0x0018, seq=354/25089, ttl=64 (no r
  13 2022-08-02 15:47:01.747162204  192.0.2.100  198.51.100.100  ICMP      108     0x026e (622)       64 Echo (ping) request  id=0x0018, seq=355/25345, ttl=64 (no r
  14 2022-08-02 15:47:01.747163783  192.0.2.100  198.51.100.100  ICMP      102     0x026e (622)       64 Echo (ping) request  id=0x0018, seq=355/25345, ttl=64 (no r
  15 2022-08-02 15:47:02.771209952  192.0.2.100  198.51.100.100  ICMP      108     0x02bc (700)       64 Echo (ping) request  id=0x0018, seq=356/25601, ttl=64 (no r
  16 2022-08-02 15:47:02.771211062  192.0.2.100  198.51.100.100  ICMP      102     0x02bc (700)       64 Echo (ping) request  id=0x0018, seq=356/25601, ttl=64 (no r
  17 2022-08-02 15:47:03.772258550  192.0.2.100  198.51.100.100  ICMP      108     0x032f (815)       64 Echo (ping) request  id=0x0018, seq=357/25857, ttl=64 (no r
  18 2022-08-02 15:47:03.772259724  192.0.2.100  198.51.100.100  ICMP      102     0x032f (815)       64 Echo (ping) request  id=0x0018, seq=357/25857, ttl=64 (no r
  19 2022-08-02 15:47:04.791118519  192.0.2.100  198.51.100.100  ICMP      108     0x040f (1039)      64 Echo (ping) request  id=0x0018, seq=358/26113, ttl=64 (no r
  20 2022-08-02 15:47:04.791119721  192.0.2.100  198.51.100.100  ICMP      102     0x040f (1039)      64 Echo (ping) request  id=0x0018, seq=358/26113, ttl=64 (no r
```

```
> Frame 2: 102 bytes on wire (816 bits), 102 bytes captured (816 bits) on interface capture_u0_1, i
> Ethernet II, Src: VMware_9d:e8:be (00:50:56:9d:e8:be), Dst: Cisco_b9:77:0e (58:97:bd:b9:77:0e)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 102
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0000 0110 0110 = ID: 102
    Type: IPv4 (0x0800)
> Internet Protocol Version 4, Src: 192.0.2.100, Dst: 198.51.100.100
> Internet Control Message Protocol
```

```
0000  58 97 bd b9 77 0e 00 50  56 9d e8 be 81 00 00 66   X···w··P V······f
0010  08 00 45 00 00 54 00 12  40 00 40 01 4d 9b c0 00   ··E··T·· @·@·M···
0020  02 64 c6 33 64 64 08 00  9e 67 00 18 01 5d e2 46   ·d·3dd·· ·g···]·F
0030  e9 62 00 00 00 00 c1 a6  0c 00 00 00 00 00 10 11   ·b······ ········
0040  12 13 14 15 16 17 18 19  1a 1b 1c 1d 1e 1f 20 21   ········ ······ !
0050  22 23 24 25 26 27 28 29  2a 2b 2c 2d 2e 2f 30 31   "#$%&'() *+,-./01
0060  32 33 34 35 36 37                                  234567
```

Explicación

Cuando se configura una captura de paquetes en una interfaz frontal, el switch captura simultáneamente cada paquete dos veces:

- Después de la inserción de la etiqueta de VLAN de puerto.
- Después de la inserción de la etiqueta VN.

En el orden de las operaciones, la etiqueta VN se inserta en una etapa posterior a la inserción de la etiqueta VLAN del puerto. Sin embargo, en el archivo de captura, el paquete con la etiqueta VN se muestra antes que el paquete con la etiqueta de puerto VLAN.

Cuando se aplica un filtro de captura, sólo se capturan los paquetes que coinciden con el filtro en la dirección de entrada.

Esta tabla resume la tarea:

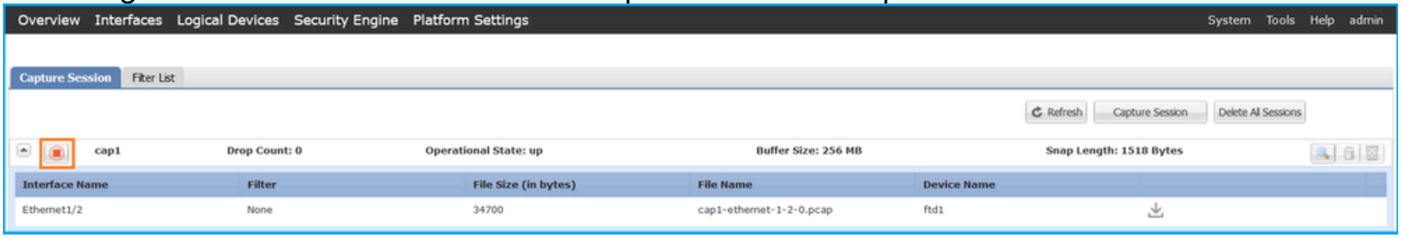
Tarea	Punto de captura	VLAN de puerto interno en paquetes capturados	Dirección:	Filtro de usuario	Tráfico capturado
Configure y verifique una captura de paquetes con un filtro en la interfaz Ethernet1/2 frontal	Ethernet1/2	102	Solo entrada	Protocolo: ICMP Fuente: 192.0.2.100 Destino: 198.51.100.100	Solicitudes de eco ICMP de 192.0.2.100 al host 198.51.100.100

Recopilación de archivos de captura de switches internos Firepower 4100/9300

FCM

Siga estos pasos en FCM para recopilar archivos de captura de switch internos:

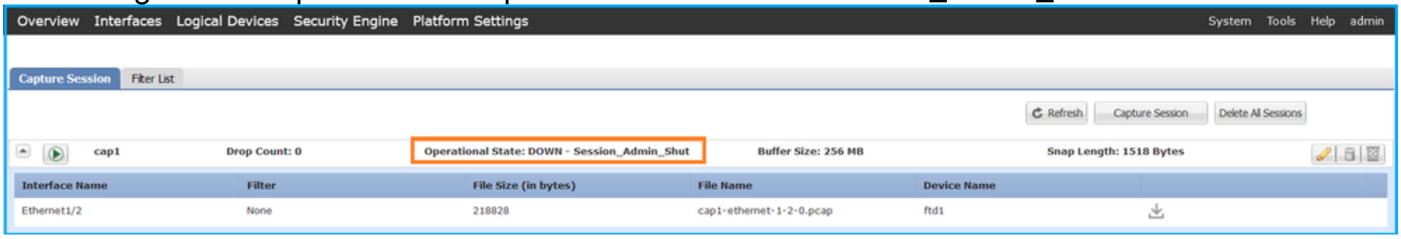
1. Haga clic en el botón **Disable Session** para detener la captura activa:



cap1 Drop Count: 0 Operational State: up Buffer Size: 256 MB Snap Length: 1518 Bytes

Interface Name	Filter	File Size (in bytes)	File Name	Device Name
Ethernet1/2	None	34700	cap1-ethernet-1-2-0.pcap	ftd1

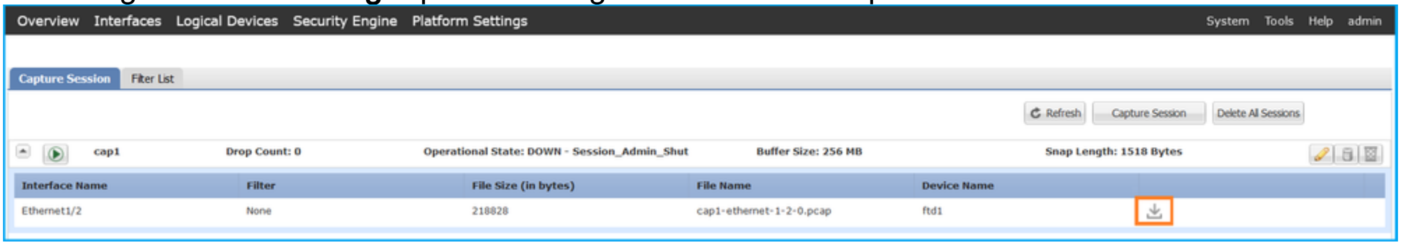
2. Asegúrese de que el estado operativo sea **DOWN - Session_Admin_Shut:**



cap1 Drop Count: 0 Operational State: DOWN - Session_Admin_Shut Buffer Size: 256 MB Snap Length: 1518 Bytes

Interface Name	Filter	File Size (in bytes)	File Name	Device Name
Ethernet1/2	None	218828	cap1-ethernet-1-2-0.pcap	ftd1

3. Haga clic en **Descargar** para descargar el archivo de captura:



cap1 Drop Count: 0 Operational State: DOWN - Session_Admin_Shut Buffer Size: 256 MB Snap Length: 1518 Bytes

Interface Name	Filter	File Size (in bytes)	File Name	Device Name
Ethernet1/2	None	218828	cap1-ethernet-1-2-0.pcap	ftd1

En el caso de las interfaces de canal de puerto, repita este paso para cada interfaz miembro.

CLI FXOS

Siga estos pasos en la CLI de FXOS para recopilar los archivos de captura:

1. Detener la captura activa:

```
firepower# scope packet-capture
firepower /packet-capture # scope session cap1
firepower /packet-capture/session # disable
firepower /packet-capture/session* # commit
firepower /packet-capture/session # up
firepower /packet-capture # show session cap1 detail

Traffic Monitoring Session:
   Packet Capture Session Name: cap1
   Session: 1
    Admin State: Disabled
    Oper State: Down
    Oper State Reason: Admin Disable
   Config Success: Yes
   Config Fail Reason:
   Append Flag: Overwrite
   Session Mem Usage: 256  MB
   Session Pcap Snap Len: 1518  Bytes
   Error Code: 0
   Drop Count: 0

Physical ports involved in Packet Capture:
   Slot Id: 1
   Port Id: 2
   Pcapfile: /workspace/packet-capture/session-1/cap1-ethernet-1-2-0.pcap
   Pcapsize: 115744  bytes
   Filter:
   Sub Interface: 0
   Application Instance Identifier: ftd1
   Application Name: ftd
```

2. Cargue el archivo de captura desde el alcance del comando **local-mgmt**:

```
firepower# connect local-mgmt
firepower(local-mgmt)# copy /packet-capture/session-1/cap1-ethernet-1-2-0.pcap ?
 ftp:        Dest File URI
 http:       Dest File URI
 https:      Dest File URI
 scp:        Dest File URI
 sftp:       Dest File URI
 tftp:       Dest File URI
 usbdrive:   Dest File URI
 volatile:   Dest File URI
 workspace:  Dest File URI

firepower(local-mgmt)# copy /packet-capture/session-1/cap1-ethernet-1-2-0.pcap
ftp://ftpuser@10.10.10.1/cap1-ethernet-1-2-0.pcap
Password:
```

En el caso de las interfaces de canal de puerto, copie el archivo de captura para cada interfaz miembro.

Directrices, limitaciones y prácticas recomendadas para Switch interno Captura de paquete

Para conocer las pautas y limitaciones relacionadas con la captura de switches internos

Firepower 4100/9300, consulte la *Guía de configuración de Cisco Firepower 4100/9300 FXOS Chassis Manager* o la *Guía de configuración de Cisco Firepower 4100/9300 FXOS CLI*, capítulo **Resolución de problemas**, sección *Captura de paquetes*.

Esta es la lista de prácticas recomendadas basadas en el uso de la captura de paquetes en casos de TAC:

- Tenga en cuenta las directrices y limitaciones.
- Capture paquetes en todas las interfaces miembro del canal de puerto y analice todos los archivos de captura.
- Utilice filtros de captura.
- Considere el impacto de NAT en las direcciones IP de paquetes cuando se configura un filtro de captura.
- Aumente o reduzca la **lente de ajuste** que especifica el tamaño de trama en caso de que difiera del valor predeterminado de 1518 bytes. Un tamaño menor da como resultado un mayor número de paquetes capturados y viceversa.
- Ajuste el **tamaño del búfer** según sea necesario.
- Tenga en cuenta el **Recuento de caídas** en FCM o FXOS CLI. Una vez alcanzado el límite de tamaño del búfer, el contador de conteo de caídas aumenta.
- Utilice el filtro **!vntag** en Wireshark para mostrar sólo los paquetes sin la etiqueta VN. Esto es útil para ocultar paquetes etiquetados VN en los archivos de captura de paquetes de la interfaz frontal.
- Utilice el filtro **frame.number&1** de Wireshark para mostrar sólo fotogramas impares. Esto es útil para ocultar los paquetes duplicados en los archivos de captura de paquetes de la interfaz de la placa de interconexiones.
- En el caso de protocolos como TCP, Wireshark aplica de forma predeterminada reglas de coloración que muestran paquetes con condiciones específicas en diferentes colores. En el caso de las capturas de switch internas debido a paquetes duplicados en los archivos de captura, el paquete se puede colorear y marcar de manera falsa positiva. Si analiza los archivos de captura de paquetes y aplica cualquier filtro, exporte los paquetes mostrados a un nuevo archivo y abra el nuevo archivo.

Configuración y verificación en Firewall seguro 3100

A diferencia de Firepower 4100/9300, las capturas del switch interno en Secure Firewall 3100 se configuran en la interfaz de línea de comandos de la aplicación mediante el comando **capture <name>switch**, donde la opción **switch** especifica que las capturas se configuran en el switch interno.

Este es el comando **capture** con la opción **switch**:

```
> capture cap_sw switch ?
 buffer         Configure size of capture buffer, default is 256MB
 ethernet-type  Capture Ethernet packets of a particular type, default is IP
 interface      Capture packets on a specific interface
 ivlan          Inner Vlan
 match          Capture packets based on match criteria
 ovlan          Outer Vlan
 packet-length  Configure maximum length to save from each packet, default is
                64 bytes
 real-time      Display captured packets in real-time. Warning: using this
                option with a slow console connection may result in an
                excessive amount of non-displayed packets due to performance
                limitations.
 stop           Stop packet capture
 trace          Trace the captured packets
 type           Capture packets based on a particular type
 <cr>
```

Los pasos generales para la configuración de la captura de paquetes son los siguientes:

1. Especifique una interfaz de ingreso:

La configuración de captura del switch acepta el **nombre** de interfaz de ingreso **si**. El usuario puede especificar nombres de interfaces de datos, enlaces ascendentes internos o las interfaces de administración:

```
> capture capsw switch interface ?
Available interfaces to listen:
 in_data_uplink1  Capture packets on internal data uplink1 interface
 in_mgmt_uplink1  Capture packets on internal mgmt uplink1 interface
 inside           Name of interface Ethernet1/1.205

 management       Name of interface Management1/1
```

2. Especifique la trama Ethernet EtherType. El EtherType predeterminado es IP. Los valores de la opción **ethernet-type** especifican el EtherType:

```
> capture capsw switch interface inside ethernet-type ?
 802.1Q
 <0-65535>  Ethernet type
 arp
 ip
 ip6
 pppoed
 pppoes
 rarp
 sgt
 vlan
```

3. Especifique las condiciones de coincidencia. La opción capture **match** especifica los criterios de coincidencia:

```
> capture capsw switch interface inside match ?
 <0-255>  Enter protocol number (0 - 255)
 ah
 eigrp
 esp
 gre
 icmp
 icmp6
 igmp
 igrp
 ip
 ipinip
 ipsec
 mac      Mac-address filter
 nos
 ospf
 pcp
 pim
 pptp
 sctp
 snp
 spi      SPI value
 tcp
 udp
 <cr>
```

4. Especifique otros parámetros opcionales como el tamaño del búfer, la longitud del paquete, etc.
5. Habilite la captura. El comando **no capture <name> switch stop** activa la captura**:**

```
> capture capsw switch interface inside match ip
>no capture capsw switch stop
```

6. Verifique los detalles de la captura:

- El estado administrativo es **activado**, y el estado operativo es **activo** y activo.
- El tamaño del archivo de captura de paquetes **Pcapsize** aumenta.
- El número de paquetes capturados en la salida de **show capture <cap_name>** no es cero.
- Ruta de captura **Pcapfile.** Los paquetes capturados se guardan automáticamente en la carpeta **/mnt/disk0/packet-capture/**.
- Condiciones de captura. El software crea automáticamente filtros de captura basados en condiciones de captura.

