보안 방화벽 및 Firepower 내부 스위치 캡처 구성 및 확인

목차

<u>소</u>개 사전 요구 사항 요구 사항 사용되는 구성 요소 배경 정보 시스템 아키텍처의 개괄적 개요 내부 스위치 운영에 대한 개괄적 개요 패킷 흐름 및 캡처 포인트 Firepower 4100/9300의 컨피그레이션 및 확인 물리적 또는 포트 채널 인터<u>페이스의 패킷 캡처</u> 백플레인 인터페이스의 패킷 캡처 애플리케이션 및 애플리케이션 포트의 패킷 캡처 물리적 또는 포트 채널 인터페이스의 하위 인터페이스에서 패킷 캡처 패킷 캡처 필터 Firepower 4100/9300 내부 스위치 캡처 파일 수집 내부 스위치 패킷 캡처에 대한 지침, 제한 및 모범 사례 Secure Firewall 3100의 컨피그레이션 및 확인 물리적 또는 포트 채널 인터페이스의 패킷 캡처 물리적 또는 포트 채널 인터페이스의 하위 인터페이스에서 패킷 캡처 내부 인터페이스의 패킷 캡처 패킷 캡처 필터 Secure Firewall 3100 내부 스위치 캡처 파일 수집 내부 스위치 패킷 캡처에 대한 지침, 제한 및 모범 사례 관련 정보

소개

이 문서에서는 Firepower 및 Secure Firewall 내부 스위치의 컨피그레이션 및 검증에 대해 설명합니 다.

사전 요구 사항

요구 사항

기본 제품 지식, 캡처 분석

사용되는 구성 요소

이 문서의 정보는 특정 랩 환경의 디바이스를 토대로 작성되었습니다. 이 문서에 사용된 모든 디바 이스는 초기화된(기본) 컨피그레이션으로 시작되었습니다. 현재 네트워크가 작동 중인 경우 모든 명령의 잠재적인 영향을 미리 숙지하시기 바랍니다.

이 문서의 정보는 다음 소프트웨어 및 하드웨어 버전을 기반으로 합니다.

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

배경 정보

시스템 아키텍처의 개괄적 개요

패킷 흐름의 관점에서 Firepower 4100/9300 및 Secure Firewall 3100의 아키텍처는 다음 그림과 같 이 시각화할 수 있습니다.



섀시에는 다음 구성 요소가 포함됩니다.

- 내부 스위치 네트워크에서 애플리케이션으로 패킷을 전달하며, 그 반대의 경우도 마찬가지입 니다. 내부 스위치는 내장된 인터페이스 모듈 또는 외부 네트워크 모듈에 있는 전면 인터페이스 에 연결되어 외부 장치(예: 스위치)에 연결됩니다. 전면 인터페이스의 예로는 Ethernet 1/1, Ethernet 2/4 등이 있습니다. "전면"은 강력한 기술적 정의가 아닙니다. 이 문서에서는 외부 디 바이스에 연결된 인터페이스를 백플레인 또는 업링크 인터페이스와 구분하는 데 사용됩니다.
- 백플레인 또는 업링크 보안 모듈(SM)을 내부 스위치에 연결하는 내부 인터페이스입니다. 다

음 표는 Firepower 4100/9300의 백플레인 인터페이스와 Secure Firewall 3100의 업링크 인터 페이스를 보여줍니다.

플랫폼	지원되는 보안 모듈 수	백플레인/업링크 인 디페이스	매핑된 애플리케이 티페이스
Firepower 4100(Firepower 4110/4112 제외)	1	SM1: 이더넷1/9 이더넷1/10	내부 데이터0/0 내부 데이터0/1
Firepower 4110/4112	1	이더넷1/9	내부 데이터0/0
Firepower 9300	3	SM1: 이더넷1/9 이더넷1/10 SM2: 이더넷1/11 이더넷1/12 SM3: 이더넷1/13 이더넷1/14	내부 데이터0/0 내부 데이터0/1 내부 데이터0/1 내부 데이터0/1 내부 데이터0/0 내부 데이터0/1
보안 방화벽 3100	1	SM1: in_data_uplink1	내부 데이터0/1

모듈당 2개의 백플레인 인터페이스의 경우, 내부 스위치와 모듈의 애플리케이션이 2개의 인터페이 스를 통해 트래픽 로드 밸런싱을 수행합니다.

- 보안 모듈, 보안 엔진 또는 블레이드 FTD 또는 ASA와 같은 애플리케이션이 설치되는 모듈입니다. Firepower 9300은 최대 3개의 보안 모듈을 지원합니다.
- **매핑된 애플리케이션 인터페이스** FTD 또는 ASA와 같은 애플리케이션은 백플레인 또는 업링 크 인터페이스를 내부 인터페이스에 매핑합니다. 즉, 백플레인 또는 업링크 인터페이스는 애플 리케이션에서 내부 인터페이스로 표시됩니다.

내부 인터페이스를 확인하려면 show interface detail 명령을 사용합니다.

```
> 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 number is 8 Interface config status is active Interface state is active

내부 스위치 운영에 대한 개괄적 개요

Firepower 4100/9300

전달 결정을 내리기 위해 내부 스위치는 인터페이스 VLAN 태그, 즉 포트 VLAN 태그와 가상 네트워 크 태그(VN-tag)를 사용합니다.

포트 VLAN 태그는 내부 스위치에서 인터페이스를 식별하는 데 사용됩니다. 스위치는 전면 인터페 이스에 제공된 각 인그레스 패킷에 포트 VLAN 태그를 삽입합니다. VLAN 태그는 시스템에서 자동 으로 구성되며 수동으로 변경할 수 없습니다. 태그 값은 fxos 명령 셸에서 **확인할** 수 있습니다.

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

VN-tag도 내부 스위치에 의해 삽입되어 패킷을 애플리케이션에 전달하는 데 사용된다. 자동으로 구 성되며 수동으로 변경할 수 없습니다.

포트 VLAN 태그 및 VN 태그는 애플리케이션과 공유됩니다. 애플리케이션은 각 패킷에 각 이그레 스 인터페이스 VLAN 태그와 VN 태그를 삽입합니다. 애플리케이션의 패킷이 백플레인 인터페이스 의 내부 스위치에 수신되면 스위치는 이그레스 인터페이스 VLAN 태그와 VN-태그를 읽고 애플리케 이션과 이그레스 인터페이스를 식별하고 포트 VLAN 태그와 VN-태그를 스트립한 다음 패킷을 네트 워크에 전달합니다.

보안 방화벽 3100

Firepower 4100/9300에서와 마찬가지로, 내부 스위치에서 인터페이스를 식별하는 데 포트 VLAN

태그를 사용합니다.

포트 VLAN 태그는 애플리케이션과 공유됩니다. 애플리케이션은 각 패킷에 각 이그레스 인터페이 스 VLAN 태그를 삽입합니다. 애플리케이션의 패킷이 업링크 인터페이스의 내부 스위치에 수신되 면 스위치는 이그레스 인터페이스 VLAN 태그를 읽고 이그레스 인터페이스를 식별하고 포트 VLAN 태그를 스트립한 다음 패킷을 네트워크로 전달합니다.

패킷 흐름 및 캡처 포인트

Firepower 4100/9300 및 Secure Firewall 3100 방화벽은 내부 스위치의 인터페이스에서 패킷 캡처 를 지원합니다.

이 그림에서는 섀시 및 애플리케이션 내의 패킷 경로를 따라 패킷 캡처 지점을 보여줍니다.



캡처 포인트는 다음과 같습니다.

- 1. 내부 스위치 전면 인터페이스 인그레스 캡처 포인트 전면 인터페이스는 스위치와 같은 피어 디바이스에 연결된 인터페이스입니다.
- 2. 데이터 플레인 인터페이스 인그레스 캡처 지점
- 3. Snort 캡처 포인트
- 4. 데이터 플레인 인터페이스 이그레스 캡처 지점
- 5. 내부 스위치 백플레인 또는 업링크 인그레스 캡처 포인트 백플레인 또는 업링크 인터페이스가 내부 스위치를 애플리케이션에 연결합니다.

내부 스위치는 인그레스 인터페이스 캡처만 지원합니다. 즉, 네트워크 또는 ASA/FTD 애플리케이션 에서 수신된 패킷만 캡처할 수 있습니다. **이그레스 패킷 캡처는 지원되지 않습니다.**

구성 및 확인 Firepower 4100/9300

Firepower 4100/9300 내부 스위치 캡처는 FCM의 **Tools > Packet Capture 또**는 FXOS CLI의 **scope packet-capture**에서 구성할 수 있습니다. 패킷 캡처 옵션에 대한 설명은 *Cisco Firepower 4100/9300 FXOS Chassis Manager 컨피그레이션 가이드 또*는 *Cisco Firepower 4100/9300 FXOS CLI 컨피그레이션 가이드*, **문제 해결, 패킷 캡처 섹션**을 참조하십시오. 이러한 시나리오에서는 Firepower 4100/9300 내부 스위치 캡처의 일반적인 활용 사례를 다룹니다.

물리적 또는 포트 채널 인터페이스의 패킷 캡처

FCM 및 CLI를 사용하여 인터페이스 Ethernet1/2 또는 Portchannel1 인터페이스에서 패킷 캡처를 구성하고 확인합니다. 포트 채널 인터페이스의 경우 모든 물리적 멤버 인터페이스를 선택해야 합니 다.

토폴로지, 패킷 흐름 및 캡처 포인트



설정

FCM

FCM에서 다음 단계를 수행하여 인터페이스 Ethernet1/2 또는 Portchannel1에서 패킷 캡처를 구성 합니다.

1. Tools(**툴) > Packet Capture(패킷 캡처) > Capture Session(캡처 세션)**을 사용하여 새 캡처 세 션을 생성합니다.

Overview	Interfaces	Logical Devices	Security Engine	Platform Settings		System	Tools	Help	admin
						Packet Capture	Trouble	shootii	ng Logs
Capture Ses	sion Filter Lis	t							
					C Refresh	Capture Session Dele	te All Sessio	ns	
No Session av	vailable								

2. 인터페이스 Ethernet1/2를 선택하고 세션 이름을 제공한 다음 Save and Run(저장 및 실행)을 클릭하여 캡처를 활성화합니다.

Overview Interfaces Logical Devices Security Engine Platform Settings System Tools Help admin										
Select an instance: ftd1 🗸	C	Save and Run Save Cancel								
ftd1	Session Name" cap1 Selected Interfaces Ethernet1/2									
Oheneti/2	Buffer Size 256 MB									
Ethernet1/3	Store Packets Overwrite Append									
Ethernet1/1 Ethernet1/10	Capture Filter Apply Filter Capture All									
Ethernet1/5 (Portchannel2)										
Ethernet1/4 (Portchannel3)										

포트 채널 인터페이스의 경우 모든 물리적 멤버 인터페이스를 선택하고 세션 이름을 제공한 다음 Save and Run을 클릭하여 캡처를 활성화합니다.

Overview Interfaces Logical Devices Security Engine Platform Settings		System Tools Help admin
Select an instance: ftd1 v		Save and Run Save Cancel
Ptd1	Session Name* Cap1 Selected Interfaces Ethernet1/5, Ethernet1/4	
Ethernet1/2	Buffer Size 256 MB Sean learth: 1559 Bytes	•
Ebenet1/3	Store Packets Overwrite Append	
Ethernet1/1 Ethernet1/10	Capture Filter Apply Filter Capture All	
Ethemet1/5 (Portchannel1)		
Ethernet1/4 (Portchannel1)		

FXOS CLI

FXOS CLI에서 다음 단계에 따라 인터페이스 Ethernet1/2 또는 Portchannel1에서 패킷 캡처를 구성 합니다.

1. 애플리케이션 유형 및 식별자를 식별합니다.

firepower# firepower	scope /ssa #	ssa show app-ing	stance			
App Name	Identi	fier Slot II) Admin Stat	e Oper State	Running Version	Startup Version
Deploy Typ	e Turbo	Mode Profil	le Name Cluster	State Clus	ster Role	
ftd	 ftd1	1	Enabled	Online	7.2.0.82	7.2.0.82
Native	No		Not App	olicable None	2	
2. 포트	채널인	<u> </u> 터페이스의	경우 멤버 인테	터페이스를 식	별합니다.	

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 _____ Pol(SU) Eth LACP Eth1/4(P) Eth1/5(P) 1 3. 캡처 세션을 생성합니다. 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 # 포트 채널 인터페이스의 경우 각 멤버 인터페이스에 대해 별도의 캡처가 구성됩니다. 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 #

확인

FCM

인터페이스 **이름**을 확인하고 작동 **상태**가 작동 중인지, **파일 크기(바이트)가** 증가하는지 확인합니 다.

Overview	Interfaces	Logical Devices	Security Engine	Platform Settings				System	Tools	Help	admin
Capture Ses	sion Filter Li	it									
							C Refresh Capture Sessi	Delete Al	Sessions		
							(
	cap1	Drop Coun	t: 0	Operational State: up	Buffer Size: 256 MB		Snap Length: 1518 Byte	5			8
Interface Na	ime	Filter		File Size (in bytes	File Name	Device Name					
Ethernet1/2		None		28632	cap1-ethernet-1-2-0.pcap	ftd1	*				
Interface Na Ethernet1/2	cap1	Drop Coun Filter None	t: 0	Operational State: up File Size (in bytes 28632	Buffer Size: 256 MB File Name cap1-ethernet-1-2-0.pcap	Device Name ftd1	Snap Length: 1518 Byte	5			8) 🔟

멤버 인터페이스가 Ethernet1/4 및 Ethernet1/5인 Portchannel1:

Overview Interfaces Lo	ogical Devices Security Engine Platform	n Settings					System Tool	ls Help	admin
Capture Session Filter List									
						Capture Session	Delete All Sess	ions	
🔺 🦲 cap1	Drop Count: 0	Operation	nal State: up	Buffer Size: 256 MB		Snap Length: 1518 Bytes			8
Interface Name	Filter		File Size (in bytes)	File Name	Device Name				
Ethernet1/S	None		160	cap1-ethernet-1-5-0.pcap	ftd1	2			
Ethernet1/4	None	L	85000	cap1-ethernet-1-4-0.pcap	ftd1	*			

FXOS CLI

scope packet-capture에서 캡처 세부 정보를 확인합니다.

```
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
멤버 인터페이스가 Ethernet1/4 및 Ethernet1/5인 포트 채널 1:
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
캔치 파일 수진
```

Firepower 4100/9300 내부 스위치 캡처 파일 수집 섹션의 단계를 수행합니다.

캡처 파일 분석

패킷 캡처 파일 판독기 응용 프로그램을 사용하여 Ethernet1/2용 캡처 파일을 엽니다. 첫 번째 패킷 을 선택하고 핵심 사항을 확인합니다.

- 1. ICMP 에코 요청 패킷만 캡처됩니다. 각 패킷은 캡처되어 2번 표시됩니다.
- 2. 원래 패킷 헤더에 VLAN 태그가 없습니다.
- 내부 스위치는 인그레스 인터페이스 Ethernet1/2를 식별하는 추가 포트 VLAN 태그(102)를 삽 입합니다.
- 4. 내부 스위치는 추가 VN 태그를 삽입합니다.

No. Time	Source	Destination	Protocol	Length	IP ID	JP 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) reque	=0x001a, seq=7/1792, ttl=64 (no respo	ise found!)
2 2022-07-13 06:23:58.285082858	192.0.2.100	198.51.100.100	ICMP	102	0x9dec (40428)	64 Echo (ping) reque	=0x001a, seq=7/1792, ttl=64 (no respo	ise found!)
3 2022-07-13 06:23:59.309048886	192.0.2.100	198.51.100.100	ICMP	108	0x9ed0 (40656)	64 Echo (ping) reque	=0x001a, seq=8/2048, ttl=64 (no respo	ise found!)
4 2022-07-13 06:23:59.309193731	192.0.2.100	198.51.100.100	ICMP	102	0x9ed0 (40656)	64 Echo (ping) reque	=0x001a, seq=8/2048, ttl=64 (no respon	ise found!)
5 2022-07-13 06:24:00.333054196	192.0.2.100	198.51.100.100	ICMP	108	0x9f20 (40736)	64 Echo (ping) reque	=0x001a, seq=9/2304, ttl=64 (no respon	ise found!)
6 2022-07-13 06:24:00.333056014	192.0.2.100	198.51.100.100	ICMP	102	0x9f20 (40736)	64 Echo (ping) reque	=0x001a, seq=9/2304, ttl=64 (no response	ise found!)
7 2022-07-13 06:24:01.357173530	192.0.2.100	198.51.100.100	ICMP	108	0x9f2d (40749)	64 Echo (ping) reque	=0x001a, seq=10/2560, ttl=64 (no resp	onse found!)
8 2022-07-13 06:24:01.357174708	192.0.2.100	198.51.100.100	ICMP	102	0x9f2d (40749)	64 Echo (ping) reque	=0x001a, seq=10/2560, ttl=64 (no resp	onse found1)
9 2022-07-13 06:24:02.381073741	192.0.2.100	198.51.100.100	ICMP	108	0x9f88 (40840)	64 Echo (ping) reque	=0x001a, seq=11/2816, ttl=64 (no resp	onse found!)
10 2022-07-13 06:24:02.381074999	192.0.2.100	198.51.100.100	ICMP	102	0x9f88 (40840)	64 Echo (ping) reque	=0x001a, seq=11/2816, ttl=64 (no resp	onse found!)
11 2022-07-13 06:24:03.405199041	192.0.2.100	198.51.100.100	ICMP	108	0xa077 (41079)	64 Echo (ping) reque	=0x001a, seq=12/3072, ttl=64 (no resp	onse found!)
12 2022-07-13 06:24:03.405200261	192.0.2.100	198.51.100.100	ICMP	102	0xa077 (41079)	64 Echo (ping) reque	=0x001a, seq=12/3072, ttl=64 (no resp	onse found!)
13 2022-07-13 06:24:04.429155683	192.0.2.100	198.51.100.100	ICMP	108	0xa10f (41231)	64 Echo (ping) reque	=0x001a, seg=13/3328, ttl=64 (no resp	onse found!)
14 2022-07-13 06:24:04.429156831	192.0.2.100	198.51.100.100	ICMP	102	0xa10f (41231)	64 Echo (ping) reque	=0x001a, seg=13/3328, ttl=64 (no resp	onse found!)
15 2022-07-13 06:24:05.453156612	192.0.2.100	198.51.100.100	ICMP	108	0xa16a (41322)	64 Echo (ping) reque	=0x001a, seg=14/3584, ttl=64 (no resp	onse found()
16 2022-07-13 06:24:05.453158052	192.0.2.100	198,51,100,100	ICMP	102	0xa16a (41322)	64 Echo (ping) reque	=0x001a, seg=14/3584, ttl=64 (no resp	onse found()
17 2022-07-13 06:24:06.477127687	192.0.2.100	198,51,100,100	ICMP	108	0xa1e9 (41449)	64 Echo (ping) reque	=0x001a, seg=15/3840, ttl=64 (no resp	onse found])
18 2022-07-13 06:24:06.477129899	192.0.2.100	198,51,100,100	ICMP	102	0xa1e9 (41449)	64 Echo (ping) reque	=0x001a, seg=15/3840, ttl=64 (no resp	anse found!)
19 2022-07-13 06:24:07.501291314	192.0.2.100	198,51,100,100	ICMP	108	9xa1f6 (41462)	64 Echo (ping) reque	=0x001a, seg=16/4096, ttl=64 (no resp	anse found()
28 2822-87-13 86:24:87.581293841	192.0.2.100	198,51,100,100	TCMP	102	8xa1f6 (41462)	64 Echo (ning) reque	=8x881a, seg=16/4896, ttl=64 (no resp	onse foundl)
21 2022-07-13 06:24:08.525089956	192.0.2.100	198,51,100,100	ICMP	108	0xa257 (41559)	64 Echo (ping) reque	=0x001a, seg=17/4352, ttl=64 (no resp	onse foundl)
22 2022-07-13 06:24:08.525092085	192.0.2.100	198.51.100.100	TCMP	102	0xa257 (41559)	64 Echo (ning) reque	=0x001a, seg=17/4352, ttl=64 (no resp	anse found)
23 2022-07-13 06:24:00 540236500	192.0.2.100	198 51 100 100	TCMP	108	0ya2a0 (41641)	64 Echo (ping) reque	=0x001a seg=18/4608 ttl=64 (no resp	onse foundl)
24 2022-07-13 06:24:09 549230564	102 0 2 100	108 51 100 100	ICMP	102	0x3230 (41641)	64 Echo (ping) reque	-0x0010, seq-10/4000, ttl-64 (no resp	anse found()
25 2022-07-13 06:24:09:349238304	102.0.2.100	100 51 100 100	TCMD	102	0x0205 (41041)	64 Echo (ping) reque	-0x001a, seq=10/4000, ttl=04 (no resp	anse foundl)
25 2022-07-13 00.24.10.573110140	102.0.2.100	100 51 100 100	TCHP	100	0x0345 (41797)	64 Echo (ping) reque	-0x001a, seq=19/4864, ttl=64 (no resp	anse foundl)
20 2022-07-13 00.24.10.573112304	102.0.2.100	198.51.100.100	ICMP	102	0x0343 (41/97)	64 Echo (ping) reque	-0x001a, seq=19/4804, ttl=04 (no resp	anse found()
27 2022-07-13 00.24.11.397000027	192.0.2.100	100 51 100 100	TCHP	100	0x0349 (41001)	64 Echo (ping) reque	-0x001a, seq=20/5120, ttl=64 (no resp	anse foundl)
28 2022-07-13 00:24:11.597088170	192.0.2.100	198.51.100.100	TCHP	102	0x3549 (41001)	64 Echo (ping) reque	-0x001a, seq=20/5120, ttl=04 (no resp	inse foundl)
29 2022-07-13 00:24:12.021001022	192.0.2.100	198.51.100.100	TCHP	108	0xa30c (41948)	64 Ecno (ping) reque	=0x001a, seq=21/53/6, tt1=04 (no resp	inse round()
<								
> Frame 1: 108 bytes on wire (864 b	its), 108 bytes	captured (864 bits)	on interface	capture_u	0_1, id 0		58 97 bd b9 77 0e 00 50 56 9d e8 b	2 89 26 80 0a X···w··P V····&··
> Ethernet II, Src: VMware 9d:e8:be	(00:50:56:9d:e8	:be), Dst: Cisco b9	77:0e (58:97	:bd:b9:77:	0e)		00 00 81 00 00 66 08 00 45 00 00 5	↓ 9d ec 40 00 ·····f··E··T··@·
✓ VN-Tag							40 01 af c0 c0 00 02 64 c6 33 64 6	1 08 00 4e a2 @·····d ·3dd··N·
1	= Direc	tion: From Bridge					00 1a 00 07 f4 64 ce 62 00 00 00 0	20 a2 07 00 ·····d·b ····
.0	= Point	ter: vif_id					00 00 00 00 10 11 12 13 14 15 16 1	/ 18 19 1a 1b
	= Desti	ination: 10					1c 1d 1e 1f 20 21 22 23 24 25 26 2	7 28 29 2a 2b ···· !"# \$5& ()"+
0	= Loope	ed: No	Λ				2C 20 2e 2t 30 31 32 33 34 35 36 3	,/0123 4567
0	= Reser	rved: 0	-					
00	= Versi	ion: 0						
0000 0	000 0000 = Sourc	:e: 0						
Type: 802.10 Virtual LAN (0x810	0)							
802.10 Virtual LAN, PRI: 0, DEI: 0), ID: 102							
000 = Priority:	Best Effort (de	efault) (0)						
0 = DEI: Inel	igible		2					
0000 0110 0110 = ID: 102	0		5					
Type: IPv4 (0x0800)								
> Internet Protocol Version 4. Src:	192.0.2.100. Ds	t: 198.51.100.100						
> Internet Control Message Protocol			2					
and the state of t			-					

두 번째 패킷을 선택하고 핵심 사항을 확인합니다.

1. ICMP 에코 요청 패킷만 캡처됩니다. 각 패킷은 캡처되어 2번 표시됩니다.

2. 원래 패킷 헤더에 VLAN 태그가 없습니다.

3. 내부 스위치는 인그레스 인터페이스 Ethernet1/2를 식별하는 추가 포트 VLAN 태그(**102**)를 삽 입합니다.

No.	Time	Source	Destination	Protocol	Length	IP ID	IP TTL Info	
Г	1 2022-07-13 06:23:58.285080930	192.0.2.100	198.51.100.100	ICMP	108	0x9dec (40428)	64 Echo (ping) reque	t 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) reque	t 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) reque	t 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) reque	t 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) reque	t 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) reque	t 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) reques	t 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) reque	t 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) reque	t 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) reque	t 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) reque	t 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) reque	t id=0x001a, seg=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) reque	t id=0x001a, seg=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) reque	t id=0x001a, seg=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) reque	t id=0x001a, seg=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) reque	t id=0x001a, seg=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) reque	t id=0x001a, seg=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) reque	t id=0x001a, seg=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) reque	t id=0x001a, seg=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) reque	t id=0x001a, seg=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) reque	t id=0x001a, seg=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) reque	t id=0x001a, seg=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) reque	t id=0x001a, seg=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) reque	t id=0x001a, seg=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) reque	t id=0x001a, seg=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) reque	t id=0x001a, seg=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) reque	t id=0x001a, seg=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) reque	t id=0x001a, seg=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) reque	t id=0x001a, seg=21/5376, ttl=64 (no response found!)
2								
<u> </u>								
2	Frame 2: 102 bytes on wire (816 bit	s), 102 bytes o	aptured (816 bits)	on interface of	capture_u	0_1, id 0		0000 58 97 bd b9 77 0e 00 50 56 9d e8 be 81 00 00 66 X···w··P V·····f
2	Ethernet II, Src: VMware_9d:e8:be (00:50:56:9d:e8:	be), Dst: Cisco_b9:	77:0e (58:97:1	bd:b9:77:0	e)		0010 08 00 45 00 00 54 90 ec 40 00 40 01 at c0 c0 00 ·····························
M	802.10 Virtual LAN, PRI: 0, DEI: 0,	ID: 102						
	000 = Priority:	Best Effort (de	fault) (0)	<u>_</u>				0040 12 13 14 15 16 17 18 19 1a th 1c 1d 1a 1f 28 21
	0 = DEI: Ineli	gible		3				0050 22 23 24 25 26 27 28 29 2a 2b 2c 2d 2e 2f 30 31 "#\$%%'() *+/01
	0000 0110 0110 = ID: 102							0060 32 33 34 35 36 37 234567
	Type: IPv4 (0x0800)			_				
2	Internet Protocol Version 4, Src: 1	92.0.2.100, Dst	: 198.51.100.100	2				
2	Internet Control Message Protocol			2				

Portchannel1 멤버 인터페이스에 대한 캡처 파일을 엽니다. 첫 번째 패킷을 선택하고 핵심 사항을 확인합니다.

- 1. ICMP 에코 요청 패킷만 캡처됩니다. 각 패킷은 캡처되어 2번 표시됩니다.
- 2. 원래 패킷 헤더에 VLAN 태그가 없습니다.
- 3. 내부 스위치는 인그레스 인터페이스 Portchannel1을 식별하는 추가 포트 VLAN 태그 1001을 삽입합니다.
- 4. 내부 스위치는 추가 VN 태그를 삽입합니다.

No.	Time	Source	Destination	Protocol	Length	IP ID		IP TTL Info							^
F	1 2022-08-05 23:07:31.865872877	192.0.2.100	198.51.100.100	ICMP	108	Øx322e	(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	Øx322e	(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	Øx32d8	(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	Øx32d8	(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	Øx3373	(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	Øx3427	(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	Øx3427	(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	Øx36ed	(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	~
<														>	
> Fnar	me 1: 108 bytes on wire (864 bits)	, 108 bytes captu	ured (864 bits) on	interface capt	ure_u0_3,	i 0000	a2 76	f2 00 00 25	00 50	56 9d e8	be 89 26 80	54 · v · · · % · P	V · · · · & · T	1	
> Eth	ernet II, Src: VMware_9d:e8:be (00	:50:56:9d:e8:be),	Dst: a2:76:f2:00:	00:25 (a2:76:f	2:00:00:2	(5) 0010	00 00	81 00 03 e9	08 00	45 00 00	54 32 2e 40	00	ET2.@.		
VN-	Tag					0020	40 01	1b 7f c0 00	02 64	c6 33 64	64 08 00 1e	d6 @·····d	· 3dd · · · ·		
1		= Direction	: From Bridge			0030	00 2d	00 f5 a6 a2	ed 62	00 00 00	00 7a 2f 0b	00 ·-···b	····z/··		
	0	= Pointer:	vif_id			0040	1c 1d	10 1f 20 21	22 22	24 25 26	27 28 20 25	2h 1"#	\$78.11**		
· ·	.00 0000 0101 0100	= Destinati	on: 84			0050	2c 2d	2e 2f 30 31	32 33	34 35 36	37		4567		
· ·	···· ···· ···· ···· 0 ····	= Looped: N	• 4				20 20	20 21 50 51	52 55	54 55 50		, 1,0125	4507		
	0	<pre> = Reserved:</pre>	0												
		<pre> = Version:</pre>	0												
· ·	0000 0000	0000 = Source: 0													
Т	ype: 802.10 Virtual LAN (0x8100)														
802	.1Q Virtual LAN, PRI: 0, DEI: 0, I	D: 1001													
e	00 Bes	t Effort (defaul	t) (0)												
	0 = DEI: Ineligit	ole	2												
	0011 1110 1001 = ID: 1001		2												
Т	ype: IPv4 (0x0800)														
Inte	ernet Protocol Version 4, Src: 192	.0.2.100, Dst: 19	08.51.100.100												
Inte	ernet Control Message Protocol		2												
_							_								_

두 번째 패킷을 선택하고 핵심 사항을 확인합니다.

1. ICMP 에코 요청 패킷만 캡처됩니다. 각 패킷은 캡처되어 2번 표시됩니다.

2. 원래 패킷 헤더에 VLAN 태그가 없습니다.

3. 내부 스위치는 인그레스 인터페이스 Portchannel1을 식별하는 추가 포트 VLAN 태그 1001을 삽입합니다.

No.	Time	Source	Destination	Protocol	Length	IP ID		IP 1	TTL Info								^
Γ.	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=24	15/62720,	ttl=64	(nc	
	2 2022-08-05 23:07:31.865875131	192.0.2.100	198.51.100.100	ICMP	102	Øx322e	(12846)		64 Echo	(ping)	request	id=0x002d,	seq=24	5/62720,	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=24	16/62976,	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=24	16/62976,	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=24	7/63232,	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=24	7/63232,	ttl=64	(nc	
	7 2022-08-05 23:07:34.883049425	192.0.2.100	198.51.100.100	ICMP	108	Øx3373	(13171)		64 Echo	(ping)	request	id=0x002d,	seq=24	18/63488,	ttl=64	(nc	
	8 2022-08-05 23:07:34.883051649	192.0.2.100	198.51.100.100	ICMP	102	Øx3373	(13171)		64 Echo	(ping)	request	id=0x002d,	seq=24	18/63488,	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=24	49/63744,	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=24	49/63744,	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=25	50/64000,	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=25	50/64000,	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=25	51/64256,	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=25	51/64256,	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=25	52/64512,	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=25	52/64512,	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=25	3/64768,	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=25	3/64768,	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=25	65024,	ttl=64	(nc	~
<																>	
> E	rame 2: 102 bytes on wire (816 bits)	, 102 bytes capt	ured (816 bits) on	interface capt	ure u0 3,	i. 0000	a2 76	f2 00	00 25	00 50	56 9d e8	be 81 00 03	e9	·v··%·P	v		-
> E	thernet II, Src: VMware 9d:e8:be (00	:50:56:9d:e8:be)	, Dst: a2:76:f2:00	:00:25 (a2:76:f	2:00:00:2	5) 0010	08 00	45 00	00 54	32 2e	40 00 40	01 1b 7f ce	00	··E··T2.	@·@····		
8	02.10 Virtual LAN, PRI: 0, DEI: 0, I	D: 1001				0020	02 64	c6 33	64 64	08 00	1e d6 00	2d 00 f5 a6	a2	∙d•3dd••			
	000 Bes	st Effort (defaul	t) (0)			0030	ed 62	00 00	00 00	7a 2f	0b 00 00	00 00 00 10	11	·b····z/			
	0 = DEI: Ineligit	ble	3			0040	12 13	14 15	16 17	18 19	1a 1b 1c	1d 1e 1f 20	21			1	
	0011 1110 1001 = ID: 1001					0050	22 23	24 25	26 27	28 29	2a 2b 2c	2d 2e 2f 30	31	"#\$%&'()	*+,/0	£.	
	Type: IPv4 (0x0800)					0060	32 33	34 35	36 37				-	234567			
1	nternet Protocol Version 4, Src: 192	.0.2.100, Dst: 1	98.51.100.100														
I	nternet Control Message Protocol		21														
	· ·																

설명

전면 인터페이스에서 패킷 캡처가 구성된 경우, 스위치는 각 패킷을 동시에 두 번 캡처합니다.

• 포트 VLAN 태그를 삽입한 후

• VN 태그를 삽입한 후

연산 순서에 따라 VN 태그는 포트 VLAN 태그 삽입보다 후반에 삽입됩니다. 그러나 캡처 파일에서 VN 태그가 있는 패킷은 포트 VLAN 태그가 있는 패킷보다 먼저 표시됩니다.

이 표에서는 작업을 요약합니다.

작업	캡처 지점	캡처된 패킷의 내부 포 트 VLAN	방향	캡처된 트래픽
인터페이스 Ethernet1/2에서 패킷 캡처 구성 및 확인 멤버 인터페이스	이더넷1/2	102	인그레스 전용	호스트 192.0.2.100에서 호스트 198.51.100.100으로의 ICMP 에크
Ethernet1/4 및 Ethernet1/5를 사용하 여 인터페이스 Portchannel1에서 패킷 캡처 구성 및 확인	이더넷1/4 이더넷1/5	1001	인그레스 전용	호스트 192.0.2.100에서 호스트 198.51.100.100으로의 ICMP 에크

백플레인 인터페이스의 패킷 캡처

FCM 및 CLI를 사용하여 백플레인 인터페이스에서 패킷 캡처를 구성하고 확인합니다.

토폴로지, 패킷 흐름 및 캡처 포인트



설정

FCM

FCM에서 다음 단계를 수행하여 백플레인 인터페이스의 패킷 캡처를 구성합니다.

1. Tools(**툴) > Packet Capture(패킷 캡처) > Capture Session(캡처 세션)**을 사용하여 새 캡처 세 션을 생성합니다.

Overview Interfaces Logical Devices Security Engine Platform Settings	System	Tools Help admin
	Packet Capture	Troubleshooting Logs
Capture Session Filter List		
C Refresh	Capture Session Delet	te All Sessions
No Session available		

2. 모든 백플레인 인터페이스의 패킷을 캡처하려면 드롭다운 목록에서 애플리케이션을 선택한 다음 All Backplane Ports(모든 백플레인 포트)를 선택합니다. 또는 특정 백플레인 인터페이스 를 선택합니다. 이 경우 백플레인 인터페이스 Ethernet1/9 및 Ethernet1/10을 사용할 수 있습니 다. 캡처를 활성화하려면 Session Name(세션 이름)을 입력하고 Save and Run(저장 및 실행)을 클릭합니다.

Help admin

백플레인 인터페이스에서 패킷 캡처를 구성하려면 FXOS CLI에서 다음 단계를 수행합니다.

1. 애플리케이션 유형 및 식별자를 식별합니다.

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. 캡처 세션을 생성합니다. 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

확인

FCM

인터페이스 **이름**을 확인하고 작동 **상태**가 작동 중인지, **파일 크기(바이트)가** 증가하는지 확인합니 다.

Overview Inter	aces Logical Devices Security Engine	Platform Settings			Syst	em Tools	Help admin
Capture Session	Filter List						
					Capture Session Del	ete All Sessions	
🛋 🦲 capi	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	\pm		
Ethernet1/9	None	286368	cap1-ethernet-1-9-0.pcap	ftd1	⊻		
L	_						

FXOS CLI

scope packet-capture에서 캡처 세부 정보를 확인합니다.

