

تاعومجم ڦارادا لوكوتورب ءاطخاً فاشڪتساً
دعتملا ثبلما تالوكوتورب (IGMP) تنرتن إلما
FirePOWER عافدلاب ڦصاخلا
اھحالصاً

تایوتھملا

قدماً

قیس اس الاتابل طتملا

تابلطت ملائی

ةمدختسملاتانوكمل

ڈیس اس اتمولعہ

نیوکرک

IGMP تایس اس ای

مکھتلائی و سمل ددعتملا ثبل ارورم ڈکر - 1 ڈھملا

ي س اس ألا ددعتم لا ثبلا نبي وكت - 2 قمم ملأ

٢) تنزيل المجموعات (IGMP) لوكوتورب عالطتسا

ةعومجم لباقم (IGMP) ترددن الاتاعومجم قرالوكوتوربل قتباثلا ةعومجملا - 3 ئمهملما

(IGMP) تەنرەت نالا تاھۇمچىم قىرادا لوكۇت ورپىلما مامضىنالا

قطب اثلا ةعومجم IGMP

IGMP مامضنا ومحج

یار ذجلاً IGMP لوكوتوربل ثبلاً ددعتم هي جو تلاني وكت - 4 قمه ملما

ةفوري م تالكشم

قەھۋىلا قەطانمىلىع دىعىتمەل اىپلار ئورمۇڭ ۋە قەھۋىلا

232.x نیوانغل اقاطنل IGMP اری راقت قیامح لاراج لهاجتی

معلومات اذانتا صقل

ةمدقم

FirePOWER دی دهت دض عافدل ا ذي فنت ئيفيك و ددعتملا ثبلا تاييس اسأ دنتسمل ا اذه فصي (IGMP) تنرتن إلأ ٤عومجم ٥رادا لوكوتوربل (FTD).

ةيـسـاسـاـلـاـ تـابـلـطـتـمـلـا

تابلطتما

فرع میجوت IP اس ال اس یو

ةم دختس ملأ تانوك ملا

ةصاخ ةيكل مع ةئيب يف ةدو جو ملا ةزهجأ لا نم دنت سملأا اذه يف ةدراو لا تامولع ملا عاشنإ مت تناك اذا .(يضارتفا) حوس مم نيك تب دنت سملأا اذه يف ةم دختس ملأا ةزهجأ لا عيمج تأداب رمأ يأ ل متحملأا ريثأت ل كم هف نم دكأت ف ،ليغشت لا ديق لكتكب ش.

(ةل دعملا نامأ لا ةزهجأ جمان رب ىلع اضيأ ةلاق ملا هذه ىوتحم قبطنى).

ةيلاتلا ةي داملا تانوك ملا وج ماربلا تارادصا ىلا دنت سملأا اذه يف ةدراو لا تامولع ملا دنت سست:

- 7.1.0. رادص إلأ Cisco Firepower 4125 ، ديده تلا دض عاف دلا.
- 7.1.0. رادص إلأ Firepower (FMC) ، رادص إلأ زكرم.
- 9.19.1. رادص إلأ ASA.

ةيساسأ تامولع م

في راعتلأا

- (دح او ىلا دح او) رخآ فيضم ىلا دح او فيضم نم = Unicast .
- (ل كلأا ىلا دح او) ةلمتحملأا ةفيضملا تائييبلأا عيمج ىلا دح او فيضم نم = Broadcast .
- (ةزهجأ لا نم ةعومجم ىلا ةفيضملا ةزهجأ لا نم ةعومجم فيضم نم = ددعتملا ثبلأا) .
- (ريثك ىلا ريثك وأ ريثك ىلا دح او) ةفيضملا .
- (ةدع نم دح او ىلا دح او) ةعومجم برقا ىلا فيضم نم = AnyCast .

تاي ساسأ

- جنيريد فيتس ةطساوب 1986 ماع يف ددعتملا ثبلل RFC 988 ةباتك تمت .
- 1110 - 224.0.0.0 - 224.0.0.0 /4 تب تادحو 4 لوا (قاطنلا IPv4 ل ددعتملا ثبلأا مدخلتسى 239.255.255.255 .)
- L3: 01005e نم ددعتملا ثبلل IP لوكوتورب L2 نم MAC ناونع دمتسي ، IPv4 ل ظبسنلاب . ددعتملا ثبلل IPv4 ناونع نم لقا تب ةدحو 23 + 0 امئاد تب دح 24 + 259 (تب ةدحو 24) .
- IPv4 ل ددعتملا ثبلأا نم ةنورم ريثكأ وهو 8/FF00: قاطنلا IPv6 ل ددعتملا ثبلأا مدخلتسى (عاقتلالا ةطقنل ترنرتن إلأ لوكوتورب نيمضت نكمي هنأ ارظن RP) .
- لقا تب 32: 3333 + 3: ىوتسم ل ددعتملا ثبلأا نم MAC ناونع دمتسي ، IPv6 ل ظبسنلاب . ددعتملا ثبلل IPv6 ناونع نم .
- هنأ ارظن ، عادألا . ردصملا ىلع لمحلا ضافخنا نع ةجتان ةعافكلا : ددعتملا ثبلأا تازيم اهناضي ف وأ رورملأا ةكرح ةيج اودزا انبنجي ، ماح دزالا بنجت مدع ، UDP ىلا دنت سى) هب قو وثوم ريق غ لق ن : ددعتملا ثبلأا بويع لسلستلا جراخ ميلستلا .
- يف ةدو جو ملا ةزهجأ لا عيمج بل طت ي هنأ ماعلا ترنرتن إلأ ىلع ددعتملا ثبلأا مع دمتى ال . ةكرتشم ةيرادا ةطلس تحت ةزهجأ لا عيمج نوكت امدنع ةداع مدخلتسى . هنـيـكـمـتـلـ رـاسـمـلـا . ويـديـفـ تـارـمـتـفـمـ دـقـعـوـيـلـخـادـ ويـديـفـ ثـبـ : ةـيـجـذـوـمـنـلـاـ دـدـعـتـمـلـاـ ثـبـلـاـ

خوس نملأا يداحأ لا ثبلأا ل باقم ددعتملا ثبلأا

ثبلأا ةمزح سفن نم ةددعتم خسن ردصملا عيشن ي ال ثامتم اخسن خوس نم Unicast يف ىلع ددعتملا ثبلأا لمعي . ةددعتم ةهج و فيضم ىلا اهل سري و (لصألا قبط ةخسن) يداحأ لا

اخسن خوسنمل اي داحألا ثبل اي ف امنيوب، ةكبشلا ايل ردملا فيضملا نم عبعلا لقن
ردملا فيضملا ىلع لمعلا لك ذيفنت متني الـثامتم

نیوکل

IGMP تایس اس آ

- L3 زاھج و ددعتمل ا ثبل ا لابقتس ا ۋەھجأ نىب اھب اھب ثدحتل ا متي يىتل ا "غىللە" يە (اھجوم نوكىي ام ۋادع) يىلجمل ا.
 - 2. مقر IP لوكوتورب مدخلتسيو (ICMP لىثم) 3 ۋەھقى طلا نم لوكوتورب وە
 - متي. 2. رادصىلا وە ۋەيامحلى رادچىلۇ يىضارتىفلا IGMP رادصى. IGMP تارادصى 3 ايلاح كانه ايلاح طقف 2 و 1 نىرادردىلا معىد.
 - يە ۋەسىيئىرلا قورقۇلما IGMPv1 و IGMPv2 نىب:

- نیب مهمل ا فالتخالا نمکی، عجرمک نکل و ASA/FTD، معنی IGMPv3 ىلع IGMPv2 و IGMPv3 نیممضت یف ایلاح متی ال یذلما IGMPv3 یف ردصملاو ۋەعومجملاپ صاخ مالعتسا نیممضت یف (SSM). ردصملا ددھم ددعتملا ثبلما یف ھم ادھتسا متی
 - IGMPv1/IGMPv2/IGMPv3 = 224.0.0.1
IGMPv2 = 224.0.0.2
IGMPv3 = 224.0.0.22
 - بوغرملا ریغ IGMP ۆيوضع ریرقىت ۆلاسىر لاسرا ھنكمىف، مامضنالا فيضملا داراً اذا ھەيىف:

No.	Time	Delta	Source	Destination	Protocol	SGT	Identification	Length	Info
7	5.118518	0.000000	192.168.1.50	224.0.0.2	IGMPv2	0x01a7	(423)	46	Leave Group 230.10.10.10
8	5.127230	0.008712	192.168.1.50	230.10.10.10	IGMPv2	0x01a8	(424)	46	Membership Report group 230.10.10.10
9	5.593022	0.465792	192.168.1.50	230.10.10.10	IGMPv2	0x01a9	(425)	46	Membership Report group 230.10.10.10
114	74.756894	69.163872	192.168.1.24	224.0.0.1	IGMPv2	0x7280	(29312)	60	Membership Query, general
118	77.093155	2.336261	192.168.1.50	239.255.255.250	IGMPv2	0x01e9	(489)	46	Membership Report group 239.255.255.250
120	79.593298	2.500143	192.168.1.50	224.0.0.252	IGMPv2	0x01eb	(491)	46	Membership Report group 224.0.0.252
122	81.093367	1.500069	192.168.1.50	230.10.10.10	IGMPv2	0x01ec	(492)	46	Membership Report group 230.10.10.10
152	103.150111	22.056744	192.168.1.24	224.0.0.1	IGMPv2	0x1c5f	(7263)	60	Membership Query, general
153	103.593643	0.443532	192.168.1.50	224.0.0.252	IGMPv2	0x0206	(518)	46	Membership Report group 224.0.0.252
154	104.593737	1.000094	192.168.1.50	239.255.255.250	IGMPv2	0x0208	(520)	46	Membership Report group 239.255.255.250
161	107.686998	3.093261	192.168.1.50	224.0.0.2	IGMPv2	0x020b	(523)	46	Leave Group 230.10.10.10
162	107.687972	0.000074	192.168.1.24	230.10.10.10	IGMPv2	0x9b9d	(39837)	60	Membership Query, specific for group 230.10.10.10
163	107.695137	0.007165	192.168.1.50	230.10.10.10	IGMPv2	0x020c	(524)	46	Membership Report group 230.10.10.10
164	108.093934	0.3989797	192.168.1.50	230.10.10.10	IGMPv2	0x020c	(526)	46	Membership Report group 230.10.10.10

- ةماع تامالعتسا IGMP تامالعتسا نم ناعون دجوي، ئيامحل رادج رظن ئهنجو نم ۋە مەجىلاب ۋە صاخ تامالعتسا و
 - كانه ناك اذا امم ققحتلا بجي، IGMP Leave Group ئىلسىر ئيامحل رادج لېرىتىسىي امدىن دىع ئيامحل رادج لسلىك، بېسلىك اذەل. ئىعرفلىك بېشلىك لىع ۋە مەجىلما ھەذە يەن نورخا عاضۇغا ئەملاپ اصاخ امالعتسا:

No.	Time	Delta	Source	Destination	Protocol	SGT	Identification	Length	Info
7	5.118518		0.000000 192.168.1.50	224.0.0.2	IGMPv2	0x01a7 (423)	46 Leave Group 230.10.10.10		
8	5.127230		0.008712 192.168.1.50	230.10.10.10	IGMPv2	0x01a8 (424)	46 Membership Report group 230.10.10.10		
9	5.593022		0.465792 192.168.1.50	230.10.10.10	IGMPv2	0x01a9 (425)	46 Membership Report group 230.10.10.10		
114	74.756894		69.163872 192.168.1.24	224.0.0.1	IGMPv2	0x7280 (29312)	60 Membership Query, general		
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120	79.593298		2.500143 192.168.1.50	224.0.0.252	IGMPv2	0x01eb (491)	46 Membership Report group 224.0.0.252		
122	81.093367		1.500069 192.168.1.50	230.10.10.10	IGMPv2	0x01ec (492)	46 Membership Report group 230.10.10.10		
152	103.150111		22.056744 192.168.1.24	224.0.0.1	IGMPv2	0x1c5f (7263)	60 Membership Query, general		
153	103.593643		0.443532 192.168.1.50	224.0.0.252	IGMPv2	0x0206 (518)	46 Membership Report group 224.0.0.252		
154	104.593737		1.000094 192.168.1.50	239.255.255.250	IGMPv2	0x0208 (520)	46 Membership Report group 239.255.255.250		
161	107.686998		3.093261 192.168.1.50	224.0.0.2	IGMPv2	0x020b (523)	46 Leave Group 230.10.10.10		
162	107.687972		0.000074 192.168.1.24	230.10.10.10	IGMPv2	0x9bd (39837)	60 Membership Query, specific for group 230.10.10.10		
163	107.695137		0.007165 192.168.1.50	230.10.10.10	IGMPv2	0x020c (524)	46 Membership Report group 230.10.10.10		
164	108.093934		0.398797 192.168.1.50	230.10.10.10	IGMPv2	0x020e (526)	46 Membership Report group 230.10.10.10		

- رایتخا متي، ئيامحلا ناردرج/تاهجوملا نم ديدعلا اه بوجوي يتللار ئيعرفلا تاكبشلا ىلع • تامالعتسا عيمج لسري زاهج) ملعتسم IGMP:

<#root>

firepower#

show igmp interface INSIDE

```
INSIDE is up, line protocol is up
  Internet address is 192.168.1.97/24
  IGMP is enabled on interface
  Current IGMP version is 2
  IGMP query interval is 125 seconds
  IGMP querier timeout is 60 seconds
  IGMP max query response time is 10 seconds
  Last member query response interval is 1 seconds
  Inbound IGMP access group is:
  IGMP limit is 500, currently active joins: 2
  Cumulative IGMP activity: 21 joins, 20 leaves
```

IGMP querying router is 192.168.1.97 (this system)

<-- IGMP querier

- لئاسرلا ضرعى debug igmp نىكمت كنكمى، يدىلىقتلا ASA رارغىل ئىف FTD ب ئوقلىعتملا IGMP:

<#root>

firepower#

debug igmp

IGMP debugging is on

IGMP: Received v2 Query on DMZ from 192.168.6.1

IGMP: Received v2 Report on INSIDE from 192.168.1.50 for 239.255.255.250

<-- Received an IGMP packet

IGMP: group_db: add new group 239.255.255.250 on INSIDE

IGMP: MRIB updated (*,239.255.255.250) : Success

IGMP: Switching to EXCLUDE mode for 239.255.255.250 on INSIDE

IGMP: Updating EXCLUDE group timer for 239.255.255.250

```

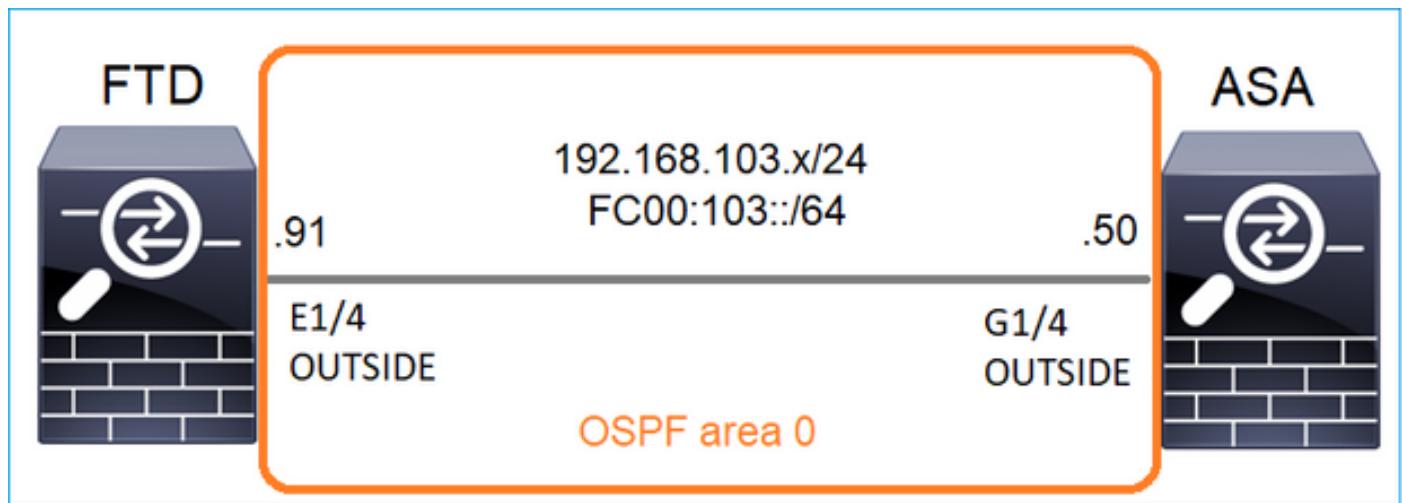
IGMP: Received v2 Report on INSIDE from 192.168.1.50 for 230.10.10.10
IGMP: group_db: add new group 230.10.10.10 on INSIDE
IGMP: MRIB updated (*,230.10.10.10) : Success
IGMP: Switching to EXCLUDE mode for 230.10.10.10 on INSIDE
IGMP: Updating EXCLUDE group timer for 230.10.10.10
IGMP: Send v2 general Query on INSIDE
IGMP: Received v2 Query on INSIDE from 192.168.1.97
IGMP: Send v2 general Query on OUTSIDE
IGMP: Received v2 Query on OUTSIDE from 192.168.103.91
IGMP: Received v2 Report on INSIDE from 192.168.1.50 for 239.255.255.250
IGMP: Updating EXCLUDE group timer for 239.255.255.250
IGMP: Received v2 Report on INSIDE from 192.168.1.50 for 230.10.10.10
IGMP: Updating EXCLUDE group timer for 230.10.10.10

```

- ةعومجم كرت ةلاسرعم ددعتملا ثبلا ةعومجم ةداع فيضملأا كرتى

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help								
Igmp.type == 0x17								
No.	Time	Delta	Source	Destination	Protocol	Identification	Length	Info
7	5.118518	0.000000	192.168.1.50	224.0.0.2	IGMPv2	0x01a7 (423)	46	Leave Group 230.10.10.10
161	107.686998		102.568480	192.168.1.50	IGMPv2	0x020b (523)	46	Leave Group 230.10.10.10

مكحتملا ىوتسملا ددعتملا ثبلا رورم ١- ٥مهملا



ةكرحو L2 ل نيزاهجلا ةجلاعم ةيقيقن يف ئوشل ؛ OSPFv3 و OSPFv2 نيب ASA و FTD ؛ ئوشل ئوقت ؛ ل3 ل ددعتملا ثبلا رورم اهؤاشنامت يتلا OSPF.

لحلا

نيوكت OSPFv2

Firewall Management Center - Devices / NGFW Routing

FTD4125-1

Cisco Firepower 4125 Threat Defense

Device Routing Interfaces Inline Sets DHCP

Manage Virtual Routers

Global

Virtual Router Properties

ECMP

OSPF

OSPFv3

EIGRP

RIP

Policy Based Routing

BGP

IPv4

IPv6

Process 1

ID: 1

OSPF Role: Internal Router

Process 2

ID:

OSPF Role: Internal Router

OSPF Process	Area ID	Area Type	Networks	Options	Authentication	Cost	Range	Virtual-Link
1	0	normal	net_192.168.103.0	false	none	10		

Device Routing Interfaces Inline Sets DHCP

Manage Virtual Routers

Global

Virtual Router Properties

ECMP

OSPF

OSPFv3

EIGRP

RIP

Policy Based Routing

BGP

IPv4

IPv6

Process 1

ID: 1

OSPF Role: Internal Router

Process 2

ID:

OSPF Role: Internal Router

Interface	Authentication	Point-to-Point	Cost	Priority	MTU Ignore	Database Filter	Neighbor
OUTSIDE	None	false	10	1	false	false	

و ل OSPFv3 بسنباب ، لثملاب

FTD: نیوکتلا ج اوجا رطس ۃہج او لع (CLI) ج

<#root>

```
router ospf 1

network 192.168.103.0 255.255.255.0 area 0

log-adj-changes
!

ipv6 router ospf 1

no graceful-restart helper
log-adjacency-changes
!
interface Ethernet1/4
nameif OUTSIDE
security-level 0
ip address 192.168.103.91 255.255.255.0
ipv6 address fc00:103::91/64
ospf authentication null

ipv6 ospf 1 area 0
```

FTD (ASP) ل عیرسلا نامآل راسمل حامسل ا لواچ یف تالاخ دالا هذہ عاشناب نیوکتلا موقی

لخدمـل ددعـتمـلـا ثـبـلـا رـوـمـ ةـكـرـحـ رـطـحـ مـتـيـ الـىـ تـحـ:

```
<#root>

firepower#
show asp table classify domain permit

...
in id=0x14f922db85f0, priority=13,
domain=permit, deny=false

<-- permit the packets
    hits=1, user_data=0x0, cs_id=0x0, reverse, flags=0x0, protocol=89
    src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any

dst ip/id=224.0.0.5, mask=255.255.255.255,
port=0, tag=any, dscp=0x0, nsg_id=none      <-- OSPF for IPv4

input_ifc=OUTSIDE
(vrfid:0), output_ifc=identity(vrfid:0)      <-- ingress interface
in id=0x14f922db9350, priority=13,
domain=permit, deny=false

<-- permit the packets
    hits=0, user_data=0x0, cs_id=0x0, reverse, flags=0x0, protocol=89
    src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any

dst ip/id=224.0.0.6, mask=255.255.255.255
, port=0, tag=any, dscp=0x0, nsg_id=none      <-- OSPF for IPv4

input_ifc=OUTSIDE
(vrfid:0), output_ifc=identity(vrfid:0)      <-- ingress interface
```

تنـرـتـنـ إـلـاـ لـوكـوـتـورـبـ نـمـ سـدـاسـلـاـ رـادـصـإـلـلـ ةـبـسـنـلـابـ (IP):

```
<#root>

...
in id=0x14f923fb16f0, priority=13,
domain=permit, deny=false

<-- permit the packets
    hits=1, user_data=0x0, cs_id=0x0, reverse, flags=0x0, protocol=89
    src ip/id=:/:/0, port=0, tag=any

dst ip/id=ff02::5/128
, port=0, tag=any, , nsg_id=none      <-- OSPF for IPv6
```

```
input_ifc=OUTSIDE

(vrfid:0), output_ifc=identity(vrfid:0)  --> ingress interface
in id=0x14f66e9d4780, priority=13,
domain=permit, deny=false

--> permit the packets
    hits=0, user_data=0x0, cs_id=0x0, reverse, flags=0x0, protocol=89
    src ip/id=:/:0, port=0, tag=any

dst ip/id=ff02::6/128

, port=0, tag=any, , nsg_id=none      --> OSPF for IPv6

input_ifc=OUTSIDE

(vrfid:0), output_ifc=identity(vrfid:0)  --> ingress interface
...