```
> show capture capsw
27 packet captured on disk using switch capture
Reading of capture file from disk is not supported

>show capture capsw  detail
Packet Capture info
  Name:               capsw
 Session:            1
  Admin State:        enabled
  Oper State:         up
 Oper State Reason: Active
 Config Success:    yes
 Config Fail Reason:
 Append Flag:       overwrite
 Session Mem Usage: 256
 Session Pcap Snap Len: 1518
 Error Code:        0
 Drop Count:        0

Total Physical ports involved in Packet Capture: 1
Physical port:
 Slot Id:           1
 Port Id:           1
 Pcapfile:          /mnt/disk0/packet-capture/sess-1-capsw-ethernet-1-1-0.pcap
  Pcapsize:          18838
 Filter:            capsw-1-1

Packet Capture Filter Info
  Name:               capsw-1-1
 Protocol:          0
 Ivlan:             0
 Ovlan:             205
 Src Ip:            0.0.0.0
 Dest Ip:           0.0.0.0
 Src Ipv6:          ::
 Dest Ipv6:         ::
 Src MAC:           00:00:00:00:00:00
 Dest MAC:          00:00:00:00:00:00
 Src Port:          0
 Dest Port:         0
 Ethertype:         0

Total Physical breakout ports involved in Packet Capture: 0
0 packet captured on disk using switch capture
Reading of capture file from disk is not supported
```

7. Detenga las capturas cuando sea necesario:

```
> capture capsw switch stop
>show capture capsw detail
Packet Capture info
  Name:              capsw
 Session:           1
  Admin State:       disabled
  Oper State:        down
  Oper State Reason: Session_Admin_Shut
 Config Success:    yes
 Config Fail Reason:
 Append Flag:       overwrite
 Session Mem Usage: 256
 Session Pcap Snap Len: 1518
 Error Code:        0
 Drop Count:        0
Total Physical ports involved in Packet Capture: 1

Physical port:
 Slot Id:           1
 Port Id:           1
 Pcapfile:          /mnt/disk0/packet-capture/sess-1-capsw-ethernet-1-1-0.pcap
 Pcapsize:          24
 Filter:            capsw-1-1

Packet Capture Filter Info
 Name:              capsw-1-1
 Protocol:          0
 Ivlan:             0
 Ovlan:             205
 Src Ip:            0.0.0.0
 Dest Ip:           0.0.0.0
 Src Ipv6:          ::
 Dest Ipv6:         ::
 Src MAC:           00:00:00:00:00:00
 Dest MAC:          00:00:00:00:00:00
 Src Port:          0
 Dest Port:         0
 Ethertype:         0

Total Physical breakout ports involved in Packet Capture: 0
0 packet captured on disk using switch capture
Reading of capture file from disk is not supported
```

8. Recopile los archivos de captura. Siga los pasos de la sección **Recopilación de los archivos de captura interna del switch Secure Firewall 3100**.

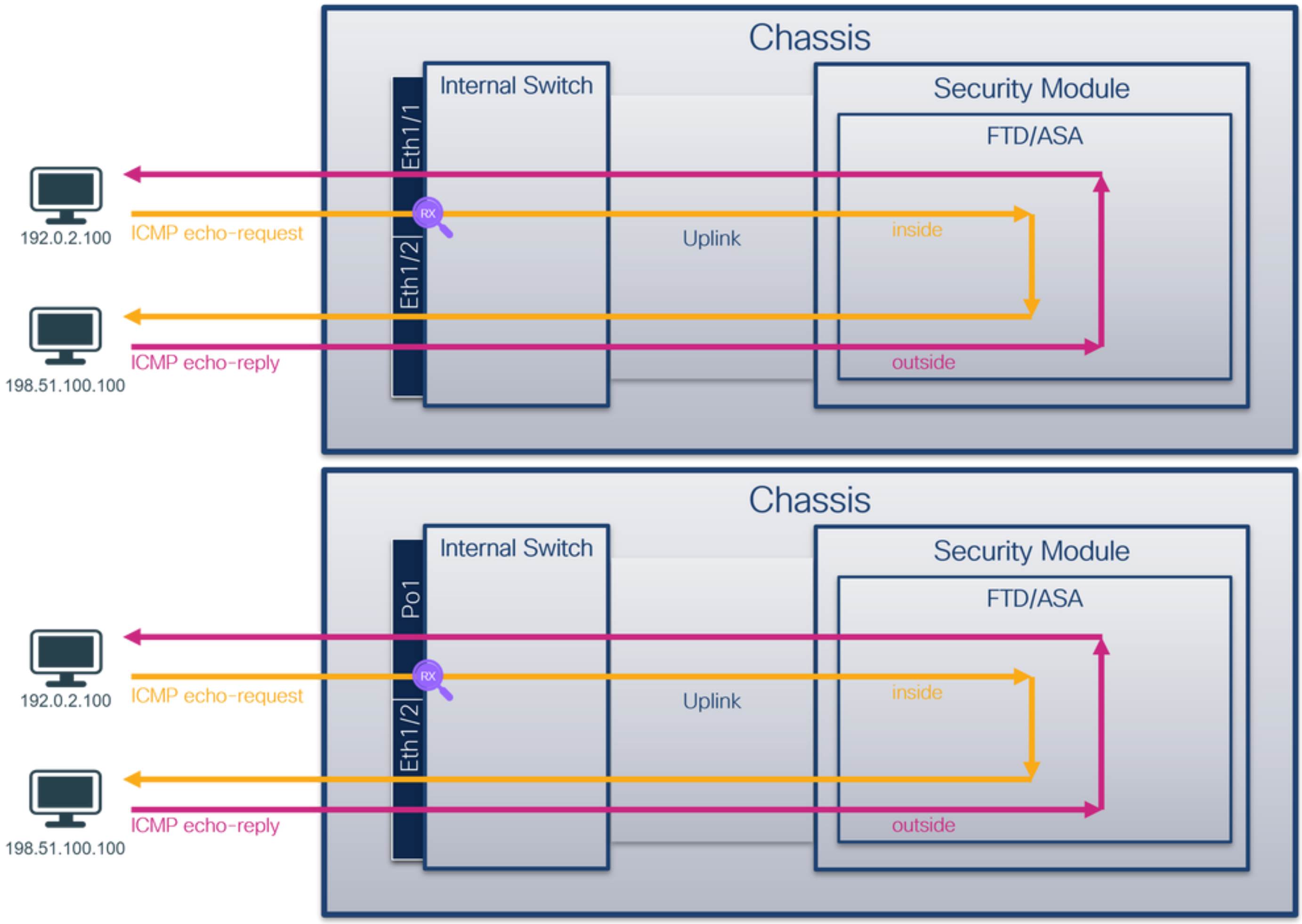
En la versión 7.2, la configuración de captura de switch interno no es compatible con FMC o FDM. En el caso del software ASA versión 9.18(1) y posteriores, las capturas internas del switch se pueden configurar en las versiones 7.18.1.x y posteriores de ASDM.

Estos escenarios abarcan casos prácticos comunes de capturas de switches internos de Secure Firewall 3100.

Captura de paquetes en una interfaz física o de canal de puerto

Utilice el FTD o ASA CLI para configurar y verificar una captura de paquetes en la interfaz Ethernet1/1 o Portchannel1. Ambas interfaces tienen el nombre if **inside**.

Topología, flujo de paquetes y puntos de captura



Configuración

Siga estos pasos en ASA o FTD CLI para configurar una captura de paquetes en la interfaz Ethernet1/1 o Port-channel1:

1. Verifique el nombre si:

```
> show nameif
Interface                Name                     Security
Ethernet1/1              inside                     0
Ethernet1/2              outside                    0
Management1/1            diagnostic                 0

> show nameif
```

```
Interface                Name                     Security
Port-channel1            inside                    0
Ethernet1/2              outside                    0
Management1/1            diagnostic                 0
```

2. Crear una sesión de captura:

```
> capture capsw switch interface inside
```

3. Habilitar la sesión de captura:

```
> no capture capsw switch stop
```

Verificación

Verifique el nombre de la sesión de captura, el estado operativo y administrativo, la ranura de interfaz y el identificador. Asegúrese de que el valor de **Pcapsize** en bytes aumente y el número de paquetes capturados no sea cero:

```
> show capture capsw detail
Packet Capture info
  Name:               capsw
 Session:            1
  Admin State:        enabled
  Oper State:         up
  Oper State Reason: Active
 Config Success:     yes
 Config Fail Reason:
 Append Flag:        overwrite
 Session Mem Usage: 256
 Session Pcap Snap Len: 1518
 Error Code:         0
 Drop Count:         0

Total Physical ports involved in Packet Capture: 1

Physical port:
  Slot Id:            1
  Port Id:            1
 Pcapfile:           /mnt/disk0/packet-capture/sess-1-capsw-ethernet-1-1-0.pcap
  Pcapsize:           12653
 Filter:             capsw-1-1

Packet Capture Filter Info
 Name:               capsw-1-1
 Protocol:           0
 Ivlan:              0
 Ovlan:              0
 Src Ip:             0.0.0.0
 Dest Ip:            0.0.0.0
 Src Ipv6:           ::
 Dest Ipv6:          ::
 Src MAC:            00:00:00:00:00:00
 Dest MAC:           00:00:00:00:00:00
 Src Port:           0
 Dest Port:          0
 Ethertype:          0

Total Physical breakout ports involved in Packet Capture: 0
```

```
79 packets captured on disk using switch capture

Reading of capture file from disk is not supported
```

En el caso del canal de puerto 1, la captura se configura en todas las interfaces miembro:

```
> show capture capsw detail
Packet Capture info
  Name:               capsw
 Session:           1
  Admin State:        enabled
  Oper State:         up
  Oper State Reason: Active
 Config Success:    yes
 Config Fail Reason:
 Append Flag:       overwrite
 Session Mem Usage: 256
 Session Pcap Snap Len: 1518
 Error Code:        0
 Drop Count:        0

Total Physical ports involved in Packet Capture: 2

Physical port:
  Slot Id:            1
  Port Id:            4
 Pcapfile:          /mnt/disk0/packet-capture/sess-1-capsw-ethernet-1-4-0.pcap
  Pcapsize:           28824
  Filter:             capsw-1-4

Packet Capture Filter Info
 Name:              capsw-1-4
 Protocol:          0
 Ivlan:             0
 Ovlan:             0
 Src Ip:            0.0.0.0
 Dest Ip:           0.0.0.0
 Src Ipv6:          ::
 Dest Ipv6:         ::
 Src MAC:           00:00:00:00:00:00
 Dest MAC:          00:00:00:00:00:00
 Src Port:          0
 Dest Port:         0
 Ethertype:         0

Physical port:
  Slot Id:            1
  Port Id:            3
 Pcapfile:          /mnt/disk0/packet-capture/sess-1-capsw-ethernet-1-3-0.pcap
  Pcapsize:           18399
 Filter:            capsw-1-3

Packet Capture Filter Info
 Name:              capsw-1-3
 Protocol:          0
 Ivlan:             0
 Ovlan:             0
 Src Ip:            0.0.0.0
 Dest Ip:           0.0.0.0
 Src Ipv6:          ::
 Dest Ipv6:         ::
 Src MAC:           00:00:00:00:00:00
 Dest MAC:          00:00:00:00:00:00
 Src Port:          0
 Dest Port:         0
 Ethertype:         0

Total Physical breakout ports involved in Packet Capture: 0

56 packet captured on disk using switch capture

Reading of capture file from disk is not supported
```

Las interfaces de miembro de canal de puerto se pueden verificar en el shell de comandos FXOS **local-mgmt** mediante el comando **show portchannel summary**:

```
> connect fxos
…
KSEC-FPR3100-1 connect local-mgmt
KSEC-FPR3100-1(local-mgmt) show portchannel summary
Flags:  D - Down        P - Up in port-channel (members)
I - Individual  H - Hot-standby (LACP only)
s - Suspended   r - Module-removed
S - Switched    R - Routed
U - Up (port-channel)
M - Not in use. Min-links not met
-------------------------------------------------------------------------------
Group Port-       Type     Protocol  Member Ports
     Channel
--------------------------------------------------------------------------------
1     Po1(U)      Eth      LACP      Eth1/3(P)    Eth1/4(P)

LACP KeepAlive Timer:
--------------------------------------------------------------------------------
     Channel  PeerKeepAliveTimerFast
--------------------------------------------------------------------------------
1     Po1(U)      False