```
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
```

firepower /packet-capture/session* # commit

firepower /packet-capture/session #

```
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
캡처 파일 수집
```

Firepower 4100/9300 내부 스위치 캡처 파일 수집 섹션의 단계를 수행합니다.

캡처 파일 분석

패킷 캡처 파일 리더 애플리케이션을 사용하여 캡처 파일을 엽니다. 백플레인 인터페이스가 여러 개인 경우 각 백플레인 인터페이스의 모든 캡처 파일을 열어야 합니다. 이 경우 패킷은 백플레인 인 터페이스 Ethernet1/9에서 캡처됩니다.

첫 번째 및 두 번째 패킷을 선택하고 핵심 사항을 확인합니다.

- 1. 각 ICMP 에코 요청 패킷이 캡처되어 2번 표시됩니다.
- 2. 원래 패킷 헤더에 VLAN 태그가 없습니다.
- 3. 내부 스위치는 이그레스 인터페이스 Ethernet1/3을 식별하는 추가 포트 VLAN 태그(**103**)를 삽 입합니다.
- 4. 내부 스위치는 추가 VN 태그를 삽입합니다.

No. Time Source	Destination	Protocol	Length	IP ID	IP TTL Info			
1 2022-07-14 20:20:36.513854256 192.0.2.1	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 192.0.2.1	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 198.51.10	00.100 192.0.2.100	ICMP	108	Øxcc2c (52268)	64 Echo (ping)	reply	id=0x0001, seq=15/3840, ttl=64 (request in 2)	
4 2022-07-14 20:20:36.514119312 198.51.10	00.100 192.0.2.100	ICMP	108	Øxcc2c (52268)	64 Echo (ping)	reply	id=0x0001, seq=15/3840, ttl=64	
5 2022-07-14 20:20:37.537723822 192.0.2.1	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 192.0.2.1	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 198.51.10	00.100 192.0.2.100	ICMP	108	Øxcc9b (52379)	64 Echo (ping)	reply	id=0x0001, seq=16/4096, ttl=64 (request in 6)	
8 2022-07-14 20:20:37.538048311 198.51.10	00.100 192.0.2.100	ICMP	108	Øxcc9b (52379)	64 Echo (ping)	reply	id=0x0001, seq=16/4096, ttl=64	
9 2022-07-14 20:20:38.561776064 192.0.2.1	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 192.0.2.1	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 198.51.10	00.100 192.0.2.100	ICMP	108	0xccc4 (52420)	64 Echo (ping)	reply	id=0x0001, seg=17/4352, ttl=64 (request in 10)	
12 2022-07-14 20:20:38.562050333 198.51.10	00.100 192.0.2.100	ICMP	108	Øxccc4 (52420)	64 Echo (ping)	reply	id=0x0001, seg=17/4352, ttl=64	
13 2022-07-14 20:20:39 585677043 192.0.2.1	100 198.51.100.100	TCMP	188	8x5h46 (23366)	64 Echo (ping)	request	id=8v8881, seg=18/4688, ttl=64 (no response foundl)	
14 2022-07-14 20:20:30 505678455 102 0.2 1	100 108 51 100 100	TCMP	108	BySh46 (23366)	64 Echo (ping)	request	id=0x0001, seq=18/4608, ttl=64 (renly in 15)	
15 2022-07-14 20:20:39:505070455 192:0:21	30 100 102 0 2 100	TCMP	100	0xcd9d (53631)	64 Echo (ping)	request	id=0x0001, seq=10/4600, ttl=64 (request in 14)	
15 2022-07-14 20:20:39.305930334 198.31.10	00.100 192.0.2.100	TCHP	100	Oxedad (52621)	64 Echo (ping)	reply	10-0x0001, Seq=10/4000, ((1=04 (request 10 14)	
16 2022-07-14 20:20:39.585957900 198.51.10	00.100 192.0.2.100	ICHP	108	0xcusu (52021)	64 ECHO (ping)	repry	10=0X0001, SEQ=10/4000, (C1=04	
17 2022-07-14 20:20:40.609804804 192.0.2.1	100 198.51.100.100	ICMP	108	0x5D/D (23419)	64 Echo (ping)	request	1d=0x0001, seq=19/4864, ttl=64 (no response tound))	
18 2022-07-14 20:20:40.609807618 192.0.2.1	100 198.51.100.100	ICMP	108	0x5b7b (23419)	64 Echo (ping)	request	1d=0x0001, seq=19/4864, ttl=64 (reply in 19)	
19 2022-07-14 20:20:40.610179685 198.51.10	00.100 192.0.2.100	ICMP	108	Øxcd8f (52623)	64 Echo (ping)	reply	id=0x0001, seq=19/4864, ttl=64 (request in 18)	
20 2022-07-14 20:20:40.610181944 198.51.10	00.100 192.0.2.100	ICMP	108	Øxcd8f (52623)	64 Echo (ping)	reply	id=0x0001, seq=19/4864, ttl=64	
21 2022-07-14 20:20:41.633805153 192.0.2.1	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 192.0.2.1	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 198.51.10	00.100 192.0.2.100	ICMP	108	Øxce36 (52790)	64 Echo (ping)	reply	id=0x0001, seq=20/5120, ttl=64 (request in 22)	
24 2022-07-14 20:20:41.634085368 198.51.10	00.100 192.0.2.100	ICMP	108	0xce36 (52790)	64 Echo (ping)	reply	id=0x0001, seq=20/5120, ttl=64	
25 2022-07-14 20:20:42.657709898 192.0.2.1	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 192.0.2.1	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 198.51.10	00.100 192.0.2.100	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 198.51.10	00.100 192.0.2.100	ICMP	108	0xce49 (52809)	64 Echo (ping)	reply	id=0x0001, seq=21/5376, ttl=64	
29 2022-07-14 20:20:43.681736697 192.0.2.1	100 198.51.100.100	ICMP	108	0x5c52 (23634)	64 Echo (ping)	request	id=0x0001, seg=22/5632, ttl=64 (no response found!)	
c								
N								
> Frame 1: 108 bytes on wire (864 bits), 108 by	ytes captured (864 bits) on inter	rface capture_	u0_8, id 0		0	0000 00 50 56 9d e7 50 58 97 bd b9 77 2d 89 26 00 00 PV PX ·································	
Ethernet II, Src: Cisco_b9:77:2d (58:97:bd:b9)	9:77:2d), Dst: VMware_9	d:e7:50 (6	00:50:56:9d:e7	:50)		0	0010 00 0a 81 00 00 67 08 00 45 00 00 54 59 90 40 00g. E. TY @-	
✓ VN-Tag						0	40 01 14 1c c0 00 02 64 c6 33 64 64 08 00 22 68 0 ·····d ·3dd··"h	
0 =	Direction: To Bridge					0	0030 00 01 00 0f 89 7a d0 62 00 00 00 00 b3 d7 09 00 ·····z·b ······	
.0	Pointer: vif_id							
0000 0000 0000 0000 0000 0000	Destination: 0						10 10 10 10 11 20 21 22 23 24 25 26 27 28 29 28 20 ····· ! # \$38 ()-+	
0	Looped: No					0	2C 2U 2E 2T 30 31 32 33 34 35 30 37 ,/0123 430/	
	Reserved: 0							
	Version: 0							
	Source: 10							
Type: 802.10 Virtual LAN (0x8100)								
902.10 Victual LAN PRI: 0. DET: 0. ID: 103		_						
and = Priority: Bast Effor	t (default) (0)							
a - DET: Inaligible	c (default) (d)	2						
and all and all a to the		3						
0000 0110 0111 = 1D: 103								
Type: IPv4 (0x0800)		_						
> Internet Protocol Version 4, Src: 192.0.2.100	0, Dst: 198.51.100.100							
> Internet Control Message Protocol		2						
						_		
No. Time Source	Destination	Protocol	Length	PD	IP TTL Info		1	-
No. Time Source 1 2022-07-14 20:20:36.513854256 192.0.2.1	Destination 100 198.51.100.100	Protocol	Length 108	PD 0x5998 (22928)	PTTL Mo 64 Echo (ping)) request	id=0x0001, seq=15/3840, ttl=64 (no response foundl)	
No. Time Source 1 2022-07-14 20:20:36.513854256 192.0.2. 2 2022-07-14 20:20:36.513857289 192.0.2.	Destination 100 198.51.100.100 100 198.51.100.100	Protocol ICMP ICMP	Length 108 108	PD 0x5990 (22928) 0x5990 (22928)	PTTL 106 64 Echo (ping) 64 Echo (ping)) request	id=0x0001, seq=15/3840, ttl=64 (no response foundl) id=0x0001, seq=15/3840, ttl=64 (reply in 3)	
No. Time Source □ 1 2022-07-14 20120136.513854256 192.0.2.1 → 2 2022-07-14 20120136.5138554259 192.0.2.1 → 3 2022-07-14 20120136.514117394 198.51.11	Destination 100 198.51.100.100 100 198.51.100.100 00.100 192.0.2.100	Protocol ICMP ICMP ICMP	Length 108 108 108	PD 0x5990 (22928) 0x5990 (22928) 0xcc2c (52268)	PTTL Mo 64 Echo (ping) 64 Echo (ping) 64 Echo (ping)) request) request) reply	id=0x0001, seq=15/3840, ttl=64 (no response foundl) id=0x0001, seq=15/3840, ttl=64 (reply in 3) id=0x0001, seq=15/3840, ttl=64 (request in 2)	
No. Time Source - 1 2022-07-14 20120136.511854256 192.0.2. - 2 2022-07-14 20120136.511857289 192.0.2. - 3 2022-07-14 20120136.514112734 198.51.1 - 4 2022-07-14 20120136.514112712 192.112	Destination 100 198.51.100.100 100 198.51.100.100 00 198.51.100.100 00.100 192.0.2.100 00.100 192.0.2.100	Protocol ICMP ICMP ICMP ICMP	Length 108 108 108 108	PD 0x5990 (22928) 0x5990 (22928) 0xcc2c (52268) 0xcc2c (52268)	PTTL Info 64 Echo (ping) 64 Echo (ping) 64 Echo (ping) 64 Echo (ping)) request) request) reply) reply	id=0x0001, seq=15/3840, ttl=64 (no response foundl) id=0x0001, seq=15/3840, ttl=64 (reply in 3) id=0x0001, seq=15/3840, ttl=64 (request in 2) id=0x0001, seq=15/3840, ttl=64	
In. Time Source 1 2022-07-14 20:20:36.513854226 192.0.2.1 • 2 2022-07-14 20:20:36.513857289 192.0.2.2 • 3 2022-07-14 20:20:36.514117394 198.51.1 4 2022-07-14 20:20:36.514119312 198.51.1 5 2022-07-14 20:20:36.514119312 198.51.1	Destination 100 198.51.100.100 100 198.51.100.100 00.100 192.0.2.100 00.100 192.0.2.100 100 198.51.100.100	Protocol ICMP ICMP ICMP ICMP ICMP	Length 108 108 108 108 108	PD 0x5990 (22928) 0x5990 (22928) 0xcc2c (52268) 0xcc2c (52268) 0x5a00 (23040)	PTTL bfo 64 Echo (ping)) request) request) reply) reply) request	id=0x0001, seq=15/3840, ttl=64 (no response foundl) id=0x0001, seq=15/3840, ttl=64 (reply in 3) id=0x0001, seq=15/3840, ttl=64 (request in 2) id=0x0001, seq=15/3840, ttl=64 :d=0x0001, seq=15/3640, ttl=64	
No. Time Source 1 2022-07-14 20120136.513854256 192.0.2.1 2 2022-07-14 20120136.513857289 192.0.2.1 4 2022-07-14 20120136.5141857289 192.0.2.1 5 2022-07-14 20120136.514117394 198.51.11 5 2022-07-14 20120136.514119312 198.51.11 5 2022-07-14 20120137.537725822 192.0.2.1 6 2022-07-14 2012037.537725882 192.0.2.1	Destination 100 198.51.100.100 100 198.51.100.100 00.100 192.0.2.100 00.100 192.0.2.100 100 198.51.100.100 100 198.51.100.100	Protocol ICMP ICMP ICMP ICMP ICMP ICMP	Length 108 108 108 108 108 108	PD 0x5990 (22928) 0x5990 (22928) 0xcc2c (52268) 0x5200 (22040) 0x5200 (23040) 0x5200 (23040)	PTTL 106 64 Echo (ping) 64 Echo (ping) 64 Echo (ping) 64 Echo (ping) 64 Echo (ping) 64 Echo (ping)) request) request) reply) reply) request) request	id=0x0001, seq=15/3840, ttl=64 (no response foundl) id=0x0001, seq=15/3840, ttl=64 (reply in 3) id=0x0001, seq=15/3840, ttl=64 (request in 2) id=0x0001, seq=16/4096, ttl=64 (no response foundl) id=0x0001, seq=16/4096, ttl=64 (no response foundl)	
In. Time Source - 1 2022-07-14 20:20:36.513854256 192.0.2.1 - 2 2022-07-14 20:20:36.513857289 192.0.2.1 + 3 2022-07-14 20:20:36.514137394 198.51.1 - 4 2022-07-14 20:20:36.51411212 198.51.1 5 2022-07-14 20:20:36.51411212 198.51.1 5 2022-07-14 20:20:37.537723822 192.0.2.1 6 2022-07-14 20:20:37.53772588 192.0.2.2 7 2022-07-14 20:20:37.535726558 198.6.1.2	Destination 100 198.51.100.100 100 198.51.100.100 00.100 192.0.2.100 00.100 192.0.2.100 100 198.51.100.100 100 198.51.100.100 00.00 192.0.2.00	Protocol ICMP ICMP ICMP ICMP ICMP ICMP	Length 108 108 108 108 108 108	P D 0x5990 (22928) 0x5990 (22928) 0xcc2c (52268) 0xcc2c (52268) 0x5a00 (23040) 0x5a00 (23040) 0xcc9b (52379)	 PTTL 166 64 Echo (ping)) request) request) reply) reply) request) request) reply	id=0x0001, seq=15/3840, ttl=64 (no response foundl) id=0x0001, seq=15/3840, ttl=64 (reply in 3) id=0x0001, seq=15/3840, ttl=64 (request in 2) id=0x0001, seq=15/4040, ttl=64 (no response foundl) id=0x0001, seq=16/4096, ttl=64 (reply in 7) id=0x0001, seq=16/4096, ttl=64 (reply in 7) id=0x0001, seq=16/4096, ttl=64 (request in 6)	
In. Time Source 1 2022-07-14 201:201:36.513854256 192.0.2.1 - 2 2022-07-14 201:201:36.513857280 192.0.2.1 - 3 2022-07-14 201:201:36.514119314 198.51.11 4 2022-07-14 201:201:37.537725822 192.0.2.1 6 6 2022-07-14 201:201:37.537725828 192.0.3.1 1 5 2022-07-14 201:201:37.537725828 192.0.3.2.1 1 6 2022-07-14 201:201:37.537725828 192.0.8.2.1 1 7 2022-07-14 201:201:37.53782681 198.51.11 1 8 2022-07-14 201:201:37.53782681 198.51.11 188.51.11	Destination 100 198.51.100.100 100 198.51.100.100 00 100 192.0.2.100 100 198.51.100.100 100 198.51.100.100 00 100 198.51.100.100 00 100 198.51.100.100 00 100 198.51.100.100 00 100.2.2.100 100.100	Protocol ICMP ICMP ICMP ICMP ICMP ICMP ICMP	Length 108 108 108 108 108 108 108	P D 0x5990 (22028) 0xcc2c (52268) 0xcc2c (52268) 0x5a00 (23040) 0x5a00 (23040) 0xcs0c (52379) 0xcc9b (52379)	▶ TTL №6 64 Echo (ping) 64 Echo (ping)) request reply) reply) reply) request) reply) reply) reply	id=0x0001, seq=15/3840, ttl=64 (no response foundl) id=0x0001, seq=15/3840, ttl=64 (request in 2) id=0x0001, seq=15/3840, ttl=64 (request in 2) id=0x0001, seq=15/3840, ttl=64 (no response foundl) id=0x0001, seq=16/4096, ttl=64 (reply in 7) id=0x0001, seq=16/4096, ttl=64 (request in 6) id=0x0001, seq=16/4096, ttl=64 (request in 6) id=0x001, seq=16/406, seq	
No. Time Source 1 2022-07-14 20:20:36.513854256 192.0.2. 2 222-07-14 20:20:36.513857289 192.0.2. 4 2022-07-14 20:20:36.51417394 198.51.1 5 2022-07-14 20:20:36.51419219 198.51.1 5 2022-07-14 20:20:37.53772822 192.0.2. 6 2022-07-14 20:20:37.537046165 198.51.1 9 2022-07-14 20:20:37.538046311 198.51.1 9 20:20-714 20:20:38.561776046165 198.51.1 9 20:20-714 20:20:37.538046151 198.51.1 9 20:20-714 20:20:38.561776046165 198.51.1	Destination 100 198.51.100.100 100 198.51.100.100 00.100 192.0.2.100 00.100 198.51.100.100 100 198.51.100.100 00.100 192.0.2.100 00.100 192.0.2.100 00.100 192.0.2.100 00.100 192.0.2.100 00.100 192.0.2.100 00.100 192.0.2.100	Protocol ICMP ICMP ICMP ICMP ICMP ICMP ICMP ICMP	Length 108 108 108 108 108 108 108 108	PD 0x5990 (22928) 0xcc2c (52268) 0xcc2c (52268) 0x5a00 (23040) 0x5a00 (23440) 0xcc9b (52379) 0xcc9b (52379) 0x5a00 (23223)	₽ TTL №6 64 Echo (ping) 64 Echo (ping)) request) reply) reply) request) request) reply) reply) reply	id=0x0001, seq=15/3840, ttl=64 (no response foundl) id=0x0001, seq=15/3840, ttl=64 (reply in 3) id=0x0001, seq=15/3840, ttl=64 (request in 2) id=0x0001, seq=15/4096, ttl=64 (no response foundl) id=0x0001, seq=16/4096, ttl=64 (reply in 7) id=0x0001, seq=16/4096, ttl=64 (request in 6) id=0x0001, seq=16/4096, ttl=64 id=0x0001, seq=16/4096, ttl=64	
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198,51,100,100 100 198,51,100,100 100 198,51,100,100 100 198,51,100,100 100 198,51,100,100 100 198,51,100,100 100 198,51,100,100 100 198,51,100,100 100 198,51,100,100 100 198,51,100,100<!--</td--><td>Protocol 1CMP 1C</td><td>Length 108 108 108 108 108 108 108 108</td><td>P D 0x55990 (22928) 0x55990 (22928) 0x5290 (22928) 0x522 (52268) 0x522 (52268) 0x5240 (23440) 0x5240 (23442) 0x5240 (23323) 0x5245 (2323) 0x5244 (23366) 0x5546 (23366) 0x5546 (23366) 0x5546 (23420) 0x5646 (23641) 0x5647 (23421) 0x5647 (23422) 0x5647 (23423) 0x5677</td><td>PTL b6 66 Echo (ping) 66 Echo (ping)</td><td>) request) request) reply) reply) request) request) request) request) reply) request) reply) request) request) reply) request) reply</td><td><pre>id=ex0001, seq=15/3840, ttl=64 (no response foundl) id=ex0001, seq=15/3840, ttl=64 (reqly in 3) id=ex0001, seq=15/3840, ttl=64 (request in 2) id=ex0001, seq=15/3840, ttl=64 (request in 2) id=ex0001, seq=15/4096, ttl=64 (request in 6) id=ex0001, seq=16/4096, ttl=64 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Time Source 1 2022-07-14 20:20:36.51385/229 192.0.2.1 - 2 2022-07-14 20:20:36.51385/229 192.0.2.1 - 3 2022-07-14 20:20:36.51385/229 192.0.2.1 - 3 2022-07-14 20:20:36.51411931 198.51.1 5 2022-07-14 20:20:37.537726588 192.0.2.1 6 2022-07-14 20:20:37.537726588 192.0.2.1 7 2022-07-14 20:20:37.5378046165 198.51.1 8 2022-07-14 20:20:38.551776688 192.0.2.1 10 2022-07-14 20:20:38.55177664 192.0.2.1 12 2022-07-14 20:20:38.55077633 192.0.2.1 12 2022-07-14 20:20:39.585677433 192.0.2.1 13 2022-07-14 20:20:39.58567743 192.0.2.1 14 2022-07-14 20:20:39.58567744 192.0.2.1 17 20:22-07-14 20:20:39.58567945 198.51.1 17 20:22-07-14 20:20:39.585937900	Operations 100 198,51.100.100 100 198,51.100.100 100 198,51.100.100 100 192,0.2.100 100 192,0.2.100 100 198,51.100.100 100 198,51.100.100 100 198,51.100.100 100 198,51.100.100 100 192,0.2.100 100 192,0.2.100 100 192,51.100.100 100 192,51.100.100 100 192,51.100.100 100 192,51.100.100 100 192,51.100.100 100 192,0.2.100 100 192,51.100.100 100 192,51.100.100 100 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In. Time Source 1 2022-07-14 20120136.513854256 192.0.2.1 2 2222-07-14 20120136.513857289 192.0.2.1 3 2022-07-14 20120136.5141857289 192.0.2.1 4 2022-07-14 20120136.514179312 198.51.11 4 2022-07-14 20120137.53772582 192.0.2.1 6 2022-07-14 20120137.53772582 192.0.2.1 7 2022-07-14 20120137.53772582 192.0.2.1 7 2022-07-14 20120137.53772682 192.0.2.1 18 2022-07-14 20120137.53772682 192.0.2.1 19 2022-07-14 20120137.538046165 198.51.11 19 2022-07-14 20120138.56204333 198.51.11 12 2022-07-14 20120138.55620455 192.0.2.1 14 2022-07-14 20120139.585570455 192.0.2.1 15 2022-07-14 20120139.585570455 192.0.2.1 16 2022-07-14 20120139.585570455 192.0.2.1 1	Destination 100 198,51.100.100 100 198,51.100.100 100 198,51.100.100 100 198,51.100.100 101 192,0.2.100 100 198,51.100.100 101 192,0.2.100 100 198,51.100.100 </td <td>Protocol I CMP I CMP</td> <td>Length 108 108 108 108 108 108 108 108</td> <td>P D 0x55990 (22928) 0x55990 (22928) 0x52090 (22928) 0x5210 (23464) 0x5200 (23484) 0x5200 (23484) 0x5200 (23484) 0x5200 (23484) 0x5200 (23379) 0x53b7 (23223) 0x5244 (23366) 0x53b7 (23234) 0x5264 (23366) 0x53b7 (23429) 0x545b7 (23419) 0x545b7 (23419) 0x545b7 (23419) 0x545b7 (23419) 0x545b7 (23419) 0x545b7 (23419) 0x545b7 (23429) 0x545b7 (23429)</td> <td>PTL 166 64 Echo (ping) 66 Echo (ping)</td> <td>) request) reply) request) reply) request) request) request) request) request) request) reply) request) reply) request) reply) request) request) request</td> <td><pre>id=ex0001, seq=15/3840, ttl=64 (no response foundl) id=ex0001, seq=15/3840, ttl=64 (reply in 3) id=ex0001, seq=15/3840, ttl=64 (request in 2) id=ex0001, seq=15/3840, ttl=64 (request in 2) id=ex0001, seq=16/4096, ttl=64 (request in 6) id=ex0001, seq=16/4096, ttl=64 (request in 6) id=ex0001, seq=16/4096, ttl=64 (request in 10) id=ex0001, seq=17/4352, ttl=64 (request in 10) id=ex0001, seq=17/4352, ttl=64 (no response foundl) id=ex0001, seq=17/4352, ttl=64 (no response foundl) id=ex0001, seq=17/4352, ttl=64 (request in 10) id=ex0001, seq=18/4608, ttl=64 (request in 10) id=ex0001, seq=18/4608, ttl=64 (request in 14) id=ex0001, seq=18/4608, ttl=64 (request in 14) id=ex0001, seq=18/4608, ttl=64 (request in 14) id=ex0001, seq=19/4864, ttl=64 (ro response foundl) id=ex0001, seq=19/4864, ttl=64 (request in 18) id=ex0001, seq=29/5120, ttl=64 (request in 2) id=ex0001, seq=29/5120, ttl=64</pre></td> <td></td>	Protocol I CMP I CMP	Length 108 108 108 108 108 108 108 108	P D 0x55990 (22928) 0x55990 (22928) 0x52090 (22928) 0x5210 (23464) 0x5200 (23484) 0x5200 (23484) 0x5200 (23484) 0x5200 (23484) 0x5200 (23379) 0x53b7 (23223) 0x5244 (23366) 0x53b7 (23234) 0x5264 (23366) 0x53b7 (23429) 0x545b7 (23419) 0x545b7 (23419) 0x545b7 (23419) 0x545b7 (23419) 0x545b7 (23419) 0x545b7 (23419) 0x545b7 (23429)	PTL 166 64 Echo (ping) 66 Echo (ping)) request) reply) request) reply) request) request) request) request) request) request) reply) request) reply) request) reply) request) request) request	<pre>id=ex0001, seq=15/3840, ttl=64 (no response foundl) id=ex0001, seq=15/3840, ttl=64 (reply in 3) id=ex0001, seq=15/3840, ttl=64 (request in 2) id=ex0001, seq=15/3840, ttl=64 (request in 2) id=ex0001, seq=16/4096, ttl=64 (request in 6) id=ex0001, seq=16/4096, ttl=64 (request in 6) id=ex0001, seq=16/4096, ttl=64 (request in 10) id=ex0001, seq=17/4352, ttl=64 (request in 10) id=ex0001, seq=17/4352, ttl=64 (no response foundl) id=ex0001, seq=17/4352, ttl=64 (no response foundl) id=ex0001, seq=17/4352, ttl=64 (request in 10) id=ex0001, seq=18/4608, ttl=64 (request in 10) id=ex0001, seq=18/4608, ttl=64 (request in 14) id=ex0001, seq=18/4608, ttl=64 (request in 14) id=ex0001, seq=18/4608, ttl=64 (request in 14) id=ex0001, seq=19/4864, ttl=64 (ro response foundl) id=ex0001, seq=19/4864, ttl=64 (request in 18) id=ex0001, seq=29/5120, ttl=64 (request in 2) id=ex0001, seq=29/5120, ttl=64</pre>	
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0xccc4 (52429) 0xc5ab7 (23223) 0x5ab7 (23236) 0xccc4 (52429) 0xc5ab6 (23366) 0xcd8d (5261) 0xcd8d (5261) 0xcd8d (5262) 0xc3d8 (52760) 0xc3d8 (52760) 0xc3d8 (52760) 0xc3d8</td><td>PTIL 146 66 Echo (ping) 66 Echo (ping) </td><td>) request reply reply request reply request reply reply reply request reply request reply request reply request reply request reply request reply request reply request reply request</td><td><pre>id=ex0001, seq=15/3840, ttl=64 (no response foundl) id=ex0001, seq=15/3840, ttl=64 (request in 2) id=ex0001, seq=15/3840, ttl=64 (request in 2) id=ex0001, seq=15/3840, ttl=64 (no response foundl) id=ex0001, seq=16/4096, ttl=64 (request in 6) id=ex0001, seq=16/4096, ttl=64 (request in 6) id=ex0001, seq=16/4096, ttl=64 (request in 6) id=ex0001, seq=17/352, ttl=64 (request in 10) id=ex0001, seq=17/352, ttl=64 (request in 10) id=ex0001, seq=17/352, ttl=64 (request in 10) id=ex0001, seq=18/4608, ttl=64 (request in 14) id=ex0001, seq=18/4608, ttl=64 (request in 18) id=ex0001, 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Im. Time Source 1 2022-07-14 20:20:36.513852280 192.0.2.1 2 2022-07-14 20:20:36.513857280 192.0.2.1 3 2022-07-14 20:20:36.513857280 192.0.2.1 4 2022-07-14 20:20:36.514179312 198.51.11 4 2022-07-14 20:20:36.514179312 198.51.11 5 2022-07-14 20:20:37.53782682 192.0.2.1 6 2022-07-14 20:20:37.538046165 198.51.11 8 2022-07-14 20:20:38.56174641 192.0.2.1 10 2022-07-14 20:20:38.56174551 192.0.2.1 11 2022-07-14 20:20:39.585507455 192.0.2.1 12 2022-07-14 20:20:39.58507445 192.0.2.1 14 20:20:07-14 20:20:39.58507445 192.0.2.1 15 20:20-07-14 20:20:39.58507445 192.0.2.1 16 20:20-07-14 20:20:40.609907618 192.0.2.1 17 20:22-07-14 20:20:40.6099087618 192.0.2.1	Destination 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 101 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100.100 100 198.51.100	Protocol ICMP IC	Length 108 108 108 108 108 108 108 108	P D 0x5990 (22928) 0x5990 (22928) 0x5290 (22928) 0x5200 (22928) 0x5210 (23440) 0xcc2c (52268) 0xcc2c (52420) 0xcc2c (52420) 0xcc2c (52420) 0xccc4 (52420) 0xccc4 (52420) 0xccd8 (5361) 0xccd8 (5362) 0xccd8 (5361) 0xccd8 (5361) 0xcd84 (5362) 0xcd84 (5362) 0xcd84 (5362) 0xcd84 (5362) 0xcd84 (5362) 0xc367 (2322) 0xc367 (2322) 0xc367 (2342) 0xc367 (2322) 0xc367 (2322) 0xc367 (2322) 0xc367 (2323) 0xc464 (5380) 0xc47 (5380) 0xc49 (2363)<	PTL 166 66 Echo (ping)) request) request) reply) reply) request) reply) request) reply) request) request	<pre>id=ex0001, seq=15/3840, ttl=64 (no response foundl) id=ex0001, seq=15/3840, ttl=64 (reply in 3) id=ex0001, seq=15/3840, ttl=64 (request in 2) id=ex0001, seq=15/4806, ttl=64 (reply in 7) id=ex0001, seq=16/4096, ttl=64 (reply in 7) id=ex0001, seq=16/4096, ttl=64 (request in 6) id=ex0001, seq=17/4352, ttl=64 (request in 10) id=ex0001, seq=17/4352, ttl=64 (request in 12) id=ex0001, seq=18/4608, ttl=64 (reply in 15) id=ex0001, seq=18/4608, ttl=64 (reply in 19) id=ex0001, seq=18/4608, ttl=64 (reply in 19) id=ex0001, seq=19/4864, ttl=64 (reply in 19) id=ex0001, seq=29/5120, ttl=64 (reply in 2) id=ex0001, seq=29/5120, ttl=64 (reply in 2) id=ex0001, seq=29/5120, ttl=64 (request in 12) id=ex0001, seq=29/5120, ttl=64 (request in 22) id=ex0001, seq=23/5376, ttl=64 (no response foundl) id=ex0001, seq=23/5376, ttl=64 (no response f</pre>	

세 번째 및 네 번째 패킷을 선택하고 핵심 사항을 확인합니다.

- 1. 각 ICMP 에코 응답이 캡처되어 2번 표시됩니다.
- 2. 원래 패킷 헤더에 VLAN 태그가 없습니다.
- 3. 내부 스위치는 이그레스 인터페이스 Ethernet1/2를 식별하는 추가 포트 VLAN 태그(**102**)를 삽 입합니다.
- 4. 내부 스위치는 추가 VN 태그를 삽입합니다.

No	. Time	Source	Destination	Protocol	Length	PD	IP TTL Info						
E.	1 2022-07-14 20:20:36.513854256	192.0.2.100	198.51.100.100	ICMP	108	0x5990 (22928)	64 Echo (ping) reque	st 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	8x5998 (22928)	64 Echo (ning) reque	st id	=0x0001,	seq=15/3840,	ttl=64	(reply in 3)	
+	3 2022-07-14 20:20:36.514117394	198.51.100.100	0 192.0.2.100	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	0 192.0.2.100	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) reque	st 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) reque	st id	-0x0001,	seq=16/4096,	ttl=64	(reply in 7)	
	7 2022-07-14 20:20:37.538046165	198.51.100.100	0 192.0.2.100	ICMP	108	Øxcc9b (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	0 192.0.2.100	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) reque	st 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) reque	st id	-0x0001,	seq=17/4352,	ttl=64	(reply in 11)	
	11 2022-07-14 20:20:38.562048288	198.51.100.100	0 192.0.2.100	ICMP	108	0xccc4 (52420)	64 Echo (ping) reply	id	-0x0001,	seg=17/4352,	ttl=64	(request in 10)	
	12 2022-07-14 20:20:38.562050333	198.51.100.100	0 192.0.2.100	ICMP	108	0xccc4 (52420)	64 Echo (ping) reply	id	-0x0001.	seg=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) reque	st id	-0x0001.	seg=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) reque	st id	=0x0001.	seg=18/4608	tt1=64	(reply in 15)	
	15 2022-07-14 20:20:39,585936554	198.51.100.100	9 192.0.2.100	ICMP	108	0xcd8d (52621)	64 Echo (ping) reply	id	-0x0001.	seg=18/4608.	tt1=64	(request in 14)	
	16 2022-07-14 20:20:39,585937900	198,51,100,100	9 192.0.2.100	ICMP	108	0xcd8d (52621)	64 Echo (ping) reply	id	-0x0001.	seg=18/4608.	tt1=64		
	17 2022-07-14 20:20:40.609804804	192.0.2.100	198.51.100.100	ICMP	108	0x5b7b (23419)	64 Echo (ping) reque	st id	=0x0001	seg=19/4864	tt1=64	(no response found!)	
	18 2022-07-14 20:20:40.609807618	192.0.2.100	198.51.100.100	TCMP	108	0x5h7h (23410)	64 Echo (ping) reque	st id	=0x0001	seg=19/4864	tt1=64	(renly in 19)	
	10 2022-07-14 20:20:40.009807018	109 51 100 100	193.91.100.100	TCMP	100	excdef (52623)	64 Echo (ping) reque	id id	-0x0001,	seq=19/4864	++1=64	(request in 19)	
	20 2022-07-14 201201401010175005	109 51 100 100	3 102 0 2 100	TCMD	100	0xcd0f (52623)	64 Echo (ping) reply	10	-0x0001	seq=10/4064	++1-64	(request in ity)	
	20 2022-07-14 20:20:40:010101944	103 0 3 100	100 51 100 100	TCMD	100	0xtuar (32023)	64 Echo (ping) repry	ct 14	-0×0001	seq=19/4804;	++1-64	(no perpense found))	
	21 2022-07-14 20:20:41.033803133	192.0.2.100	198.51.100.100	TCHP	100	0x507e (23422)	64 Echo (ping) reque	st id	-0+0001	seq=20/5120,	**1-64	(no response roundr)	
	22 2022-07-14 20:20:41.033800997	192.0.2.100	198.51.100.100	TCMP	100	0x5070 (25422)	64 Echo (ping) reque	st id	-0:00001,	seq=20/5120,	++1-64	(reply in 23)	
	25 2022-07-14 20:20:41.054004102	198.51.100.100	0 192.0.2.100	TCHP	100	0xce36 (52790)	64 Echo (ping) reply	10	-0-0001,	seq=20/5120,	++1-64	(request in zz)	
	24 2022-07-14 20:20:41.034085308	198.51.100.100	192.0.2.100	ICHP	108	0xceso (52/90)	64 Echo (ping) reply	10	-0x0001,	seq=20/5120,	tt1=04	(an anna faund))	
	25 2022-07-14 20:20:42.657709898	192.0.2.100	198.51.100.100	ICMP	108	0X50T0 (23536)	64 Echo (ping) reque	St 10	=0x0001,	seq=21/53/6,	tt1=04	(no response tound1)	
	26 2022-07-14 20:20:42.657711660	192.0.2.100	198.51.100.100	ICMP	108	0X5010 (23536)	64 Echo (ping) reque	st 1d	=0x0001,	seq=21/5376,	tt1=64	(reply in 27)	
	27 2022-07-14 20:20:42.657980675	198.51.100.100	0 192.0.2.100	ICMP	108	0xce49 (52809)	64 Echo (ping) reply	10	=0x0001,	seq=21/5376,	tt1=64	(request in 26)	
	28 2022-07-14 20:20:42.657981971	198.51.100.100	0 192.0.2.100	ICMP	108	0xce49 (52809)	64 Echo (ping) reply	10	=0x0001,	seq=21/5376,	tt1=64		
	29 2022-07-14 20:20:43.681736697	192.0.2.100	198.51.100.100	ICMP	108	0x5c52 (23634)	64 Echo (ping) reque	st id	-0x0001,	seq=22/5632,	ttl=64	(no response found!)	
<													
>	Frame 3: 108 bytes on wire (864 bit	s), 108 bytes (captured (864 bits)	on interface	capture u	0 8, id 0		0000	00 50	56 9d e8 be 5	i8 97 bi	d b9 77 0e 89 26 00 00	·PV···X· ··w· &··
>	Ethernet II, Src: Cisco b9:77:0e (5	8:97:bd:b9:77:0	0e), Dst: VMware 90	:e8:be (00:50:	56:9d:e8:	be)		0010	00 0a	81 00 00 66 0	8 00 4	5 00 00 54 cc 2c 00 00	·····f·· E··T·,··
4	VN-Tag							0020	40 01	c1 80 c6 33 6	64 G4 C	0 00 02 64 00 00 2a 68	@····3dd ···d··*h
	0	= Direc	tion: To Bridge					0030	00 01	00 0f 89 7a d	10 62 0	0 00 00 00 b3 d7 09 00	·····z·b ·····
	.0	= Point	er: vif id					0040	00 00	00 00 10 11 1	2 13 1	4 15 16 17 18 19 1a 1b	
	0000 0000 0000	= Desti	nation: 0					0050	1c 1d	1e 1f 20 21 2	2 23 24	4 25 26 27 28 29 2a 2b	!"# \$5&`()"+
	0	= Loope	d: No	A				0000	20 20	2e 2f 30 31 3	12 33 34	4 35 36 37	,/0123 456/
		= Reser	ved: 0	41									
		= Versi	on: 0										
		00 1010 = Sourc	e: 10										
	Type: 802.10 Victual LAN (0x8100))											
v	802.10 Virtual LAN, PRI: 0, DEI: 0.	ID: 102											
	888 Priority: I	Rest Effort (de	fault) (0)										
	a DEL: Inelia	aihle		2									
	0000 0110 0110 - TD: 102	Prove		2									
	Tunos IDurt (000000)												
Ι.	Tetennet Destecal Vension 4 Ensu 3	0.0 51 100 100	Dr.t. 103 0 3 100										
1	Internet Protocol Version 4, SFC: 1	98.51.100.100,	051: 192.0.2.100	2									
11	incernet control Message Protocol			4									
Ľ													
1													
1													

설명

백플레인 인터페이스에서 패킷 캡처가 구성된 경우 스위치는 각 패킷을 동시에 두 번 캡처합니다. 이 경우, 내부 스위치는 보안 모듈의 애플리케이션이 포트 VLAN 태그 및 VN 태그와 함께 이미 태깅 한 패킷을 수신합니다. VLAN 태그는 내부 섀시에서 네트워크로 패킷을 전달하는 데 사용하는 이그 레스 인터페이스를 식별합니다. ICMP 에코 요청 패킷의 VLAN 태그 103은 이그레스 인터페이스로 Ethernet1/3을 식별하고, ICMP 에코 응답 패킷의 VLAN 태그 102는 이그레스 인터페이스로 Ethernet1/2를 식별합니다. 내부 스위치는 패킷이 네트워크로 전달되기 전에 VN 태그 및 내부 인터 페이스 VLAN 태그를 제거합니다.

이 표에서는 작업을 요약합니다.

작업	캡처 지 점	캡처된 패킷의 내부 포 트 VLAN	방향	캡처된 트래픽
백플레인 인터페이스에서 패킷 캡처 구성 및 확인	백플레 인 인터 페이스	102 103	인그레 스 전용	호스트 192.0.2.100에서 호스트 198.51.100.100으로의 ICMP 에 청 호스트 198.51.100.100에서 호스 192.0.2.100으로 ICMP 에코 응답

애플리케이션 및 애플리케이션 포트의 패킷 캡처

사용자가 애플리케이션 캡처 방향을 지정하는 경우 애플리케이션 또는 애플리케이션 포트 패킷 캡 처는 항상 백플레인 인터페이스에서, 또한 전면 인터페이스에서 구성됩니다.

주로 두 가지 활용 사례가 있습니다.

• 특정 전면 인터페이스를 떠나는 패킷에 대해 백플레인 인터페이스의 패킷 캡처를 구성합니다. 예를 들어, Ethernet1/2 인터페이스를 떠나는 패킷에 대해 백플레인 인터페이스 Ethernet1/9에 서 패킷 캡처를 구성합니다.

• 특정 전면 인터페이스 및 백플레인 인터페이스에서 동시 패킷 캡처를 구성합니다. 예를 들어, 인터페이스 Ethernet1/2를 떠나는 패킷에 대해 인터페이스 Ethernet1/2 및 백플레인 인터페이 스 Ethernet1/9에서 동시 패킷 캡처를 구성합니다.

이 섹션에서는 두 가지 사용 사례를 다룹니다.

작업 1

FCM 및 CLI를 사용하여 백플레인 인터페이스에서 패킷 캡처를 구성하고 확인합니다. 애플리케이 션 포트 Ethernet1/2가 이그레스 인터페이스로 식별되는 패킷이 캡처됩니다. 이 경우 ICMP 응답이 캡처됩니다.

토폴로지, 패킷 흐름 및 캡처 포인트



설정

FCM

FCM에서 다음 단계를 수행하여 FTD 애플리케이션 및 애플리케이션 포트 Ethernet1/2에서 패킷 캡 처를 구성합니다.

1. Tools(**툴) > Packet Capture(패킷 캡처) > Capture Session(캡처 세션)**을 사용하여 새 캡처 세 션을 생성합니다.

Overview Interfaces	Logical Devices	Security Engine	Platform Settings		System	Tools Help admin
					Packet Capture	Troubleshooting Logs
Capture Session Fiter L	ist					
				C Refresh	Capture Session Dele	te All Sessions
No Session available						

Application Port(애플리케이션 포트) 드롭다운 목록에서 애플리케이션 Ethernet1/2를 선택하고 Application Capture Direction(애플리케이션 캡처 방향)에서 Egress Packet(이그레스 패킷)을 선택합니다. 캡처를 활성화하려면 Session Name(세션 이름)을 입력하고 Save and Run(저장 및 실행)을 클릭합니다.

Overview Interfaces Logical Devices Security Engine Platform Settings		System	n Tools Help admin
Select an instance: ftd1 v		Save and Run Save Cancel	
ftd1	Session Name*	cap1	
	Selected Interfaces	None	
Ethernet1/2	Buffer Size	256 MB 👻	
	Snap length:	1518 Bytes	
	Store Packets	Overwrite Append	
	Capture On	ftd	
Ethernet1/3	Application Port	Ethernet1/2	
Ethernet1/9, Eth	hemet1/10 Application Capture Direction	All Packets Egress Packet	
	Capture Filter	Apply Filter Capture All	
Ethernet1/1			

FXOS CLI

백플레인 인터페이스에서 패킷 캡처를 구성하려면 FXOS CLI에서 다음 단계를 수행합니다.

1. 애플리케이션 유형 및 식별자를 식별합니다.

firepower# firepower App Name Deploy Typ	scope ssa /ssa# show Identifier e Turbo Mode	app-instan Slot ID e Profile Na	Se Admin State ame Cluster	e Oper S State	tate Cluster Ro	Running Version le	Startup Version
ftd ^{Native} 2. 캡처	ftd1 _{No} 세션을 생성	¹ 성합니다.	Enabled Not Appl	Online .icable	None	7.2.0.82	7.2.0.82
firepower firepower firepower firepower firepower firepower firepower firepower \$PO	<pre>scope pack /packet-cap /packet-cap /packet-cap /packet-cap /packet-cap /packet-cap /packet-cap /packet-cap</pre>	et-capture ture # creat ture/session ture/session ture/session ture/session ture/session ture/session	<pre>ce session co n* # create n/app-port* n/app-port* n/app-port* n/app-port* n* # commit n #</pre>	app-por # set a # set f # set s # up	t 1 l12 Eth pp-identifi ilter "" ubinterface	ernet1/2 ftd er ftd1 e 0	

FCM

인터페이스 **이름**을 확인하고 작동 **상태**가 작동 중인지, **파일 크기(바이트)가** 증가하는지 확인합니 다.

0	Overview	Interfaces	Logical Devices Security Engin	e Platform Settings			ę	System Tools H	ielp adm	nin
•	Capture Ses	ssion Filter Lis	st							
							Capture Session	Delete All Sessions		
6		cap1	Drop Count: 0	Operational State: up	Buffer Size: 256 MB		Snap Length: 1518 Bytes			
Г	Interface N	ame	Filter	File Size (in bytes)	File Name	Device Name				
	Ethernet1/2	- Ethernet1/10	None	576	cap1-vethernet-1175.pcap	ftd1	⊻			
Ŀ	Ethernet1/2	- Ethernet1/9	None	4360	cap1-vethernet-1036.pcap	ftd1	Ł			

FXOS CLI

scope packet-capture에서 캡처 세부 정보를 확인합니다.