```

لیغشتلا ديق OSPFv3 و OSPFv2 رواجت تايلمع نوكت

```
<#root>

firepower#  
  
show ospf neighbor  
  
Neighbor ID Pri State Dead Time Address Interface  
192.168.103.50 1  
  
FULL/BDR  
  
0:00:35 192.168.103.50 OUTSIDE      <-- OSPF neighbor is up  
  
firepower#  
  
show ipv6 ospf neighbor  
  
Neighbor ID Pri State Dead Time Interface ID Interface  
192.168.103.50 1  
  
FULL/BDR  
  
0:00:34 3267035482 OUTSIDE      <-- OSPF neighbor is up
```

للمع تاسلچ يه ٥٥ اهؤاهنإ مت يتل ددعتملا ثبـلـل OSPF بـرـمـلـا يـلـا

```
<#root>  
firepower#  
show conn all | include OSPF
```

```
OSPF OUTSIDE fe80::2be:75ff:fef6:1d8e NP Identity Ifc ff02::5, idle 0:00:09, bytes 5924, flags
OSPF OUTSIDE 192.168.103.50 NP Identity Ifc 224.0.0.5, idle 0:00:03, bytes 8904, flags
OSPF OUTSIDE ff02::5 NP Identity Ifc fe80::f6db:e6ff:fe33:442e, idle 0:00:01, bytes 6304, flags
OSPF OUTSIDE 224.0.0.5 NP Identity Ifc 192.168.103.91, idle 0:00:00, bytes 25220, flags
```

زاوجلاب تالاصتالا حسـمـ وـ IPv4 لـ طـاقـتـلـ الـاـ نـيـ كـمـتـبـ مـقـ ،ـ رـابـتـخـ إـاـكـ

```
<#root>

firepower#

capture CAP interface OUTSIDE trace

firepower#

clear conn all

12 connection(s) deleted.

firepower#

clear capture CAP

firepower# !
```

⚠ طقف يحيضوتلا ضرعـأـ لـ اـثـمـلـاـ ضـرـعـ مـتـيـ !ـ عـاطـقـنـاـ اـذـهـ بـبـسـيـ :ـ رـيـذـحـتـ

ةـطـقـتـلـمـلـاـ مـزـحـ OSPFـ

```
<#root>

firepower# show capture CAP | include proto-89

1: 12:25:33.142189 192.168.103.50 > 224.0.0.5 ip-proto-89, length 60
2: 12:25:33.702691 192.168.103.91 > 224.0.0.5 ip-proto-89, length 60
7: 12:25:36.317000 192.168.206.100 > 224.0.0.5 ip-proto-89, length 56
8: 12:25:36.952587 fe80::2be:75ff:fef6:1d8e > ff02::5 ip-proto-89 40 [flowlabel 0xe] [hlim 1]
12: 12:25:41.282608 fe80::f6db:e6ff:fe33:442e > ff02::5 ip-proto-89 40 [flowlabel 0xe] [hlim 1]
```

ةـيـامـحـلـاـ رـادـجـ ةـطـسـ اوـبـ OSPFv2ـ دـدـعـتـمـلـاـ ثـبـلـاـ ةـمـزـحـ ةـجـلـاعـمـ ةـيـفـيـكـ يـلـيـ اـمـيـفـ

```
<#root>

firepower#

show capture CAP packet-number 1 trace

115 packets captured

1: 12:25:33.142189 192.168.103.50 > 224.0.0.5 ip-proto-89, length 60
```

<-- The first packet of the flow

Phase: 1

Type: CAPTURE

Subtype:

Result: ALLOW

Elapsed time: 6344 ns

Config:

Additional Information:

MAC Access list

Phase: 2

Type: ACCESS-LIST

Subtype:

Result: ALLOW

Elapsed time: 6344 ns

Config:

Implicit Rule

Additional Information:

MAC Access list

Phase: 3

Type: ROUTE-LOOKUP

Subtype: No ECMP load balancing

Result: ALLOW

Elapsed time: 10736 ns

Config:

Additional Information:

Destination is locally connected. No ECMP load balancing.

Found next-hop 192.168.103.50 using egress ifc OUTSIDE(vrfid:0)

Phase: 4

Type: ACCESS-LIST

Subtype:

Result: ALLOW

Elapsed time: 5205 ns

Config:

Implicit Rule

Additional Information:

Phase: 5

Type: NAT

Subtype: per-session

Result: ALLOW

Elapsed time: 5205 ns

Config:

Additional Information:

Phase: 6

Type: IP-OPTIONS

Subtype:

Result: ALLOW

Elapsed time: 5205 ns

Config:

Additional Information:

Phase: 7

Type: CLUSTER-REDIRECT

Subtype: cluster-redirect

Result: ALLOW

Elapsed time: 29280 ns

Config:

Additional Information:

Phase: 8
Type: MULTICAST
Subtype:
Result: ALLOW
Elapsed time: 976 ns
Config:
Additional Information:

Phase: 9

Type: OSPF
<-- The OSPF process
subtype: ospf

Result: ALLOW

Elapsed time: 488 ns

Config:

Additional Information:

Phase: 10
Type: FLOW-CREATION
Subtype:
Result: ALLOW
Elapsed time: 13176 ns
Config:
Additional Information:
New flow created with id 620, packet dispatched to next module

Result:
input-interface: OUTSIDE(vrfid:0)
input-status: up
input-line-status: up
output-interface: OUTSIDE(vrfid:0)
output-status: up
output-line-status: up
Action: allow
Time Taken: 82959 ns

هذا يه قي رطل ا يتلا ةقلاع ماهب مت يه قي رطل ا ثبل ا ددعتمل ا OSPFv3 اوب طس ام حلا رادج ةي

<#root>

```
firepower#  
show capture CAP packet-number 8 trace  
  
274 packets captured  
  
8: 12:25:36.952587 fe80::2be:75ff:fef6:1d8e > ff02::5 ip-proto-89 40 [flowlabel 0xe] [hlim 1]  
--> The first packet of the flow  
Phase: 1  
Type: CAPTURE  
Subtype:  
Result: ALLOW  
Elapsed time: 7564 ns  
Config:  
Additional Information:  
MAC Access list  
  
Phase: 2  
Type: ACCESS-LIST  
Subtype:  
Result: ALLOW  
Elapsed time: 7564 ns  
Config:  
Implicit Rule  
Additional Information:  
MAC Access list  
  
Phase: 3  
Type: ROUTE-LOOKUP  
Subtype: No ECMP load balancing  
Result: ALLOW  
Elapsed time: 8296 ns  
Config:  
Additional Information:  
Destination is locally connected. No ECMP load balancing.  
Found next-hop ff02::5 using egress ifc identity(vrfid:0)  
  
Phase: 4  
Type: ACCESS-LIST  
Subtype:  
Result: ALLOW  
Elapsed time: 8784 ns  
Config:  
Implicit Rule  
Additional Information:  
  
Phase: 5  
Type: NAT  
Subtype: per-session  
Result: ALLOW  
Elapsed time: 8784 ns  
Config:  
Additional Information:  
  
Phase: 6  
Type: CLUSTER-REDIRECT  
Subtype: cluster-redirect  
Result: ALLOW  
Elapsed time: 27816 ns  
Config:
```