Cluster LACP Status:
--------------------------------------------------------------------------------
     Channel  ClusterSpanned  ClusterDetach  ClusterUnitID  ClusterSysID
--------------------------------------------------------------------------------
1     Po1(U)      False          False          0            clust
```

Para acceder al FXOS en ASA, ejecute el comando **connect fxos admin**. En el caso de multicontexto, ejecute el comando en el contexto de administración.

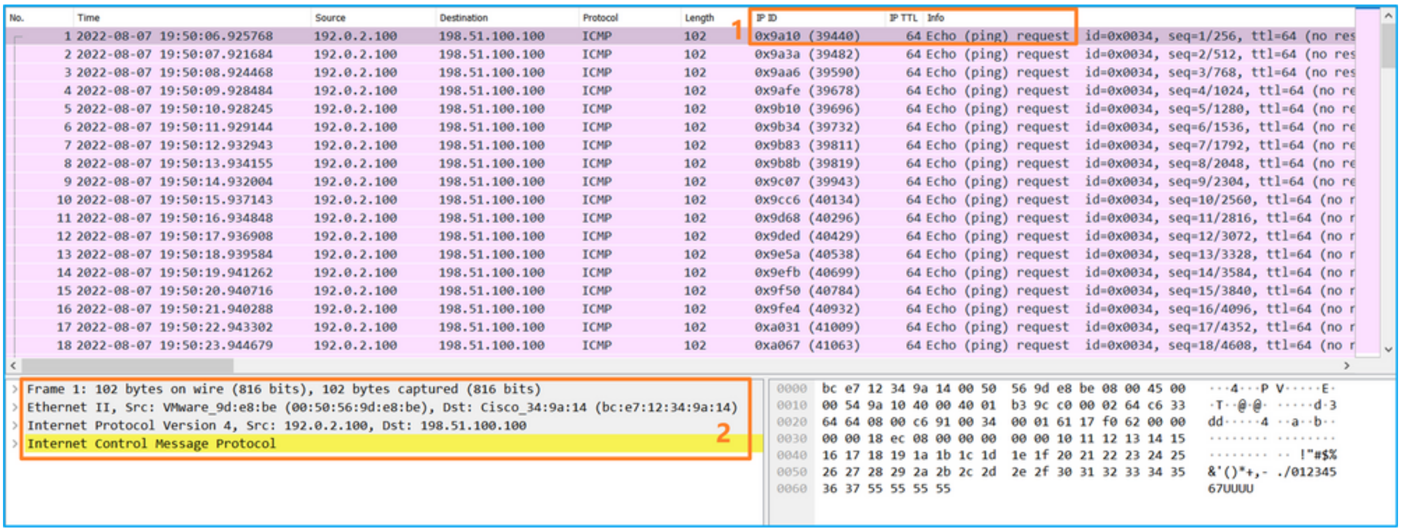
Recopilar archivos de captura

Siga los pasos de la sección **Recopilación de los archivos de captura interna del switch Secure Firewall 3100**.

Capturar análisis de archivos

Utilice una aplicación de lector de archivos de captura de paquetes para abrir los archivos de captura para Ethernet1/1. Seleccione el primer paquete y compruebe los puntos clave:

1. Solo se capturan los paquetes de solicitud de eco ICMP.
2. El encabezado del paquete original no tiene la etiqueta VLAN.



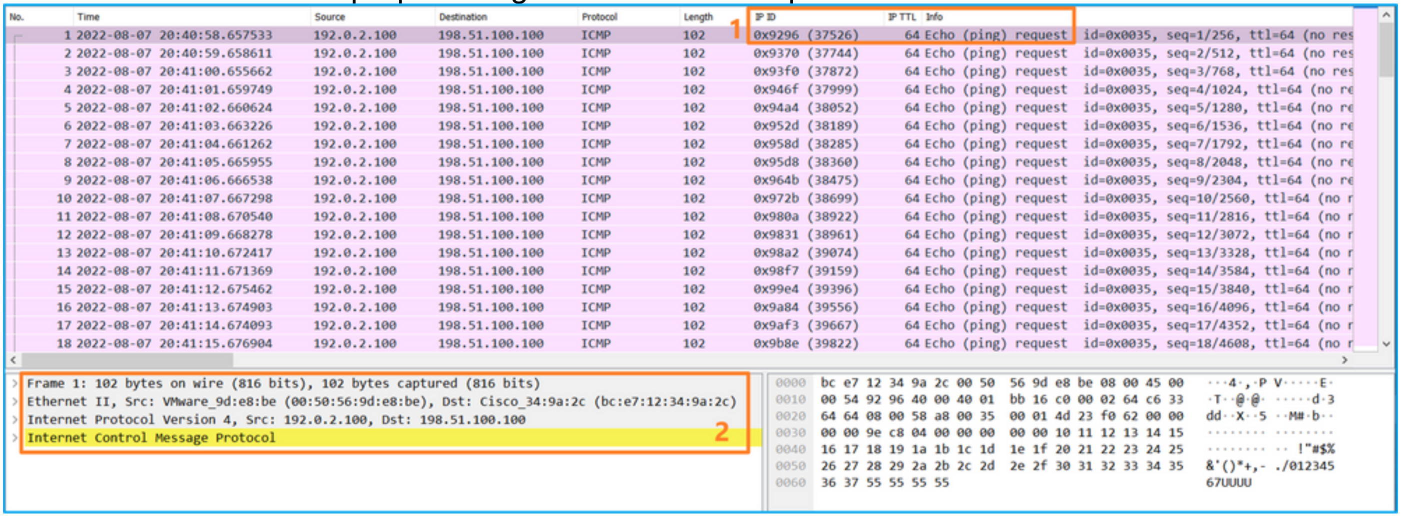
```
No.  Time                        Source       Destination     Protocol Length  IP ID          IP TTL Info
   1 2022-08-07 19:50:06.925768  192.0.2.100  198.51.100.100  ICMP     102     0x9a10 (39440)     64 Echo (ping) request  id=0x0034, seq=1/256, ttl=64 (no res
   2 2022-08-07 19:50:07.921684  192.0.2.100  198.51.100.100  ICMP     102     0x9a3a (39482)     64 Echo (ping) request  id=0x0034, seq=2/512, ttl=64 (no res
   3 2022-08-07 19:50:08.924468  192.0.2.100  198.51.100.100  ICMP     102     0x9aa6 (39590)     64 Echo (ping) request  id=0x0034, seq=3/768, ttl=64 (no res
   4 2022-08-07 19:50:09.928484  192.0.2.100  198.51.100.100  ICMP     102     0x9afe (39678)     64 Echo (ping) request  id=0x0034, seq=4/1024, ttl=64 (no re
   5 2022-08-07 19:50:10.928245  192.0.2.100  198.51.100.100  ICMP     102     0x9b10 (39696)     64 Echo (ping) request  id=0x0034, seq=5/1280, ttl=64 (no re
   6 2022-08-07 19:50:11.929144  192.0.2.100  198.51.100.100  ICMP     102     0x9b34 (39732)     64 Echo (ping) request  id=0x0034, seq=6/1536, ttl=64 (no re
   7 2022-08-07 19:50:12.932943  192.0.2.100  198.51.100.100  ICMP     102     0x9b83 (39811)     64 Echo (ping) request  id=0x0034, seq=7/1792, ttl=64 (no re
   8 2022-08-07 19:50:13.934155  192.0.2.100  198.51.100.100  ICMP     102     0x9b8b (39819)     64 Echo (ping) request  id=0x0034, seq=8/2048, ttl=64 (no re
   9 2022-08-07 19:50:14.932004  192.0.2.100  198.51.100.100  ICMP     102     0x9c07 (39943)     64 Echo (ping) request  id=0x0034, seq=9/2304, ttl=64 (no re
  10 2022-08-07 19:50:15.937143  192.0.2.100  198.51.100.100  ICMP     102     0x9cc6 (40134)     64 Echo (ping) request  id=0x0034, seq=10/2560, ttl=64 (no r
  11 2022-08-07 19:50:16.934848  192.0.2.100  198.51.100.100  ICMP     102     0x9d68 (40296)     64 Echo (ping) request  id=0x0034, seq=11/2816, ttl=64 (no r
  12 2022-08-07 19:50:17.936908  192.0.2.100  198.51.100.100  ICMP     102     0x9ded (40429)     64 Echo (ping) request  id=0x0034, seq=12/3072, ttl=64 (no r
  13 2022-08-07 19:50:18.939584  192.0.2.100  198.51.100.100  ICMP     102     0x9e5a (40538)     64 Echo (ping) request  id=0x0034, seq=13/3328, ttl=64 (no r
  14 2022-08-07 19:50:19.941262  192.0.2.100  198.51.100.100  ICMP     102     0x9efb (40699)     64 Echo (ping) request  id=0x0034, seq=14/3584, ttl=64 (no r
  15 2022-08-07 19:50:20.940716  192.0.2.100  198.51.100.100  ICMP     102     0x9f50 (40784)     64 Echo (ping) request  id=0x0034, seq=15/3840, ttl=64 (no r
  16 2022-08-07 19:50:21.940288  192.0.2.100  198.51.100.100  ICMP     102     0x9fe4 (40932)     64 Echo (ping) request  id=0x0034, seq=16/4096, ttl=64 (no r
  17 2022-08-07 19:50:22.943302  192.0.2.100  198.51.100.100  ICMP     102     0xa031 (41009)     64 Echo (ping) request  id=0x0034, seq=17/4352, ttl=64 (no r
  18 2022-08-07 19:50:23.944679  192.0.2.100  198.51.100.100  ICMP     102     0xa067 (41063)     64 Echo (ping) request  id=0x0034, seq=18/4608, ttl=64 (no r

> Frame 1: 102 bytes on wire (816 bits), 102 bytes captured (816 bits)
> Ethernet II, Src: VMware_9d:e8:be (00:50:56:9d:e8:be), Dst: Cisco_34:9a:14 (bc:e7:12:34:9a:14)
> Internet Protocol Version 4, Src: 192.0.2.100, Dst: 198.51.100.100
> Internet Control Message Protocol

0000  bc e7 12 34 9a 14 00 50  56 9d e8 be 08 00 45 00   ···4···P V·····E·
0010  00 54 9a 10 40 00 40 01  b3 9c c0 00 02 64 c6 33   ·T··@·@· ·····d·3
0020  64 64 08 00 c6 91 00 34  00 01 61 17 f0 62 00 00   dd·····4 ··a··b··
0030  00 00 18 ec 08 00 00 00  00 00 10 11 12 13 14 15   ········ ········
0040  16 17 18 19 1a 1b 1c 1d  1e 1f 20 21 22 23 24 25   ········ ·· !"#$%
0050  26 27 28 29 2a 2b 2c 2d  2e 2f 30 31 32 33 34 35   &'()*+,- ./012345
0060  36 37 55 55 55 55                                  67UUUU
```

Abra los archivos de captura para las interfaces de miembro Portchannel1. Seleccione el primer paquete y verifique los puntos clave:

1. Solo se capturan los paquetes de solicitud de eco ICMP.
2. El encabezado del paquete original no tiene la etiqueta VLAN.



```
No.  Time                        Source       Destination     Protocol Length  IP ID          IP TTL Info
   1 2022-08-07 20:40:58.657533  192.0.2.100  198.51.100.100  ICMP     102     0x9296 (37526)     64 Echo (ping) request  id=0x0035, seq=1/256, ttl=64 (no res
   2 2022-08-07 20:40:59.658611  192.0.2.100  198.51.100.100  ICMP     102     0x9370 (37744)     64 Echo (ping) request  id=0x0035, seq=2/512, ttl=64 (no res
   3 2022-08-07 20:41:00.655662  192.0.2.100  198.51.100.100  ICMP     102     0x93f0 (37872)     64 Echo (ping) request  id=0x0035, seq=3/768, ttl=64 (no res
   4 2022-08-07 20:41:01.659749  192.0.2.100  198.51.100.100  ICMP     102     0x946f (37999)     64 Echo (ping) request  id=0x0035, seq=4/1024, ttl=64 (no re
   5 2022-08-07 20:41:02.660624  192.0.2.100  198.51.100.100  ICMP     102     0x94a4 (38052)     64 Echo (ping) request  id=0x0035, seq=5/1280, ttl=64 (no re
   6 2022-08-07 20:41:03.663226  192.0.2.100  198.51.100.100  ICMP     102     0x952d (38189)     64 Echo (ping) request  id=0x0035, seq=6/1536, ttl=64 (no re
   7 2022-08-07 20:41:04.661262  192.0.2.100  198.51.100.100  ICMP     102     0x958d (38285)     64 Echo (ping) request  id=0x0035, seq=7/1792, ttl=64 (no re
   8 2022-08-07 20:41:05.665955  192.0.2.100  198.51.100.100  ICMP     102     0x95d8 (38360)     64 Echo (ping) request  id=0x0035, seq=8/2048, ttl=64 (no re
   9 2022-08-07 20:41:06.666538  192.0.2.100  198.51.100.100  ICMP     102     0x964b (38475)     64 Echo (ping) request  id=0x0035, seq=9/2304, ttl=64 (no re
  10 2022-08-07 20:41:07.667298  192.0.2.100  198.51.100.100  ICMP     102     0x972b (38699)     64 Echo (ping) request  id=0x0035, seq=10/2560, ttl=64 (no r
  11 2022-08-07 20:41:08.670540  192.0.2.100  198.51.100.100  ICMP     102     0x980a (38922)     64 Echo (ping) request  id=0x0035, seq=11/2816, ttl=64 (no r
  12 2022-08-07 20:41:09.668278  192.0.2.100  198.51.100.100  ICMP     102     0x9831 (38961)     64 Echo (ping) request  id=0x0035, seq=12/3072, ttl=64 (no r
  13 2022-08-07 20:41:10.672417  192.0.2.100  198.51.100.100  ICMP     102     0x98a2 (39074)     64 Echo (ping) request  id=0x0035, seq=13/3328, ttl=64 (no r
  14 2022-08-07 20:41:11.671369  192.0.2.100  198.51.100.100  ICMP     102     0x98f7 (39159)     64 Echo (ping) request  id=0x0035, seq=14/3584, ttl=64 (no r
  15 2022-08-07 20:41:12.675462  192.0.2.100  198.51.100.100  ICMP     102     0x99e4 (39396)     64 Echo (ping) request  id=0x0035, seq=15/3840, ttl=64 (no r
  16 2022-08-07 20:41:13.674903  192.0.2.100  198.51.100.100  ICMP     102     0x9a84 (39556)     64 Echo (ping) request  id=0x0035, seq=16/4096, ttl=64 (no r
  17 2022-08-07 20:41:14.674093  192.0.2.100  198.51.100.100  ICMP     102     0x9af3 (39667)     64 Echo (ping) request  id=0x0035, seq=17/4352, ttl=64 (no r
  18 2022-08-07 20:41:15.676904  192.0.2.100  198.51.100.100  ICMP     102     0x9b8e (39822)     64 Echo (ping) request  id=0x0035, seq=18/4608, ttl=64 (no r

> Frame 1: 102 bytes on wire (816 bits), 102 bytes captured (816 bits)
> Ethernet II, Src: VMware_9d:e8:be (00:50:56:9d:e8:be), Dst: Cisco_34:9a:2c (bc:e7:12:34:9a:2c)
> Internet Protocol Version 4, Src: 192.0.2.100, Dst: 198.51.100.100
> Internet Control Message Protocol

0000  bc e7 12 34 9a 2c 00 50  56 9d e8 be 08 00 45 00   ···4·,·P V·····E·
0010  00 54 92 96 40 00 40 01  bb 16 c0 00 02 64 c6 33   ·T··@·@· ·····d·3
0020  64 64 08 00 58 a8 00 35  00 01 4d 23 f0 62 00 00   dd··X··5 ··M#·b··
0030  00 00 9e c8 04 00 00 00  00 00 10 11 12 13 14 15   ········ ········
0040  16 17 18 19 1a 1b 1c 1d  1e 1f 20 21 22 23 24 25   ········ ·· !"#$%
0050  26 27 28 29 2a 2b 2c 2d  2e 2f 30 31 32 33 34 35   &'()*+,- ./012345
0060  36 37 55 55 55 55                                  67UUUU
```

Explicación

Las capturas del switch se configuran en las interfaces Ethernet1/1 o Portchannel1.

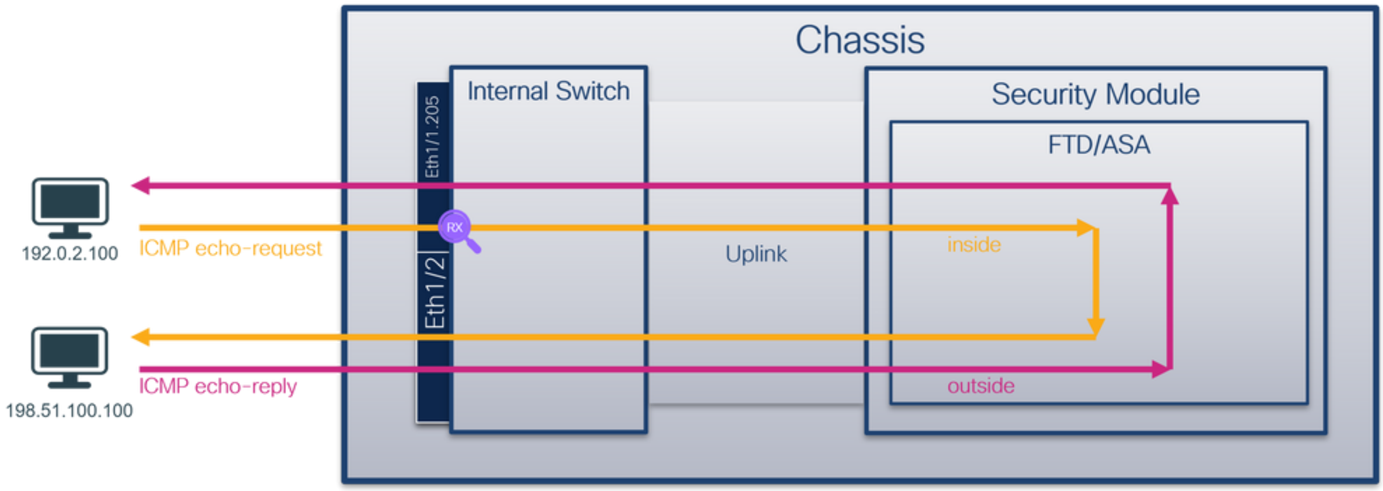
Esta tabla resume la tarea:

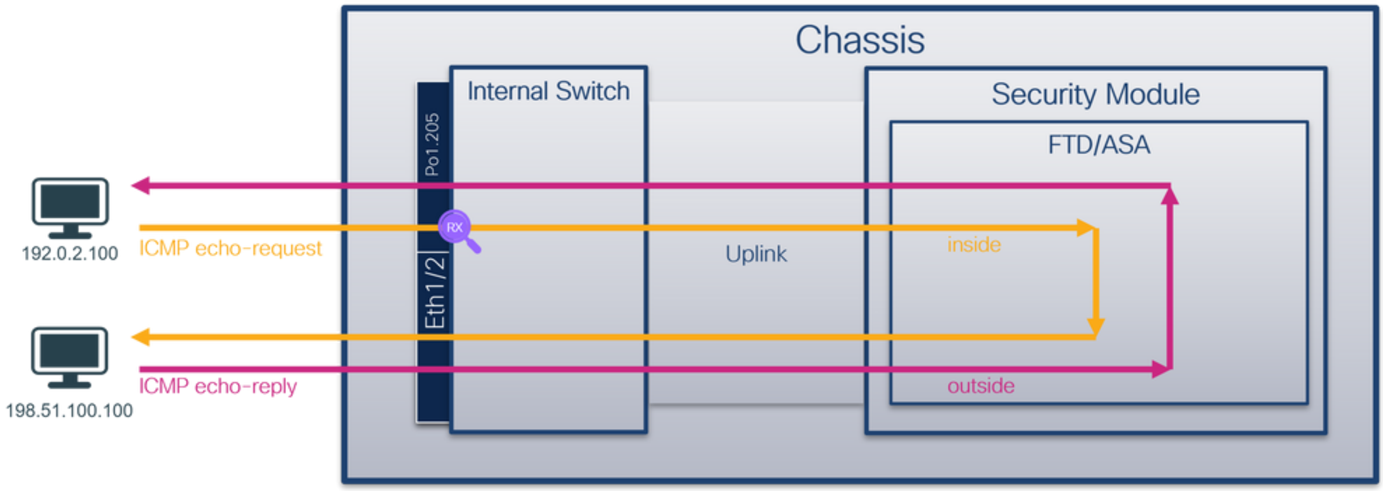
Tarea	Punto de captura	Filtro interno	Dirección:	Tráfico capturado
Configurar y verificar una captura de paquetes en la interfaz Ethernet1/1	Ethernet1/1	Ninguno	Solo entrada	Solicitudes de eco ICMP del host 192.0.2.100 al host 198.51.100.10
Configure y verifique una captura de paquetes en la interfaz Portchannel1 con las interfaces miembro Ethernet1/3 y Ethernet1/4	Ethernet1/3 Ethernet1/4	Ninguno	Solo entrada	Solicitudes de eco ICMP del host 192.0.2.100 al host 198.51.100.10

Captura de paquetes en una subinterfaz de una interfaz física o de canal de puerto

Utilice el FTD o ASA CLI para configurar y verificar una captura de paquetes en las subinterfaces Ethernet1/1.205 o Portchannel1.205. Ambas subinterfaces tienen el nombre if **inside**.

Topología, flujo de paquetes y puntos de captura





Configuración

Siga estos pasos en ASA o FTD CLI para configurar una captura de paquetes en la interfaz Ethernet1/1 o Port-channel1:

1. Verifique el nombre si:

```
> show nameif
Interface                Name                     Security
Ethernet1/1.205          inside                     0
Ethernet1/2              outside                    0
Management1/1            diagnostic                 0

> show nameif
Interface                Name                     Security
Port-channel1.205        inside                     0
Ethernet1/2              outside                    0
Management1/1            diagnostic                 0
```

2. Crear una sesión de captura:

```
> capture capsw switch interface inside
```

3. Habilitar la sesión de captura:

```
> no capture capsw switch stop
```

Verificación

Verifique el nombre de la sesión de captura, el estado operativo y administrativo, la ranura de interfaz y el identificador. Asegúrese de que el valor de **Pcapsize** en bytes aumente y el número de paquetes capturados no sea cero:

```
> show capture capsw detail
Packet Capture info
  Name:               capsw
 Session:            1
  Admin State:        enabled
  Oper State:         up
  Oper State Reason: Active
 Config Success:     yes
 Config Fail Reason:
 Append Flag:        overwrite
 Session Mem Usage: 256
 Session Pcap Snap Len: 1518
 Error Code:         0
 Drop Count:         0

Total Physical ports involved in Packet Capture: 1

Physical port:
  Slot Id:            1
  Port Id:            1
 Pcapfile:           /mnt/disk0/packet-capture/sess-1-capsw-ethernet-1-1-0.pcap
  Pcapsize:           6360
 Filter:             capsw-1-1

Packet Capture Filter Info
  Name:               capsw-1-1
 Protocol:           0
 Ivlan:              0
  Ovlan:              205
 Src Ip:             0.0.0.0
 Dest Ip:            0.0.0.0
 Src Ipv6:           ::
 Dest Ipv6:          ::
 Src MAC:            00:00:00:00:00:00
 Dest MAC:           00:00:00:00:00:00
 Src Port:           0
 Dest Port:          0
 Ethertype:          0

Total Physical breakout ports involved in Packet Capture: 0

46 packets captured on disk using switch capture

Reading of capture file from disk is not supported
```

En este caso, se crea un filtro con la VLAN externa **Ovlan=205** y se aplica a la interfaz.

En el caso del Port-channel1, la captura con un filtro **Ovlan=205** se configura en todas las interfaces miembro:

```
> show capture capsw detail
Packet Capture info
  Name:               capsw
 Session:            1
```

```
  Admin State:       enabled
  Oper State:        up
  Oper State Reason: Active
 Config Success:    yes
 Config Fail Reason:
 Append Flag:       overwrite
 Session Mem Usage: 256
 Session Pcap Snap Len: 1518
 Error Code:        0
 Drop Count:        0

Total Physical ports involved in Packet Capture: 2

Physical port:
  Slot Id:           1
  Port Id:           4
 Pcapfile:          /mnt/disk0/packet-capture/sess-1-capsw-ethernet-1-4-0.pcap
  Pcapsize:          23442
  Filter:            capsw-1-4

Packet Capture Filter Info
 Name:              capsw-1-4
 Protocol:          0
  Ivlan:             0
  Ovlan:             205
 Src Ip:            0.0.0.0
 Dest Ip:           0.0.0.0
 Src Ipv6:          ::
 Dest Ipv6:         ::
 Src MAC:           00:00:00:00:00:00
 Dest MAC:          00:00:00:00:00:00
 Src Port:          0
 Dest Port:         0
 Ethertype:         0

Physical port:
  Slot Id:           1
  Port Id:           3
 Pcapfile:          /mnt/disk0/packet-capture/sess-1-capsw-ethernet-1-3-0.pcap
  Pcapsize:          5600
 Filter:            capsw-1-3

Packet Capture Filter Info
 Name:              capsw-1-3
 Protocol:          0
 Ivlan:             0
  Ovlan:             205
 Src Ip:            0.0.0.0
 Dest Ip:           0.0.0.0
 Src Ipv6:          ::
  Dest Ipv6:         ::
 Src MAC:           00:00:00:00:00:00
 Dest MAC:          00:00:00:00:00:00
 Src Port:          0
 Dest Port:         0
 Ethertype:         0

Total Physical breakout ports involved in Packet Capture: 0

49 packet captured on disk using switch capture

Reading of capture file from disk is not supported
```

Las interfaces de miembro de canal de puerto se pueden verificar en el shell de comandos FXOS

local-mgmt mediante el comando **show portchannel summary**:

```
> connect fxos
…
KSEC-FPR3100-1 connect local-mgmt
KSEC-FPR3100-1(local-mgmt) show portchannel summary
Flags:  D - Down        P - Up in port-channel (members)
I - Individual  H - Hot-standby (LACP only)
s - Suspended   r - Module-removed
S - Switched    R - Routed
U - Up (port-channel)
M - Not in use. Min-links not met
-------------------------------------------------------------------------------
Group Port-       Type     Protocol  Member Ports
     Channel
--------------------------------------------------------------------------------
1     Po1(U)      Eth      LACP      Eth1/3(P)    Eth1/4(P)

LACP KeepAlive Timer:
--------------------------------------------------------------------------------
     Channel  PeerKeepAliveTimerFast
--------------------------------------------------------------------------------
1     Po1(U)      False

Cluster LACP Status:
--------------------------------------------------------------------------------
     Channel  ClusterSpanned  ClusterDetach  ClusterUnitID  ClusterSysID
--------------------------------------------------------------------------------
1     Po1(U)      False          False          0            clust
```

Para acceder al FXOS en ASA, ejecute el comando **connect fxos admin**. En el caso de multicontexto, ejecute este comando en el contexto de administración.

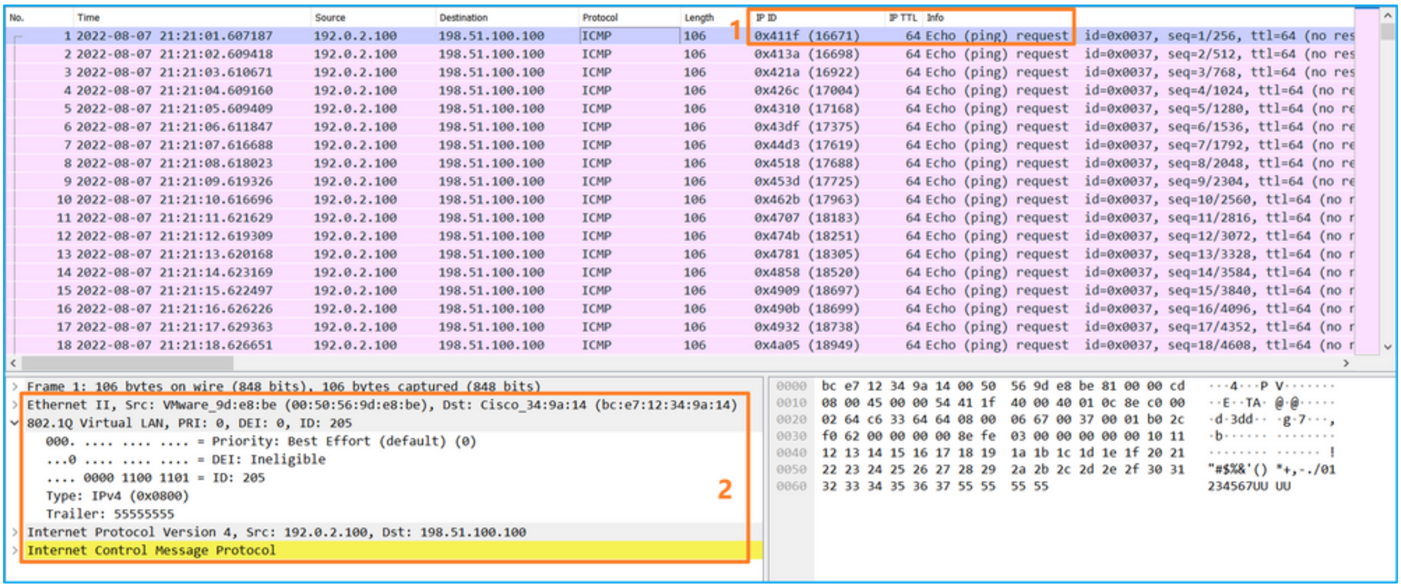
Recopilar archivos de captura

Siga los pasos de la sección **Recopilación de los archivos de captura interna del switch Secure Firewall 3100**.

Capturar análisis de archivos

Utilice una aplicación de lector de archivos de captura de paquetes para abrir los archivos de captura para Ethernet1/1.205. Seleccione el primer paquete y compruebe los puntos clave:

1. Solo se capturan los paquetes de solicitud de eco ICMP.
2. El encabezado del paquete original tiene la etiqueta VLAN **205**.



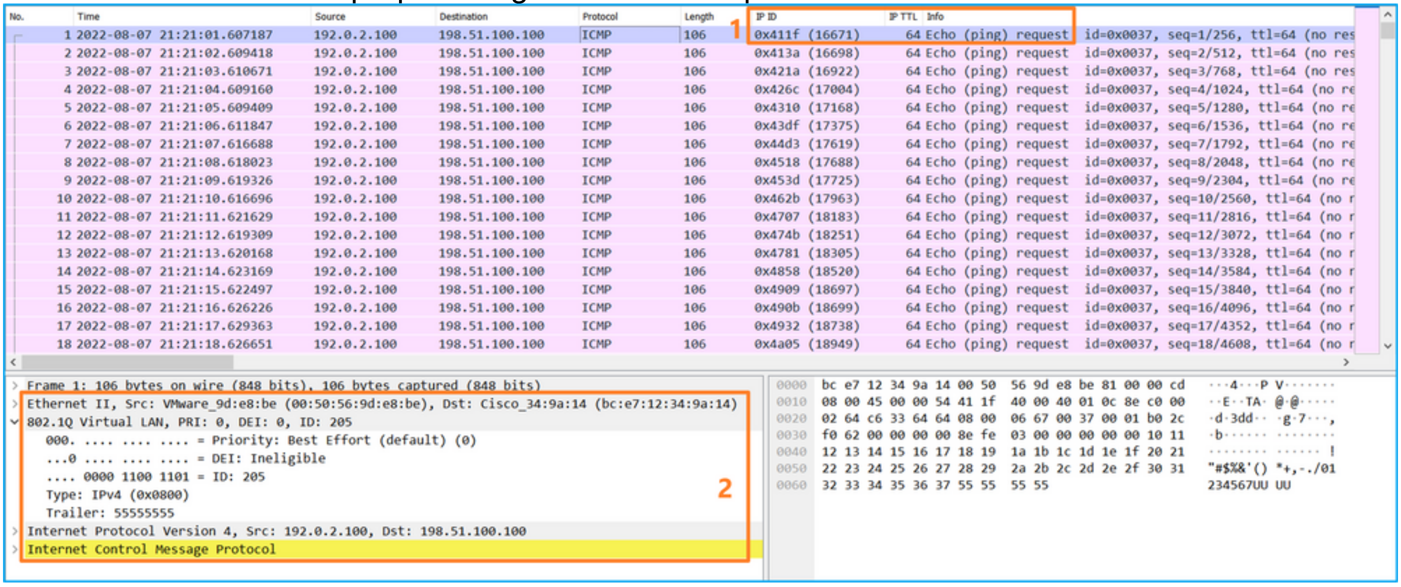
```
No.  Time                        Source        Destination     Protocol  Length  IP ID            IP TTL Info
   1 2022-08-07 21:21:01.607187  192.0.2.100   198.51.100.100  ICMP      106     0x411f (16671)   64 Echo (ping) request  id=0x0037, seq=1/256, ttl=64 (no res
   2 2022-08-07 21:21:02.609418  192.0.2.100   198.51.100.100  ICMP      106     0x413a (16698)   64 Echo (ping) request  id=0x0037, seq=2/512, ttl=64 (no res
   3 2022-08-07 21:21:03.610671  192.0.2.100   198.51.100.100  ICMP      106     0x421a (16922)   64 Echo (ping) request  id=0x0037, seq=3/768, ttl=64 (no res
   4 2022-08-07 21:21:04.609160  192.0.2.100   198.51.100.100  ICMP      106     0x426c (17004)   64 Echo (ping) request  id=0x0037, seq=4/1024, ttl=64 (no re
   5 2022-08-07 21:21:05.609409  192.0.2.100   198.51.100.100  ICMP      106     0x4310 (17168)   64 Echo (ping) request  id=0x0037, seq=5/1280, ttl=64 (no re
   6 2022-08-07 21:21:06.611847  192.0.2.100   198.51.100.100  ICMP      106     0x43df (17375)   64 Echo (ping) request  id=0x0037, seq=6/1536, ttl=64 (no re
   7 2022-08-07 21:21:07.616688  192.0.2.100   198.51.100.100  ICMP      106     0x44d3 (17619)   64 Echo (ping) request  id=0x0037, seq=7/1792, ttl=64 (no re
   8 2022-08-07 21:21:08.618023  192.0.2.100   198.51.100.100  ICMP      106     0x4518 (17688)   64 Echo (ping) request  id=0x0037, seq=8/2048, ttl=64 (no re
   9 2022-08-07 21:21:09.619326  192.0.2.100   198.51.100.100  ICMP      106     0x453d (17725)   64 Echo (ping) request  id=0x0037, seq=9/2304, ttl=64 (no re
  10 2022-08-07 21:21:10.616696  192.0.2.100   198.51.100.100  ICMP      106     0x462b (17963)   64 Echo (ping) request  id=0x0037, seq=10/2560, ttl=64 (no r
  11 2022-08-07 21:21:11.621629  192.0.2.100   198.51.100.100  ICMP      106     0x4707 (18183)   64 Echo (ping) request  id=0x0037, seq=11/2816, ttl=64 (no r
  12 2022-08-07 21:21:12.619309  192.0.2.100   198.51.100.100  ICMP      106     0x474b (18251)   64 Echo (ping) request  id=0x0037, seq=12/3072, ttl=64 (no r
  13 2022-08-07 21:21:13.620168  192.0.2.100   198.51.100.100  ICMP      106     0x4781 (18305)   64 Echo (ping) request  id=0x0037, seq=13/3328, ttl=64 (no r
  14 2022-08-07 21:21:14.623169  192.0.2.100   198.51.100.100  ICMP      106     0x4858 (18520)   64 Echo (ping) request  id=0x0037, seq=14/3584, ttl=64 (no r
  15 2022-08-07 21:21:15.622497  192.0.2.100   198.51.100.100  ICMP      106     0x4909 (18697)   64 Echo (ping) request  id=0x0037, seq=15/3840, ttl=64 (no r
  16 2022-08-07 21:21:16.626226  192.0.2.100   198.51.100.100  ICMP      106     0x490b (18699)   64 Echo (ping) request  id=0x0037, seq=16/4096, ttl=64 (no r
  17 2022-08-07 21:21:17.629363  192.0.2.100   198.51.100.100  ICMP      106     0x4932 (18738)   64 Echo (ping) request  id=0x0037, seq=17/4352, ttl=64 (no r
  18 2022-08-07 21:21:18.626651  192.0.2.100   198.51.100.100  ICMP      106     0x4a05 (18949)   64 Echo (ping) request  id=0x0037, seq=18/4608, ttl=64 (no r
```

```
> Frame 1: 106 bytes on wire (848 bits), 106 bytes captured (848 bits)
> Ethernet II, Src: VMware_9d:e8:be (00:50:56:9d:e8:be), Dst: Cisco_34:9a:14 (bc:e7:12:34:9a:14)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 205
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0000 1100 1101 = ID: 205
    Type: IPv4 (0x0800)
    Trailer: 55555555
> Internet Protocol Version 4, Src: 192.0.2.100, Dst: 198.51.100.100
> Internet Control Message Protocol
```

```
0000  bc e7 12 34 9a 14 00 50  56 9d e8 be 81 00 00 cd   ···4···P V·······
0010  08 00 45 00 00 54 41 1f  40 00 40 01 0c 8e c0 00   ··E··TA· @·@·····
0020  02 64 c6 33 64 64 08 00  06 67 00 37 00 01 b0 2c   ·d·3dd·· ·g·7···,
0030  f0 62 00 00 00 00 8e fe  03 00 00 00 00 00 10 11   ·b······ ········
0040  12 13 14 15 16 17 18 19  1a 1b 1c 1d 1e 1f 20 21   ········ ······ !
0050  22 23 24 25 26 27 28 29  2a 2b 2c 2d 2e 2f 30 31   "#$%&'() *+,-./01
0060  32 33 34 35 36 37 55 55  55 55                     234567UU UU
```

Abra los archivos de captura para las interfaces de miembro Portchannel1. Seleccione el primer paquete y verifique los puntos clave:

1. Solo se capturan los paquetes de solicitud de eco ICMP.
2. El encabezado del paquete original tiene la etiqueta VLAN **205**.