```
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: 112
   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:
캡처 파일 수집
```

Firepower 4100/9300 내부 스위치 캡처 파일 수집 섹션의 단계를 수행합니다.

캡처 파일 분석

패킷 캡처 파일 리더 애플리케이션을 사용하여 캡처 파일을 엽니다. 여러 백플레인 인터페이스의 경우 각 백플레인 인터페이스의 모든 캡처 파일을 열어야 합니다. 이 경우 패킷은 백플레인 인터페 이스 Ethernet1/9에서 캡처됩니다.

첫 번째 및 두 번째 패킷을 선택하고 핵심 사항을 확인합니다.

1. 각 ICMP 에코 응답이 캡처되어 2번 표시됩니다.

- 2. 원래 패킷 헤더에 VLAN 태그가 없습니다.
- 3. 내부 스위치는 이그레스 인터페이스 Ethernet1/2를 식별하는 추가 포트 VLAN 태그(**102**)를 삽 입합니다.
- 4. 내부 스위치는 추가 VN 태그를 삽입합니다.

No. Time Source Destination	Protocol	Length IP ID	p TTL info	
1 2022-08-01 10:03:22.231237959 198.51.100.100 192.0.2.100	ICMP	108 d 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 0X4303 (1/331)	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, seg=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, seg=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, seg=8/2048, ttl=64	
16 2022-08-01 10:03:20.354936706 198.51.100.100 192.0.2.100	TCMP	108 0x4553 (17747)	64 Frho (ning) renly id=avent, seque/2048, ttl=64	
17 2022-02-01 10:03:30.378705204 108.51.100.100 102.0.2.100	TCMP	100 0x4597 (17815)	64 Echo (ning) renly id=aveal2 seque/2304 ttls64	
10 2022-00-01 10:03:30:370793204 190:31:100:100 192:0.2:100	TCMP	100 0x4507 (17015)	64 Echo (ping) reply in-oxoniz, seq=9/2304, til-64	
	TCHP	100 004537 (17813)	64 ECHO (PIRg) reply Id-6x0012, seq-9/2560, CL164	
19 2022-08-01 10:03:31.402//221/ 198.51.100.100 192.0.2.100	ICMP	108 0x467a (18042)	64 ECR0 (ping) reply 10-000012, seq=10/2560, tt1=64	
20 2022-08-01 10:03:31.402/74775 198.51.100.100 192.0.2.100	ICMP	108 0x467a (18042)	64 Ecno (ping) reply 1d=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 1d=0x0012, seq=11/2816, tt1=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) Ethernet II, Src: Cisco D9:77:00 (58:97:bd:b9:77:00), DSt: VMware	ts) on interfac 9d:e8:be (00:5	:e capture_u0_8, id 0 00:56:9d:e8:be)	0000 00 50 56 9d e8 be 58 97 bd b9 77 0e 89 26 00 00 ··PV···X· ··w 010 00 0a 81 00 00 66 08 00 45 00 00 54 42 f8 00 00 ····f· E··1	··&·· [B···
VN-Tag		,	0020 40 01 4a b5 c6 33 64 64 c0 00 02 64 00 00 90 04 @·J··3dd ···d	4
0 = Direction: To Bridge			0030 00 12 00 01 dd a4 e7 62 00 00 00 e3 0d 09 00b	
.0 Pointer: vif_id			0040 00 00 00 00 10 11 12 13 14 15 16 17 18 19 1a 1b	()**
00 0000 0000 0000 = Destination: 0			0050 1C 10 10 17 20 21 22 23 24 25 26 27 28 29 2a 20 ···· !"# \$%&"	()-+
= Looped: No	4		0000 ZC ZU	,
= Reserved: 0				
0000 0000 1010 = Source: 10				
Type: 802.1Q Virtual LAN (0x8100)				
802.10 Virtual LAN, PRI: 0, DEI: 0, ID: 102				
000 e Priority: Best Effort (default) (0)	-			
0 = DEI: Ineligible	31			
0000 0110 0110 = ID: 102				
Type: IPv4 (0x0800)				
Internet Protocol Version 4, Src: 198.51.100.100, Dst: 192.0.2.10	0			
Internet Control Message Protocol	21			
	_			
No. Time Source Destination	Protocol	Length P ID	PTI, 1/0	
No. Time Source Destination 1 2022-08-01 10:03:22.231237959 198.51.100.100 192.0.2.100	Protocol	Length P D 108 1 0x42f8 (17144)	₽TL №6 64 Echo (ping) reply id=0x0012, seq=1/256, ttl=64	
In. Time Source Destination 1 2022-08-01 10:03:22.231237959 198.51.100.100 192.0.2.100 2 2022-08-01 10:03:22.231239747 198.51.100.100 192.0.2.100	Protocol ICMP ICMP	Length P D 108 0x42f8 (17144) 108 0x42f8 (17144)	PTL b6 64 Echo (ping) reply id=0x0012, seq=1/256, tt1=64 64 Echo (ping) reply id=0x0012, seq=1/256, tt1=64	
Fig. Time Source Destination 1 2022-08-01 10:03:22.23123755 198.51.100.100 192.0.2.100 2 2022-08-01 10:03:22.231237947 198.51.100.100 192.0.2.100 3 2022-08-01 10:03:23.232244760 198.51.100.100 192.0.2.100	Protocol ICMP ICMP ICMP	Length PD 108 0x42f8 (17144) 108 0x42f8 (17144) 108 0x4303 (17331)	PTT, 146 64 Echo (ping) reply 64 Echo (ping) reply id=0x0012, seq=1/256, ttl=64 64 Echo (ping) reply id=0x0012, seq=2/2512, ttl=64	
Ho. Time Source Destination 1 2022-08-01 10:03:22,231237959 198.51.100.100 192.0.2.100 2 2022-08-01 10:03:22,231237947 198.51.100.100 192.0.2.100 3 2022-08-01 10:03:23,23224775 198.51.100.100 192.0.2.100 4 2022-08-01 10:03:23,23224775 198.51.100.100 192.0.2.100	Protocol ICMP ICMP ICMP ICMP	Length 108 9 108 9 108 0x42f8 (17144) 0x42f8 (17144) 0x42f8 (17144) 0x42f8 (17144) 0x42f8 (17144) 0x42f8 (17144)	PTL 36 id=0x0012, seq=1/256, ttl=64 64 Echo (ping) reply id=0x0012, seq=1/256, ttl=64 64 Echo (ping) reply id=0x0012, seq=1/252, ttl=64 64 Echo (ping) reply id=0x0012, seq=2/512, ttl=64	
Ho. Time Source Destination 1 2022-08-01 10:03:22.231237959 108.51.100.100 192.0.2.100 2 2022-08-01 10:03:22.231239747 198.51.100.100 192.0.2.100 3 2022-08-01 10:03:23.232244769 198.51.100.100 192.0.2.100 4 2022-08-01 10:03:23.232244753 198.51.100.100 192.0.2.100 5 2022-08-01 10:03:24.234703981 198.51.100.100 192.0.2.100	Protocol ICMP ICMP ICMP ICMP ICMP	Length P D 0x42f8 (17144) 108 0x42f8 (17144) 108 0x4305 (1731) 108 0x43b3 (1731) 108 0x455 (17502)	PTL b6 id=0x0012, seq=1/256, tt1=64 64 Echo (ping) reply id=0x0012, seq=1/256, tt1=64 64 Echo (ping) reply id=0x0012, seq=2/1256, tt1=64 64 Echo (ping) reply id=0x0012, seq=2/1251, tt1=64 64 Echo (ping) reply id=0x0012, seq=2/1251, tt1=64 64 Echo (ping) reply id=0x0012, seq=2/1251, tt1=64	
Ins. Time Source Destination 1 2022-08-01 10:03:22.231237959 198.51.100.100 192.0.2.100 2 2022-08-01 10:03:22.231237947 198.51.100.100 192.0.2.100 3 2022-08-01 10:03:22.23123747 198.51.100.100 192.0.2.100 4 2022-08-01 10:03:23.232244760 196.51.100.100 192.0.2.100 5 2022-08-01 10:03:24.2347933 196.51.100.100 192.0.2.100 6 2022-08-01 10:03:24.23470531 196.51.100.100 192.0.2.100	Protocol ICMP ICMP ICMP ICMP ICMP ICMP	Length P D 108 0x42f8 (17144) 0x42f8 (17144) 0x4305 (17331) 108 0x4305 (17331) 108 0x4456 (17502) 108 0x4456 (17502)	PTTL 146 id=0x0012, seq=1/256, tt1=64 64 Echo (ping) reply id=0x0012, seq=1/256, tt1=64 64 Echo (ping) reply id=0x0012, seq=2/512, tt1=64 64 Echo (ping) reply id=0x0012, seq=2/512, tt1=64 64 Echo (ping) reply id=0x0012, seq=3/768, tt1=64 64 Echo (ping) reply id=0x0012, seq=3/768, tt1=64 64 Echo (ping) reply id=0x0012, seq=3/768, tt1=64	
Ho. Time Source Destination 1 2022-08-01 10:03:22,231237559 198.51.100.100 192.0.2.100 2 2022-08-01 10:03:22,231237477 198.51.100.100 192.0.2.100 3 2022-08-01 10:03:23,23224759 198.51.100.100 192.0.2.100 4 2022-08-01 10:03:23,23224759 198.51.100.100 192.0.2.100 5 2022-08-01 10:03:24,234706751 198.51.100.100 192.0.2.100 7 2022-08-01 10:03:24,234706751 198.51.100.100 192.0.2.100 7 2022-08-01 10:03:25,258672449 198.51.100.100 192.0.2.100	Protocol ICMP ICMP ICMP ICMP ICMP ICMP	Length P.D. 108 0x42f8 (17144) 108 0x42f8 (17144) 108 0x43b3 (17331) 108 0x43b3 (17331) 108 0x4456 (17502) 108 0x4456 (17502) 108 0x4456 (17502) 108 0x4456 (17508)	PTL b6 id=0x0012, seq=1/256, ttl=64 64 Echo (ping) reply id=0x0012, seq=1/256, ttl=64 64 Echo (ping) reply id=0x0012, seq=2/512, ttl=64 64 Echo (ping) reply id=0x0012, seq=2/512, ttl=64 64 Echo (ping) reply id=0x0012, seq=3/768, ttl=64	
Ins. Time Source Destination 1 2022-08-01 10:03:22.231237959 198.51.100.100 192.0.2.100 2 2022-08-01 10:03:22.231237947 198.51.100.100 192.0.2.100 3 2022-08-01 10:03:22.332244760 198.51.100.100 192.0.2.100 4 2022-08-01 10:03:23.232244760 198.51.100.100 192.0.2.100 5 2022-08-01 10:03:24.234703051 198.51.100.100 192.0.2.100 6 2022-08-01 10:03:24.23470551 198.51.100.100 192.0.2.100 7 2022-08-01 10:03:24.234706751 198.51.100.100 192.0.2.100 8 2022-08-08 10:03:24.234706751 198.51.100.100 192.0.2.100 7 2022-08-01 10:03:24.235.25672440 198.51.100.100 192.0.2.100 8 2020-08-01 10:03:25.25672440 198.51.100.100 192.0.2.100	Protocol ICMP ICMP ICMP ICMP ICMP ICMP ICMP	Length P.D 108 0x42f8 (17144) 108 0x42f8 (17144) 108 0x42f8 (17143) 108 0x43b3 (17331) 108 0x445e (17502) 108 0x445e (17502) 108 0x445e (17502) 108 0x445e (17508)	PTL Ho id=0x0012, seq=1/256, ttl=64 64 Echo (ping) reply id=0x0012, seq=1/256, ttl=64 64 Echo (ping) reply id=0x0012, seq=2/512, ttl=64 64 Echo (ping) reply id=0x0012, seq=2/512, ttl=64 64 Echo (ping) reply id=0x0012, seq=3/768, ttl=64 64 Echo (ping) reply id=0x0012, seq=3/768, ttl=64 64 Echo (ping) reply id=0x0012, seq=3/768, ttl=64 64 Echo (ping) reply id=0x0012, seq=4/1024, ttl=64 64 Echo (ping) reply id=0x0012, seq=4/1024, ttl=64 64 Echo (ping) reply id=0x0012, seq=4/1024, ttl=64	
Ho. Time Source Distriction 1 2022-08-01 10:03:22,231237959 198.51.100.100 192.0.2.100 2 2022-08-01 10:03:22,231237947 198.51.100.100 192.0.2.100 3 2022-08-01 10:03:23,23224769 198.51.100.100 192.0.2.100 4 2022-08-01 10:03:23,23224775 198.51.100.100 192.0.2.100 5 2022-08-01 10:03:23,23224775 198.51.100.100 192.0.2.100 6 2022-08-01 10:03:23,23224775 198.51.100.100 192.0.2.100 6 2022-08-01 10:03:25,258672469 198.51.100.100 192.0.2.100 7 2022-08-01 10:03:25,258672469 198.51.100.100 192.0.2.100 8 2022-08-01 10:03:25,258672469 198.51.100.100 192.0.2.100 9 2022-08-01 10:03:25,258672469 198.51.100.100 192.0.2.100 9 2022-08-01 10:03:25,258672469 198.51.100.100 192.0.2.100	Protocol ICMP ICMP ICMP ICMP ICMP ICMP ICMP ICMP	Length P.D. 108 0x42f8 (17144) 108 0x42f8 (17144) 108 0x43b3 (1731) 108 0x44b3 (17502) 108 0x4454 (17502) 108 0x4454 (17502) 108 0x4454 (17503) 108 0x4454 (17603)	PTL b6 id=0x0012, seq=1/256, ttl=64 64 Echo (ping) reply id=0x0012, seq=1/256, ttl=64 64 Echo (ping) reply id=0x0012, seq=2/512, ttl=64 64 Echo (ping) reply id=0x0012, seq=3/768, ttl=64 64 Echo (ping) reply id=0x0012, seq=4/1024, ttl=64	
Bo. Time Source Destination 1 2022-08-01 10:03:22.23123755 198.51.100.100 192.0.2.100 2 2022-08-01 10:03:22.23123755 198.51.100.100 192.0.2.100 3 2022-08-01 10:03:22.33224470 198.51.100.100 192.0.2.100 4 2022-08-01 10:03:23.23224475 198.51.100.100 192.0.2.100 5 2022-08-01 10:03:23.23224475 198.51.100.100 192.0.2.100 6 2022-08-01 10:03:24.24470531 198.51.100.100 192.0.2.100 7 2022-08-01 10:03:25.258674861 198.51.100.100 192.0.2.100 9 2022-08-01 10:03:25.258674861 198.51.100.100 192.0.2.100 9 2022-08-01 10:03:25.258674861 198.51.100.100 192.0.2.100 9 2022-08-01 10:03:25.258674861 198.51.100.100 192.0.2.100 9 2022-08-01 10:03:25.258674861 198.51.100.100 192.0.2.100 10 2022-08-01 10:03:25.258674861 198.51.100.100 192.0.2.100	Protocol ICMP ICMP ICMP ICMP ICMP ICMP ICMP ICMP	tegs P D 108 0x42f8 (17144) 0x842f8 (17144) 0x42f8 (17144) 108 0x435 (1733) 108 0x445 (17502) 108 0x445 (17503) 108 0x4464 (17508) 108 0x445 (17603) 108 0x445 (17603)	PTL b6 id=0x0012, seq=1/256, ttl=64 64 Echo (ping) reply id=0x0012, seq=1/256, ttl=64 64 Echo (ping) reply id=0x0012, seq=2/1256, ttl=64 64 Echo (ping) reply id=0x0012, seq=2/1258, ttl=64 64 Echo (ping) reply id=0x0012, seq=3/768, ttl=64 64 Echo (ping) reply id=0x0012, seq=3/768, ttl=64 64 Echo (ping) reply id=0x0012, seq=4/1024, ttl=64 64 Echo (ping) reply id=0x0012, seq=4/1024, ttl=64 64 Echo (ping) reply id=0x0012, seq=4/1024, ttl=64 64 Echo (ping) reply id=0x0012, seq=4/1224, ttl=64 64 Echo (ping) reply id=0x0012, seq=5/1280, ttl=64 64 Echo (ping) reply id=0x0012, seq=5/1280, ttl=64	
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설명

이 경우 포트 VLAN 태그가 102인 Ethernet1/2는 ICMP 에코 응답 패킷의 이그레스 인터페이스입니 다.

애플리케이션 캡처 방향이 캡처 옵션에서 이그레스로 설정된 경우 이더넷 헤더에 포트 VLAN 태그

102가 있는 패킷은 인그레스 방향의 백플레인 인터페이스에서 캡처됩니다.

이 표에서는 작업을 요약합니다.

작업	캡처 지점	캡처된 패킷의 내부 포 트 VLAN	방향	캡처된 트래픽
애플리케이션 및 애플리케 이션 포트 Ethernet1/2에서 캡처 구성 및 확인	백플레인 인 터페이스	102	인그레 스 전용	호스트 198.51.100.100에서 호 192.0.2.100으로 ICMP 에코 용

작업 2

FCM 및 CLI를 사용하여 백플레인 인터페이스 및 전면 인터페이스 Ethernet1/2에서 패킷 캡처를 구성하고 확인합니다.

동시 패킷 캡처가 다음 위치에 구성됩니다.

- 전면 인터페이스 인터페이스 Ethernet1/2에 포트 VLAN 102가 있는 패킷이 캡처됩니다. 캡처 된 패킷은 ICMP 에코 요청입니다.
- 백플레인 인터페이스 Ethernet1/2가 이그레스 인터페이스로 식별되는 패킷 또는 포트 VLAN 102의 패킷이 캡처됩니다. 캡처된 패킷은 ICMP 에코 응답입니다.

토폴로지, 패킷 흐름 및 캡처 포인트



설정

FCM

FCM에서 다음 단계를 수행하여 FTD 애플리케이션 및 애플리케이션 포트 Ethernet1/2에서 패킷 캡 처를 구성합니다.

1. Tools(**툴) > Packet Capture(패킷 캡처) > Capture Session(캡처 세션)**을 사용하여 새 캡처 세 션을 생성합니다.

Overview In	terfaces	Logical Devices	Security Engine	Platform Settings			System	Tools	Help	admin
							Packet Capture	Trouble	eshooti	ng Logs
Capture Session	Filter Lis	st								
					C Refresh	(Capture Session Dele	te All Sessi	ons	
No Session availa	ble									

Application Port(애플리케이션 포트) 드롭다운 목록에서 FTD 애플리케이션 Ethernet1/2를 선택하고 Application Capture Direction(애플리케이션 캡처 방향)에서 All Packets(모든 패킷)를 선택합니다. 캡처를 활성화하려면 Session Name(세션 이름)을 입력하고 Save and Run(저장 및 실행)을 클릭합니다.

Overview Interfaces Logical Devices Security Engine	Natform Settings			System Tools Help admin
Select an instance: ftd1 🗸			Save and R	un Save Cancel
ftd1		Session Name* cap1		
		Selected Interfaces None		
Ethernet1/2	nat1/2	Buffer Size 256 MB	v	
		Snap length: 1518	Bytes	
		Store Packets Overwrite Append		
		Capture On ftd	~	
Ethernet1/3		Application Port Ethernet1/2	▼	
	FTD Ethernet1/9, Ethernet1/10	Application Capture Direction All Packets Egress Pac	ket	
		Capture Filter Apply Filter Capture	ui -	
Ethernet1/1				

FXOS CLI

백플레인 인터페이스에서 패킷 캡처를 구성하려면 FXOS CLI에서 다음 단계를 수행합니다.

1. 애플리케이션 유형 및 식별자를 식별합니다.

firepower# firepower App Name Deploy Typ	scope ssa /ssa # show Identifier e Turbo Mode	app-instanc Slot ID Profile Na	e Admin State me Cluster	e Oper S State	State Cluster Rc	Running Version	n Startup Version
f td ^{Native} 2. 캡처	^{ftd1} ^{N⊙} 세션을 생성	¹ 1 합니다.	Enabled Not Appl	Online Licable	None	7.2.0.82	7.2.0.82
firepower firepower firepower firepower firepower firepower firepower	scope packed /packet-capt /packet-capt /packet-capt /packet-capt /packet-capt /packet-capt	et-capture cure # creat cure/session cure/session cure/session cure/session cure/session	e session c * # create 1/phy-port* 1/phy-port* * # create 1/app-port*	cap1 phy-por # set a # exit app-por # set a	t eth1/2 pp-identifi t 1 link12 pp-identifi	er ftd1 Ethernet1/2 ftd er ftd1	1

FCM

인터페이스 **이름**을 확인하고 작동 **상태**가 작동 중인지, **파일 크기(바이트)가** 증가하는지 확인합니 다.

Overview Interfaces L	ogical Devices Security Engine Platform	Settings			Si	ystem Tools Help admin
Capture Session Filter List						
					C R	effesh Capture Session D
🔺 📵 capl	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	土	
Ethernet1/2 - Ethernet1/10	None	368	cap1-vethernet-1175.pcap	ftd1	*	
Ethernet1/2 - Ethernet1/9	None	13040	cap1-vethernet-1036.pcap	ftd1	*	

FXOS CLI

scope packet-capture에서 캡처 세부 정보를 확인합니다.

```
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:

캡처 파일 수집
```

Firepower 4100/9300 내부 스위치 캡처 파일 수집 섹션의 단계를 수행합니다.

캡처 파일 분석

패킷 캡처 파일 리더 애플리케이션을 사용하여 캡처 파일을 엽니다. 여러 백플레인 인터페이스의 경우 각 백플레인 인터페이스의 모든 캡처 파일을 열어야 합니다. 이 경우 패킷은 백플레인 인터페 이스 Ethernet1/9에서 캡처됩니다.

인터페이스 Ethernet1/2에 대한 캡처 파일을 열고 첫 번째 패킷을 선택한 다음 핵심 사항을 확인합 니다.

- 1. ICMP 에코 요청 패킷만 캡처됩니다. 각 패킷은 캡처되어 2번 표시됩니다.
- 2. 원래 패킷 헤더에 VLAN 태그가 없습니다.
- 3. 내부 스위치는 인그레스 인터페이스 Ethernet1/2를 식별하는 추가 포트 VLAN 태그(**102**)를 삽 입합니다.
- 4. 내부 스위치는 추가 VN 태그를 삽입합니다.

No.	Time	Source	Destination	Protocol	Length	PD	IP TTL Info	
-	1 2022-08-01 11:33:19.070693081	192.0.2.100	198.51.100.100	ICMP	108 1	0xc009 (49161)	64 Echo (ping) reque	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) reque	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	8XC009 (49161)	64 ECRO (ping) reque	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) reque	t 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) reque	t 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) reque	t 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) reque	t 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) reque	t 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) reque	t 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) reque	t 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) reque	t 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) reque	t 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) reque	t 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) reque	t 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) reque	t 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) reque	t 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) reque	t 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) reque	t 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) reque	t id=0x0013, seg=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) reque	t 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) reque	t 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) reque	t 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) reque	t 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) reque	t id=0x0013, seg=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) reque	t id=0x0013, seg=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) reque	t id=0x0013, seg=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) reque	t id=0x0013, seg=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) reque	t id=0x0013, seg=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) reque	t id=0x0013, seg=14/3584, ttl=64 (no response found!)
ć.							(1-0)	
1	Frame 1: 108 bytes on wire (864 bit	s) 109 hytes ca	ntured (R64 hits) o	n interface ca	enture ue	1 14 0		888 58 97 hd h9 77 80 89 58 56 9d 08 ho 89 26 88 83 X
5	Ethernet II. Src: VMware 9d:e8:be (00:50:56:9d:e8:h	e). Dst: Cisco h9:7	7:0e (58:97:br	1:h9:77:0	_1, 10 0		010 00 00 81 00 00 65 08 00 45 00 00 54 c0 09 40 00 ·····f··E··T··@·
Ű,	WLTag	0013013013010010	en osti cisco osti	100 (5015710)		-)		020 40 01 8d a3 c0 00 02 64 c6 33 64 64 08 00 8d 7c @d .3dd
	1		ion: Ecom Bridge					030 00 13 00 01 f2 b9 e7 62 00 00 00 00 cb 7f 06 00bb
	.0	Pointer	vif id					040 00 00 00 00 10 11 12 13 14 15 16 17 18 19 1a 1b ······
		= Destina	tion: 10					050 1c 1d 1e 1f 20 21 22 23 24 25 26 27 28 29 2a 2b ···· !"# \$%&'()*+
		= Looped:	No A	4				060 2c 2d 2e 2f 30 31 32 33 34 35 36 37 ,/0123 4567
		= Reserve	di a	• •				
		= Version						
	0000 000	00 0000 = Sources						
	Tupe: 802 10 Victual LAN (0x8100))						
J	802 10 Victual LAN DRT: 0 DET: 0	TD: 182		_				
1	and priority in the priority in	Rest Effort (dof:	(0) (the					
	a per tali	aihla		2				
	0000 0110 0110 - ID: 102	Prove		2				
	Tune: TPu4 (avagaa)							
J.	Internet Protocol Version A Front	02 0 2 100 Det.	109 51 100 100					
1	Internet Frotocol Version 4, SFC: 1		190.91.100.100					
1	incernet control Message Protocol							

두 번째 패킷을 선택하고 핵심 사항을 확인합니다.

- 1. ICMP 에코 요청 패킷만 캡처됩니다. 각 패킷은 캡처되어 2번 표시됩니다.
- 2. 원래 패킷 헤더에 VLAN 태그가 없습니다.
- 내부 스위치는 인그레스 인터페이스 Ethernet1/2를 식별하는 추가 포트 VLAN 태그(102)를 삽 입합니다.

No. Time	Source	Destination	Protocol	Length	PD	IP TTL Info		
1 2022-08-01 11:33:19.070693081	192.0.2.100	198.51.100.100	ICMP	108 1	0xc009 (49161)	64 Echo (ping) re	equest i	d=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) re	quest i	d=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) re	equest i	d=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) re	equest in	d=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) re	equest i	d=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) re	equest i	d=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) re	equest i	d=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) re	equest i	d=0x0013, seg=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	Øxc175 (49525)	64 Echo (ping) re	equest in	d=0x0013, seg=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	Øxc175 (49525)	64 Echo (ping) re	equest i	d=0x0013, seg=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) re	equest i	d=0x0013, seg=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) re	equest i	d=0x0013, seg=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) re	quest i	d=0x0013, seg=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	Øxc211 (49681)	64 Echo (ping) re	equest i	d=0x0013, seg=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) re	quest i	d=0x0013, seg=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) re	quest i	d=0x0013, seg=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) re	equest i	d=0x0013, seg=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) re	equest i	d=0x0013, seg=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	Øxc476 (50294)	64 Echo (ping) re	equest i	d=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) re	equest i	d=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) re	equest in	d=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) re	equest i	d=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) re	equest in	d=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) re	equest in	d=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) re	equest i	d=0x0013, seg=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) re	equest i	d=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) re	equest i	d=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) re	equest i	d=0x0013, seg=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) re	equest i	d=0x0013, seg=14/3584, ttl=64 (no response found!)
¢					, , , ,	(1 0)		, , , , , , , , , , , , , , , , , , , ,
> Frame 2: 102 bytes on wire (816 bit	(s), 102 hytes ca	ntured (816 hits) o	a interface ca	nture u8	1. id 0			58 97 bd b9 77 8e 89 58 56 9d e8 be 81 88 89 66 X ··· W ·· P V ··· ·· f
> Ethernet II, Src: VMware 9d:e8:be (00:50:56:9d:e8:b	e), Dst: Cisco b9:7	7:0e (58:97:bo	:b9:77:0	he)		0010	08 00 45 00 00 54 c0 09 40 00 40 01 8d a3 c0 00 ··E··T·· @·@····
802.10 Virtual LAN, PRI: 0, DEI: 0.	ID: 102		-				0020	02 64 c6 33 64 64 08 00 8d 7c 00 13 00 01 f2 b9 ·d·3dd·· ·
eee	Rest Effort (def;	wlt) (0)	_				0030	e7 62 00 00 00 00 cb 7f 06 00 00 00 00 00 10 11 .b
0 = DEI: Ineli	gible						0040	12 13 14 15 16 17 18 19 1a 1b 1c 1d 1e 1f 20 21
0000 0110 0110 = ID: 102	0	-	·				0050	22 23 24 25 26 27 28 29 2a 2b 2c 2d 2e 2f 30 31 "#\$%&'() *+,/01
Type: IPv4 (0x0800)							0060	32 33 34 35 36 37 234567
> Internet Protocol Version 4, Src: 1	192.0.2.100, Dst:	198.51.100.100						
> Internet Control Message Protocol	,							

인터페이스 Ethernet1/9의 캡처 파일을 열고 첫 번째 및 두 번째 패킷을 선택한 다음 핵심 사항을 확 인합니다.

- 1. 각 ICMP 에코 응답이 캡처되어 2번 표시됩니다.
- 2. 원래 패킷 헤더에 VLAN 태그가 없습니다.
- 3. 내부 스위치는 이그레스 인터페이스 Ethernet1/2를 식별하는 추가 포트 VLAN 태그(**102**)를 삽 입합니다.
- 4. 내부 스위치는 추가 VN 태그를 삽입합니다.

No.	Time	Source	Destination	Protocol	Length	PD	1P TTL 1nfo	
	1 2022-08-01 11:33:19.071512698	198.51.100.100	192.0.2.100	ICMP	108 -	0x4f27 (20263)	64 Echo (ping) repl	ly 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) repl	ly 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	0,4110 (204/5)	04 ECHO (PING) Tebi	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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly 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) repl	ly id=0x0013, seq=15/3840, ttl=64
<								
> Fr	ame 1: 108 bytes on wire (864 bit	s), 108 bytes ca	otured (864 bits) o	n interface ca	pture_u0_	8, id 0		0000 00 50 56 9d e8 be 58 97 bd b9 77 0e 89 26 00 00 PV···X···w··&··
> Et	hernet II, Src: Cisco b9:77:0e (5	8:97:bd:b9:77:0e), Dst: VMware 9d:e	8:be (00:50:56	:9d:e8:be)		0010 00 0a 81 00 00 66 08 00 45 00 00 54 4f 27 00 00 ·····f·· E··TO'··
∽ vi	I-Tag							0020 40 01 30 86 66 33 64 64 60 00 02 64 00 00 95 7c g·>··300 ···0···
	0	= Directi	on: To Bridge					0030 00 13 00 01 12 09 e7 02 00 00 00 00 00 00 00 00 00 00 00 00
	.0	= Pointer	: vif_id					0050 1c 1d 1e 1f 20 21 22 23 24 25 26 27 28 29 2a 2b !"# \$\$\$\$'()*+
	00 0000 0000 0000	= Destina	tion: 0					0060 2c 2d 2e 2f 30 31 32 33 34 35 36 37 ,/0123 4567
	···· ··· ··· ··· ··· 0 ····	= Looped:	NO Z					
		= Reserve	d: 0					
		· · · · · · · · · Version	: 0					
	0000 000	00 1010 = Source:	10					
	Type: 802.10 Virtual LAN (0x8100)			_				
× 80	2.10 Virtual LAN, PRI: 0, DEI: 0,	ID: 102	1.1. (-1					
	000 = Priority: 8	est Effort (defa	uit) (0)					
	= DEI: Inelig	1016						
	0000 0110 0110 = 1D: 102							
	toppet Deptacel Vencion 4 Enci 1	0.0 51 100 100 0	+, 103 0 3 100	_				
	tennet Control Message Destecol	98.51.100.100, 0	st: 192.0.2.100					
11	ternet control message protocol		4					

No. Time Source Destinat	ation Protocol	Length IP ID IP TTL Info	
1 2022-08-01 11:33:19.071512698 198.51.100.100 192.0	0.2.100 ICMP	108 ┥ 0x4f27 (20263) 64 Echo (pin	ng) reply id=0x0013, seq=1/256, ttl=64
2 2022-08-01 11:33:19.071514882 198.51.100.100 192.0	0.2.100 ICMP	108 0x4f27 (20263) 64 Echo (pin	ng) reply id=0x0013, seq=1/256, ttl=64
3 2022-08-01 11:33:20.072677302 198.51.100.100 192.0	0.2.100 ICMP	108 0X4TTD (20475) 04 ECHO (pin	ng) repry id=0x0013, seq=2/512, ttl=64
4 2022-08-01 11:33:20.072679384 198.51.100.100 192.0	0.2.100 ICMP	108 0x4ffb (20475) 64 Echo (pin	ng) reply id=0x0013, seq=2/512, ttl=64
5 2022-08-01 11:33:21.073913640 198.51.100.100 192.0	0.2.100 ICMP	108 0x50ac (20652) 64 Echo (pin	ng) reply id=0x0013, seq=3/768, ttl=64
6 2022-08-01 11:33:21.073915690 198.51.100.100 192.0	0.2.100 ICMP	108 0x50ac (20652) 64 Echo (pin	ng) reply id=0x0013, seq=3/768, ttl=64
7 2022-08-01 11:33:22.075239381 198.51.100.100 192.0	0.2.100 ICMP	108 0x513e (20798) 64 Echo (pin	ng) reply id=0x0013, seq=4/1024, ttl=64
8 2022-08-01 11:33:22.075241491 198.51.100.100 192.0	0.2.100 ICMP	108 0x513e (20798) 64 Echo (pin	ng) reply id=0x0013, seq=4/1024, ttl=64
9 2022-08-01 11:33:23.076447152 198.51.100.100 192.0	0.2.100 ICMP	108 0x51c9 (20937) 64 Echo (pin	ng) reply id=0x0013, seq=5/1280, ttl=64
10 2022-08-01 11:33:23.076449303 198.51.100.100 192.0	0.2.100 ICMP	108 0x51c9 (20937) 64 Echo (pin	ng) reply id=0x0013, seq=5/1280, ttl=64
11 2022-08-01 11:33:24.082407896 198.51.100.100 192.0	0.2.100 ICMP	108 0x528e (21134) 64 Echo (pin	ng) reply id=0x0013, seq=6/1536, ttl=64
12 2022-08-01 11:33:24.082410099 198.51.100.100 192.0	0.2.100 ICMP	108 0x528e (21134) 64 Echo (pin	ng) reply id=0x0013, seq=6/1536, ttl=64
13 2022-08-01 11:33:25.106382424 198.51.100.100 192.0	0.2.100 ICMP	108 0x52af (21167) 64 Echo (pin	ng) reply id=0x0013, seq=7/1792, ttl=64
14 2022-08-01 11:33:25.106384549 198.51.100.100 192.0	0.2.100 ICMP	108 0x52af (21167) 64 Echo (pin	ng) reply id=0x0013, seq=7/1792, ttl=64
15 2022-08-01 11:33:26.130437851 198.51.100.100 192.0	0.2.100 ICMP	108 0x53a6 (21414) 64 Echo (pin	ng) reply id=0x0013, seq=8/2048, ttl=64
16 2022-08-01 11:33:26.130440320 198.51.100.100 192.0	0.2.100 ICMP	108 0x53a6 (21414) 64 Echo (pin	ng) reply id=0x0013, seq=8/2048, ttl=64
17 2022-08-01 11:33:27.154398212 198.51.100.100 192.0	0.2.100 ICMP	108 0x5446 (21574) 64 Echo (pin	ng) reply id=0x0013, seq=9/2304, ttl=64
18 2022-08-01 11:33:27.154400198 198.51.100.100 192.0	0.2.100 ICMP	108 0x5446 (21574) 64 Echo (pin	ng) reply id=0x0013, seq=9/2304, ttl=64
19 2022-08-01 11:33:28.178469866 198.51.100.100 192.0	0.2.100 ICMP	108 0x5493 (21651) 64 Echo (pin	ng) reply id=0x0013, seq=10/2560, ttl=64
20 2022-08-01 11:33:28.178471810 198.51.100.100 192.0	0.2.100 ICMP	108 0x5493 (21651) 64 Echo (pin	ng) reply id=0x0013, seq=10/2560, ttl=64
21 2022-08-01 11:33:29.202395869 198.51.100.100 192.0	0.2.100 ICMP	108 0x54f4 (21748) 64 Echo (pin	ng) reply id=0x0013, seq=11/2816, ttl=64
22 2022-08-01 11:33:29.202398067 198.51.100.100 192.0	0.2.100 ICMP	108 0x54f4 (21748) 64 Echo (pin	ng) reply id=0x0013, seq=11/2816, ttl=64
23 2022-08-01 11:33:30.226398735 198.51.100.100 192.0	0.2.100 ICMP	108 0x5526 (21798) 64 Echo (pin	ng) reply id=0x0013, seq=12/3072, ttl=64
24 2022-08-01 11:33:30.226401017 198.51.100.100 192.0	0.2.100 ICMP	108 0x5526 (21798) 64 Echo (pin	ng) reply id=0x0013, seq=12/3072, ttl=64
25 2022-08-01 11:33:31.250387808 198.51.100.100 192.0	0.2.100 ICMP	108 0x55f2 (22002) 64 Echo (pin	ng) reply id=0x0013, seq=13/3328, ttl=64
26 2022-08-01 11:33:31.250389971 198.51.100.100 192.0	0.2.100 ICMP	108 0x55f2 (22002) 64 Echo (pin	ng) reply id=0x0013, seq=13/3328, ttl=64
27 2022-08-01 11:33:32.274416011 198.51.100.100 192.0	0.2.100 ICMP	108 0x5660 (22112) 64 Echo (pin	ng) reply id=0x0013, seq=14/3584, ttl=64
28 2022-08-01 11:33:32.274418229 198.51.100.100 192.0	0.2.100 ICMP	108 0x5660 (22112) 64 Echo (pin	ng) reply id=0x0013, seq=14/3584, ttl=64
29 2022-08-01 11:33:33.298397657 198.51.100.100 192.0	0.2.100 ICMP	108 0x56e7 (22247) 64 Echo (pin	ng) reply id=0x0013, seq=15/3840, ttl=64
C			
> Frame 2: 108 bytes on wire (864 bits), 108 bytes captured	d (864 bits) on interface ca	pture_u0_8, id 0	0000 00 50 56 9d e8 be 58 97 bd b9 77 0e 89 26 00 00 ·PV···X· ··w··&··
> Ethernet II, Src: Cisco b9:77:0e (58:97:bd:b9:77:0e), Dst	t: VMware 9d:e8:be (00:50:56	:9d:e8:be)	0010 00 0a 81 00 00 66 08 00 45 00 00 54 4f 27 00 00 ·····f·· E··TO'··
✓ VN-Tag			0020 40 01 3e 86 c6 33 64 64 c0 00 02 64 00 00 95 7c @·>··3dd ···d···
0 Direction: To	o Bridge		0030 00 13 00 01 f2 b9 e7 62 00 00 00 cb 7f 06 00b
.0 = Pointer: vif	id		0040 00 00 00 00 10 11 12 13 14 15 16 17 18 19 1a 1b
00 0000 0000 0000 = Destination:	0		0050 1c 1d 1e 1f 20 21 22 23 24 25 26 27 28 29 2a 2b ····· 1"# \$3&`()"+
= Looped: No	<u> </u>		0000 2c 2d 2e 2t 30 31 32 33 34 35 36 37 , /0123 4567
= Reserved: 0			
= Version: 0			
0000 0000 1010 = Source: 10			
Type: 802.10 Virtual LAN (0x8100)			
✓ 802.10 Virtual LAN, PRI: 0, DEI: 0, ID: 102			
000 = Priority: Best Effort (default)	(0)		
0 = DEI: Ineligible	~ 2		
0000 0110 0110 = ID: 102			
Type: IPv4 (0x0800)			
Internet Protocol Version 4, Src: 198,51,100.100. Dst: 19	22.0.2.100		
Internet Control Message Protocol	21		

설명

Application Capture Direction의 All Packets 옵션을 선택한 경우 선택한 애플리케이션 포트 Ethernet1/2와 관련된 2개의 동시 패킷 캡처가 구성됩니다. 전면 인터페이스 Ethernet1/2의 캡처 및 선택한 백플레인 인터페이스의 캡처

전면 인터페이스에서 패킷 캡처가 구성된 경우, 스위치는 각 패킷을 동시에 두 번 캡처합니다.

• 포트 VLAN 태그를 삽입한 후

• VN 태그를 삽입한 후

연산 순서에 따라 VN 태그는 포트 VLAN 태그 삽입보다 후반에 삽입됩니다. 그러나 캡처 파일에서 VN 태그가 있는 패킷은 포트 VLAN 태그가 있는 패킷보다 먼저 표시됩니다. 이 예에서 ICMP 에코 요청 패킷의 VLAN 태그(102)는 Ethernet1/2를 인그레스 인터페이스로 식별합니다.

백플레인 인터페이스에서 패킷 캡처가 구성된 경우 스위치는 각 패킷을 동시에 두 번 캡처합니다. 내부 스위치는 보안 모듈의 애플리케이션이 포트 VLAN 태그 및 VN 태그와 함께 이미 태깅한 패킷 을 수신합니다. 포트 VLAN 태그는 내부 섀시에서 네트워크로 패킷을 전달하는 데 사용하는 이그레 스 인터페이스를 식별합니다. 이 예에서 ICMP 에코 응답 패킷의 VLAN 태그 102는 이그레스 인터 페이스로 Ethernet1/2를 식별합니다.

내부 스위치는 패킷이 네트워크로 전달되기 전에 VN 태그 및 내부 인터페이스 VLAN 태그를 제거 합니다.

이 표에서는 작업을 요약합니다.

작업	캡처 지점	캡처된 패킷의 내부 포트 VLAN	방향	캡처된 트래픽
애플리케이션 및 애플리케이 션 포트 Ethernet1/2에서 캡처 구성 및 확인	백플레인 인 터페이스	102	인그레스 전용	호스트 198.51.100.100에서 3 192.0.2.100으로 ICMP 에코 3
	인터페이스 Ethernet1/2	102	인그레스 전용	호스트 192.0.2.100에서 호스 198.51.100.100으로의 ICMP

물리적 또는 포트 채널 인터페이스의 하위 인터페이스에서 패킷 캡처

FCM 및 CLI를 사용하여 하위 인터페이스 Ethernet1/2.205 또는 포트 채널 하위 인터페이스 Portchannel1.207에서 패킷 캡처를 구성하고 확인합니다. 하위 인터페이스의 하위 인터페이스 및 캡처는 컨테이너 모드의 FTD 애플리케이션에 대해서만 지원됩니다. 이 경우 Ethernet1/2.205 및 Portchannel1.207에서 패킷 캡처가 구성됩니다.



토폴로지, 패킷 흐름 및 캡처 포인트

설정

FCM

FCM에서 다음 단계를 수행하여 FTD 애플리케이션 및 애플리케이션 포트 Ethernet1/2에서 패킷 캡 처를 구성합니다.

1. Tools(**툴) > Packet Capture(패킷 캡처) > Capture Session(캡처 세션)**을 사용하여 새 캡처 세 션을 생성합니다.

Overview Interfaces Logical Devices Security Engine Platform Settings	System	Tools Help admin
	Packet Capture	Troubleshooting Logs
Capture Session Fiter List		
C Refresh	Capture Session Dele	e All Sessions
No Session available		

2. 특정 애플리케이션 인스턴스 ftd1, 하위 인터페이스 Ethernet1/2.205를 선택하고 세션 이름을 제공한 다음 Save and Run을 클릭하여 캡처를 활성화합니다.

Overview Interfaces Logical Devices Security Engine Platform Settings			System Tools Help admin
Select an instance: ftd1			Save and Run Save Cancel
Subinterface selection Ethernet/2.205 Ethernet/2.206 Subinterfaces(2) Ethernet1/2 Ethernet1/1	Ethernet1/30	Session Name* Selected Interfaces Buffer Size Snap length: Store Packets Capture Filter	capil Ethermet1/2.205 256 MB 1518 Bytes Coverance Apply Filter Capture All

3. 포트 채널 하위 인터페이스의 경우 Cisco 버그 ID 때문에 CSCvq33119 하위 <u>인터페이스</u>가 FCM에 표시되지 않습니다. FXOS CLI를 사용하여 포트 채널 하위 인터페이스에서 캡처를 구성합 니다.

FXOS CLI

하위 인터페이스 Ethernet1/2.205 및 Portchannel1.207에서 패킷 캡처를 구성하려면 FXOS CLI에 서 다음 단계를 수행합니다.

1. 애플리케이션 유형 및 식별자를 식별합니다.

firepower# firepower	scope s /ssa #	sa show app-inst	ance						
App Name	Identif	ier Slot ID	Admin Stat	e Oper State	Running Versi	on Startup Version			
Deploy Type	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 App	licable None					
ftd	ftd2	1	Enabled	Online	7.2.0.82	7.2.0.82			
Container	No	RP20	Not App	licable None					
2. 포트	채널 인	터페이스의 깅	경우 멤버 인터	터페이스를 식별	합니다.				

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

1	Pol(SU)	Eth	LACP	Eth1/3(P)	Eth1/3(P)	
Group	Port- Channel	Туре	Protocol	Member Port	5	
	U - Up (por M - Not in	ct-channel use. Min-	L) -links not	met		