Additional Information:

Phase: 7

Type: OSPF

<-- The OSPF process

subtype: ospf

Result: ALLOW

Elapsed time: 976 ns

Config:

Additional Information:

Phase: 8

Type: FLOW-CREATION

Subtype:

Result: ALLOW

Elapsed time: 13664 ns

Config:

Additional Information:

New flow created with id 624, packet dispatched to next module

Result:

input-interface: OUTSIDE(vrfid:0)

input-status: up

input-line-status: up

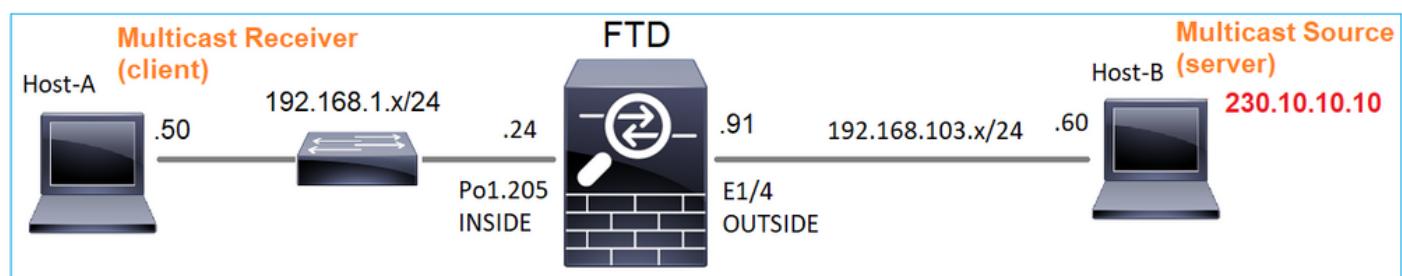
output-interface: NP Identity Ifc

Action: allow

Time Taken: 83448 ns

يساسألا ددعتملا ثبلا نيوكت - 2 ۆمەملا

ططخمل



تابل طتملا

ليمع يلـا مـدخلـا نـم دـدعـتمـلا ثـبـلـا روـرـم ةـكـرـح قـفـدـت مـتـي ثـيـحـب ةـيـامـحـلـا رـادـجـنـيـوـكـتـبـ مـقـاـعـلـا IP 230.10.10.10

لـحـلـا

مـاعـلـكـشـبـ دـدعـتمـلا ثـبـلـا هـيـجـوـتـ نـيـكـمـتـ وـهـ يـنـدـأـلـا نـيـوـكـتـلـا نـإـفـ،ـةـيـامـحـلـا رـادـجـرـظـنـ ةـهـجـوـنـمـ.ـةـيـامـحـلـا رـادـجـ تـاهـجـاـوـعـيـمـجـ يـلـعـ PIM وـIGMPـ

مـدـخـتـسـمـ ةـهـجـاـوـيـفـ FMC:

Firewall Management Center
Devices / NGFW Routing
Overview Analysis Policies Devices Objects Integration Deploy

FTD4125-1
Cisco Firepower 4125 Threat Defense

Device Routing Interfaces Inline Sets DHCP

Manage Virtual Routers

Global

Virtual Router Properties

- ECMP
- OSPF
- OSPFv3
- EIGRP
- RIP
- Policy Based Routing
- BGP
 - IPv4
 - IPv6
- Static Route
- Multicast Routing
 - IGMP
 - PIM

Protocol Neighbor Filter Bidirectional Neighbor Filter Rendezvous Points Route Tree Request Filter Bootstrap Router

Enable Multicast Routing (Enabling Multicast Routing checkbox will enable both IGMP and PIM on all Interfaces.)

Interface	PIM Enabled	DR Priority	Hello Interval
No records to display			

هـعـفـدـ مـتـ يـذـلـا نـيـوـكـتـلـا وـهـ اـذـهـ ةـيـامـحـلـا رـادـجـ (CLI) رـمـ اوـاـ رـطـسـ ةـهـجـاـوـيـلـعـ:

```
<#root>
firepower#
show run multicast-routing
multicast-routing
-- Multicast routing is enabled
```

IGMP نـم قـقـحـتـلـا

```
<#root>
firepower#
show igmp interface
```

```
diagnostic is up, line protocol is up
  Internet address is 0.0.0.0/0
    IGMP is disabled on interface

INSIDE is up, line protocol is up

<-- The interface is UP
  Internet address is 192.168.1.24/24

  IGMP is enabled on interface

<-- IGMP is enabled on the interface

  Current IGMP version is 2

<-- IGMP version
  IGMP query interval is 125 seconds
  IGMP querier timeout is 255 seconds
  IGMP max query response time is 10 seconds
  Last member query response interval is 1 seconds
  Inbound IGMP access group is:
    IGMP limit is 500, currently active joins: 1
  Cumulative IGMP activity: 4 joins, 3 leaves
  IGMP querying router is 192.168.1.24 (this system)

OUTSIDE is up, line protocol is up

<-- The interface is UP
  Internet address is 192.168.103.91/24

  IGMP is enabled on interface

<-- IGMP is enabled on the interface

  Current IGMP version is 2

<-- IGMP version
  IGMP query interval is 125 seconds
  IGMP querier timeout is 255 seconds
  IGMP max query response time is 10 seconds
  Last member query response interval is 1 seconds
  Inbound IGMP access group is:
    IGMP limit is 500, currently active joins: 1
  Cumulative IGMP activity: 1 joins, 0 leaves
  IGMP querying router is 192.168.103.91 (this system)
```

```
<#root>

firepower#
show igmp group

IGMP Connected Group Membership
Group Address Interface Uptime Expires Last Reporter
239.255.255.250 INSIDE 00:09:05 00:03:19 192.168.1.50
239.255.255.250 OUTSIDE 00:06:01 00:02:33 192.168.103.60
```

```
<#root>
```

```

firepower#
show igmp traffic

IGMP Traffic Counters
Elapsed time since counters cleared: 03:40:48 Received Sent

Received Sent
Valid IGMP Packets 21 207
Queries 0 207
Reports 15 0      <-- IGMP Reports received and sent
Leaves 6 0
Mtrace packets 0 0
DVMRP packets 0 0
PIM packets 0 0

Errors:
Malformed Packets 0
Martian source 0
Bad Checksums 0

```

نم ققحتل PIM

```

<#root>
firepower#
show pim interface

```

Address	Interface	PIM	Nbr	Hello	DR
		Count	Intvl	Prior	
0.0.0.0	diagnostic	off	0	30	1
192.168.1.24	INSIDE	on	0	30	1
192.168.103.91	OUTSIDE	on	0	30	1