```
No.  Time                        Source        Destination     Protocol  Length  IP ID            IP TTL Info
   1 2022-08-07 21:21:01.607187  192.0.2.100   198.51.100.100  ICMP      106     0x411f (16671)   64 Echo (ping) request  id=0x0037, seq=1/256, ttl=64 (no res
   2 2022-08-07 21:21:02.609418  192.0.2.100   198.51.100.100  ICMP      106     0x413a (16698)   64 Echo (ping) request  id=0x0037, seq=2/512, ttl=64 (no res
   3 2022-08-07 21:21:03.610671  192.0.2.100   198.51.100.100  ICMP      106     0x421a (16922)   64 Echo (ping) request  id=0x0037, seq=3/768, ttl=64 (no res
   4 2022-08-07 21:21:04.609160  192.0.2.100   198.51.100.100  ICMP      106     0x426c (17004)   64 Echo (ping) request  id=0x0037, seq=4/1024, ttl=64 (no re
   5 2022-08-07 21:21:05.609409  192.0.2.100   198.51.100.100  ICMP      106     0x4310 (17168)   64 Echo (ping) request  id=0x0037, seq=5/1280, ttl=64 (no re
   6 2022-08-07 21:21:06.611847  192.0.2.100   198.51.100.100  ICMP      106     0x43df (17375)   64 Echo (ping) request  id=0x0037, seq=6/1536, ttl=64 (no re
   7 2022-08-07 21:21:07.616688  192.0.2.100   198.51.100.100  ICMP      106     0x44d3 (17619)   64 Echo (ping) request  id=0x0037, seq=7/1792, ttl=64 (no re
   8 2022-08-07 21:21:08.618023  192.0.2.100   198.51.100.100  ICMP      106     0x4518 (17688)   64 Echo (ping) request  id=0x0037, seq=8/2048, ttl=64 (no re
   9 2022-08-07 21:21:09.619326  192.0.2.100   198.51.100.100  ICMP      106     0x453d (17725)   64 Echo (ping) request  id=0x0037, seq=9/2304, ttl=64 (no re
  10 2022-08-07 21:21:10.616696  192.0.2.100   198.51.100.100  ICMP      106     0x462b (17963)   64 Echo (ping) request  id=0x0037, seq=10/2560, ttl=64 (no r
  11 2022-08-07 21:21:11.621629  192.0.2.100   198.51.100.100  ICMP      106     0x4707 (18183)   64 Echo (ping) request  id=0x0037, seq=11/2816, ttl=64 (no r
  12 2022-08-07 21:21:12.619309  192.0.2.100   198.51.100.100  ICMP      106     0x474b (18251)   64 Echo (ping) request  id=0x0037, seq=12/3072, ttl=64 (no r
  13 2022-08-07 21:21:13.620168  192.0.2.100   198.51.100.100  ICMP      106     0x4781 (18305)   64 Echo (ping) request  id=0x0037, seq=13/3328, ttl=64 (no r
  14 2022-08-07 21:21:14.623169  192.0.2.100   198.51.100.100  ICMP      106     0x4858 (18520)   64 Echo (ping) request  id=0x0037, seq=14/3584, ttl=64 (no r
  15 2022-08-07 21:21:15.622497  192.0.2.100   198.51.100.100  ICMP      106     0x4909 (18697)   64 Echo (ping) request  id=0x0037, seq=15/3840, ttl=64 (no r
  16 2022-08-07 21:21:16.626226  192.0.2.100   198.51.100.100  ICMP      106     0x490b (18699)   64 Echo (ping) request  id=0x0037, seq=16/4096, ttl=64 (no r
  17 2022-08-07 21:21:17.629363  192.0.2.100   198.51.100.100  ICMP      106     0x4932 (18738)   64 Echo (ping) request  id=0x0037, seq=17/4352, ttl=64 (no r
  18 2022-08-07 21:21:18.626651  192.0.2.100   198.51.100.100  ICMP      106     0x4a05 (18949)   64 Echo (ping) request  id=0x0037, seq=18/4608, ttl=64 (no r
```

```
> Frame 1: 106 bytes on wire (848 bits), 106 bytes captured (848 bits)
> Ethernet II, Src: VMware_9d:e8:be (00:50:56:9d:e8:be), Dst: Cisco_34:9a:14 (bc:e7:12:34:9a:14)
v 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 205
    000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 0000 1100 1101 = ID: 205
    Type: IPv4 (0x0800)
    Trailer: 55555555
> Internet Protocol Version 4, Src: 192.0.2.100, Dst: 198.51.100.100
> Internet Control Message Protocol
```

```
0000  bc e7 12 34 9a 14 00 50  56 9d e8 be 81 00 00 cd   ···4···P V·······
0010  08 00 45 00 00 54 41 1f  40 00 40 01 0c 8e c0 00   ··E··TA· @·@·····
0020  02 64 c6 33 64 64 08 00  06 67 00 37 00 01 b0 2c   ·d·3dd·· ·g·7···,
0030  f0 62 00 00 00 00 8e fe  03 00 00 00 00 00 10 11   ·b······ ········
0040  12 13 14 15 16 17 18 19  1a 1b 1c 1d 1e 1f 20 21   ········ ······ !
0050  22 23 24 25 26 27 28 29  2a 2b 2c 2d 2e 2f 30 31   "#$%&'() *+,-./01
0060  32 33 34 35 36 37 55 55  55 55                     234567UU UU
```

Explicación

Las capturas del switch se configuran en las subinterfaces Ethernet1/1.205 o Portchannel1.205 con un filtro que coincide con la VLAN externa 205.

Esta tabla resume la tarea:

Tarea	Punto de captura	Filtro interno	Dirección:	Tráfico capturado
Configurar y verificar una captura de paquetes en la subinterfaz Ethernet1/1.205	Ethernet 1/1	VLAN externa 205	Solo entrada	Solicitudes de eco ICMP del host 192.0.2.100 al host 198.51.100.10
Configure y verifique una captura de paquetes en la subinterfaz Portchannel1.205 con las interfaces miembro Ethernet1/3 y Ethernet1/4	Ethernet 1/3 Ethernet 1/4	VLAN externa 205	Solo entrada	Solicitudes de eco ICMP del host 192.0.2.100 al host 198.51.100.10

Captura de paquetes en interfaces internas

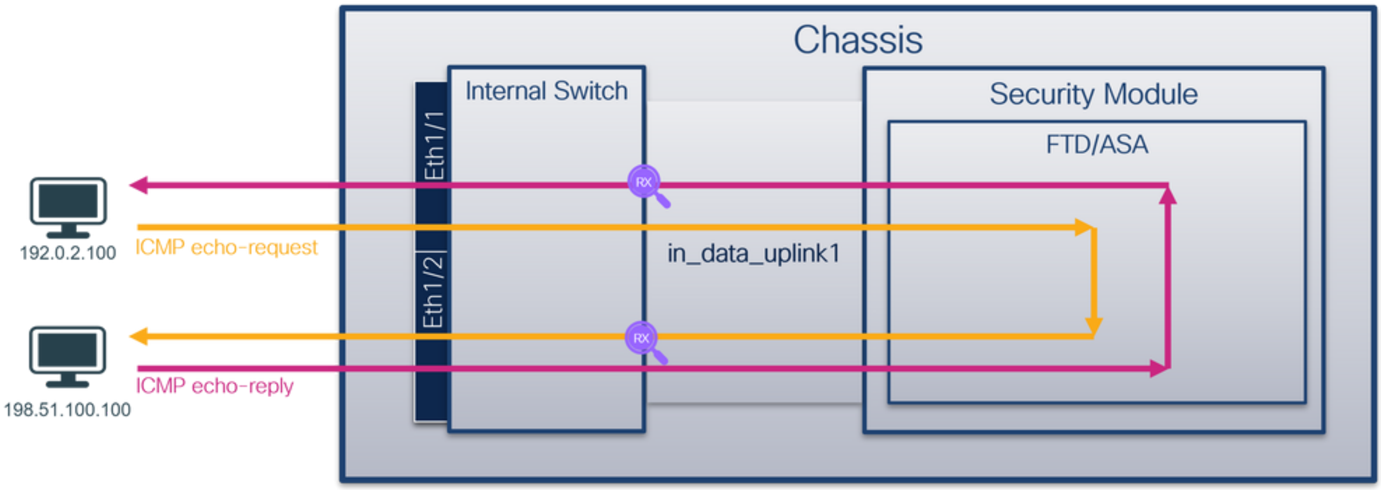
Secure Firewall tiene 2 interfaces internas:

- **in_data_uplink1**: conecta la aplicación al switch interno.
- **in_mgmt_uplink1** - proporciona una trayectoria de paquete dedicada para las conexiones de administración, tales como SSH a la interfaz de administración, o la conexión de administración, también conocida como sftunnel, entre el FMC y el FTD.

Tarea 1

Utilice el FTD o la CLI ASA para configurar y verificar una captura de paquetes en la interfaz de enlace ascendente **in_data_uplink1.**

Topología, flujo de paquetes y puntos de captura



Configuración

Siga estos pasos en ASA o FTD CLI para configurar una captura de paquetes en la interfaz **in_data_uplink1**:

1. Crear una sesión de captura:

```
> capture capsw switch interface in_data_uplink1
```

2. Habilitar la sesión de captura:

```
> no capture capsw switch stop
```

Verificación

Verifique el nombre de la sesión de captura, el estado operativo y administrativo, la ranura de interfaz y el identificador. Asegúrese de que el valor de **Pcapsize** en bytes aumente y el número de paquetes capturados no sea cero:

```
>  show capture capsw detail
Packet Capture info
  Name:                capsw
 Session:             1
```

```
  Admin State:       enabled
  Oper State:        up
  Oper State Reason: Active
 Config Success:    yes
 Config Fail Reason:
 Append Flag:       overwrite
 Session Mem Usage: 256
 Session Pcap Snap Len: 1518
 Error Code:        0
 Drop Count:        0

Total Physical ports involved in Packet Capture: 1

Physical port:
  Slot Id:           1
  Port Id:           18
 Pcapfile:          /mnt/disk0/packet-capture/sess-1-capsw-data-uplink1.pcap
  Pcapsize:          7704
 Filter:            capsw-1-18

Packet Capture Filter Info
 Name:              capsw-1-18
 Protocol:          0
 Ivlan:             0
 Ovlan:             0
 Src Ip:            0.0.0.0
 Dest Ip:           0.0.0.0
 Src Ipv6:          ::
 Dest Ipv6:         ::
 Src MAC:           00:00:00:00:00:00
 Dest MAC:          00:00:00:00:00:00
 Src Port:          0
 Dest Port:         0
 Ethertype:         0

Total Physical breakout ports involved in Packet Capture: 0

66 packets captured on disk using switch capture

Reading of capture file from disk is not supported
```

En este caso, se crea una captura en la interfaz con un ID interno **18** que es la interfaz in_data_uplink1 en Secure Firewall 3130. El comando **show portmanager switch status** en el shell de comandos FXOS **local-mgmt** muestra los ID de la interfaz**:**

```
> connect fxos
…
KSEC-FPR3100-1 connect local-mgmt
KSEC-FPR3100-1(local-mgmt) show portmanager switch status
Dev/Port         Mode        Link   Speed  Duplex  Loopback Mode  Port Manager
---------  ----------------  -----  -----  ------  -------------  ------------
0/1             SGMII         Up     1G     Full    None           Link-Up
0/2             SGMII         Up     1G     Full    None           Link-Up
0/3             SGMII         Up     1G     Full    None           Link-Up
0/4             SGMII         Up     1G     Full    None           Link-Up
0/5             SGMII        Down    1G     Half    None           Mac-Link-Down
0/6             SGMII        Down    1G     Half    None           Mac-Link-Down
0/7             SGMII        Down    1G     Half    None           Mac-Link-Down
0/8             SGMII        Down    1G     Half    None           Mac-Link-Down
0/9           1000_BaseX     Down    1G     Full    None           Link-Down
0/10          1000_BaseX     Down    1G     Full    None           Link-Down
0/11          1000_BaseX     Down    1G     Full    None           Link-Down
0/12          1000_BaseX     Down    1G     Full    None           Link-Down
```

```
0/13          1000_BaseX     Down     1G      Full      None           Link-Down
0/14          1000_BaseX     Down     1G      Full      None           Link-Down
0/15          1000_BaseX     Down     1G      Full      None           Link-Down
0/16          1000_BaseX     Down     1G      Full      None           Link-Down
0/17          1000_BaseX      Up      1G      Full      None           Link-Up
0/18             KR2          Up      50G     Full      None           Link-Up
0/19              KR          Up      25G     Full      None           Link-Up
0/20              KR          Up      25G     Full      None           Link-Up
0/21             KR4         Down     40G     Full      None           Link-Down
0/22             n/a         Down     n/a     Full      N/A            Reset
0/23             n/a         Down     n/a     Full      N/A            Reset
0/24             n/a         Down     n/a     Full      N/A            Reset
0/25          1000_BaseX     Down     1G      Full      None           Link-Down
0/26             n/a         Down     n/a     Full      N/A            Reset
0/27             n/a         Down     n/a     Full      N/A            Reset
0/28             n/a         Down     n/a     Full      N/A            Reset
0/29          1000_BaseX     Down     1G      Full      None           Link-Down
0/30             n/a         Down     n/a     Full      N/A            Reset
0/31             n/a         Down     n/a     Full      N/A            Reset
0/32             n/a         Down     n/a     Full      N/A            Reset
0/33          1000_BaseX     Down     1G      Full      None           Link-Down
0/34             n/a         Down     n/a     Full      N/A            Reset
0/35             n/a         Down     n/a     Full      N/A            Reset
0/36             n/a         Down     n/a     Full      N/A            Reset
```

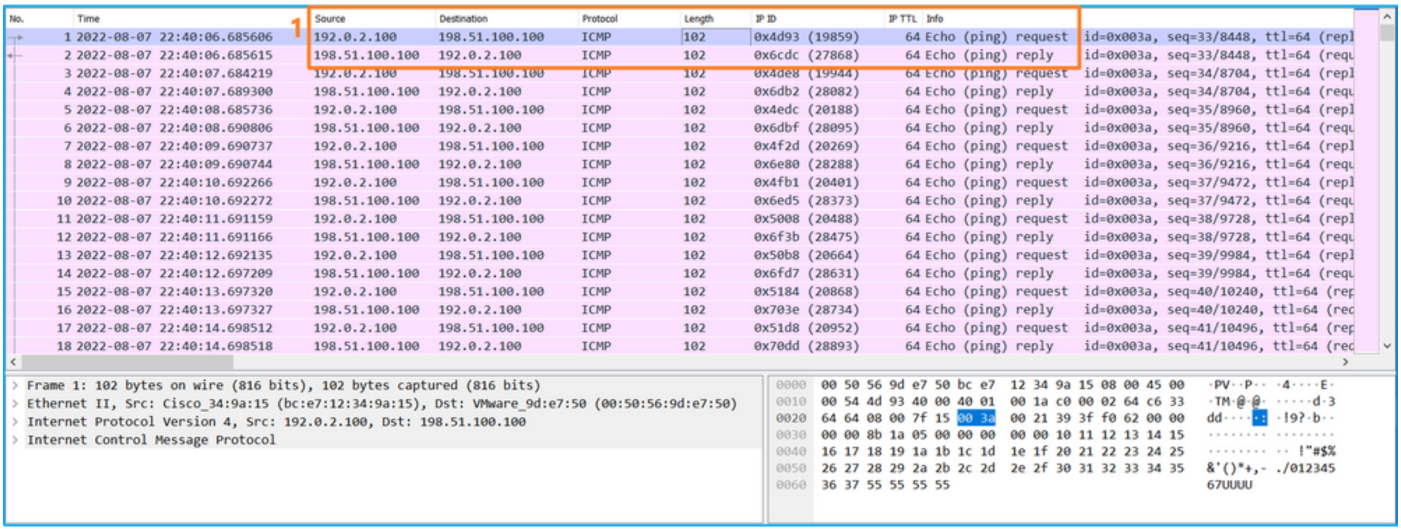
Para acceder al FXOS en ASA, ejecute el comando **connect fxos admin**. En el caso de multicontexto, ejecute este comando en el contexto de administración.

Recopilar archivos de captura

Siga los pasos de la sección **Recopilación de los archivos de captura interna del switch Secure Firewall 3100**.

Capturar análisis de archivos

Utilice una aplicación de lector de archivos de captura de paquetes para abrir los archivos de captura para la interfaz in_data_uplink1. Compruebe el punto clave: en este caso, se capturan los paquetes de solicitud de eco ICMP y de respuesta de eco. Estos son los paquetes enviados desde la aplicación al switch interno.