3. 캡처 세션을 생성합니다.

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 # 포트 채널 하위 인터페이스의 경우 각 포트 채널 멤버 인터페이스에 대한 패킷 캡처를 생성합니다.

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 # 확인

FXOS CLI에 구성된 포트 채널 하위 인터페이스 캡처도 FCM에서 볼 수 있습니다. 그러나 다음과 같이 편집할 수는 없습니다.

& Refresh Capture Session Delete Al Se

A 8 3

FCM

ces Logical Devices Security Engine Platform Se

인터페이스 **이름**을 확인하고 작동 상태가 작동 중인지, **파일 크기(바이트)가** 증가하는지 확인합니 다.

Overview Interfaces Logica	I Devices Security Engine Platform S	ettings				System Tools Help admin
Capture Session Fiter List						
					C Refresh Capture Session	Delete Al Sessions
🔿 🔳 cap1	Drop Count: 0	Operational State: up	Buffer Size: 256 MB		Snap Length: 1518 Bytes	A.8.0
Interface Name	Filter	File Size (in bytes)	File Name	Device Name		
Ethernet1/4.207	None	624160	cap1-ethernet-1-4-0.pcap	Not available	<u>*</u>	
Ethernet1/3.207	None	160	cap1-ethernet-1-3-0.pcap	Not available	*	

FXOS CLI

Slot Id: 1

scope packet-capture에서 캡처 세부 정보를 확인합니다.

```
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
멤버 인터페이스가 Ethernet1/3 및 Ethernet1/4인 포트 채널 1:
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:
```

```
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
```

캡처 파일 수집

Firepower 4100/9300 내부 스위치 캡처 파일 수집 섹션의 단계를 수행합니다.

캡처 파일 분석

패킷 캡처 파일 리더 애플리케이션을 사용하여 캡처 파일을 엽니다. 첫 번째 패킷을 선택하고 핵심 사항을 확인합니다.

- 1. ICMP 에코 요청 패킷만 캡처됩니다. 각 패킷은 캡처되어 2번 표시됩니다.
- 2. 원래 패킷 헤더에는 VLAN 태그 205가 있습니다.
- 3. 내부 스위치는 인그레스 인터페이스 Ethernet1/2를 식별하는 추가 포트 VLAN 태그(**102**)를 삽 입합니다.
- 4. 내부 스위치는 추가 VN 태그를 삽입합니다.

No.	Time	Source	Destination	Protocol	Length	PD	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) requ	est i	d=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) requ	est i	d=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) requ	est i	d=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) requ	est i	d=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) requ	est i	d=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) requ	est i	d=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) requ	est i	d=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) reque	est i	d=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) requ	est i	d=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) requ	est i	d=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) requi	est i	d=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) requi	est 1	d=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) requi	est 1	d=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) requi	est 1	d=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) requi	est 1	d=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) requi	est 1	d=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) requi	est 1	d=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) requi	est 1	d=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) requi	est 1	d=0x0022, seq=18/4608, ttl=64 (no response foundi)
	20 2022-08-04 07:22:14.341946249	192.0.2.100	198.51.100.100	TCMP	102	0x906a (40554)	64 Echo (ping) requi	est i	d=0x0022, seq=10/4004, ttl=64 (no response found!)
	21 2022-08-04 07:22:15.365941588	192.0.2.100	198.51.100.100	ICMP	112	0x9etb (40699)	64 Echo (ping) requi	est 1	d=0x0022, seq=19/4864, ttl=64 (no response found))
	22 2022-08-04 07:22:15.305942500	192.0.2.100	198.51.100.100	TCMP	102	0x90fc0 (40099)	64 Echo (ping) requi	est i	d=0x0022, seq=19/4804, tt1=04 (no response found:)
	23 2022-00-04 07:22:10.309973043	192.0.2.100	198.51.100.100	TCMP	102	0X9108 (40956)	64 Echo (ping) requi	est i	d=0x0022, seq=20/5120, ((1=64 (no response found))
	24 2022-08-04 07:22:10.389975129	192.0.2.100	198.51.100.100	TCMP	102	0x9108 (40936)	64 Echo (ping) requi	est i	d=0x0022, seq=20/5120, tt1=64 (no response found))
	25 2022-00-04 07:22:17.413930452	192.0.2.100	190.51.100.100	TCMD	102	0x3079 (41081)	64 Echo (ping) requi	est i	d=0x0022, seq=21/53/6, ((1=04 (no response found))
	20 2022-08-04 07:22:17.413938090	192.0.2.100	198.51.100.100	TCMP	102	0x30/9 (41081)	64 Echo (ping) requi	est i	d=0x0022, seq=21/53/6, (t1=64 (no response found))
	2/ 2022-08-04 0/:22:18.43/954335	192.0.2.100	190.31.100.100	ICPP	112	6X8116 (41240)	ou ecno (prng) redu	est 1	u=oxoozz, seq=zz/sosz, cc1=64 (no response round)
<									
> F	rame 1: 112 bytes on wire (896 bi	ts), 112 bytes ca	ptured (896 bits) o	n interface ca	pture_u0_	1, id 0		0000	a2 76 f2 00 00 1b 00 50 56 9d e8 be 89 26 80 54 ···································
> E	thernet II, Src: VMware 9d:e8:be	(00:50:56:9d:e8:b	e), Dst: a2:76:f2:0	0:00:1b (a2:76	:f2:00:00	:1b)		0010	00 00 81 00 00 66 81 00 00 cd 08 00 45 00 00 54fE.T
۲ ۱	/N-Tag							0020	95 74 40 00 40 01 08 38 C0 00 02 64 C6 33 64 64
	1	= Directi	on: From Bridge					0030	49 94 88 89 89 88 88 89 89 88 18 11 12 13 14 15 16 17
	.0	= Pointer	: vif_id					0050	18 19 1a 1b 1c 1d 1e 1f 20 21 22 23 24 25 26 27 !"#\$%&"
		= Destina	tion: 84					0060	28 29 2a 2b 2c 2d 2e 2f 30 31 32 33 34 35 36 37 ()*+,/ 01234567
	0	= Looped:	No 🖌	¥					
		= Reserve	d: 0						
		= Version	: 0						
	0000 00	00 0000 = Source:	0						
	Type: 802.10 Virtual LAN (0X8100	?) TO: 100		_					
M 5	302.10 Virtual LAN, PRI: 0, DEI: 0	, ID: 102							
	000 = Priority:	Best Effort (defa	uit) (0)						
		gible							
	0000 0110 0110 = 1D: 102								
	Type: 802.10 Virtual LAN (0X8100	7) 70- 205		_					
× 8	000 PRI: 0, DEI: 0	, 10; 205 Bact Effort (def-	w1+1 (a)						
	000 = Priority:	aible	urc) (0)						
		giore							
	0000 1100 1101 = 10: 205			2					
	Type: 1994 (0x0800)	102 0 2 100 Det.	100 51 100 100	-					
1	Internet Control Message Protocol	192.0.2.100, DSt:	190.31.100.100						
1	internet control nessage Protocol								

두 번째 패킷을 선택하고 핵심 사항을 확인합니다.

- 1. ICMP 에코 요청 패킷만 캡처됩니다. 각 패킷은 캡처되어 2번 표시됩니다.
- 2. 원래 패킷 헤더에는 VLAN 태그 205가 있습니다.

N	. Time	Source	Destination	Protocol	Length	1P 1D	JP TTL Info		
r	1 2022-08-04 07:21:56.993302102	192.0.2.100	198.51.100.100	CMP	112	0x9574 (38260)	64 Echo (ping) re	equest	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	CMP	102	0x9574 (38260)	64 Echo (ping) re	equest	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	CMP	112	0x9a81 (39553)	64 Echo (ping) re	equest	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	CMP	102	0x9a81 (39553)	64 Echo (ping) re	equest	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	CMP	112	0x9ac3 (39619)	64 Echo (ping) re	equest	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	CMP	102	0x9ac3 (39619)	64 Echo (ping) re	equest	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	CMP	112	0x9b33 (39731)	64 Echo (ping) re	equest	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	CMP	102	0x9b33 (39731)	64 Echo (ping) re	equest	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	CMP	112	0x9c0e (39950)	64 Echo (ping) re	equest	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	CMP	102	0x9c0e (39950)	64 Echo (ping) re	equest	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	CMP	112	0x9ccb (40139)	64 Echo (ping) re	equest	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	CMP	102	0x9ccb (40139)	64 Echo (ping) re	equest	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	CMP	112	0x9d84 (40324)	64 Echo (ping) re	equest	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	CMP	102	0x9d84 (40324)	64 Echo (ping) re	equest	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	CMP	112	0x9da2 (40354)	64 Echo (ping) re	equest	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	CMP	102	0x9da2 (40354)	64 Echo (ping) re	equest	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	CMP	112	0x9e07 (40455)	64 Echo (ping) re	equest	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	CMP	102	0x9e07 (40455)	64 Echo (ping) re	equest	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	CMP	112	0x9e6a (40554)	64 Echo (ping) re	equest	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	CMP	102	0x9e6a (40554)	64 Echo (ping) re	equest	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	CMP	112	0x9efb (40699)	64 Echo (ping) re	equest	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	CMP	102	0x9efb (40699)	64 Echo (ping) re	equest	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	CMP	112	0x9fe8 (40936)	64 Echo (ping) re	equest	<pre>id=0x0022, seq=20/5120, ttl=64 (no response found!)</pre>
	24 2022-08-04 07:22:16.389975129	192.0.2.100	198.51.100.100	CMP	102	0x9fe8 (40936)	64 Echo (ping) re	equest	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	CMP	112	0xa079 (41081)	64 Echo (ping) re	equest	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	CMP	102	0xa079 (41081)	64 Echo (ping) re	equest	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	CMP	112	0xa11e (41246)	64 Echo (ping) re	equest	id=0x0022, seq=22/5632, ttl=64 (no response found!)
<									
5	Frame 2: 102 bytes on wire (816 bi	ts), 102 bytes ca	ptured (816 bits) on	interface ca	oture u0	1. id 0		0000	a2 76 f2 00 00 1b 00 50 56 9d e8 be 81 00 00 cd · v · · · · P V · · · · · P
5	Ethernet II, Src: VMware 9d:e8:be	(00:50:56:9d:e8:b	e), Dst: a2:76:f2:00:	00:1b (a2:76	f2:00:00	:1b)		0016	08 00 45 00 00 54 95 74 40 00 40 01 b8 38 c0 00 ··E··T·t @·@··8··
~	802.10 Virtual LAN, PRI: 0, DEI: 0	ID: 205						0026	02 64 c6 33 64 64 08 00 eb 95 00 22 00 01 88 73 ·d·3dd·····"···s
	000 = Priority:	Best Effort (def.	oult) (0)					0036	eb 62 00 00 00 00 d9 9d 00 00 00 00 00 00 10 11 ·b·····
	0 = DEI: Ineli	gible						0046	12 13 14 15 16 17 18 19 1a 1b 1c 1d 1e 1f 20 21 !
	0000 1100 1101 = ID: 205		2	1				0056	22 23 24 25 26 27 28 29 2a 2b 2c 2d 2e 2f 30 31 "#\$%&'() *+,/01
	Type: IPv4 (0x0800)		2	1				0066	32 33 34 35 36 37 234567
>	Internet Protocol Version 4, Src:	192.0.2.100, Dst:	198.51.100.100						
þ	Internet Control Message Protocol								

이제 Portchannel1.207에 대한 캡처 파일을 엽니다. 첫 번째 패킷을 선택하고 핵심 사항을 확인합니 다

- 1. ICMP 에코 요청 패킷만 캡처됩니다. 각 패킷은 캡처되어 2번 표시됩니다.
- 2. 원래 패킷 헤더에는 VLAN 태그 207이 있습니다.
- 3. 내부 스위치는 인그레스 인터페이스 Portchannel1을 식별하는 추가 포트 VLAN 태그 1001을 삽입합니다.
- 4. 내부 스위치는 추가 VN 태그를 삽입합니다.

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) r	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) r	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) r	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) r	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) r	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) r	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) r	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) r	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) r	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) r	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) r	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) r	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) r	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) r	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) r	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) r	request	1d=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) r	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) r	request	1d=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) r	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) r	request	1d=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) r	request	1d=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) r	request	1d=0x0070, seq=10/2560, tt1=255 (no response round!)
	23 2022-08-04 08:18:24.578448781	192.168.247.100	192.168.247.102	ICMP	128	0x60a9 (24745)	255 Echo (ping) r	request	1d=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) r	request	1d=0x007b, seq=11/281b, tt1=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) r	request	1d=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) r	request	1d=0x007b, seq=12/3072, ttl=255 (no response found!)
	2/ 2022-08-04 08:18:24.5/9420902	192.168.247.100	192.108.247.102	ICHP	128	0x00a0 (24747)	255 Ecno (ping) i	equest	id=bxbb/b, sed=13/3328, ttl=255 (no response round)
<									
> Fr	ame 1: 128 bytes on wire (1024 bits), 128 bytes capt	tured (1024 bits) or	n interface ca	pture_u0	3, id 0		0000	a2 76 f2 00 00 1c 00 17 df d6 ec 00 89 26 80 3d ·v·····&·=
> Et	hernet II, Src: Cisco d6:ec:00 (00:	17:df:d6:ec:00),	Dst: a2:76:f2:00:0	0:1c (a2:76:f2	:00:00:10	:)		0010	00 00 81 00 03 e9 81 00 00 cf 08 00 45 00 00 64E.d
~ V1	I-Tag							0020	00 90 00 00 TT 01 00 00 00 00 00 00 00 00 00 00 00 TT 00 00
	1	= Direction	: From Bridge					0030	ah cd
	.0	= Pointer:	vif_id					0050	ab cd
		= Destinati	on: 61	1				0060	ab cd
	0	= Looped: N	0	4				0070	ab cd
		= Keserved:	0						
		= version:	0						
		0000 = Source: 0							
	Type: 802.10 Virtual LAN (0x8100)	D: 1001							
1 64	ARA PRICESSION PRI: 0, DEI: 0, I	t Effort (defaul	t) (0)	-					
	a pet: Inoligii	st errort (deraut	() (0)	2					
	0011 1110 1001 - ID: 1001	ALC: NO.		-					
	Type: 802.10 Virtual LAN (0v8100)								
1 86	12.10 Virtual LAN, PRI: 0, DEI: 0, I	D: 207							
	000	st Effort (defaul)	t) (0)						
		ble	-/ \-/						
	0000 1100 1111 = ID: 207			2					
	Type: IPv4 (0x0800)			2					
> Ir	ternet Protocol Version 4, Src; 192	.168.247.100, Dst	: 192.168.247.102						
	ternet Control Message Protocol	,							

두 번째 패킷을 선택하고 핵심 사항을 확인합니다.

1. ICMP 에코 요청 패킷만 캡처됩니다. 각 패킷은 캡처되어 2번 표시됩니다.

2. 원래 패킷 헤더에는 VLAN 태그 207이 있습니다.

No.	Time	Source	Destination	Protocol	Length	P D	3P TTL Info	
Γ.	1 2022-08-04 08:18:24.572548869	192.168.247.100	192.168.247.102	ICMP	128	0x609e (24734)	255 Echo (ping) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est 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) requ	est id=0x007b, seq=13/3328, ttl=255 (no response found!)
<								
21	Frame 2: 118 bytes on wire (944 bits)	. 118 bytes captu	red (944 bits) on :	interface capt	ure u0 3.	. id 0		a2 76 f2 00 00 1c 00 17 df d6 ec 00 81 00 00 cf .v
> 1	Ethernet II, Src: Cisco d6:ec:00 (00:	17:df:d6:ec:00),	Dst: a2:76:f2:00:00	:1c (a2:76:f2	:00:00:10	c)	6	0010 08 00 45 00 00 64 60 9e 00 00 ff 01 ea dd c0 a8 ··E··d`· ·····
1	802.10 Virtual LAN, PRI: 0, DEI: 0, I	D: 207					6	020 f7 64 c0 a8 f7 66 08 00 e5 c8 00 7b 00 00 00 00 ·d···f·· ···{···
11	000 = Priority: Bes	t Effort (defaul	t) (0)				6	0030 00 02 4d 8c 4a 78 ab cd ab cd ab cd ab cd ab cdM-Jx
	0 = DEI: Ineligit	ole					0	ab cd
	0000 1100 1111 = ID: 207			2			6	ab cd
	Type: IPv4 (0x0800)			5				ab cd
> 1	Internet Protocol Version 4, Src: 192	.168.247.100, Dst	: 192.168.247.102					ab cu ab cu ab cu
> 1	Internet Control Message Protocol							

설명

전면 인터페이스에서 패킷 캡처가 구성된 경우, 스위치는 각 패킷을 동시에 두 번 캡처합니다.

- 포트 VLAN 태그를 삽입한 후
- VN 태그를 삽입한 후

연산 순서에 따라 VN 태그는 포트 VLAN 태그 삽입보다 후반에 삽입됩니다. 그러나 캡처 파일에서 VN 태그가 있는 패킷은 포트 VLAN 태그가 있는 패킷보다 먼저 표시됩니다. 또한 하위 인터페이스 의 경우 캡처 파일에서 모든 초 패킷은 포트 VLAN 태그를 포함하지 않습니다.

이 표에서는 작업을 요약합니다.

작업	캡처 지점	캡처된 패킷의 내부 포 트 VLAN	방향	캡처된 트래픽
하위 인터페이스 Ethernet1/2.205에서 패킷 캡처 구성 및 확인 멤버 인터페이스	이더넷 1/2.205	102	인그레 스 전용	호스트 192.0.2.100에서 호스트 198.51.100.100으로의 ICMP 에크 청
Ethernet1/3 및 Ethernet1/4를 사용하여 Portchannel1 하위 인터페 이스에서 패킷 캡처 구성 및 확인	이더넷1/3 이더넷1/4	1001	인그레 스 전용	192.168.207.100에서 호스트 192.168.207.102로의 ICMP 에코

패킷 캡처 필터

FCM 및 CLI를 사용하여 Ethernet1/2 인터페이스에서 필터를 사용하여 패킷 캡처를 구성하고 확인 합니다.

토폴로지, 패킷 흐름 및 캡처 포인트

		Cha	ssis	
	Internal Switch		Security Module	
192.0.2.100	th1/		FTD/ASA	
192.0.2.101				
ICMP echo-request	CC src:192.0.2.100, dst:198.51.100.100, proto: ICMP_IPv4	Backplane		
ICMP echo-reply				
198.51.100.100				

설정

FCM

FCM에서 다음 단계를 수행하여 호스트 192.0.2.100에서 호스트 198.51.100.100으로의 ICMP 에코 요청 패킷에 대한 캡처 필터를 구성하고 이를 인터페이스 Ethernet1/2의 패킷 캡처에 적용합니다.

- 1. Tools > Packet Capture > Filter List > Add Filter를 사용하여 캡처 필터를 생성합니다.
- 2. Filter Name(필터 이름), Protocol(프로토콜), Source IPv4(소스 IPv4), Destination IPv4(대상 IPv4)를 지정하고 Save(저장)를 클릭합니다.

Overview Inter	faces Logical Devices S	ecurity Engine Plat	tform Settings									System Tools	Help admin
Capture Session	Filter List												
Filter List												A	ld Filter
Filter Name		From				То			Protocol	Inner vlan	Outer vlan	EtherType	
filter_icmp	00:00:00:00:00:00	192.0.2.100	IPv6 11	0 Port	00:00:00:00:00	192.0.2.100	IPv6	0	1	0	0	0	/8
				Edit Packet	Filter			? ×					
				Filter Name*	filter_icmp								
				Protocol	ICMP_IPv4 ¥								
				EtherType	Any 👻								
				Inner vian	0	Outer vian	0						
				IPv4	192.0.2.100	IPv4	198.51.100.100						
				1Pv6	=	IPv6	:						
				Port	0	Port	0						
				MAC	00:00:00:00:00:00	MAC	00:00:00:00:00:00	0					
							Save	Cancel					

3. Tools(**툴) > Packet Capture(패킷 캡처) > Capture Session(캡처 세션)**을 사용하여 새 캡처 세 션을 생성합니다.

Overview	Interfaces	Logical Devices	Security Engine	Platform Settings		System	Tools	Help	admin
						Packet Capture	Trouble	shootii	ng Logs
Capture Sess	ion Filter Lis	t							
No Socion ava	ilabla				C Refresh	Capture Session Delet	e All Sessio	ns	
NO Session ava	nadie								

4. Ethernet1/2를 선택하고 Session Name(세션 이름)을 입력한 다음 캡처 필터를 적용하고 Save and Run(저장 및 실행)을 클릭하여 캡처를 활성화합니다.

Overview Interfaces Logical Devices Security Engine Platform Settings		System Tools Help admin
Select an instance: ftd1 v	Save and Run Save	Cancel
ftd1	Session Name" cap1	
	Selected Interfaces Ethernet1/2	
themati/2	Buffer Size 256 MB 💙	
	Snap length: 1518 Bytes	
	Store Packets Overwrite Append	
EthernetI/3	Capture Filter Capture All Apply Another Filter Create Filter	
Ethernet1/9, Ethernet1/10	Apply filter imp	
Ethernet1/1		

FXOS CLI

백플레인 인터페이스에서 패킷 캡처를 구성하려면 FXOS CLI에서 다음 단계를 수행합니다.

1. 애플리케이션 유형 및 식별자를 식별합니다.

firepower	*# scope ss /ssa# sl	sa now app-insta	nce				
App Name Deploy Ty	Identif: pe Turbo N	ier Slot ID Mode Profile	Admin Stat Name Cluster	e Oper State State Clust	Running Versi cer Role	on Startup Versio	on
 ftd	ftd1	1	Enabled	Online	7.2.0.82	7.2.0.82	
Native 2. https://	[№] www.iana	.org/assignn	Not App nents/protoc	olicable None ol-numbers/pro	otocol-numbers.xh	tml에서 IP 프로토	콜

- 번호를 확인합니다. 이 경우 ICMP 프로토콜 번호는 1입니다.
- 3. 캡처 세션을 생성합니다.