نم ققحتل MFIB

```

<#root>
firepower#
show mfib

Entry Flags: C - Directly Connected, S - Signal, IA - Inherit A flag,
             AR - Activity Required, K - Keepalive
Forwarding Counts: Pkt Count/Pkts per second/Avg Pkt Size/Kbits per second
Other counts: Total/RPF failed/Other drops
Interface Flags: A - Accept, F - Forward, NS - Negate Signalling
                 IC - Internal Copy, NP - Not platform switched
                 SP - Signal Present

```

Interface Counts: FS Pkt Count/PS Pkt Count

(*,224.0.1.39) Flags: S K

Forwarding: 0/0/0/0

, Other: 0/0/0 <-- The Forwarding counters are: Pkt Count/Pkts per second/Avg Pkt Size/Kbits per second
(*,224.0.1.40) Flags: S K

Forwarding: 0/0/0/0,

Other: 8/8/0

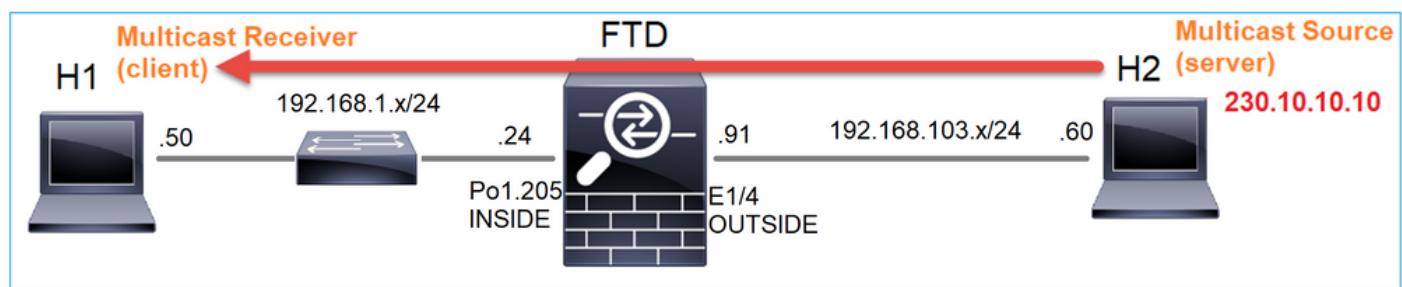
<-- The Other counters are: Total/RPF failed/Other drops