```
No.  Time                        Source          Destination     Protocol  Length  IP ID           IP TTL  Info
 1 2022-08-07 22:40:06.685606   192.0.2.100     198.51.100.100  ICMP      102     0x4d93 (19859)  64 Echo (ping) request  id=0x003a, seq=33/8448, ttl=64 (repl
 2 2022-08-07 22:40:06.685615   198.51.100.100  192.0.2.100     ICMP      102     0x6cdc (27868)  64 Echo (ping) reply    id=0x003a, seq=33/8448, ttl=64 (requ
 3 2022-08-07 22:40:07.684219   192.0.2.100     198.51.100.100  ICMP      102     0x4de8 (19944)  64 Echo (ping) request  id=0x003a, seq=34/8704, ttl=64 (repl
 4 2022-08-07 22:40:07.689300   198.51.100.100  192.0.2.100     ICMP      102     0x6db2 (28082)  64 Echo (ping) reply    id=0x003a, seq=34/8704, ttl=64 (requ
 5 2022-08-07 22:40:08.685736   192.0.2.100     198.51.100.100  ICMP      102     0x4edc (20188)  64 Echo (ping) request  id=0x003a, seq=35/8960, ttl=64 (repl
 6 2022-08-07 22:40:08.690806   198.51.100.100  192.0.2.100     ICMP      102     0x6dbf (28095)  64 Echo (ping) reply    id=0x003a, seq=35/8960, ttl=64 (requ
 7 2022-08-07 22:40:09.690737   192.0.2.100     198.51.100.100  ICMP      102     0x4f2d (20269)  64 Echo (ping) request  id=0x003a, seq=36/9216, ttl=64 (repl
 8 2022-08-07 22:40:09.690744   198.51.100.100  192.0.2.100     ICMP      102     0x6e80 (28288)  64 Echo (ping) reply    id=0x003a, seq=36/9216, ttl=64 (requ
 9 2022-08-07 22:40:10.692266   192.0.2.100     198.51.100.100  ICMP      102     0x4fb1 (20401)  64 Echo (ping) request  id=0x003a, seq=37/9472, ttl=64 (repl
10 2022-08-07 22:40:10.692272   198.51.100.100  192.0.2.100     ICMP      102     0x6ed5 (28373)  64 Echo (ping) reply    id=0x003a, seq=37/9472, ttl=64 (requ
11 2022-08-07 22:40:11.691159   192.0.2.100     198.51.100.100  ICMP      102     0x5008 (20488)  64 Echo (ping) request  id=0x003a, seq=38/9728, ttl=64 (repl
12 2022-08-07 22:40:11.691166   198.51.100.100  192.0.2.100     ICMP      102     0x6f3b (28475)  64 Echo (ping) reply    id=0x003a, seq=38/9728, ttl=64 (requ
13 2022-08-07 22:40:12.692135   192.0.2.100     198.51.100.100  ICMP      102     0x50b8 (20664)  64 Echo (ping) request  id=0x003a, seq=39/9984, ttl=64 (repl
14 2022-08-07 22:40:12.697209   198.51.100.100  192.0.2.100     ICMP      102     0x6fd7 (28631)  64 Echo (ping) reply    id=0x003a, seq=39/9984, ttl=64 (requ
15 2022-08-07 22:40:13.697320   192.0.2.100     198.51.100.100  ICMP      102     0x5184 (20868)  64 Echo (ping) request  id=0x003a, seq=40/10240, ttl=64 (rep
16 2022-08-07 22:40:13.697327   198.51.100.100  192.0.2.100     ICMP      102     0x703e (28734)  64 Echo (ping) reply    id=0x003a, seq=40/10240, ttl=64 (rec
17 2022-08-07 22:40:14.698512   192.0.2.100     198.51.100.100  ICMP      102     0x51d8 (20952)  64 Echo (ping) request  id=0x003a, seq=41/10496, ttl=64 (rep
18 2022-08-07 22:40:14.698518   198.51.100.100  192.0.2.100     ICMP      102     0x70dd (28893)  64 Echo (ping) reply    id=0x003a, seq=41/10496, ttl=64 (rec

> Frame 1: 102 bytes on wire (816 bits), 102 bytes captured (816 bits)
> Ethernet II, Src: Cisco_34:9a:15 (bc:e7:12:34:9a:15), Dst: VMware_9d:e7:50 (00:50:56:9d:e7:50)
> Internet Protocol Version 4, Src: 192.0.2.100, Dst: 198.51.100.100
> Internet Control Message Protocol

0000  00 50 56 9d e7 50 bc e7  12 34 9a 15 08 00 45 00   ·PV··P·· ·4····E·
0010  00 54 4d 93 40 00 40 01  00 1a c0 00 02 64 c6 33   ·TM·@·@· ·····d·3
0020  64 64 08 00 7f 15 00 3a  00 21 39 3f f0 62 00 00   dd·····: ·!9?·b··
0030  00 00 8b 1a 05 00 00 00  00 00 10 11 12 13 14 15   ········ ········
0040  16 17 18 19 1a 1b 1c 1d  1e 1f 20 21 22 23 24 25   ········ ·· !"#$%
0050  26 27 28 29 2a 2b 2c 2d  2e 2f 30 31 32 33 34 35   &'()*+,- ./012345
0060  36 37 55 55 55 55                                 67UUUU
```

Explicación

Cuando se configura una captura de switch en la interfaz de enlace ascendente, solo se capturan los paquetes enviados desde la aplicación al switch interno. Los paquetes enviados a la aplicación no se capturan.

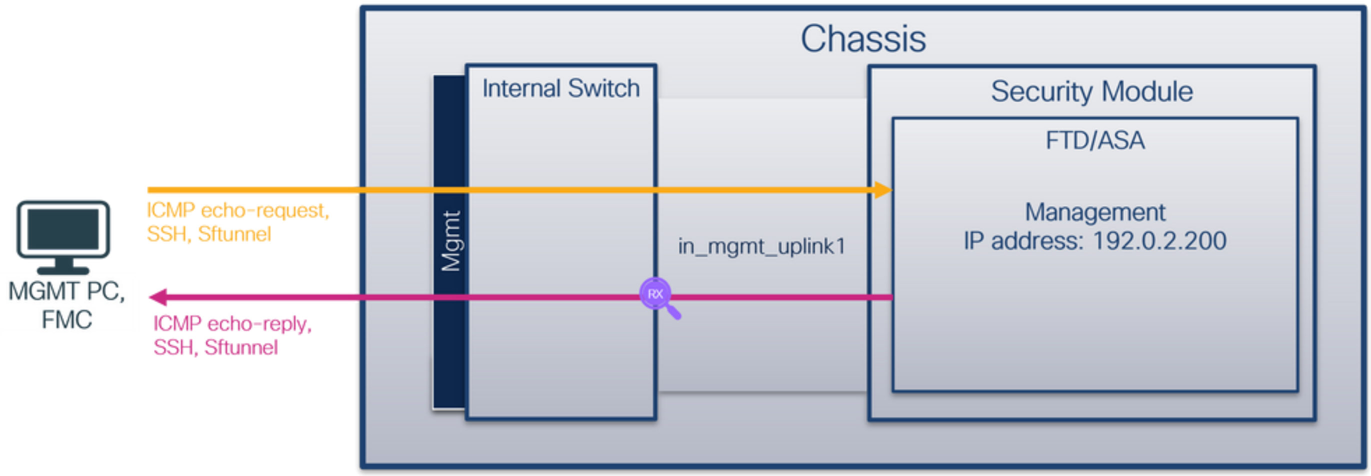
Esta tabla resume la tarea:

Tarea	Punto de captura	Filtro interno	Dirección:	Tráfico capturado
Configure y verifique una captura de paquetes en la interfaz de enlace ascendente in_data_uplink1	in_data_uplink1	Ninguno	Solo entrada	Solicitudes de eco ICMP del host 192.0.2.100 al host 198.51.100.1 Respuestas de eco ICMP del hos 198.51.100.100 al host 192.0.2.1

Tarea 2:

Utilice el FTD o la CLI de ASA para configurar y verificar una captura de paquetes en la interfaz de enlace ascendente **in_mgmt_uplink1.** Sólo se capturan los paquetes de las conexiones del plano de administración.

Topología, flujo de paquetes y puntos de captura



Configuración

Siga estos pasos en ASA o FTD CLI para configurar una captura de paquetes en la interfaz **in_mgmt_uplink1**:

1. Crear una sesión de captura:

```
> capture capsw switch interface in_mgmt_uplink1
```

2. Habilitar la sesión de captura:

```
> no capture capsw switch stop
```

Verificación

Verifique el nombre de la sesión de captura, el estado operativo y administrativo, la ranura de interfaz y el identificador. Asegúrese de que el valor de **Pcapsize** en bytes aumente y el número de paquetes capturados no sea cero:

```
> show capture capsw detail
Packet Capture info
 Name:              capsw
 Session:           1
 Admin State:       enabled
  Oper State:        up
  Oper State Reason: Active
 Config Success:    yes
 Config Fail Reason:
 Append Flag:       overwrite
 Session Mem Usage: 256
 Session Pcap Snap Len: 1518
 Error Code:        0
 Drop Count:        0

Total Physical ports involved in Packet Capture: 1

Physical port:
  Slot Id:           1
  Port Id:           19
 Pcapfile:          /mnt/disk0/packet-capture/sess-1-capsw-mgmt-uplink1.pcap
 Pcapsize:          137248
 Filter:            capsw-1-19

Packet Capture Filter Info
 Name:              capsw-1-19
 Protocol:          0
 Ivlan:             0
 Ovlan:             0
 Src Ip:            0.0.0.0
 Dest Ip:           0.0.0.0
 Src Ipv6:          ::
 Dest Ipv6:         ::
 Src MAC:           00:00:00:00:00:00
 Dest MAC:          00:00:00:00:00:00
 Src Port:          0
 Dest Port:         0
 Ethertype:         0

Total Physical breakout ports involved in Packet Capture: 0

281 packets captured on disk using switch capture

Reading of capture file from disk is not supported
```

En este caso, se crea una captura en la interfaz con un ID interno 19 que es la interfaz **in_mgmt_uplink1** en Secure Firewall 3130. El comando **show portmanager switch status** en el shell de comandos FXOS **local-mgmt** muestra los ID de la interfaz:

```
> connect fxos
…
KSEC-FPR3100-1 connect local-mgmt
KSEC-FPR3100-1(local-mgmt) show portmanager switch status
Dev/Port         Mode        Link   Speed  Duplex  Loopback Mode  Port Manager
---------  ----------------  -----  -----  ------  -------------  ------------
0/1             SGMII         Up     1G     Full    None           Link-Up
0/2             SGMII         Up     1G     Full    None           Link-Up
0/3             SGMII         Up     1G     Full    None           Link-Up
0/4             SGMII         Up     1G     Full    None           Link-Up
0/5             SGMII        Down    1G     Half    None           Mac-Link-Down
0/6             SGMII        Down    1G     Half    None           Mac-Link-Down
0/7             SGMII        Down    1G     Half    None           Mac-Link-Down
0/8             SGMII        Down    1G     Half    None           Mac-Link-Down
```