```
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 #
```

확인

인터페이스 **이름**을 확인하고 작동 **상태**가 작동 중인지, **파일 크기(바이트)가** 증가하는지 확인합니 다.

Overview Inter	faces Logical Devices Si	ecurity Engine Plat	form Settings									System Tools	Help admin
Capture Session F	filter List												
Filter List												A	dd Filter
		From				То							
Filter Name	мас	IPv4	IPv6	Port	мас	IPv4	IPv6	Port	Protocol	Inner vlan	Outer vlan	EtherType	
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	/8

인터페이스 이름, **필터**, **작동 상태**를 확인하고 **파일 크기(바이트)가 증가하는지 확인합니다.** Tools(툴) > Packet Capture(패킷 캡처) > Capture Session(캡처 세션)에서 확인할 수 있습니다^.

Overview Interfaces Le	gical Devices Security Engin	e Platform Settings					System Tools Help admin
Capture Session Filter List							
						C Refresh Capture Session	Delete All Sessions
0.00					- //		
Cap1	Drop Count: 0		Operational State: up		Butter Size: 256 MB	Snap Length: 1518 Bytes	A 8 E
Interface Name	Filter	File Size (in bytes)	File Name	Device Name			
Ethernet1/2	filter_icmp	84340	cap1-ethernet-1-2-0.pcap	ftd1	*		
cap1 Interface Name Ethernet1/2	Drop Count: 0 Filter filter_icmp	File Size (in bytes) 84340	Operational State: up File Name cap1-ethernet-1-2-0.pcap	Device Name	Buffer Size: 256 MB	Snap Length: 1518 Bytes	

FXOS CLI

scope packet-capture에서 캡처 세부 정보를 확인합니다.

```
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
캡처 파일 수집
```

Firepower 4100/9300 내부 스위치 캡처 파일 수집 섹션의 단계를 수행합니다.

캡처 파일 분석

패킷 캡처 파일 리더 애플리케이션을 사용하여 캡처 파일을 엽니다. 첫 번째 패킷을 선택하고 핵심 사항을 확인합니다.

- 1. ICMP 에코 요청 패킷만 캡처됩니다. 각 패킷은 캡처되어 2번 표시됩니다.
- 2. 원래 패킷 헤더에 VLAN 태그가 없습니다.
- 내부 스위치는 인그레스 인터페이스 Ethernet1/2를 식별하는 추가 포트 VLAN 태그(102)를 삽 입합니다.
- 4. 내부 스위치는 추가 VN 태그를 삽입합니다.

No. Time	Source	Destination	Protocol	Length	IP ID	IP TTL Info			
1 2022-08-02 15:46:55.60327776	0 192.0.2.100	198.51.100.100	ICMP	108 1	0x0012 (18	3) 64 Echo (pin	g) request id=0x	0018, seq=349/23809,	, ttl=64 (no r
2 2022-08-02 15:46:55.60327968	8 192.0.2.100	198.51.100.100	ICMP	102	0x0012 (18	 64 Echo (pin) 	g) request id=0x	0018, seq=349/23809,	, ttl=64 (no r
3 2022-08-02 15:46:56.6271392	2 192.0.2.100	198.51.100.100	ICMP	108	0x00db (21	19) 64 Echo (pin	g) request id=0x	0018, seq=350/24065,	, ttl=64 (no r
4 2022-08-02 15:46:56.62714093	9 192.0.2.100	198.51.100.100	ICMP	102	0x00db (21	19) 64 Echo (pin	g) request id=0x	0018, seq=350/24065,	, ttl=64 (no r
5 2022-08-02 15:46:57.65118519	3 192.0.2.100	198.51.100.100	ICMP	108	0x01cb (45	59) 64 Echo (pin	g) request id=0x	0018, seq=351/24321,	, ttl=64 (no r
6 2022-08-02 15:46:57.65118678	7 192.0.2.100	198.51.100.100	ICMP	102	0x01cb (45	59) 64 Echo (pin	g) request id=0x	0018, seq=351/24321,	, ttl=64 (no r
7 2022-08-02 15:46:58.6751533	7 192.0.2.100	198.51.100.100	ICMP	108	0x01d6 (47	70) 64 Echo (pin	g) request id=0x	0018, seq=352/24577,	, ttl=64 (no r
8 2022-08-02 15:46:58.67515456	3 192.0.2.100	198.51.100.100	ICMP	102	0x01d6 (47	70) 64 Echo (pin	g) request id=0x	0018, seq=352/24577,	, ttl=64 (no r
9 2022-08-02 15:46:59.6991526	9 192.0.2.100	198.51.100.100	ICMP	108	0x01f4 (50	00) 64 Echo (pin	g) request id=0x	0018, seq=353/24833,	, ttl=64 (no r
10 2022-08-02 15:46:59.6991538	5 192.0.2.100	198.51.100.100	ICMP	102	0x01f4 (50	00) 64 Echo (pin	g) request id=0x	0018, seq=353/24833,	, ttl=64 (no r
11 2022-08-02 15:47:00.72314264	1 192.0.2.100	198.51.100.100	ICMP	108	0x01f9 (50	35) 64 Echo (pin)	g) request id=0x	0018, seq=354/25089,	, ttl=64 (no r
12 2022-08-02 15:47:00.72314464	3 192.0.2.100	198.51.100.100	ICMP	102	0x01f9 (50	35) 64 Echo (pin)	g) request id=0x	0018, seq=354/25089,	, ttl=64 (no r
13 2022-08-02 15:47:01.74716220	4 192.0.2.100	198.51.100.100	ICMP	108	0x026e (62	22) 64 Echo (pin	g) request id=0x	0018, seq=355/25345,	, ttl=64 (no r
14 2022-08-02 15:47:01.74716378	3 192.0.2.100	198.51.100.100	ICMP	102	0x026e (62	22) 64 Echo (pin	g) request id=0x	0018, seq=355/25345,	, ttl=64 (no r
15 2022-08-02 15:47:02.7712099	2 192.0.2.100	198.51.100.100	ICMP	108	0x02bc (70	00) 64 Echo (pin	g) request id=0x	0018, seq=356/25601,	, ttl=64 (no r
16 2022-08-02 15:47:02.77121100	2 192.0.2.100	198.51.100.100	ICMP	102	0x02bc (70	90) 64 Echo (pin	g) request id=0x	(0018, seq=356/25601,	ttl=64 (no r
17 2022-08-02 15:47:03.7722585	0 192.0.2.100	198.51.100.100	ICMP	108	0x032f (81	15) 64 Echo (pin	g) request id=0x	(0018, seq=357/25857,	ttl=64 (no r
18 2022-08-02 15:47:03.77225972	4 192.0.2.100	198.51.100.100	ICMP	102	0x032f (81	15) 64 Echo (pin	g) request id=0x	0018, seq=357/25857,	ttl=64 (no r
19 2022-08-02 15:47:04.7911185	9 192.0.2.100	198.51.100.100	ICMP	108	0x040f (10	339) 64 Echo (pin	g) request id=0x	0018, seq=358/26113,	ttl=64 (no r
20 2022-08-02 15:47:04.79111972	1 192.0.2.100	198.51.100.100	ICMP	102	0x040f (10	339) 64 Echo (pin	g) request id=0x	0018, seq=358/26113,	ttl=64 (no r
<						,,			,
Ename 1: 108 bytes on wire (864	its) 100 hytes c	antured (864 hits)	n interface (anture u0	1. 1. 0000	58 97 bd b9 77 0e 00	50 56 9d e8 he 8	89 26 80 0a Xw.	·P V····&··
> Ethernet II. Src: VMware 9d:e8:h	(00:50:56:9d:e8:	he). Dst: Cisco h9:	7:0e (58:97:1	nd:h9:77:0e	0010	00 00 81 00 00 66 08	00 45 00 00 54 0	30 12 40 00 ·····f	·· E··T··@·
VN-Tag	(001501501501501	Jeff baci craco bar	1.00 (50.57.0		0020	40 01 4d 9b c0 00 02	64 c6 33 64 64 0	08 00 9e 67 @·M····	·d ·3dd···g
1	= Direct	ion: From Bridge	_		0030	00 18 01 5d e2 46 e9	62 00 00 00 00 0	c1 a6 0c 00 ····]·F	·b · · · · · · · ·
.0	= Pointe	r: vif id			0040	00 00 00 00 10 11 12	13 14 15 16 17 1	18 19 1a 1b ·····	
	= Destin	ation: 10			0050	1c 1d 1e 1f 20 21 22	23 24 25 26 27 2	28 29 2a 2b ···· !	"# \$%&'()"+
	- Looped	No.			0060	2c 2d 2e 2f 30 31 32	33 34 35 36 37	,/01	23 4567
	- Record	adı A							
	- Vensio	eu. 0							
	0000 0000 - Source								
Type: 902 10 Vintual LAN (079	0000 0000 = 3001Ce	. 0							
1902 10 Virtual LAN DRT: A DET:	A ID: 102		_						
and - Priority	· Rost Effort (dof	ault) (0)	_						
0 - DEL: Inc	ligible	aurc) (0)							
0000 0110 0110 - TD: 100	1161016	-							
Tupo: Tout (0x0000)									
Internet Protocol Version 4 Sec	102 0 2 100 Dct	109 51 100 100	_						
Internet Control Massage Protoco	192.0.2.100, DSt	198.51.100.100							
Three net control nessage protoco									
				_	>				
<									

두 번째 패킷을 선택하고 핵심 사항을 확인합니다.

- 1. ICMP 에코 요청 패킷만 캡처됩니다. 각 패킷은 캡처되어 2번 표시됩니다.
- 2. 원래 패킷 헤더에 VLAN 태그가 없습니다.
- 내부 스위치는 인그레스 인터페이스 Ethernet1/2를 식별하는 추가 포트 VLAN 태그(102)를 삽 입합니다.

No. Time		Source	Destination	Protocol	Length	IP ID		IP TTL Info							^
1 2022-08-0	2 15:46:55.603277760	192.0.2.100	198.51.100.100	ICMP	108 -	0x0012	(18)	64 Echo	(ping)	request	id=0x0018,	seq=349/23	809, ttl=64	(no r	
2 2022-08-0	2 15:46:55.603279688	192.0.2.100	198.51.100.100	ICMP	102	0x0012	(18)	64 Echo	(ping)	request	id=0x0018,	seq=349/23	809, ttl=64	(no r	
3 2022-08-0	2 15:46:56.627139252	192.0.2.100	198.51.100.100	ICMP	108	0x00db	(219)	64 Echo	(ping)	request	id=0x0018,	seq=350/24	065, ttl=64	(no r	
4 2022-08-0	2 15:46:56.627140919	192.0.2.100	198.51.100.100	ICMP	102	0x00db	(219)	64 Echo	(ping)	request	id=0x0018,	seq=350/24	065, ttl=64	(no r	
5 2022-08-0	2 15:46:57.651185193	192.0.2.100	198.51.100.100	ICMP	108	0x01cb	(459)	64 Echo	(ping)	request	id=0x0018,	seq=351/24	321, ttl=64	(no r	
6 2022-08-0	2 15:46:57.651186787	192.0.2.100	198.51.100.100	ICMP	102	0x01cb	(459)	64 Echo	(ping)	request	id=0x0018,	seq=351/24	321, ttl=64	(no r	
7 2022-08-0	2 15:46:58.675153317	192.0.2.100	198.51.100.100	ICMP	108	0x01d6	(470)	64 Echo	(ping)	request	id=0x0018,	seq=352/24	577, ttl=64	(no r	
8 2022-08-0	2 15:46:58.675154503	192.0.2.100	198.51.100.100	ICMP	102	0x01d6	(470)	64 Echo	(ping)	request	id=0x0018,	seq=352/24	577, ttl=64	(no r	
9 2022-08-0	2 15:46:59.699152639	192.0.2.100	198.51.100.100	ICMP	108	0x01f4	(500)	64 Echo	(ping)	request	id=0x0018,	seq=353/24	833, ttl=64	(no r	
10 2022-08-0	2 15:46:59.699153835	192.0.2.100	198.51.100.100	ICMP	102	0x01f4	(500)	64 Echo	(ping)	request	id=0x0018,	seq=353/24	833, ttl=64	(no r	
11 2022-08-0	2 15:47:00.723142641	192.0.2.100	198.51.100.100	ICMP	108	0x01f9	(505)	64 Echo	(ping)	request	id=0x0018,	seq=354/25	389, ttl=64	(no r	
12 2022-08-0	2 15:47:00.723144643	192.0.2.100	198.51.100.100	ICMP	102	0x01f9	(505)	64 Echo	(ping)	request	id=0x0018,	seq=354/25	389, ttl=64	(no r	
13 2022-08-0	2 15:47:01.747162204	192.0.2.100	198.51.100.100	ICMP	108	0x026e	(622)	64 Echo	(ping)	request	id=0x0018,	seq=355/25	345, ttl=64	(no r	
14 2022-08-0	2 15:47:01.747163783	192.0.2.100	198.51.100.100	ICMP	102	0x026e	(622)	64 Echo	(ping)	request	id=0x0018,	seq=355/25	345, ttl=64	(no r	
15 2022-08-0	2 15:47:02.771209952	192.0.2.100	198.51.100.100	ICMP	108	0x02bc	(700)	64 Echo	(ping)	request	id=0x0018,	seq=356/25	501, ttl=64	(no r	
16 2022-08-0	2 15:47:02.771211062	192.0.2.100	198.51.100.100	ICMP	102	0x02bc	(700)	64 Echo	(ping)	request	id=0x0018,	seq=356/25	501, ttl=64	(no r	
17 2022-08-0	2 15:47:03.772258550	192.0.2.100	198.51.100.100	ICMP	108	0x032f	(815)	64 Echo	(ping)	request	id=0x0018,	seq=357/25	857, ttl=64	(no r	
18 2022-08-0	2 15:47:03.772259724	192.0.2.100	198.51.100.100	ICMP	102	0x032f	(815)	64 Echo	(ping)	request	id=0x0018,	seq=357/25	857, ttl=64	(no r	
19 2022-08-0	2 15:47:04.791118519	192.0.2.100	198.51.100.100	ICMP	108	0x040f	(1039)	64 Echo	(ping)	request	id=0x0018,	seq=358/26	113, ttl=64	(no r	
20 2022-08-0	2 15:47:04.791119721	192.0.2.100	198.51.100.100	ICMP	102	0x040f	(1039)	64 Echo	(ping)	request	id=0x0018,	seq=358/26	113, ttl=64	(no r	~
<														>	
> Frame 2: 102	ovtes on wire (816 bit	ts), 102 bytes ca	ptured (816 bits) o	n interface ca	pture u0 :	1. id 00	00 58	97 bd b9 77 Ø	e 00 50	56 9d e	8 be 81 00	00 66 X··	-wP V	···f	
> Ethernet II.	Src: VMware 9d:e8:be ((00:50:56:9d:e8:b	e), Dst: Cisco b9:7	7:0e (58:97:bd	:b9:77:0e	00	10 08	00 45 00 00 5	4 00 12	40 00 4	0 01 4d 9b	c0 00 ···E	····· @·@·/	4	
~ 802.10 Virtua	LAN, PRI: 0, DEI: 0	ID: 102				00	20 02	64 c6 33 64 6	4 08 00	9e 67 6	0 18 01 5d	e2 46 ·d·	3dd · · · g · ·	-]-F	
000	= Priority:	Best Effort (defa	ault) (0)			00	30 e9 i	62 00 00 00 0	0 c1 a6	0c 00 0	0 00 00 00	10 11 ·b·			
	= DEI: Ineli	gible	3			00	40 12 :	13 14 15 16 1	7 18 19	1a 1b 1	c 1d 1e 1f	20 21		- I.	
0000 0	110 0110 = ID: 102	0				00	50 22	23 24 25 26 2	7 28 29	2a 2b 2	c 2d 2e 2f	30 31 "#\$	%&'() *+,-	/01	
Type: IPv4	(0x0800)					00	60 32	33 34 35 36 3	7			234	567		
> Internet Prote	col Version 4, Src: 1	192.0.2.100, Dst:	198.51.100.100												
> Internet Contr	ol Message Protocol	,	2												
	0		-												

설명

전면 인터페이스에서 패킷 캡처가 구성된 경우, 스위치는 각 패킷을 동시에 두 번 캡처합니다.

- 포트 VLAN 태그를 삽입한 후
- VN 태그를 삽입한 후

연산 순서에 따라 VN 태그는 포트 VLAN 태그 삽입보다 후반에 삽입됩니다. 그러나 캡처 파일에서 VN 태그가 있는 패킷은 포트 VLAN 태그가 있는 패킷보다 먼저 표시됩니다.

캡처 필터를 적용하면 인그레스 방향의 필터와 일치하는 패킷만 캡처됩니다.

이 표에서는 작업을 요약합니다.

작업	캡처 지 점	캡처된 패킷의 내부 포트 VLAN	방향	사용자 필터	캡처된 트래픽
전면 인터페이스 Ethernet1/2에서 필 터를 사용하여 패킷 캡처 구성 및 확인	이더넷 1/2	102	인그레 스 전용	프로토콜: ICMP 출처 :192.0.2.100 대상: 198.51.100.100	호스트 192.0.2.100에서 호스 198.51.100.100으로의 ICMI 코 요청

Firepower 4100/9300 내부 스위치 캡처 파일 수집

FCM

FCM에서 다음 단계를 수행하여 내부 스위치 캡처 파일을 수집합니다.

1. 활성 캡처를 **중지하려면 Disable Session** 버튼을 클릭합니다.

Overview Interfaces Logical	Devices Security Engine Pl	latform Settings			System Tools	Help admin
Capture Session Filter List						
				C Refresh Ca	pture Session Delete Al Session	s
Cap1	Drop Count: 0	Operational State: up	Buffer Size: 256 MB	Snap Length: 1	518 Bytes	
Interface Name	Filter	File Size (in bytes)	File Name	Device Name		
Ethernet1/2	None	34700	cap1-ethemet-1-2-0.pcap	ftd1	⊻	

2. 작동 상태가 DOWN - Session_Admin_Shut:

Overview	Interfaces	Logical Devices	Security Engine	Platform Settings				System 1	ools He	lp admin
Capture Ses	sion Filter Lis	t								
							Capture Session	Delete Al S	ssions	
	cap1	Drop Count	: 0	Operational State: DOWN - Session_Admin_Shut	Buffer Size: 256 MB		Snap Length: 1518 Bytes		6	?[8]⊠]
Interface Na	ame	Filter		File Size (in bytes)	File Name	Device Name				
Ethernet1/2		None		218828	cap1-ethemet-1-2-0.pcap	ftd1	玉			

3. Download(**다운로드**)를 클릭하여 캡처 파일을 다운로드합니다.

Overview Interfaces Log	gical Devices Security Engine	Platform Settings			System Too	ls Help admin
Capture Session Fiter List						
				C Re	fresh Capture Session Delete Al Sessi	205
a D cap1	Drop Count: 0	Operational State: DOWN - Session_Admin_Shut	t Buffer Size: 256 MB	Sn	ap Length: 1518 Bytes	/88
Interface Name	Filter	File Size (in bytes)	File Name	Device Name		
Ethernet1/2	None	218828	cap1-ethernet-1-2-0.pcap	ftd1	⊻	

포트 채널 인터페이스의 경우 각 멤버 인터페이스에 대해 이 단계를 반복합니다.

FXOS CLI

캡처 파일을 수집하려면 FXOS CLI에서 다음 단계를 수행합니다.

1. 활성 캡처를 중지합니다.

```
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. local-mgmt 명령 범위에서 캡처 파일을 업로드합니다.
```

firepower#	connect	local-mgmt	
------------	---------	------------	--

firepower(lo	cal-mgmt)#	сору	<pre>/packet-capture/session-1/cap1-ethernet-1-2-0.pcap</pre>	?
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:

포트 채널 인터페이스의 경우 각 멤버 인터페이스의 캡처 파일을 복사합니다.

지침, 제한 및 모범 사례 내부 스위치 패킷 캡처

Firepower 4100/9300 내부 스위치 캡처와 관련된 지침 및 제한 사항에 대해서는 *Cisco Firepower* 4100/9300 FXOS Chassis Manager 컨피그레이션 가이드 또는 Cisco Firepower 4100/9300 FXOS CLI 컨피그레이션 가이드, 문제 해결 장, 패킷 캡처 섹션을 참조하십시오.

다음은 TAC 사례에서 패킷 캡처 사용을 기반으로 한 모범 사례 목록입니다.

- 지침 및 제한 사항에 유의하십시오.
- 모든 포트 채널 멤버 인터페이스에서 패킷을 캡처하고 모든 캡처 파일을 분석합니다.
- 캡처 필터를 사용합니다.
- 캡처 필터가 구성된 경우 NAT가 패킷 IP 주소에 미치는 영향을 고려하십시오.
- 기본값인 1518**바이트**와 다를 경우 프레임 크기를 지정하는 스냅 길이를 늘리거나 줄입니다. 크 기가 작으면 캡처된 패킷의 수가 증가하고, 그 반대의 경우도 마찬가지입니다.
- 필요에 따라 버퍼 크기를 조정합니다.
- FCM 또는 FXOS CLI의 삭제 수를 확인합니다. 버퍼 크기 제한에 도달하면 드롭 카운트 카운터 가 증가합니다.
- Wireshark의 !vntag 필터를 사용하여 VN-tag 없이 패킷만 표시합니다. 이는 전면 인터페이스 패 킷 캡처 파일에서 VN 태그가 지정된 패킷을 숨기는 데 유용합니다.
- Wireshark에서 frame.number&1 필터를 사용하여 홀수 프레임만 표시합니다. 이는 백플레인 인터페이스 패킷 캡처 파일에서 중복 패킷을 숨기는 데 유용합니다.
- TCP와 같은 프로토콜의 경우 Wireshark는 기본적으로 특정 조건의 패킷을 다른 색으로 표시하는 색상화 규칙을 적용합니다. 캡처 파일의 중복 패킷으로 인해 내부 스위치 캡처가 발생하는 경우 패킷이 오탐으로 채색되고 표시될 수 있습니다. 패킷 캡처 파일을 분석하고 필터를 적용하는 경우 표시된 패킷을 새 파일로 내보내고 대신 새 파일을 엽니다.

구성 및 확인 보안 방화벽 3100

Firepower 4100/9300과 달리 Secure Firewall 3100의 내부 스위치는 capture **<name> switch 명령** 을 통해 애플리케이션 명령줄 인터페이스에 구성되며, 여기서 **switch 옵션**은 캡처가 내부 스위치에 구성되도록 지정합니다.

다음은 switch 옵션을 사용하는 capture 명령입니다.

> 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></cr>	

패킷 캡처 컨피그레이션의 일반적인 단계는 다음과 같습니다.

1. 인그레스 인터페이스를 지정합니다.

스위치 캡처 컨피그레이션은 인그레스 인터페이스 nameif를 **수락합니다**. 사용자는 데이터 인터페 이스 이름, 내부 업링크 또는 관리 인터페이스를 지정할 수 있습니다.

> 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. 이더넷 프레임 EtherType을 지정합니다. 기본 이더 유형은 IP입니다. ethernet**-type** 옵션 값은 EtherType을 지정합니다.

```
> capture capsw switch interface inside ethernet-type ?
802.1Q
<0-65535> Ethernet type
arp
ip
ip6
pppoed
pppoes
rarp
sgt
vlan
3. 일치 조건을 지정합니다. capture match 옵션은 일치 기준을 지정합니다.
```

```
> 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 ldsof рср pim opto sctp snp SPI value spi tcp udp <cr> 4. 버퍼 크기, 패킷 길이 등과 같은 기타 선택적 매개변수를 지정합니다.

5. 캡처를 활성화합니다. no capture **<name> switch stop 명령은** 캡처를 활성화합니다.

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

6. 캡처 세부사항을 확인합니다.

- 관리 상태가 활성화되었고, 작동 상태는 작동 및 활성입니다.
- 패킷 캡처 파일 크기 Pcapsize가 증가합니다.
- show capture <cap_name> 출력의 캡처된 패킷 수는 0이 아닙니다.
- 캡처 경로 Pcapfile. 캡처된 패킷은 자동으로 /mnt/disk0/packet-capture/ 폴더에 저장됩니다.
- 조건을 캡처합니다. 소프트웨어는 캡처 조건에 따라 캡처 필터를 자동으로 생성합니다.

> 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 I	len: 1518
Error Code:	0
Drop Count:	0
Total Physical ports	s involved in Packet Ca

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 InfoName:capsw-1-1Protocol:0Ivlan: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. 필요한 경우 캡처를 중지합니다.

<pre>>show capture capsw detail Packet Capture info Name: capsw Session: 1 Admin State: disabled Oper State: down Oper State: down Oper State: capsw-Int Append Plag: overwrite Session Mem Usage: 256 Session</pre>	> capture capsw swit	tch stop
Packet Capture info Name: capsw Session: i Admin State: disabled Oper State Reason: Session_Admin_Shut Config Success: yes Config Fail Reason: Append Flag: overwrite Session Mem Usage: 256 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 Port Id: 1 Port Id: 2 Filter: capsw-1-1 Packet Capture Filter Info Name: capsw-1-1 Protccol: 0 Ivlan: 0 Ovlan: 205 Src Ip: 0.0.0.0 Dest Ipv6: :: Dest Ipv6: :: Src MAC: 00:00:00:00:00:00	>show capture capsw	detail
Name: capsw Session: 1 Admin Stat: disabled Oper State: down Oper State: Session_Admin_Shut Config Success: ys Config Fail Reaso:: Voerwrite Session Mem Usage: 25 Session Mem Usage: 0 Drop Count: 0 Drop Count: 0 Drop Count: 0 Prop Count: 0 Prop Count: 0 Drop Count: 0 Prot I d: 1 Poapfile: /mnt/disk0/packet-capture/sess-1-capsw-ethernet-1-1-0.pcap Pcapsize: 24 Filter: capsw-1-1 Protocol: 0 Name: capsw-1-1 Protocol: 0 Vulan: 0 Vulan: 0 Vulan: 0 Vulan: 0 Str Ipv6: : Dest Ipv5: : Dest Ipv5: :	Packet Capture info	
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 Mem Usage: 256 Session Pcap Snap Len: 1518 Error Code: 0 Drop Count: 0 Total Physical port: Slot Id: Slot Id: 1 Proxpile: /mnt/disk0/packet-capture/sess-1-capsw-ethernet-1-1-0.pcap Peapsize: 24 Filter: capsw-1-1 Packet Capture Filt Info Protocol: 0 Ivlan: 0 Ovlan: 205 Src Ip: 0.0.0.0 Src Ipv6: :: Dest Ipv5: :: Dest Ipv5: :: Src MAC: 00:00:00:00:00:00	Name:	capsw
Admin State: disabled Oper State: down Oper State: down Oper State: session_Admin_Shut Config Success: yes Config Fail Reason: yes Append Flag: overwrite Session Mem Usage: 256 Session Pcap Snap Len: 1518 Error Code: 0 Drop Count: 0 Ortal Physical port: involved in Packet Capture: Slot Id: 1 Port Id: 1 Port Id: 1 Prospial: Zapsw-1-1 Packet Capture Filt=r Info Name: capsw-1-1 Protocol: 0 Ortal: 205 Stro Ip: 0.0.0.0 Dest Ip: 0.0.0.0 Src Ipv6: :: Dest Ipv6: :: Dest Ipv6: :: Dest MAC: 00:00:00:00:00:00	Session:	1
Oper State: down Oper State Reason: Session_Admin_Shut Config Succes: yes Config Fail Reason: Append Flag: overwrite Session Mem Usage: 256 Session Pcap Snap Len: 1518 Error Code: 0 Drop Count: 0 Total Physical port: involved in Packet Capture: Slot Id: 1 Port Id: 1 Port Id: 1 Port Id: 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 Src Ipv6: :: Dest Ipv6: :: Dest Ipv6: :: Dest Ipv6: :: Src MAC: 0:00:00:00:00:00:00	Admin State:	disabled
Oper State Reason: Session_Admin_ShutConfig Success:yesConfig Fail Reason:Append Flag:overwriteSession Mem Usage:256Session Pcap Snap Len:1518Error Code:0Drop Count:0Total Physical portsinvolved in Packet Capture:Slot Id:1Port Id:1Port Id:1Prapfile:/mnt/disk0/packet-capture/sess-1-capsw-ethernet-1-1-0.pcapPcapsize:24Filter:capsw-1-1Packet Capture Filt=rInfoName:capsw-1-1Protocol:0Ovlan:205Src Ip:0.0.0.0Dest Ip:0.0.0.0Src Ipv6:::Dest Ipv6:::Src MAC:00:00:00:00:00:00Dest MAC:00:00:00:00:00	Oper State:	down
Config Success:yesConfig Fail Reason:Append Flag:overwriteSession Mem Usage:256Session Pcap Snap Len:1518Error Code:0Drop Count:0Total Physical portsin Packet Capture:Physical port:1Port Id:1Pcapsize:24Filter:capsw-1-1Packet Capture Filter InfoName:capsw-1-1Protocol:0O'lan:205Src Ip:0.0.0.0Dest Ip:0.0.0.0Src Ipv6::Dest Ipv6::Src MAC:00:00:00:00:00:00Dest MAC:00:00:00:00:00	Oper State Reason	: Session_Admin_Shut
Config Fail Reason:Append Flag:overwriteSession Mem Usage: 256Session Pcap Snap Len: 1518Error Code:0Drop Count:0Total Physical ports involved in Packet Capture: 1Physical port:Slot Id:1Pcapfile:/mt/disk0/packet-capture/sess-1-capsw-ethernet-1-1-0.pcapPcapsize:24Filter:capsw-1-1Packet Capture Filter InfoName:capsw-1-1Protocol:0Ovlan:205Src Ip:0.0.0.0Dest Ip:0.0.0.0Src Ipv6:::Src MAC:00:00:00:00:00Dest MAC:00:00:00:00:00	Config Success:	yes
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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	Append Flag:	overwrite
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 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	Session Mem Usage:	256
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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 Dest MAC: 00:00:00:00:00		
<pre>Slot Id: 1 Port 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 Dest MAC: 00:00:00:00</pre>	Physical port:	
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Packet Capture Filter InfoName:capsw-1-1Protocol:0Ivlan:0Ovlan:205Src Ip:0.0.0.0Dest Ip:0.0.0.0Src Ipv6:::Dest Ipv6:::Src MAC:00:00:00:00:00:00Dest MAC:00:00:00:00:00:00	Filter:	capsw-1-1
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Dest Ip: 0.0.0.0 Src Ipv6: :: Dest Ipv6: :: Src MAC: 00:00:00:00:00 Dest MAC: 00:00:00:00:00	Src Ip:	0.0.0.0
Src Ipv6: :: Dest Ipv6: :: Src MAC: 00:00:00:00:00 Dest MAC: 00:00:00:00:00	Dest Ip:	0.0.0.0
Dest Ipv6: :: Src MAC: 00:00:00:00:00 Dest MAC: 00:00:00:00:00	Src Ipv6:	::
Src MAC: 00:00:00:00:00 Dest MAC: 00:00:00:00:00:00	Dest Ipv6:	::
Dest MAC: 00:00:00:00:00:00	Src MAC:	00:00:00:00:00
	Dest MAC:	00:00:00:00:00
Src Port: 0	Src Port:	0
Dest Port: 0	Dest Port:	0
Ethertype: 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. 캡처 파일을 수집합니다. Collect Secure Firewall 3100 Internal Switch Capture Files 섹션의 단계 를 수행합니다.

버전 7.2에서는 내부 스위치 캡처 컨피그레이션이 FMC 또는 FDM에서 지원되지 않습니다. ASA 소 프트웨어 버전 9.18(1) 이상의 경우 ASDM 버전 7.18.1.x 이상에서 내부 스위치 캡처를 구성할 수 있 습니다.

이러한 시나리오에서는 Secure Firewall 3100 내부 스위치 캡처의 일반적인 활용 사례를 다룹니다.

물리적 또는 포트 채널 인터페이스의 패킷 캡처

FTD 또는 ASA CLI를 사용하여 인터페이스 Ethernet1/1 또는 Portchannel1 인터페이스에서 패킷 캡처를 구성하고 확인합니다. 두 인터페이스 모두 nameif 내부**에** 있습니다.

토폴로지, 패킷 흐름 및 캡처 포인트



설정

ASA 또는 FTD CLI에서 다음 단계를 수행하여 인터페이스 Ethernet1/1 또는 Port-channel1에서 패 킷 캡처를 구성합니다.

1. nameif 확인:

Name	Security
inside	0
outside	0
diagnostic	0
	Name inside outside diagnostic

<pre>> show nameif</pre>			
Interface	Name		
Port-channel1	inside		
Ethernet1/2	outside		
Management1/1	diagnostic		

2. 캡처 세션을 생성합니다.

> capture capsw switch interface inside
 3. 캡처 세션을 활성화합니다.

> no capture capsw switch stop 확인

캡처 세션 이름, 관리 및 운영 상태, 인터페이스 슬롯 및 식별자를 확인합니다. Pcapsize **값**(바이트)이 증가하고 캡처된 패킷 수가 0이 아닌지 확인합니다.

Security 0 0

> show capture	capsw detail
Packet Capture	info
Name:	capsw
Session:	1
Admin State:	enabled
Oper State:	up
Oper State Re	eason: Active
Config Success	s: yes
Config Fail Re	eason:
Append Flag:	overwrite
Session Mem Us	sage: 256
Session Pcap S	Snap Len: 1518
Error Code:	0
Drop Count:	0
Total Physical Physical port:	ports involved in Packet Capture: 1
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
Dest Ip:	0.0.0
Src Ipv6:	::
Dest Ipv6:	::
Src MAC:	00:00:00:00:00
Dest MAC:	00:00:00:00:00
Src Port:	0
Dest Port:	0
Ethertype:	0

Total Physical breakout ports involved in Packet Capture: 0

Reading of capture file from disk is not supported Port-channel1의 경우 모든 멤버 인터페이스에 캡처가 구성됩니다.

> 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 /mnt/disk0/packet-capture/sess-1-capsw-ethernet-1-4-0.pcap Pcapfile: 28824 Pcapsize: Filter: capsw-1-4 Packet Capture Filter Info Name: capsw-1-4 Protocol: 0 Ivlan: 0 0 Ovlan: 0.0.0.0 Src Ip: Dest Ip: 0.0.0.0 Src Ipv6: :: Dest Ipv6: :: 00:00:00:00:00:00 Src MAC: 00:00:00:00:00:00 Dest MAC: Src Port: 0 0 Dest Port: Ethertype: 0 Physical port: Slot Id: 1 Port Id: 3 /mnt/disk0/packet-capture/sess-1-capsw-ethernet-1-3-0.pcap Pcapfile: Pcapsize: 18399 Filter: capsw-1-3 Packet Capture Filter Info capsw-1-3 Name: Protocol: 0 0 Ivlan: 0 Ovlan: 0.0.0.0 Src Ip: Dest Ip: 0.0.0.0 Src Ipv6: :: Dest Ipv6: :: 00:00:00:00:00:00 Src MAC: Dest MAC: 00:00:00:00:00:00 Src Port: 0

Dest	Port:	0
Ether	type:	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 포트 채널 멤버 인터페이스는 FXOS local-mgmt 명령 셸에서 show portchannel summary 명령을 통해 확인할 수 있습니다.

> CO KSEC Flag I - S - S - U - M -	-FPR3100- -FPR3100- s: D - D Individua Suspended Switched Up (port- Not in us	1 connect loc 1(local-mgmt) Down P Il H - Hot-st I r - Module R - Routed cchannel) se. Min-links	al-mgmt show port - Up in po andby (LAC -removed	c hannel ort-chann CP only)	summary el (men	hbers)			
Grou	p Port- Channel	Туре	Protocol	Member	Ports				
1	Po1(U)	Eth	LACP	Eth1/3(P) E	th1/4(P)			
LACP	KeepAliv	ve Timer:							
	Channel	PeerKeepAliv	eTimerFast						
1	Po1(U)	False							
Clus	ter LACP	Status:							
	Channel	ClusterSpann	ed Cluste	erDetach	Cluste	erUnitID	ClusterSysII)	
1 ASA 리 킨	^{₽₀1(Ⴎ)} \에서 FX(선텍스트0	_{False} OS에 액세스쳐 네서 명령을 실	_{Fal} 하려면 con !행합니다.	inect fxo	o s admiı	n 명령을	_{clust} 실행합니다.	다중 컨텍	스트의

캡처 파일 수집

Collect Secure Firewall 3100 Internal Switch Capture Files 섹션의 단계를 수행합니다.

캡처 파일 분석

패킷 캡처 파일 판독기 응용 프로그램을 사용하여 Ethernet1/1에 대한 캡처 파일을 엽니다. 첫 번째 패킷을 선택하고 핵심 사항을 확인합니다.

경우 관

- 1. ICMP 에코 요청 패킷만 캡처됩니다.
- 2. 원래 패킷 헤더에 VLAN 태그가 없습니다.

No.	Time	Source	Destination	Protocol	Length	PD	IP TTL Info	^
E	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 🗸
<								>
5	Frame 1: 102 bytes on wire (816 bits	s), 102 bytes ca	ptured (816 bits)			0000 bc e7 1	2 34 9a 14 00 50 56 9d e8	be 08 00 45 00 ···4···P V····E·
5	Ethernet II, Src: VMware 9d:e8:be (0:50:56:9d:e8:b	e), Dst: Cisco 34:9a	1:14 (bc:e7	:12:34:9a:14)	0010 00 54 9	a 10 40 00 40 01 b3 9c c0	00 02 64 c6 33 ·T··@·@· ·····d·3
>	Internet Protocol Version 4, Src: 19	2.0.2.100. Dst:	198,51,100,100		2	0020 64 64 0	8 00 c6 91 00 34 00 01 61	17 f0 62 00 00 dd ····· 4 ··a··b··
5	Internet Control Message Protocol	,,			2	0030 00 00 1	8 ec 08 00 00 00 00 00 10	11 12 13 14 15
1	0-					0040 16 17 1	8 19 1a 1b 1c 1d 1e 1f 20	21 22 23 24 25 !"#\$%
						0050 26 27 2	8 29 2a 2b 2c 2d 2e 2f 30	31 32 33 34 35 &'()*+,/012345
						0060 36 37 5	5 55 55 55	670000

Portchannel1 멤버 인터페이스에 대한 캡처 파일을 엽니다. 첫 번째 패킷을 선택하고 핵심 사항을 확인합니다.

- 1. ICMP 에코 요청 패킷만 캡처됩니다.
- 2. 원래 패킷 헤더에 VLAN 태그가 없습니다.

No.	Time	Source	Destination	Protocol	Length	PD	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 re	s
	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 re	s
	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 re	s
	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 r	e i
	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 r	e i
	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 r	•
	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 r	•
	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 r	e
	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 r	e
	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 ~
<								>	
> F	rame 1: 102 bytes on wire (816 bi	ts), 102 bytes cap	tured (816 bits)			0000 bc e7 1	2 34 9a 2c 00 50 56 9d e8	be 08 00 45 00 ···4·, P V····E·	
> E	thernet II, Src: VMware 9d:e8:be	(00:50:56:9d:e8:be), Dst: Cisco 34:9a	a:2c (bc:e7	12:34:9a:2c)	0010 00 54 9	2 96 40 00 40 01 bb 16 c0	00 02 64 c6 33 ·T··@·@· ·····d·3	
> 1	nternet Protocol Version 4, Src:	192.0.2.100, Dst:	198.51.100.100		-	0020 64 64 6	8 00 58 a8 00 35 00 01 4d	23 f0 62 00 00 dd ·· X ·· 5 ·· M# · b ··	
> 1	nternet Control Message Protocol				2	0030 00 00 9	e c8 04 00 00 00 00 00 10	11 12 13 14 15	
						0040 16 17 1	8 19 1a 1b 1c 1d 1e 1f 20	21 22 23 24 25!"#\$%	
						0050 26 27 2	28 29 2a 2b 2c 2d 2e 2f 30	31 32 33 34 35 & ()*+,/012345	
						0000 36 37 5	CC CC CC CC CC	670000	

설명

스위치 캡처는 Ethernet1/1 또는 Portchannel1 인터페이스에 구성됩니다.

이 표에서는 작업을 요약합니다.

작업	캡처 지점	내부 필 터	방향	캡처된 트래픽
인터페이스 Ethernet1/1에서 패킷 캡처 구성 및 확인	이더넷1/1	없음	인그레 스 전용	호스트 192.0.2.100에서 호스트 198.51.100.100으로의 ICMP 에코 9
멤버 인터페이스 Ethernet1/3 및 Ethernet1/4를 사용하여 인터페이스 Portchannel1에서 패킷 캡처 구성 및 확 인	이더넷1/3 이더넷1/4	없음	인그레 스 전용	호스트 192.0.2.100에서 호스트 198.51.100.100으로의 ICMP 에코 1

물리적 또는 포트 채널 인터페이스의 하위 인터페이스에서 패킷 캡처

FTD 또는 ASA CLI를 사용하여 하위 인터페이스 Ethernet1/1.205 또는 Portchannel1.205에서 패킷 캡처를 구성하고 확인합니다. 두 하위 인터페이스 모두 nameif **내부**를 **갖습니다**.

토폴로지, 패킷 흐름 및 캡처 포인트



설정

ASA 또는 FTD CLI에서 다음 단계를 수행하여 인터페이스 Ethernet1/1 또는 Port-channel1에서 패 킷 캡처를 구성합니다.

1. nameif 확인:

<pre>> show nameif</pre>		
Interface	Name	Security
Ethernet1/1.205	inside	0
Ethernet1/2	outside	0
Management1/1	diagnostic	0
<pre>> show nameif</pre>		
Interface	Name	Security
Port-channel1.205	inside	0
Ethernet1/2	outside	0
Management1/1	diagnostic	0
2. 캡처 세션을 생성합	니다.	

> capture capsw switch interface inside
 3. 캡처 세션을 활성화합니다.

확인

캡처 세션 이름, 관리 및 운영 상태, 인터페이스 슬롯 및 식별자를 확인합니다. Pcapsize **값**(바이트)이 증가하고 캡처된 패킷 수가 0이 아닌지 확인합니다.

> show capture caps	sw detail
Packet Capture info)
Name:	capsw
Session:	1
Admin State:	enabled
Oper State:	up
Oper State Reason	n: Active
Config Success:	yes
Config Fail Reason	1:
Append Flag:	overwrite
Session Mem Usage	: 256
Session Pcap Snap	Len: 1518
Error Code:	0
Drop Count:	0
Total Physical port	ts 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 Filt	ter 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
Dest MAC:	00:00:00:00:00
Src Port:	0
Dest Port:	0
Ethertype:	0
Total Physical brea	akout ports involved in Packet Capture: 0

46 packets captured on disk using switch capture

Reading of capture file from disk is not supported 이 경우 외부 VLAN Ovlan=205의 필터가 생성되어 인터페이스에 적용됩니다.

Port-channel1의 경우 Ovlan=205 필터를 사용하는 캡처가 모든 멤버 인터페이스에 구성됩니다.

> 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 /mnt/disk0/packet-capture/sess-1-capsw-ethernet-1-4-0.pcap Pcapfile: Pcapsize: 23442 Filter: capsw-1-4 Packet Capture Filter Info capsw-1-4 Name: 0 Protocol: Ivlan: 0 Ovlan: 205 0.0.0.0 Src Ip: Dest Ip: 0.0.0.0 Src Ipv6: :: Dest Ipv6: :: 00:00:00:00:00:00 Src MAC: 00:00:00:00:00:00 Dest MAC: Src Port: 0 0 Dest Port: 0 Ethertype: Physical port: 1 Slot Id: Port Id: 3 /mnt/disk0/packet-capture/sess-1-capsw-ethernet-1-3-0.pcap Pcapfile: Pcapsize: 5600 Filter: capsw-1-3 Packet Capture Filter Info Name: capsw-1-3 0 Protocol: 0 Ivlan: Ovlan: 205 0.0.0.0 Src Ip: 0.0.0.0 Dest Ip: Src Ipv6: :: :: Dest Ipv6: 00:00:00:00:00:00 Src MAC: Dest MAC: 00:00:00:00:00:00 0 Src Port: 0 Dest Port: 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 포트 채널 멤버 인터페이스는 FXOS local-mgmt 명령 셸에서 show portchannel summary 명령을 통해 확인할 수 있습니다.

 KSEC KSEC Flag I - s -	-FPR3100- -FPR3100- s: D - D Individua Suspended	1 connect loc 1(local-mgmt) Nown P 1 H - Hot-st r - Module	al-mgmt show port - Up in po andby (LAC -removed	c hannel s prt-channe CP only)	ummary l (members)			
S – U –	Switched Up (port-	R - Routed channel)						
M -	Not in us	e. Min-links	not met					
 Grou	p Port- Channel	Туре	Protocol	Member Po	orts			
1	Po1(U)	Eth	LACP	Eth1/3(P) Eth1/4(P)			
LACP	KeepAliv	e Timer:						
	Channel	PeerKeepAliv	eTimerFast					
1	Po1(U)	False						
Clus	ter LACP	Status:						
	Channel	ClusterSpann	ed Cluste	erDetach (ClusterUnitID	ClusterSysID		
1 ASA 리 킨	₽о1(U) \에서 FX(건텍스트0	_{False} OS에 액세스히 에서 이 명령을	^{Fa]} 하려면 cor 실행합니	se I nect fxos 다.	⁰ admin 명령을	_{clust} 실행합니다.	다중 컨텍	스트의 경우 관

캡처 파일 수집

> connect fxos

Collect Secure Firewall 3100 Internal Switch Capture Files 섹션의 단계를 수행합니다.

캡처 파일 분석

패킷 캡처 파일 판독기 응용 프로그램을 사용하여 Ethernet1/1.205에 대한 캡처 파일을 엽니다. 첫 번째 패킷을 선택하고 핵심 사항을 확인합니다.

- 1. ICMP 에코 요청 패킷만 캡처됩니다.
- 2. 원래 패킷 헤더에 VLAN 태그 205가 있습니다.