```
0/9           1000_BaseX     Down    1G     Full    None           Link-Down
0/10          1000_BaseX     Down    1G     Full    None           Link-Down
0/11          1000_BaseX     Down    1G     Full    None           Link-Down
0/12          1000_BaseX     Down    1G     Full    None           Link-Down
0/13          1000_BaseX     Down    1G     Full    None           Link-Down
0/14          1000_BaseX     Down    1G     Full    None           Link-Down
0/15          1000_BaseX     Down    1G     Full    None           Link-Down
0/16          1000_BaseX     Down    1G     Full    None           Link-Down
0/17          1000_BaseX      Up     1G     Full    None           Link-Up
0/18             KR2          Up     50G    Full    None           Link-Up
0/19              KR          Up     25G    Full    None           Link-Up
0/20              KR          Up     25G    Full    None           Link-Up
0/21             KR4         Down    40G    Full    None           Link-Down
0/22             n/a         Down    n/a    Full    N/A            Reset
0/23             n/a         Down    n/a    Full    N/A            Reset
0/24             n/a         Down    n/a    Full    N/A            Reset
0/25          1000_BaseX     Down    1G     Full    None           Link-Down
0/26             n/a         Down    n/a    Full    N/A            Reset
0/27             n/a         Down    n/a    Full    N/A            Reset
0/28             n/a         Down    n/a    Full    N/A            Reset
0/29          1000_BaseX     Down    1G     Full    None           Link-Down
0/30             n/a         Down    n/a    Full    N/A            Reset
0/31             n/a         Down    n/a    Full    N/A            Reset
0/32             n/a         Down    n/a    Full    N/A            Reset
0/33          1000_BaseX     Down    1G     Full    None           Link-Down
0/34             n/a         Down    n/a    Full    N/A            Reset
0/35             n/a         Down    n/a    Full    N/A            Reset
0/36             n/a         Down    n/a    Full    N/A            Reset
```

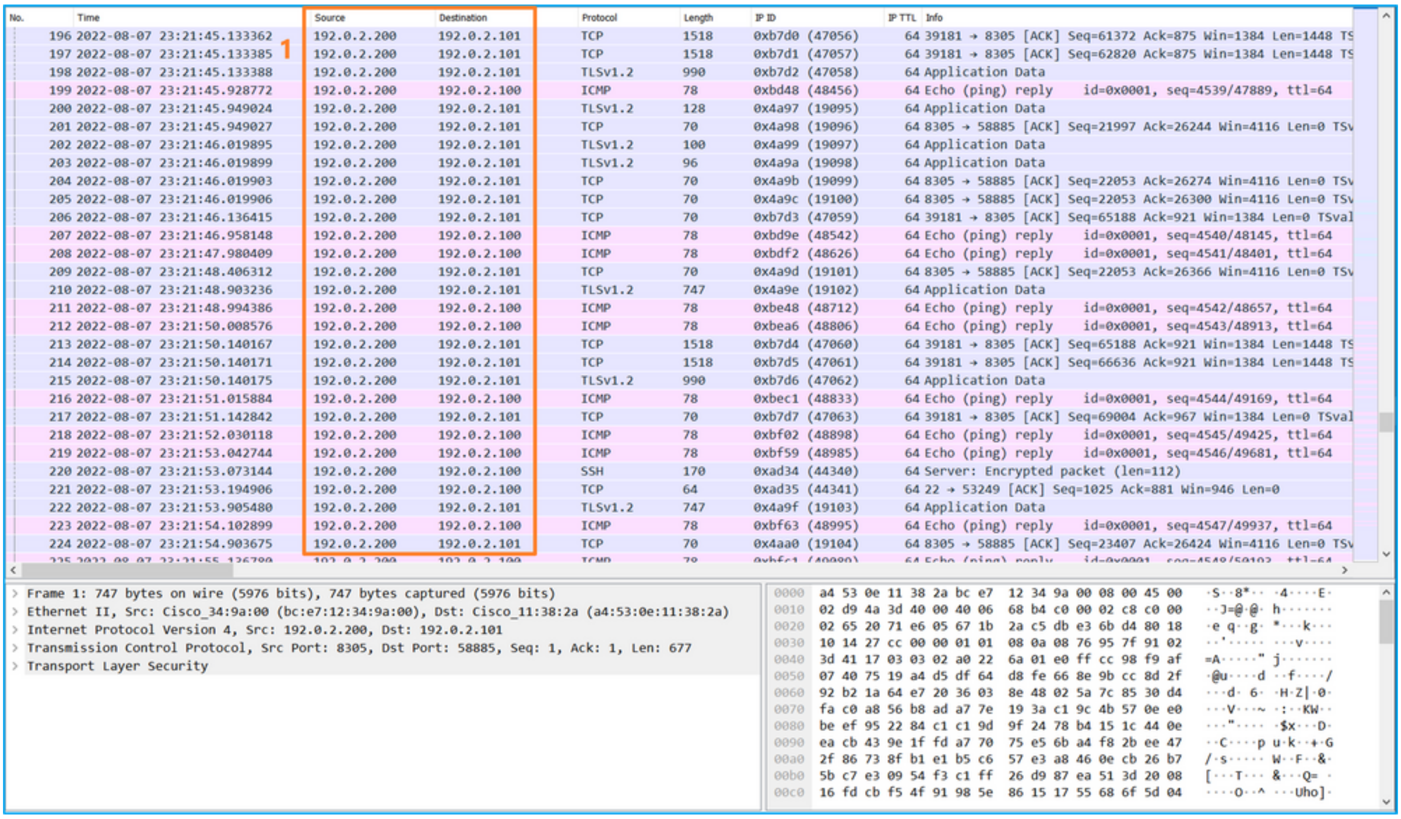
Para acceder al FXOS en ASA, ejecute el comando **connect fxos admin**. En el caso de multicontexto, ejecute este comando en el contexto de administración.

Recopilar archivos de captura

Siga los pasos de la sección **Recopilación de archivos de captura de switches internos de Secure Firewall 3100.**

Capturar análisis de archivos

Utilice una aplicación de lector de archivos de captura de paquetes para abrir los archivos de captura para la interfaz **in_mgmt_uplink1**. Verifique el punto clave; en este caso, sólo se muestran los paquetes de la dirección IP de administración 192.0.2.200. Algunos ejemplos son SSH, Sftunnel o paquetes de respuesta de eco ICMP. Estos son los paquetes enviados desde la interfaz de administración de aplicaciones a la red a través del switch interno.



```
No.   Time                        Source        Destination   Protocol  Length  IP ID            IP TTL Info
  196 2022-08-07 23:21:45.133362  192.0.2.200   192.0.2.101   TCP       1518    0xb7d0 (47056)   64 39181 → 8305 [ACK] Seq=61372 Ack=875 Win=1384 Len=1448 TS
  197 2022-08-07 23:21:45.133385  192.0.2.200   192.0.2.101   TCP       1518    0xb7d1 (47057)   64 39181 → 8305 [ACK] Seq=62820 Ack=875 Win=1384 Len=1448 TS
  198 2022-08-07 23:21:45.133388  192.0.2.200   192.0.2.101   TLSv1.2   990     0xb7d2 (47058)   64 Application Data
  199 2022-08-07 23:21:45.928772  192.0.2.200   192.0.2.100   ICMP      78      0xbd48 (48456)   64 Echo (ping) reply    id=0x0001, seq=4539/47889, ttl=64
  200 2022-08-07 23:21:45.949024  192.0.2.200   192.0.2.101   TLSv1.2   128     0x4a97 (19095)   64 Application Data
  201 2022-08-07 23:21:45.949027  192.0.2.200   192.0.2.101   TCP       70      0x4a98 (19096)   64 8305 → 58885 [ACK] Seq=21997 Ack=26244 Win=4116 Len=0 TSv
  202 2022-08-07 23:21:46.019895  192.0.2.200   192.0.2.101   TLSv1.2   100     0x4a99 (19097)   64 Application Data
  203 2022-08-07 23:21:46.019899  192.0.2.200   192.0.2.101   TLSv1.2   96      0x4a9a (19098)   64 Application Data
  204 2022-08-07 23:21:46.019903  192.0.2.200   192.0.2.101   TCP       70      0x4a9b (19099)   64 8305 → 58885 [ACK] Seq=22053 Ack=26274 Win=4116 Len=0 TSv
  205 2022-08-07 23:21:46.019906  192.0.2.200   192.0.2.101   TCP       70      0x4a9c (19100)   64 8305 → 58885 [ACK] Seq=22053 Ack=26300 Win=4116 Len=0 TSv
  206 2022-08-07 23:21:46.136415  192.0.2.200   192.0.2.101   TCP       70      0xb7d3 (47059)   64 39181 → 8305 [ACK] Seq=65188 Ack=921 Win=1384 Len=0 TSval
  207 2022-08-07 23:21:46.958148  192.0.2.200   192.0.2.100   ICMP      78      0xbd9e (48542)   64 Echo (ping) reply    id=0x0001, seq=4540/48145, ttl=64
  208 2022-08-07 23:21:47.980409  192.0.2.200   192.0.2.100   ICMP      78      0xbdf2 (48626)   64 Echo (ping) reply    id=0x0001, seq=4541/48401, ttl=64
  209 2022-08-07 23:21:48.406312  192.0.2.200   192.0.2.101   TCP       70      0x4a9d (19101)   64 8305 → 58885 [ACK] Seq=22053 Ack=26366 Win=4116 Len=0 TSv
  210 2022-08-07 23:21:48.903236  192.0.2.200   192.0.2.101   TLSv1.2   747     0x4a9e (19102)   64 Application Data
  211 2022-08-07 23:21:48.994386  192.0.2.200   192.0.2.100   ICMP      78      0xbe48 (48712)   64 Echo (ping) reply    id=0x0001, seq=4542/48657, ttl=64
  212 2022-08-07 23:21:50.008576  192.0.2.200   192.0.2.100   ICMP      78      0xbea6 (48806)   64 Echo (ping) reply    id=0x0001, seq=4543/48913, ttl=64
  213 2022-08-07 23:21:50.140167  192.0.2.200   192.0.2.101   TCP       1518    0xb7d4 (47060)   64 39181 → 8305 [ACK] Seq=65188 Ack=921 Win=1384 Len=1448 TS
  214 2022-08-07 23:21:50.140171  192.0.2.200   192.0.2.101   TCP       1518    0xb7d5 (47061)   64 39181 → 8305 [ACK] Seq=66636 Ack=921 Win=1384 Len=1448 TS
  215 2022-08-07 23:21:50.140175  192.0.2.200   192.0.2.101   TLSv1.2   990     0xb7d6 (47062)   64 Application Data
  216 2022-08-07 23:21:51.015884  192.0.2.200   192.0.2.100   ICMP      78      0xbec1 (48833)   64 Echo (ping) reply    id=0x0001, seq=4544/49169, ttl=64
  217 2022-08-07 23:21:51.142842  192.0.2.200   192.0.2.101   TCP       70      0xb7d7 (47063)   64 39181 → 8305 [ACK] Seq=69004 Ack=967 Win=1384 Len=0 TSval
  218 2022-08-07 23:21:52.030118  192.0.2.200   192.0.2.100   ICMP      78      0xbf02 (48898)   64 Echo (ping) reply    id=0x0001, seq=4545/49425, ttl=64
  219 2022-08-07 23:21:53.042744  192.0.2.200   192.0.2.100   ICMP      78      0xbf59 (48985)   64 Echo (ping) reply    id=0x0001, seq=4546/49681, ttl=64
  220 2022-08-07 23:21:53.073144  192.0.2.200   192.0.2.100   SSH       170     0xad34 (44340)   64 Server: Encrypted packet (len=112)
  221 2022-08-07 23:21:53.194906  192.0.2.200   192.0.2.100   TCP       64      0xad35 (44341)   64 22 → 53249 [ACK] Seq=1025 Ack=881 Win=946 Len=0
  222 2022-08-07 23:21:53.905480  192.0.2.200   192.0.2.101   TLSv1.2   747     0x4a9f (19103)   64 Application Data
  223 2022-08-07 23:21:54.102899  192.0.2.200   192.0.2.100   ICMP      78      0xbf63 (48995)   64 Echo (ping) reply    id=0x0001, seq=4547/49937, ttl=64
  224 2022-08-07 23:21:54.903675  192.0.2.200   192.0.2.101   TCP       70      0x4aa0 (19104)   64 8305 → 58885 [ACK] Seq=23407 Ack=26424 Win=4116 Len=0 TSv
  225 2022-08-07 23:21:55.126780  192.0.2.200   192.0.2.100   ICMP      78      0xbfc1 (49089)   64 Echo (ping) reply    id=0x0001, seq=4548/50193, ttl=64
```

```
> Frame 1: 747 bytes on wire (5976 bits), 747 bytes captured (5976 bits)
> Ethernet II, Src: Cisco_34:9a:00 (bc:e7:12:34:9a:00), Dst: Cisco_11:38:2a (a4:53:0e:11:38:2a)
> Internet Protocol Version 4, Src: 192.0.2.200, Dst: 192.0.2.101
> Transmission Control Protocol, Src Port: 8305, Dst Port: 58885, Seq: 1, Ack: 1, Len: 677
> Transport Layer Security
```

```
0000  a4 53 0e 11 38 2a bc e7  12 34 9a 00 08 00 45 00   ·S··8*·· ·4····E·
0010  02 d9 4a 3d 40 00 40 06  68 b4 c0 00 02 c8 c0 00   ··J=@·@· h·······
0020  02 65 20 71 e6 05 67 1b  2a c5 db e3 6b d4 80 18   ·e q··g· *···k···
0030  10 14 27 cc 00 00 01 01  08 0a 08 76 95 7f 91 02   ··'····· ···v····
0040  3d 41 17 03 03 02 a0 22  6a 01 e0 ff cc 98 f9 af   =A·····" j·······
0050  07 40 75 19 a4 d5 df 64  d8 fe 66 8e 9b cc 8d 2f   ·@u····d ··f····/
0060  92 b2 1a 64 e7 20 36 03  8e 48 02 5a 7c 85 30 d4   ···d· 6· ·H·Z|·0·
0070  fa c0 a8 56 b8 ad a7 7e  19 3a c1 9c 4b 57 0e e0   ···V···~ ·:··KW··
0080  be ef 95 22 84 c1 c1 9d  9f 24 78 b4 15 1c 44 0e   ···"···· ·$x···D·
0090  ea cb 43 9e 1f fd a7 70  75 e5 6b a4 f8 2b ee 47   ··C····p u·k··+·G
00a0  2f 86 73 8f b1 e1 b5 c6  57 e3 a8 46 0e cb 26 b7   /·s····· W··F··&·
00b0  5b c7 e3 09 54 f3 c1 ff  26 d9 87 ea 51 3d 20 08   [···T··· &···Q= ·
00c0  16 fd cb f5 4f 91 98 5e  86 15 17 55 68 6f 5d 04   ····O··^ ···Uho]·
```

Explicación

Cuando se configura una captura de switch en la interfaz de link ascendente de administración, solo se capturan los paquetes de ingreso enviados desde la interfaz de administración de aplicaciones. Los paquetes destinados a la interfaz de administración de aplicaciones no se capturan.

Esta tabla resume la tarea:

Tarea	Punto de captura	Filtro interno	Dirección:	Tráfico capturado
Configurar y verificar una captura de paquetes en la interfaz de link ascendente de administración	in_mgmt_uplink1	Ninguno	Solo entrada (desde la interfaz de gestión hasta la red a través del switch interno)	Respuestas de eco ICMP de la dirección administración de FTD 192.0.2.200 al ho 192.0.2.100 Sftunnel de la dirección IP de gestión de 192.0.2.200 a la dirección IP de FMC 192.0.2.101 SSH desde la dirección IP de administrac de FTD 192.0.2.200 al host 192.0.2.100

Filtros de captura de paquetes

Los filtros de captura de paquetes de switch internos se configuran de la misma manera que las capturas del plano de datos. Utilice las opciones **ethernet-type** y **match** para configurar los filtros.

Configuración

Siga estos pasos en ASA o FTD CLI para configurar una captura de paquetes con un filtro que coincida con las tramas ARP o los paquetes ICMP del host 198.51.100.100 en la interfaz Ethernet1/1:

1. Verifique el nombre si:

```
> show nameif
Interface                Name                     Security
Ethernet1/1              inside                     0
Ethernet1/2              outside                    0
Management1/1            diagnostic                 0
```

2. Cree una sesión de captura para ARP o ICMP:

```
> capture capsw switch interface inside ethernet-type arp

> capture capsw switch interface inside match icmp 198.51.100.100
```

Verificación

Verifique el nombre de la sesión de captura y el filtro. El valor Ethertype es **2054** en decimal y **0x0806** en hexadecimal:

```
> show capture capsw detail
Packet Capture info
 Name:               capsw
 Session:            1
 Admin State:        disabled
 Oper State:         down
 Oper State Reason: Session_Admin_Shut
 Config Success:     yes
 Config Fail Reason:
 Append Flag:        overwrite
 Session Mem Usage: 256
 Session Pcap Snap Len: 1518
 Error Code:         0
 Drop Count:         0

Total Physical ports involved in Packet Capture: 1

Physical port:
 Slot Id:            1
 Port Id:            1
 Pcapfile:           /mnt/disk0/packet-capture/sess-1-capsw-ethernet-1-1-0.pcap
 Pcapsize:           0
 Filter:             capsw-1-1

Packet Capture Filter Info
  Name:               capsw-1-1
 Protocol:           0
 Ivlan:              0
 Ovlan:              0
 Src Ip:             0.0.0.0
 Dest Ip:            0.0.0.0
 Src Ipv6:           ::
 Dest Ipv6:          ::
 Src MAC:            00:00:00:00:00:00
 Dest MAC:           00:00:00:00:00:00
 Src Port:           0
 Dest Port:          0
 Ethertype:          2054

Total Physical breakout ports involved in Packet Capture: 0
```

```
0 packet captured on disk using switch capture

Reading of capture file from disk is not supported
```

Esta es la verificación del filtro para ICMP. El protocolo IP 1 es el ICMP:

```
> show capture capsw detail
Packet Capture info
 Name:               capsw
 Session:            1
 Admin State:        disabled
 Oper State:         down
 Oper State Reason: Session_Admin_Shut
 Config Success:     yes
 Config Fail Reason:
 Append Flag:        overwrite
 Session Mem Usage: 256
 Session Pcap Snap Len: 1518
 Error Code:         0
 Drop Count:         0

Total Physical ports involved in Packet Capture: 1

Physical port:
 Slot Id:            1
 Port Id:            1
 Pcapfile:           /mnt/disk0/packet-capture/sess-1-capsw-ethernet-1-1-0.pcap
 Pcapsize:           0
 Filter:             capsw-1-1

Packet Capture Filter Info
  Name:               capsw-1-1
 Protocol:           1
 Ivlan:              0
 Ovlan:              0
 Src Ip:             198.51.100.100
 Dest Ip:            0.0.0.0
 Src Ipv6:           ::
 Dest Ipv6:          ::
 Src MAC:            00:00:00:00:00:00
 Dest MAC:           00:00:00:00:00:00
 Src Port:           0
 Dest Port:          0
 Ethertype:          0

Total Physical breakout ports involved in Packet Capture: 0

0 packets captured on disk using switch capture

Reading of capture file from disk is not supported
```

Recopilación de archivos de captura de switches internos de Secure Firewall 3100

Utilice ASA o FTD CLI para recopilar archivos de captura de switch internos. En FTD, el archivo de captura también se puede exportar mediante el comando CLI **copy** a destinos accesibles a través de las interfaces de datos o diagnóstico.

Como alternativa, el archivo se puede copiar a **/ngfw/var/common** en modo experto y descargarse de FMC mediante la opción **File Download**.

En el caso de las interfaces de canal de puerto, asegúrese de recopilar los archivos de captura de paquetes de todas las interfaces miembro.

ASA

Siga estos pasos en para recopilar archivos de captura de switch internos en ASA CLI:

1. Detener la captura:

```
asa# capture capsw switch stop
```

2. Compruebe que la sesión de captura se ha detenido y anote el nombre del archivo de captura.

```
asa# show capture capsw detail
Packet Capture info
 Name:              capsw
 Session:           1
 Admin State:       disabled
  Oper State:        down
  Oper State Reason: Session_Admin_Shut
 Config Success:    yes
 Config Fail Reason:
 Append Flag:       overwrite
 Session Mem Usage: 256
 Session Pcap Snap Len: 1518
 Error Code:        0
 Drop Count:        0

Total Physical ports involved in Packet Capture: 1

Physical port:
 Slot Id:           1
 Port Id:           1
  Pcapfile:          /mnt/disk0/packet-capture/sess-1-capsw-ethernet-1-1-0.pcap
 Pcapsize:          139826
 Filter:            capsw-1-1

Packet Capture Filter Info
 Name:              capsw-1-1
 Protocol:          0
 Ivlan:             0
 Ovlan:             0
 Src Ip:            0.0.0.0
 Dest Ip:           0.0.0.0
 Src Ipv6:          ::
 Dest Ipv6:         ::
 Src MAC:           00:00:00:00:00:00
 Dest MAC:          00:00:00:00:00:00
 Src Port:          0
 Dest Port:         0
 Ethertype:         0

Total Physical breakout ports involved in Packet Capture: 0

886 packets captured on disk using switch capture

Reading of capture file from disk is not supported
```

3. Utilice el comando CLI **copy** para exportar el archivo a destinos remotos:

```
asa# copy flash:/packet-capture/sess-1-capsw-ethernet-1-1-0.pcap ?
 cluster:        Copy to cluster: file system
 disk0:          Copy to disk0: file system
 disk1:          Copy to disk1: file system
 flash:          Copy to flash: file system
 ftp:            Copy to ftp: file system
 running-config  Update (merge with) current system configuration
 scp:            Copy to scp: file system
 smb:            Copy to smb: file system
 startup-config  Copy to startup configuration
 system:         Copy to system: file system
 tftp:           Copy to tftp: file system

asa# copy flash:/packet-capture/sess-1-capsw-ethernet-1-1-0.pcap tftp://198.51.100.10/
Source filename [/packet-capture/sess-1-capsw-ethernet-1-1-0.pcap]?
Destination filename [sess-1-capsw-ethernet-1-1-0.pcap]?
Copy in progress...C
139826 bytes copied in 0.532 secs
```

FTD

Siga estos pasos para recopilar los archivos de captura de switch internos en la CLI de FTD y copiarlos en servidores accesibles a través de interfaces de datos o diagnóstico:

1. Vaya a la CLI de diagnóstico:

```
> system support diagnostic-cli
Attaching to Diagnostic CLI ... Click 'Ctrl+a then d' to detach.
Type help or '?' for a list of available commands.

firepower> enable
Password: <-- Enter
firepower#
```

2. Detener la captura:

```
firepower# capture capi switch stop
```

3. Verifique que la sesión de captura se haya detenido y anote el nombre del archivo de captura:

```
firepower# show capture capsw detail
Packet Capture info
 Name:              capsw
 Session:           1
 Admin State:       disabled
  Oper State:        down
  Oper State Reason: Session_Admin_Shut
 Config Success:    yes
 Config Fail Reason:
 Append Flag:       overwrite
 Session Mem Usage: 256
 Session Pcap Snap Len: 1518
 Error Code:        0
 Drop Count:        0

Total Physical ports involved in Packet Capture: 1
Physical port:
 Slot Id:           1
 Port Id:           1
  Pcapfile:          /mnt/disk0/packet-capture/sess-1-capsw-ethernet-1-1-0.pcap
 Pcapsize:           139826
 Filter:             capsw-1-1

Packet Capture Filter Info
 Name:               capsw-1-1
 Protocol:           0
 Ivlan:              0
 Ovlan:              0
 Src Ip:             0.0.0.0
 Dest Ip:            0.0.0.0
 Src Ipv6:           ::
 Dest Ipv6:          ::
 Src MAC:            00:00:00:00:00:00
 Dest MAC:           00:00:00:00:00:00
 Src Port:           0
 Dest Port:          0
 Ethertype:          0

Total Physical breakout ports involved in Packet Capture: 0

886 packets captured on disk using switch capture

Reading of capture file from disk is not supported
```

4. Utilice el comando CLI **copy** para exportar el archivo a destinos remotos.

```
firepower# copy flash:/packet-capture/sess-1-capsw-ethernet-1-1-0.pcap ?
 cluster:        Copy to cluster: file system
 disk0:          Copy to disk0: file system
 disk1:          Copy to disk1: file system
 flash:          Copy to flash: file system
 ftp:            Copy to ftp: file system
 running-config  Update (merge with) current system configuration
 scp:            Copy to scp: file system
 smb:            Copy to smb: file system
 startup-config  Copy to startup configuration
 system:         Copy to system: file system
 tftp:           Copy to tftp: file system

firepower# copy flash:/packet-capture/sess-1-capsw-ethernet-1-1-0.pcap tftp://198.51.100.10/
Source filename [/packet-capture/sess-1-capsw-ethernet-1-1-0.pcap]?
Destination filename [sess-1-capsw-ethernet-1-1-0.pcap]?
Copy in progress...C
139826 bytes copied in 0.532 secs
```

Siga estos pasos en para recopilar archivos de captura de FMC mediante la opción **File Download**:

1. Detener la captura:

```
> capture capsw switch stop
```

2. Verifique que la sesión de captura esté detenida y observe el nombre del archivo y la ruta completa del archivo de captura:

```
> show capture capsw detail
Packet Capture info
 Name:               capsw
 Session:            1
 Admin State:        disabled
  Oper State:         down
 Oper State Reason: Session_Admin_Shut
 Config Success:    yes
 Config Fail Reason:
 Append Flag:       overwrite
 Session Mem Usage: 256
 Session Pcap Snap Len: 1518
 Error Code:        0
 Drop Count:        0

Total Physical ports involved in Packet Capture: 1

Physical port:
 Slot Id:           1
 Port Id:           1
 Pcapfile:          /mnt/disk0/packet-capture/sess-1-capsw-ethernet-1-1-0.pcap
 Pcapsize:          139826
Filter:            capsw-1-1

Packet Capture Filter Info
 Name:              capsw-1-1
 Protocol:          0
 Ivlan:             0
 Ovlan:             0
 Src Ip:            0.0.0.0
 Dest Ip:           0.0.0.0
 Src Ipv6:          ::
 Dest Ipv6:         ::
 Src MAC:           00:00:00:00:00:00
 Dest MAC:          00:00:00:00:00:00
 Src Port:          0
 Dest Port:         0
 Ethertype:         0

Total Physical breakout ports involved in Packet Capture: 0
886 packets captured on disk using switch capture
Reading of capture file from disk is not supported
```

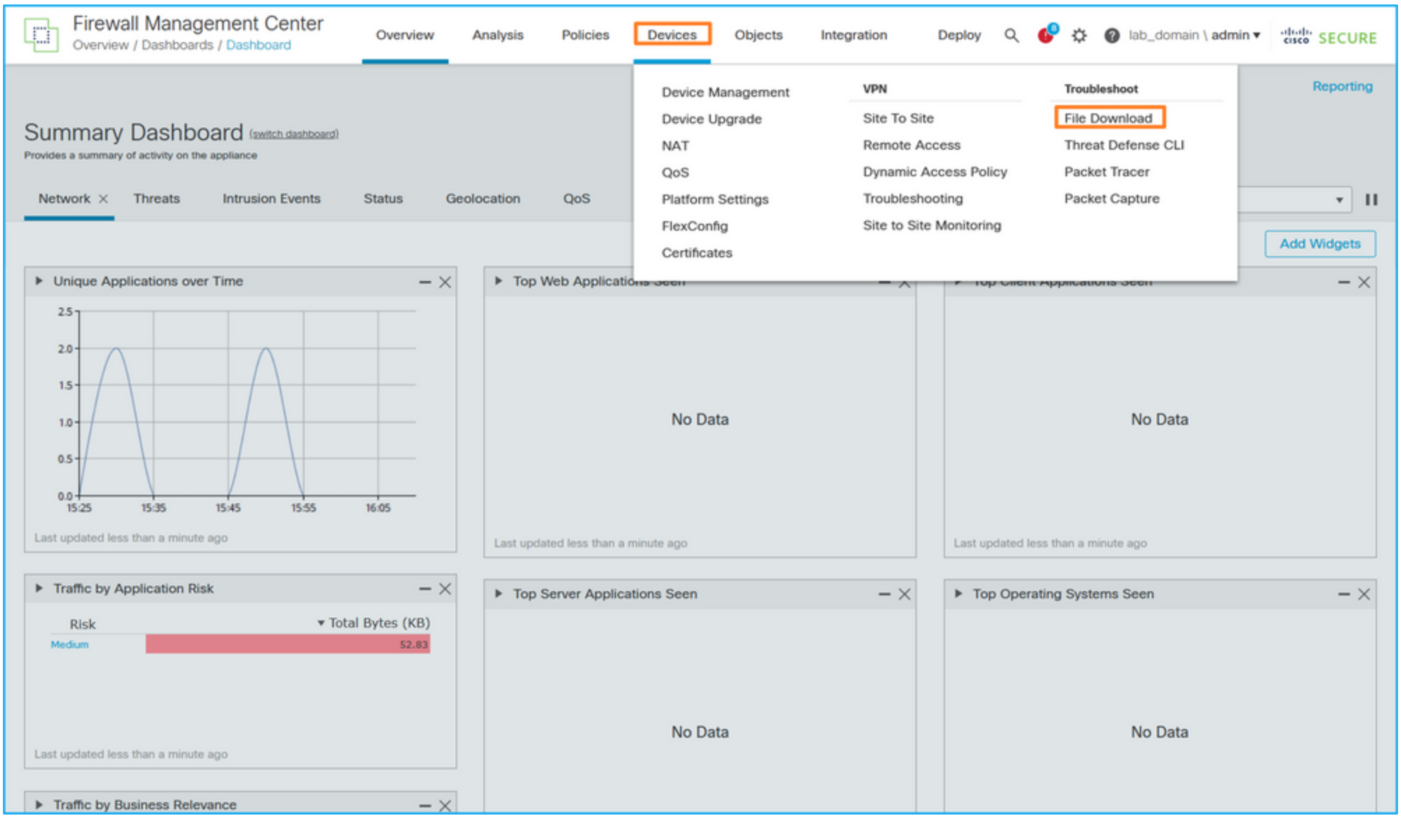
3. Vaya al modo experto y cambie al modo raíz:

```
> expert
admin@firepower:~$ sudo su
root@firepower:/home/admin
```

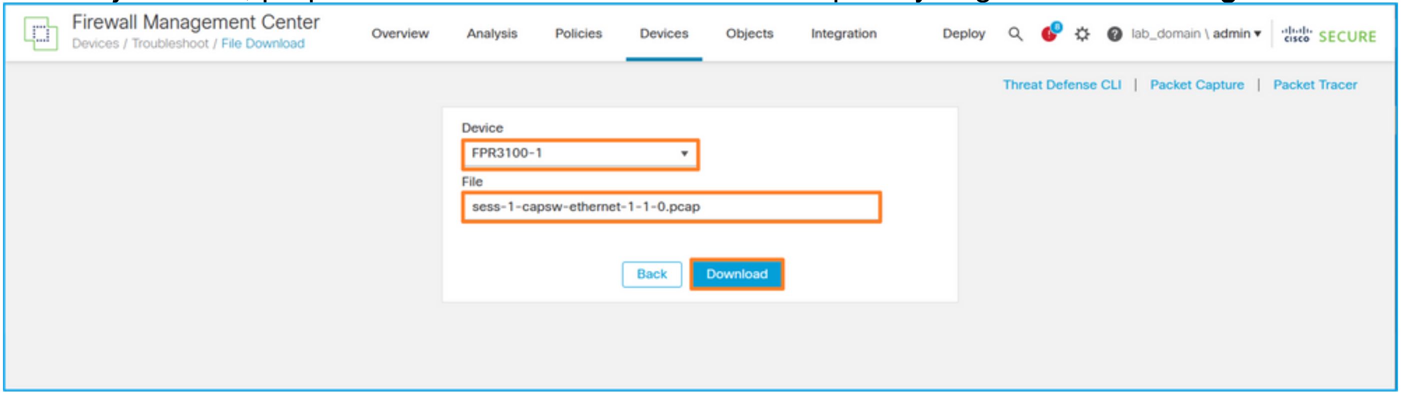
4. Copie el archivo de captura en **/ngfw/var/common/:**

```
root@KSEC-FPR3100-1:/home/admin cp /mnt/disk0/packet-capture/sess-1-capsw-ethernet-1-1-0.pcap
/ngfw/var/common/
root@KSEC-FPR3100-1:/home/admin ls -l /ngfw/var/common/sess*
-rwxr-xr-x 1 root admin 139826 Aug  7 20:14 /ngfw/var/common/sess-1-capsw-ethernet-1-1-0.pcap
-rwxr-xr-x 1 root admin     24 Aug  6 21:58 /ngfw/var/common/sess-1-capsw-ethernet-1-3-0.pcap
```

5. En FMC elija **Devices > File Download**:



6. Elija el FTD, proporcione el nombre del archivo de captura y haga clic en **Descargar**:



Firewall Management Center
Devices / Troubleshoot / File Download
Overview
Analysis
Policies
Devices
Objects
Integration
Deploy
lab_domain \ admin
SECURE
Threat Defense CLI | Packet Capture | Packet Tracer
Back
Download

Device: FPR3100-1

File: sess-1-capsw-ethernet-1-1-0.pcap

Directrices, limitaciones y prácticas recomendadas para la captura de paquetes de switches internos

Directrices y limitaciones:

- Se admiten varias sesiones de configuración de captura de switch, pero solo una sesión de captura de switch puede estar activa a la vez. Un intento de habilitar 2 o más sesiones de captura produce un error "**ERROR: Error al habilitar la sesión, ya que se alcanzó el límite máximo de 1 sesiones de captura de paquetes activas**".
- No se puede eliminar una captura de switch activa.
- Las capturas del switch no se pueden leer en la aplicación. El usuario debe exportar los archivos.
- Ciertas opciones de captura del plano de datos como **dump, decode, packet-number, trace** y otras no se soportan para las capturas del switch.
- En el caso de ASA multicontexto, las capturas del switch en las interfaces de datos se configuran en contextos de usuario. Las capturas del switch en las interfaces in_data_uplink1 e in_mgmt_uplink1 se soportan solamente en el contexto de administración.

Esta es la lista de prácticas recomendadas basadas en el uso de la captura de paquetes en casos de TAC:

- Tenga en cuenta las directrices y limitaciones.
- Utilice filtros de captura.
- Considere el impacto de NAT en las direcciones IP de paquetes cuando se configura un filtro de captura.
- Aumente o disminuya la **longitud del paquete** que especifica el tamaño de trama, en caso de que difiera del valor predeterminado de 1518 bytes. Un tamaño menor da como resultado un mayor número de paquetes capturados y viceversa.
- Ajuste el tamaño del **búfer** según sea necesario.
- Tenga en cuenta el comando **Drop Count** en el resultado del comando **show cap <cap_name>detail**. Una vez alcanzado el límite de tamaño del búfer, el contador de conteo de caídas aumenta.

Información Relacionada

- Guías de configuración de Firepower 4100/9300 Chassis Manager y FXOS CLI
- Guía de inicio de Cisco Secure Firewall 3100
- Referencia de Comandos de Cisco Firepower FXOS 4100/9300

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