No.	Time	Source	Destination	Protocol	Length	IP ID			P	TTL Info)									^
	1 2022-08-07 21:21:01.607187	192.0.2.100	198.51.100.100	ICMP	106	0x4	11f (16671)		64 Ec	ho (pi	ing)	request	id=0x00	37,	seq=1/256	, ttl=	64 (n	o res	
	2 2022-08-07 21:21:02.609418	192.0.2.100	198.51.100.100	ICMP	106	0x4	13a (16698)		64 Ec	ho (pi	ing)	request	id=0x00	37,	seq=2/512	2, ttl=	64 (no	o res	
	3 2022-08-07 21:21:03.610671	192.0.2.100	198.51.100.100	ICMP	106	0x4	21a (16922)		64 Ec	ho (pi	ing)	request	id=0x00	37,	seq=3/768	3, ttl=	-64 (no	o res	
	4 2022-08-07 21:21:04.609160	192.0.2.100	198.51.100.100	ICMP	106	0x4	26c (17004)		64 Ec	ho (pi	ing)	request	id=0x00	37,	seq=4/102	24, tt]	=64 (r	no re	
	5 2022-08-07 21:21:05.609409	192.0.2.100	198.51.100.100	ICMP	106	0x4	310 (17168)		64 Ec	ho (pi	ing)	request	id=0x00	37,	seq=5/128	30, tt]	=64 (r	no re	
	6 2022-08-07 21:21:06.611847	192.0.2.100	198.51.100.100	ICMP	106	0x4	3df (17375)		64 Ec	ho (pi	ing)	request	id=0x00	37,	seq=6/15	86, tt]	=64 (r	no re	
	7 2022-08-07 21:21:07.616688	192.0.2.100	198.51.100.100	ICMP	106	0x4	4d3 (17619)		64 Ec	ho (pi	ing)	request	id=0x00	37,	seq=7/179	2, tt]	=64 (r	no re	
	8 2022-08-07 21:21:08.618023	192.0.2.100	198.51.100.100	ICMP	106	0x4	518 (17688)		64 Ec	ho (pi	ing)	request	id=0x00	37,	seq=8/204	18, ttl	=64 (r	no re	
	9 2022-08-07 21:21:09.619326	192.0.2.100	198.51.100.100	ICMP	106	0x4	53d (17725)		64 Ec	ho (pi	ing)	request	id=0x00	37,	seq=9/230	94, tt]	=64 (r	no re	
	10 2022-08-07 21:21:10.616696	192.0.2.100	198.51.100.100	ICMP	106	0x4	62b (17963)		64 Ec	ho (pi	ing)	request	id=0x00	37,	seq=10/25	60, tt	(1=64)	(no r	
	11 2022-08-07 21:21:11.621629	192.0.2.100	198.51.100.100	ICMP	106	0x4	707 (18183)		64 Ec	ho (pi	ing)	request	id=0x00	37,	seq=11/28	816, tt	(1=64)	(no r	
	12 2022-08-07 21:21:12.619309	192.0.2.100	198.51.100.100	ICMP	106	0x4	74b (18251)		64 Ec	ho (pi	ing)	request	id=0x00	37,	seq=12/30	972, tt	1=64	(no r	
	13 2022-08-07 21:21:13.620168	192.0.2.100	198.51.100.100	ICMP	106	0x4	781 (18305)		64 Ec	ho (pi	ing)	request	id=0x00	37,	seq=13/33	828, tt	1=64	(no r	
	14 2022-08-07 21:21:14.623169	192.0.2.100	198.51.100.100	ICMP	106	0x4	858 (18520)		64 Ec	ho (pi	ing)	request	id=0x00	37,	seq=14/3	584, tt	1=64 ((no r	
	15 2022-08-07 21:21:15.622497	192.0.2.100	198.51.100.100	ICMP	106	0x4	909 (18697)		64 Ec	ho (pi	ing)	request	id=0x00	37,	seq=15/38	340, tt	1=64 ((no r	
	16 2022-08-07 21:21:16.626226	192.0.2.100	198.51.100.100	ICMP	106	0x4	90b (18699)		64 Ec	ho (pi	ing)	request	id=0x00	37,	seq=16/40	996, tt	(1=64)	(no r	
	17 2022-08-07 21:21:17.629363	192.0.2.100	198.51.100.100	ICMP	106	0x4	932 (18738)		64 Ec	ho (pi	ing)	request	id=0x00	37,	seq=17/43	352, tt	1=64	(no r	
	18 2022-08-07 21:21:18.626651	192.0.2.100	198.51.100.100	ICMP	106	0x4	a05 (18949)		64 Ec	ho (pi	ing)	request	id=0x00	37,	seq=18/46	508, tt	1=64	(no r	~
<																			>	
> F	rame 1: 106 bytes on wire (848 bits), 106 bytes captu	ured (848 bits)				0000	bc e7	12 34	9a 1	4 00 1	50 5	56 9d e8	be 81 00	00	cd	4+++P 1	v		
> E	thernet II, Src: VMware 9d:e8:be (0	0:50:56:9d:e8:be)	, Dst: Cisco 34:9a:1	14 (bc:e7:12:3	4:9a:14)		0010	08 00	45 00	00 5	4 41 :	1f /	10 00 40	01 0c 8e	cØ	00 · · E	· · TA · (ð. 6		
~ 8	02.1Q Virtual LAN, PRI: 0, DEI: 0,	ID: 205	-				0020	02 64	C6 33	64 6	4 08 0	90 0	96 67 00	37 00 01	bØ	2c · d ·	3dd · ·	·g · 7 · ·	٠,	
	000 Be	st Effort (defaul	t) (0)				0030	fØ 62	00 00	00 6	0 8e 1	fe (93 00 00	00 00 00	10	11 ·b·				
	0 = DEI: Ineligi	ble				9	0040	12 13	14 15	16 1	7 18 :	19 1	la 1b 1c	1d 1e 1f	20	21				
	0000 1100 1101 = ID: 205						0050	22 23	24 25	26 2	7 28	29	2a 2b 2c	2d 2e 21	30	31 "#\$	eg.()	*+,/	01	
	Type: IPv4 (0x0800)				2		0000	32 33	34 35	36 3	/ 55 :	55 :	>> >>			234	56700 1	JU		
	Trailer: 55555555																			
> 1	nternet Protocol Version 4, Src: 19	2.0.2.100, Dst: 19	98.51.100.100																	
> 1	nternet Control Message Protocol																			
						-														

Portchannel1 멤버 인터페이스에 대한 캡처 파일을 엽니다. 첫 번째 패킷을 선택하고 핵심 사항을 확인합니다.

- 1. ICMP 에코 요청 패킷만 캡처됩니다.
- 2. 원래 패킷 헤더에 VLAN 태그 205가 있습니다.

No.	Time	Source	Destination	Protocol	Length	IP ID)		IP T	TL Info							^
_	1 2022-08-07 21:21:01.607187	192.0.2.100	198.51.100.100	ICMP	106	0x4	111f (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	0x4	13a ((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	0x4	121a (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	0x4	126c ((17004)	1	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	0x4	310 (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	0x4	13df (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	0x4	14d3 (17619)		64 Echo	(ping)	<pre>request</pre>	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	0x4	1518 (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	0x4	153d (17725)		64 Echo	(ping)	request	id=0x0037,	seq=9/2304,	ttl=64	(no r∈	
	10 2022-08-07 21:21:10.616696	192.0.2.100	198.51.100.100	ICMP	106	0x4	162b (17963)		64 Echo	(ping)	request	id=0x0037,	seq=10/2566), ttl=64	(no r	
	11 2022-08-07 21:21:11.621629	192.0.2.100	198.51.100.100	ICMP	106	0x4	1707 ((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	0x4	174b (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	0x4	1781 (18305)	1	64 Echo	(ping)	<pre>request</pre>	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	0x4	1858 (18520)	1	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	0x4	1909 (18697)	1	64 Echo	(ping)	request	id=0x0037,	seq=15/3846), ttl=64	(no r	
	16 2022-08-07 21:21:16.626226	192.0.2.100	198.51.100.100	ICMP	106	0x4	190b (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	0x4	1932 (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	0x4	la05 (18949)		64 Echo	(ping)) request	id=0x0037,	seq=18/4608	, ttl=64	(no r	~
<																>	
> Fr	ame 1: 106 bytes on wire (848 bits)	, 106 bytes capt	ured (848 bits)				0000	bc e7	12 34	9a 14	00 50	56 9d e8	be 81 00 00	cd4.	· · P V· · · ·		
> Et	thernet II, Src: VMware_9d:e8:be (00	:50:56:9d:e8:be)	, Dst: Cisco_34:9a:	14 (bc:e7:12:3	4:9a:14)		0010	08 00	45 00	00 54	41 1f	40 00 40	01 0c 8e c0	00 ··E··	ra- @-@-		
~ 80	02.1Q Virtual LAN, PRI: 0, DEI: 0, I	D: 205					0020	02 64	c6 33	64 64	08 00	06 67 00	37 00 01 b0	2c · d · 3d	d • • • g • 7 •	···,	
	000 Be:	st Effort (defaul	t) (0)				0030	f0 62	00 00	69 69	8e fe	03 00 00	00 00 00 10	11 ·b···			
	0 = DEI: Ineligit	ble					0040	12 13	14 15	16 17	18 19	1a 1b 1c	1d 1e 1f 20	21		100	
	0000 1100 1101 = ID: 205				2		0050	22 23	24 25	26 27	28 29	2a 20 2C	2d 2e 2t 30	31 #\$%&	() *+,	./01	
	Type: IPv4 (0x0800)				2		0000	32 33	34 30	30 37	>> >>	>> >>		23450	/00 00		
	Trailer: 5555555																
> Ir	ternet Protocol Version 4, Src: 192	2.0.2.100, Dst: 1	98.51.100.100														
> 1	nternet Control Message Protocol																
-																	

설명

스위치 캡처는 하위 인터페이스 Ethernet1/1.205 또는 Portchannel1.205에서 구성되며 외부 VLAN 205와 일치하는 필터가 있습니다.

이 표에서는 작업을 요약합니다.

캡처 지점 내부 필터 방향 전처된 트래픽 작업 인그레 호스트 192.0.2.100에서 호스트 하위 인터페이스 Ethernet1/1.205에서 패 이더넷 외부 킷 캡처 구성 및 확인 VLAN 205 스 전용 198.51.100.100으로의 ICMP 에코 1/1 멤버 인터페이스 Ethernet1/3 및 이더넷 Ethernet1/4를 사용하여 하위 인터페이스 1/3 외부 인그레 호스트 192.0.2.100에서 호스트 Portchannel1.205에서 패킷 캡처를 구성 이더넷 VLAN 205 스 전용 198.51.100.100으로의 ICMP 에코 하고 확인합니다. 1/4

내부 인터페이스의 패킷 캡처

보안 방화벽에는 2개의 내부 인터페이스가 있습니다.

- in_data_uplink1 애플리케이션을 내부 스위치에 연결합니다.
- in_mgmt_uplink1 관리 인터페이스에 대한 SSH 또는 sftunnel이라고도 하는 FMC와 FTD 간의 관리 연결과 같은 관리 연결을 위한 전용 패킷 경로를 제공합니다.

작업 1

FTD 또는 ASA CLI를 사용하여 업링크 인터페이스 in_data_uplink1에서 패킷 캡처를 구성하고 확인 합니다.

토폴로지, 패킷 흐름 및 캡처 포인트



설정

ASA 또는 FTD CLI에서 다음 단계를 수행하여 인터페이스 in_data_uplink1의 패킷 캡처를 구성합니 다.

1. 캡처 세션을 생성합니다.

```
    > capture capsw switch interface in_data_uplink1
    2. 캡처 세션을 활성화합니다.
```

> no capture capsw switch stop 확인

캡처 세션 이름, 관리 및 운영 상태, 인터페이스 슬롯 및 식별자를 확인합니다. Pcapsize **값**(바이트)이 증가하고 캡처된 패킷 수가 0이 아닌지 확인합니다.

```
> 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

capsw-1-18
0
0
0
0.0.0.0
0.0.0
::
::
00:00:00:00:00:00
00:00:00:00:00:00
0
0
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 이 경우, 보안 방화벽(3130)의 in_data_uplink1 인터페이스인 내부 ID **18**로 인터페이스에 캡처가 생 성됩니다. FXOS **local-mgmt** 명령 셸의 show portmanager switch **status** 명령은 인터페이스 ID를 표시합니다.

> 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

ASA에서 FXOS에 액세스하려면 **connect** fxos admin **명령을** 실행합니다. 다중 컨텍스트의 경우 관 리 컨텍스트에서 이 명령을 실행합니다.

캡처 파일 수집

Collect Secure Firewall 3100 Internal Switch Capture Files 섹션의 단계를 수행합니다.

캡처 파일 분석

패킷 캡처 파일 판독기 응용 프로그램을 사용하여 인터페이스 in_data_uplink1의 캡처 파일을 엽니 다. 키 포인트를 확인합니다. 이 경우 ICMP 에코 요청 및 에코 응답 패킷이 캡처됩니다. 애플리케이 션에서 내부 스위치로 전송된 패킷입니다.

No.	Time		4	Source	Destination	Protocol	Length	IP ID		IP T	TL 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	
4-	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	TCMP	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)	1	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)	0	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)	- 0	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	~
<																	>	
> E	rame 1: 102 byte	es on wire (816 bit	ts)	, 102 bytes captu	ured (816 bits)			000	00 50 56	5 9d	e7 50 b	oc e7	12 34 9a	15 08 00 45	00 · PV · · P ·	· ·4····	E·	
> E	thernet II, Src:	Cisco 34:9a:15 (bc:	e7:12:34:9a:15),	Dst: VMware_9d:e7:	50 (00:50:56:9	d:e7:50)	001	00 54 40	93	40 00 4	0 01	00 1a c0	00 02 64 c6	33 ·TM-@-@	· · · · · · · · · · · · · · · · · · ·	- 3	
> 1	nternet Protocol	Version 4, Src: 1	192	.0.2.100, Dst: 19	98.51.100.100			002	64 64 08	8 00	7f 15	90 3a	00 21 39	3f f0 62 00	00 dd	: · [9] · t		
> 1	nternet Control	Message Protocol						003	00 00 st) 1a	05 00 0	00 00	00 00 10	11 12 13 14	15		• •	
								0040	16 17 18	3 19	1a 1b 1	lc 1d	1e 1f 20	21 22 23 24	25	I**	\$%	
								0050	26 27 28	3 29	2a 2b 2	2c 2d	2e 2f 30	31 32 33 34	35 & ()*+,	/0123	45	
								0060	36 37 5	55	55 55				670000			

설명

업링크 인터페이스에서 스위치 캡처가 구성된 경우 애플리케이션에서 내부 스위치로 전송된 패킷 만 캡처됩니다. 애플리케이션으로 전송된 패킷은 캡처되지 않습니다.

이 표에서는 작업을 요약합니다.

작업	캡처 지점 <mark>내부 필</mark> 터	방향	캡처된 트래픽
업링크 인터페이스에서 패킷 캡처를 구 성하고 확인합니다. in_data_uplink1	in_data_u _{없음} plink1	인그레스 전용	호스트 192.0.2.100에서 호스트 198.51.100.100으로의 ICMP 에크 호스트 198.51.100.100에서 호스 192.0.2.100으로 ICMP 에코 응답

작업 2

FTD 또는 ASA CLI를 사용하여 업링크 인터페이스 in_mgmt_uplink1에서 패킷 캡처를 구성하고 확 인합니다. 관리 플레인 연결의 패킷만 캡처됩니다.

토폴로지, 패킷 흐름 및 캡처 포인트

			Chas	ssis
		Internal Switch		Security Module
				FTD/ASA
	ICMP echo-request, SSH, Sftunnel	TUBW	in_mgmt_uplink1	Management IP address: 192.0.2.200
FMC	ICMP echo-reply, SSH, Sftunnel			

설정

ASA 또는 FTD CLI에서 다음 단계를 수행하여 인터페이스 in_mgmt_uplink1에 패킷 캡처를 구성합 니다.

1. 캡처 세션을 생성합니다.

> no capture capsw switch stop 확인

캡처 세션 이름, 관리 및 운영 상태, 인터페이스 슬롯 및 식별자를 확인합니다. Pcapsize **값**(바이트)이 증가하고 캡처된 패킷 수가 0이 아닌지 확인합니다.

```
> 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

 > capture capsw switch interface in_mgmt_uplink1
 2. 캡처 세션을 활성화합니다.

capsw-1-19
0
0
0
0.0.0.0
0.0.0.0
::
::
00:00:00:00:00:00
00:00:00:00:00:00
0
0
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

이 경우 Secure Firewall 3130의 in_mgmt_uplink1 인터페이스인 내부 ID 19로 인터페이스에 캡처가 생성됩니다. FXOS local-mgmt 명령 셸의 show portmanager switch status 명령은 인터페이스 ID를 표시합니다.

> 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

ASA에서 FXOS에 액세스하려면 **connect** fxos admin **명령을** 실행합니다. 다중 컨텍스트의 경우 관 리 컨텍스트에서 이 명령을 실행합니다.

캡처 파일 수집

Collect Secure Firewall 3100 Internal Switch Capture Files 섹션의 단계를 수행합니다.

캡처 파일 분석

패킷 캡처 파일 판독기 응용 프로그램을 사용하여 인터페이스 in_mgmt_uplink1에 대한 캡처 파일을 엽니다. 핵심 사항을 확인합니다. 이 경우 관리 IP 주소 192.0.2.200의 패킷만 표시됩니다. 예를 들 어 SSH, Sftunnel 또는 ICMP 에코 응답 패킷이 있습니다. 내부 스위치를 통해 애플리케이션 관리 인터페이스에서 네트워크로 전송된 패킷입니다.

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 1	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 1	1518	Øxb7d1	(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	Øxb7d2	(47058)	64 Application Data
199 2022-08-07 23:21:45.928772	192.0.2.200	192.0.2.100	ICMP 7	78	Øxbd48	(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 1	128	0x4a97	(19095)	64 Application Data
201 2022-08-07 23:21:45.949027	192.0.2.200	192.0.2.101	TCP 7	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 1	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 5	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 5	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	Øxb7d3	(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 7	78	Øxbd9e	(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 7	78	Øxbdf2	(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 7	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 7	78	Øxbe48	(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 7	78	Øxbea6	(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 1	1518	Øxb7d4	(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 1	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 7	78	Øxbec1	(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 7	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 7	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 7	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 1	170	Øxad34	(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	Øxad35	(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 7	78	Øxbf63	(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 7	70	0x4aa0	(19104)	64 8305 → 58885 [ACK] Seq=23407 Ack=26424 Win=4116 Len=0 TSv
225 2022 00 07 22:21:55 126700	103 0 3 300	103 0 3 100	TCMD	70	avhfe1	(10000)	64 Echo (ning) nonly id-avagas con-4540/50102 ++1-64
S							,
> Frame 1: 747 bytes on wire (5976 bits	s), 747 bytes ca	ptured (5976 bi	ts)		0000	a4 53 0e	2 11 38 2a bc e7 12 34 9a 00 08 00 45 00 ·S··8*···4····E·
> Ethernet II, Src: Cisco_34:9a:00 (bc:	:e7:12:34:9a:00)	, Dst: Cisco_11	:38:2a (a4:53:0e:11:	38:2a)	0010	02 09 48	a 30 40 00 40 06 68 04 c0 00 02 c8 c0 00 ···J=@·@· h·····
> Internet Protocol Version 4, Src: 192	2.0.2.200, Dst:	192.0.2.101			0020	10 14 27	7 cc 00 00 01 01 02 02 02 75 05 75 01 02
> Transmission Control Protocol, Src Po	ort: 8305, Dst P	ort: 58885, Seq	: 1, Ack: 1, Len: 67	7	0030	3d 41 17	7 03 03 02 a0 22 6a 01 e0 ff cc 08 f0 af i" i
> Transport Layer Security					0050	07 40 75	5 19 a4 d5 df 64 d8 fe 66 8e 9h cc 8d 2f $\theta = \theta + $
					0060	92 b2 1a	a 64 e7 20 36 03 8e 48 02 5a 7c 85 30 d4 ····d· 6· ·H·ZI·0·
					0070	fa c0 a8	8 56 b8 ad a7 7e 19 3a c1 9c 4b 57 0e e0 ····V···~ ·:··KW··
					0080	be ef 95	5 22 84 c1 c1 9d 9f 24 78 b4 15 1c 44 0e ···"···· ·\$x···D·
					0090	ea cb 43	3 9e 1f fd a7 70 75 e5 6b a4 f8 2b ee 47 ···C····p u·k··+·G
					00a0	2f 86 73	3 8f b1 e1 b5 c6 57 e3 a8 46 0e cb 26 b7 ∕·s···· ₩··F··&·
					00b0	5b c7 e3	3 09 54 f3 c1 ff 26 d9 87 ea 51 3d 20 08 [···T·· &···Q= ·
					0000	16 fd cb	b +5 4+ 91 98 5e 86 15 17 55 68 6f 5d 04 ····0··^ ···Uho]·

설명

관리 업링크 인터페이스에서 스위치 캡처가 구성된 경우 애플리케이션 관리 인터페이스에서 전송 된 인그레스 패킷만 캡처됩니다. 애플리케이션 관리 인터페이스로 향하는 패킷은 캡처되지 않습니 다.

이 표에서는 작업을 요약합니다.

작업	캡처 지점	내부 필 터	방향	캡처된 트래픽
관리 업링크 인터 페이스에서 패킷 캡처 구성 및 확인	in_mgmt_ uplink1	없음	인그레스 전용 (내부 스위치를 통해 관 리 인터페이스에서 네 트워크로)	FTD 관리 IP 주소 192.0.2.200에서 호스트 192.0.2.100으로 ICMP 에코 응답 FTD 관리 IP 주소 192.0.2.200에서 FMC I 소 192.0.2.101로 Sftunnel FTD 관리 IP 주소 192.0.2.200에서 호스트

패킷 캡처 필터

내부 스위치 패킷 캡처 필터는 데이터 플레인 캡처와 동일한 방식으로 구성됩니다. 필터를 구성하 려면 ethernet-type 및 match 옵션을 사용합니다.

설정

ASA 또는 FTD CLI에서 다음 단계를 수행하여 Ethernet1/1 인터페이스에서 호스트 198.51.100.100의 ARP 프레임 또는 ICMP 패킷과 일치하는 필터를 사용하여 패킷 캡처를 구성합니 다.

1. nameif 확인:

<pre>> show nameif</pre>							
Interface	Name	Security					
Ethernet1/1	inside	0					
Ethernet1/2	outside	0					
Management1/1	diagnostic	0					
2. ARP 또는 ICMP에 대한 캡처 세션을 생성합니다.							

> capture capsw switch interface inside ethernet-type arp

> capture capsw switch interface inside match icmp 198.51.100.100 확인

캡처 세션 이름 및 필터를 확인합니다. Ethertype 값은 10진수로 2054, 16진수로 0x0806입니다.

> show capture caps	w 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 port	s 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 ICMP에 대한 필터 확인입니다. IP 프로토콜 1은 ICMP입니다.

> show capture capsw detail

^	011011	oupcure	Capb.		Juli
F	Packet	Capture	info		
	Name:			cap	SW
	Sessio	on:		1	
	Admin	State:		disa	abled
	Oper S	State:		dow	n
	Oper S	State Rea	ason:	Ses	sion_Admin_Shut
	Config	g Success	5:	yes	
	Config	g Fail Re	eason	:	
	Append	d Flag:		ove	rwrite
	Sessio	on Mem Us	sage:	256	
	Sessio	on Pcap S	Snap I	Len:	1518
	Error	Code:		0	
	Drop (Count:		0	

Total Physical ports involved in Packet Capture: 1

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

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

Reading of capture file from disk is not supported

Secure Firewall 3100 내부 스위치 캡처 파일 수집

ASA 또는 FTD CLI를 사용하여 내부 스위치 캡처 파일을 수집합니다. FTD에서 캡처 파일은 CLI copy 명령을 통해 데이터 **또**는 진단 인터페이스를 통해 연결 가능한 대상으로 내보낼 수도 있습니 다.

또는 파일을 전문가 모드에서 /ngfw/var/common에 복사하고 File Download 옵션을 통해 FMC에서 **다운로드할** 수 있습니다.

포트 채널 인터페이스의 경우 모든 멤버 인터페이스에서 패킷 캡처 파일을 수집해야 합니다.

ASA

ASA CLI에서 내부 스위치 캡처 파일을 수집하려면 의 다음 단계를 수행합니다.

1. 캡처를 중지합니다.

asa# capture capsw switch stop 2. 캡처 세션이 중지되었는지 확인하고 캡처 파일 이름을 확인합니다.

asa# show capture c	apsw 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 port Physical port:	s involved in Packet Capture: 1
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 Filt	er Info
Name:	capsw-1-1
Protocol:	0
Ivlan:	0
Ovlan:	0
Src Ip:	0.0.0
Dest Ip:	0.0.0
Src Ipv6:	::
Dest Ipv6:	::
Src MAC:	00:00:00:00:00
Dest MAC:	00:00:00:00:00

Src Port:0Dest Port:0Ethertype: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. 원격 대상으로 파일을 내보내려면 CLI copy 명령을 사용합니다.

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

FTD CLI에서 내부 스위치 캡처 파일을 수집하고 데이터 또는 진단 인터페이스를 통해 연결 가능한 서버에 복사하려면 다음 단계를 수행합니다.

1. 진단 CLI로 이동합니다.

> 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. 캡처를 중지합니다.

firepower# capture capi switch stop 3. 캡처 세션이 중지되었는지 확인하고 캡처 파일 이름을 확인합니다.

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 capsw-1-1 Name: Protocol: 0 Tvlan: 0 Ovlan: 0 0.0.0.0 Src Ip: 0.0.0.0 Dest Ip: Src Ipv6: :: Dest Ipv6: :: Src MAC: 00:00:00:00:00:00 Dest MAC: 00:00:00:00:00:00 0 Src Port: 0 Dest Port: 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. 파일을 원격 대상으로 내보내려면 CLI copy 명령을 사용합니다. 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 Copy to smb: file system smb: 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 파일 다운로드 옵션을 통해 FMC에서 캡처 파일을 수집하려면 다음 단계를 수행합니다.

1. 캡처를 중지합니다.

2. 캡처 세션이 중지되었는지 확인하고 파일 이름과 전체 캡처 파일 경로를 확인합니다.

> 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 0 Protocol: 0 Tvlan: Ovlan: 0 Src Ip: 0.0.0.0 0.0.0.0 Dest Ip: Src Ipv6: :: Dest Ipv6: :: Src MAC: 00:00:00:00:00:00 00:00:00:00:00:00 Dest MAC: Src Port: 0 Dest Port: 0 0 Ethertype: 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. 전문가 모드로 전환하고 루트 모드로 전환합니다.

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

4. 캡처 파일을 /ngfw/var/common/에 복사합니다.

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 1s -1 /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. FMC에서 Devices > File Download를 선택합니다.



6. FTD를 선택하고 캡처 파일 이름을 제공한 다음 Download(다운로드)를 클릭합니다.

Firewall Management Center Devices / Troubleshoot / File Download	Overview	Analysis	Policies	Devices	Objects	Integration	Deplo	y Q	. 🧬	¢ (lab_	_domain	\ admin 🔻	cisco	SECURE
								Th	reat Def	ense CL	. 1	Packet C	Capture	Packe	t Tracer
		Device FPR3100-1	1	•											
		File sess-1-ca	psw-ethernet	-1-1-0.pcap											
				Back	Download										

내부 스위치 패킷 캡처에 대한 지침, 제한 및 모범 사례

지침 및 제한 사항:

- 여러 개의 스위치 캡처 컨피그레이션 세션이 지원되지만 한 번에 하나의 스위치 캡처 세션만 활 성화할 수 있습니다. 2개 이상의 캡처 세션을 활성화하면 "ERROR: 최대 1개의 활성 패킷 캡처 세션 제한에 도달했으므로 세션을 활성화하지 못했습니다."
- 활성 스위치 캡처를 삭제할 수 없습니다.
- 애플리케이션에서 스위치 캡처를 읽을 수 없습니다. 사용자는 파일을 내보내야 합니다.
- 덤프, 디코드, 패킷 번호, 추적 등의 특정 데이터 플레인 캡처 옵션은 스위치 캡처에 대해 지원 되지 않습니다.
- 다중 컨텍스트 ASA의 경우 데이터 인터페이스의 스위치 캡처가 사용자 컨텍스트에서 구성됩니다. 이 스위치는 인터페이스 in_data_uplink1 및 in_mgmt_uplink1에서 캡처하며 관리 컨텍스 트에서만 지원됩니다.

다음은 TAC 사례에서 패킷 캡처 사용을 기반으로 한 모범 사례 목록입니다.

- 지침 및 제한 사항에 유의하십시오.
- 캡처 필터를 사용합니다.

- 캡처 필터가 구성된 경우 NAT가 패킷 IP 주소에 미치는 영향을 고려하십시오.
- 프레임 크기를 지정하는 패킷 길이를 늘리거나 줄입니다(기본값 1518바이트와 다를 경우). 크 기가 작으면 캡처된 패킷의 수가 증가하고, 그 반대의 경우도 마찬가지입니다.
- 필요에 따라 버퍼 크기를 조정합니다.
- show cap <cap_name> detail 명령 출력의 Drop Count에 주의하십시오. 버퍼 크기 제한에 도달 하면 드롭 카운트 카운터가 증가합니다.

관련 정보

- Firepower 4100/9300 Chassis Manager 및 FXOS CLI 컨피그레이션 가이드
- <u>Cisco Secure Firewall 3100 시작 가이드</u>
- <u>Cisco Firepower 4100/9300 FXOS 명령 참조</u>

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