(*,232.0.0.0/8) Flags: K

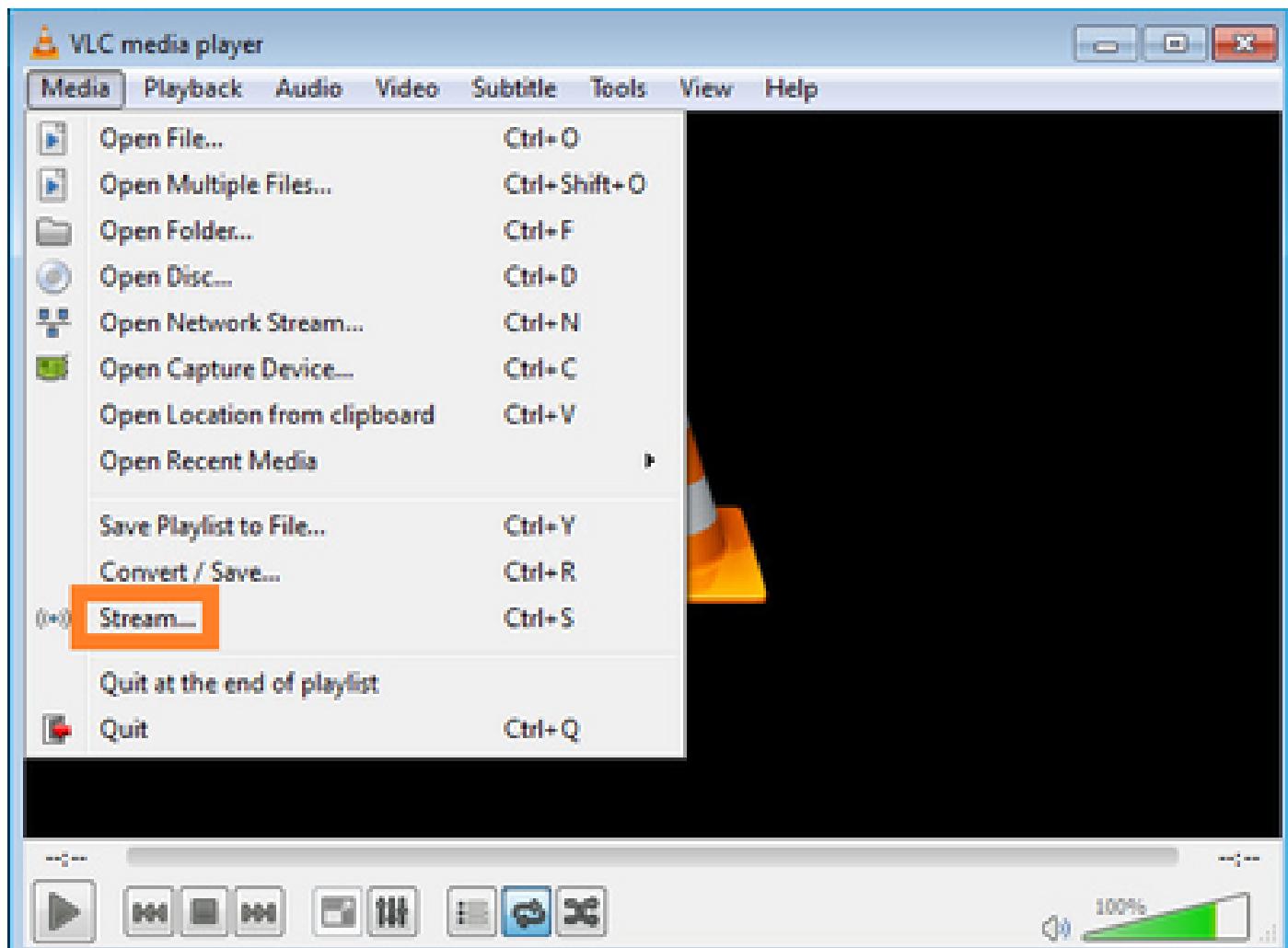
Forwarding: 0/0/0/0, Other: 0/0/0

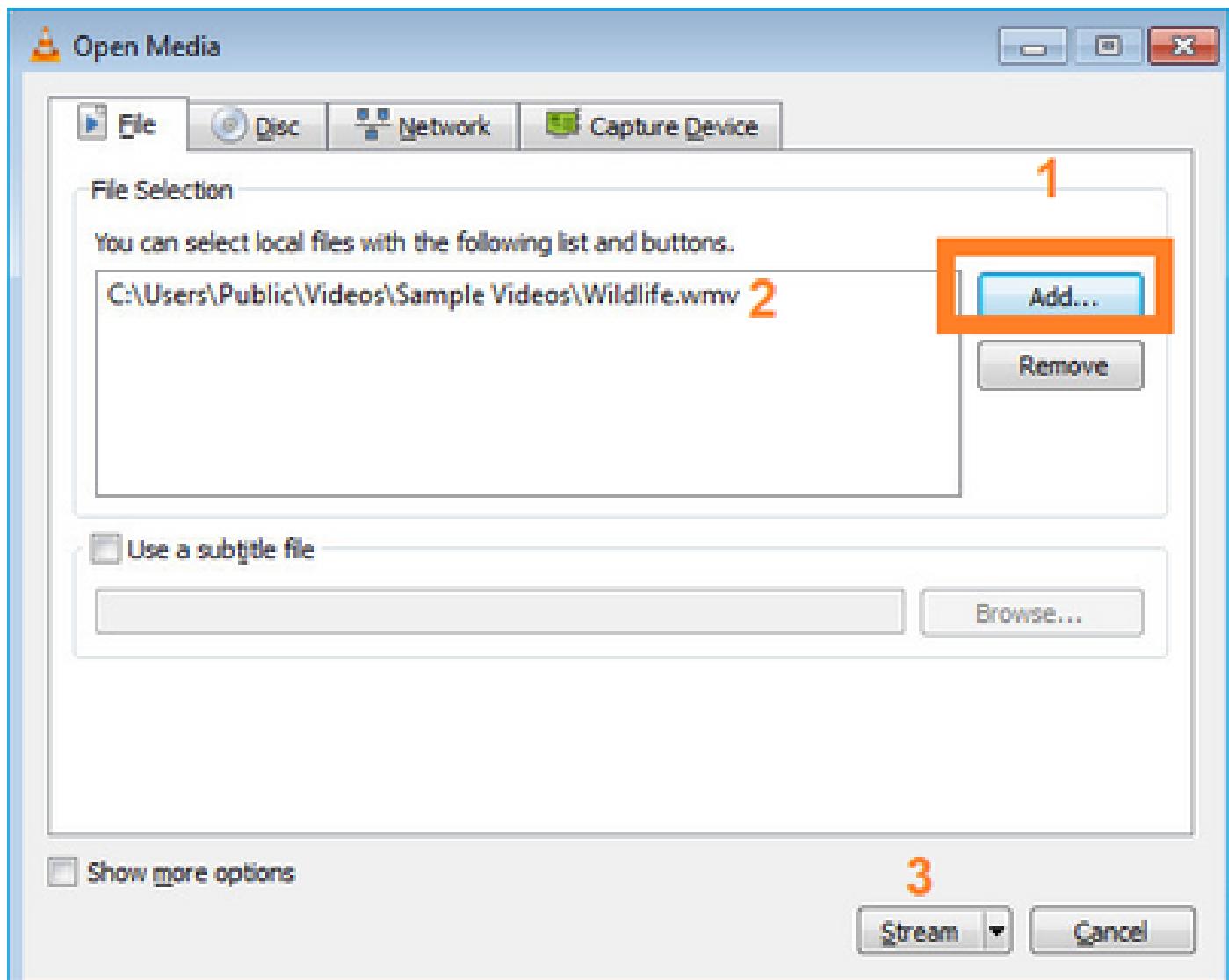
ةيامحلا رادج لالخ نم ددعتملا ثبلا رورم ةكرح

ربتخي نأ نوبزو multicast لدانك قيبطت تلمعتسا لغشم طئاسو VLC لـ، ءلاحلا هذه يف
multicast ةكرح:



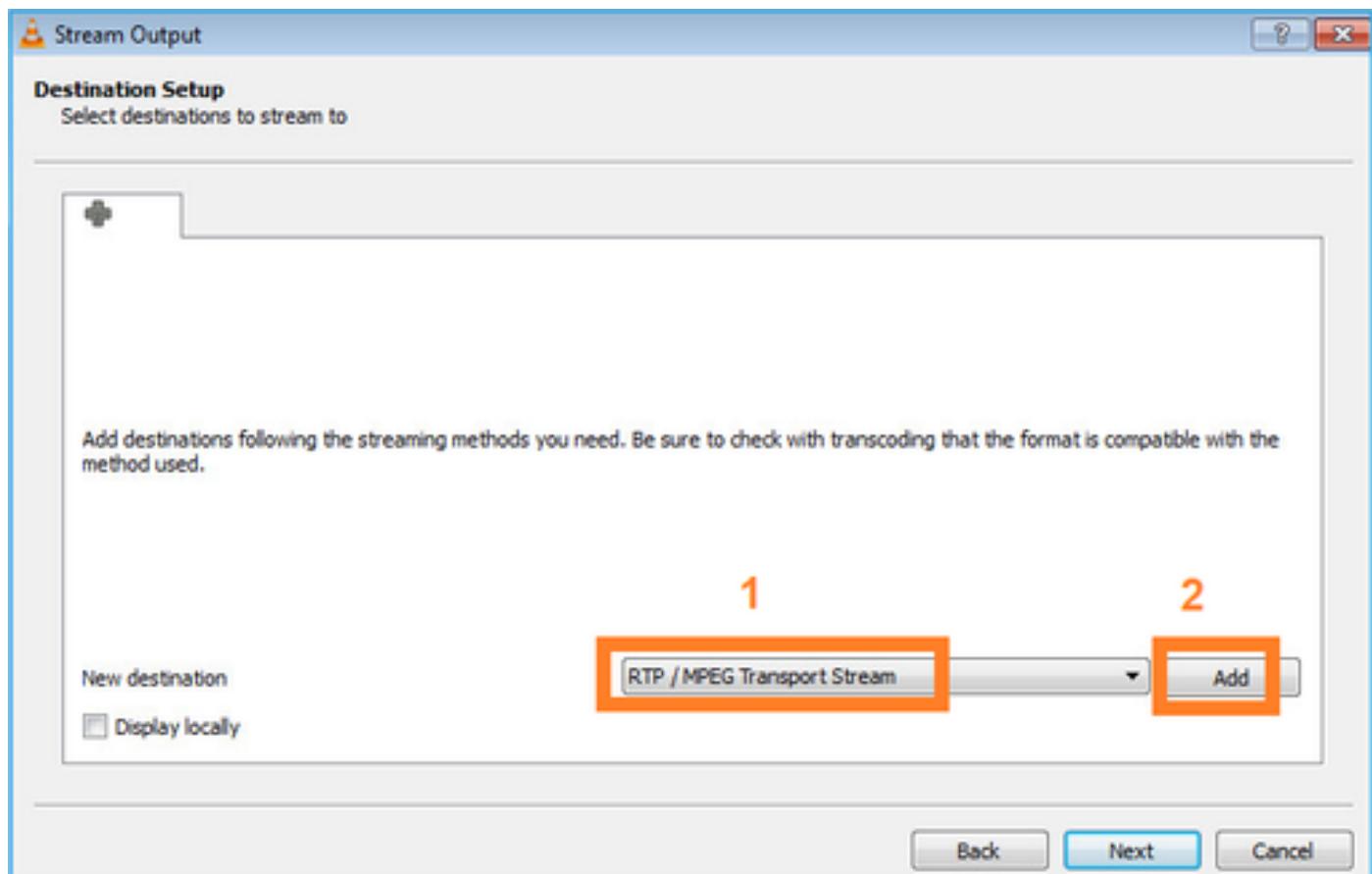
ددعتملا ثبلا مداخ نيوكت VLC:



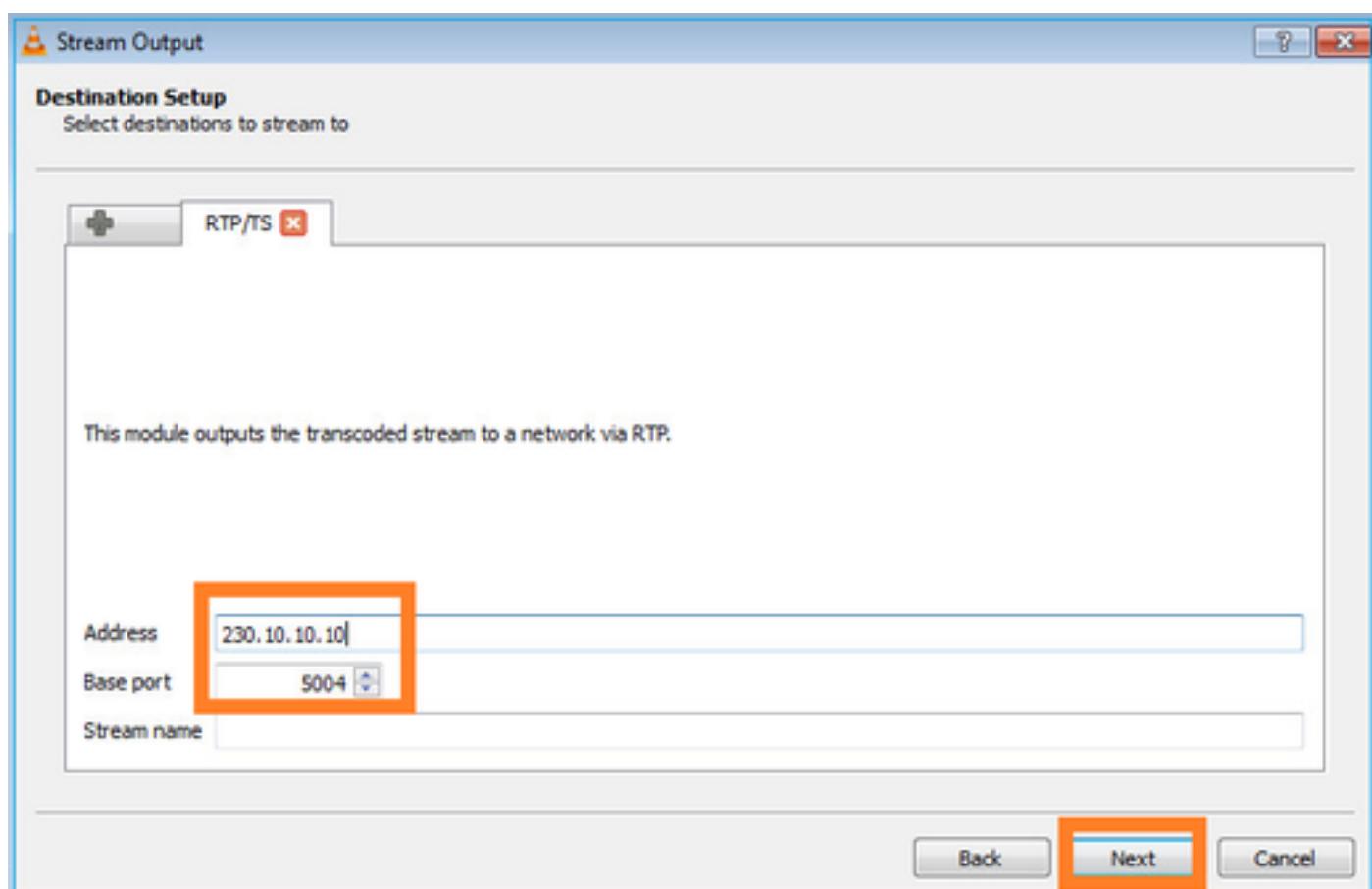


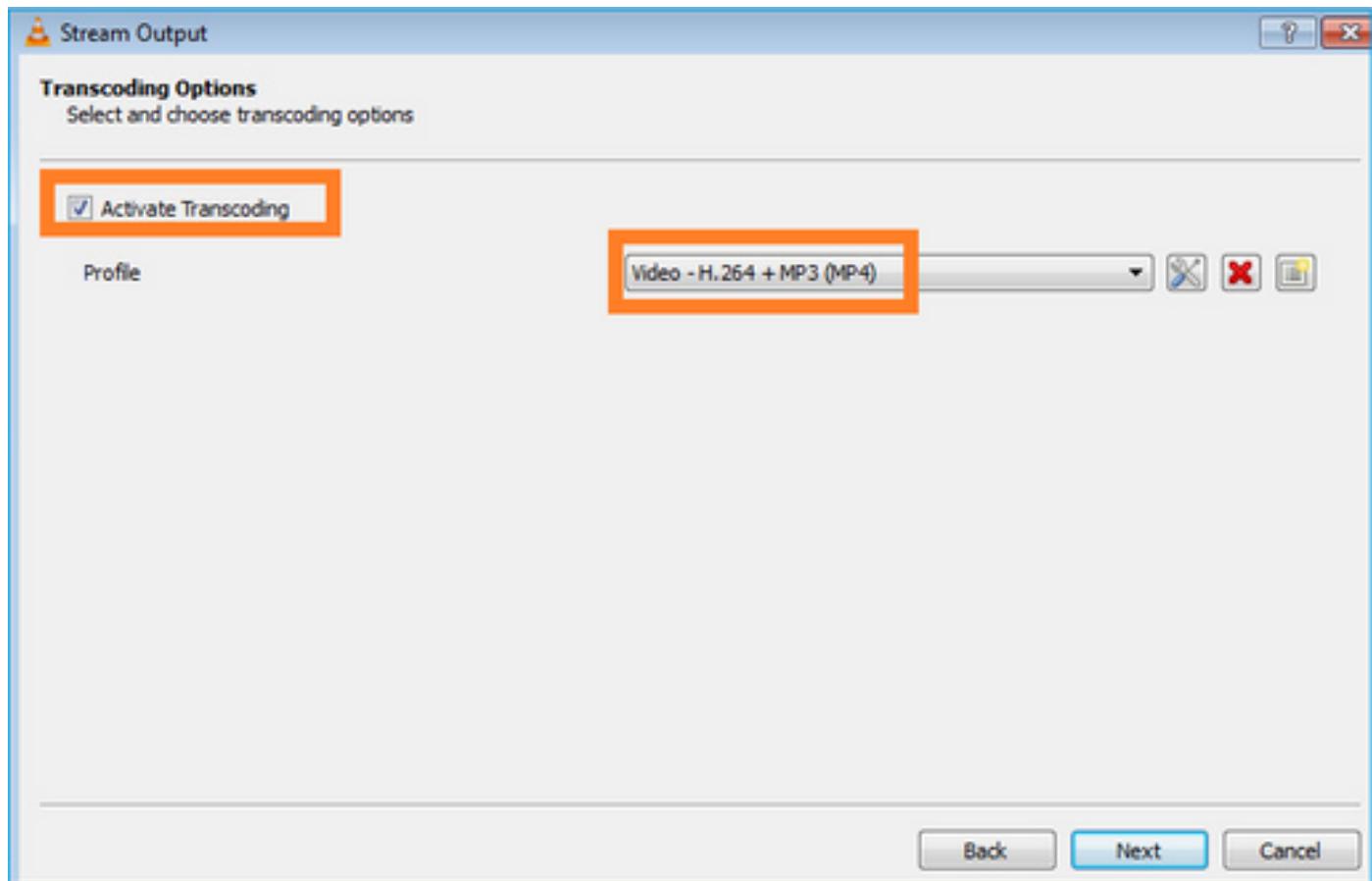
طقف يلاتلا ددح ، ئيلاتلا ۋاشلا يف.

قىسىنتلا ددح:



عاني م و لـ multicast IP لـ تنسيع:

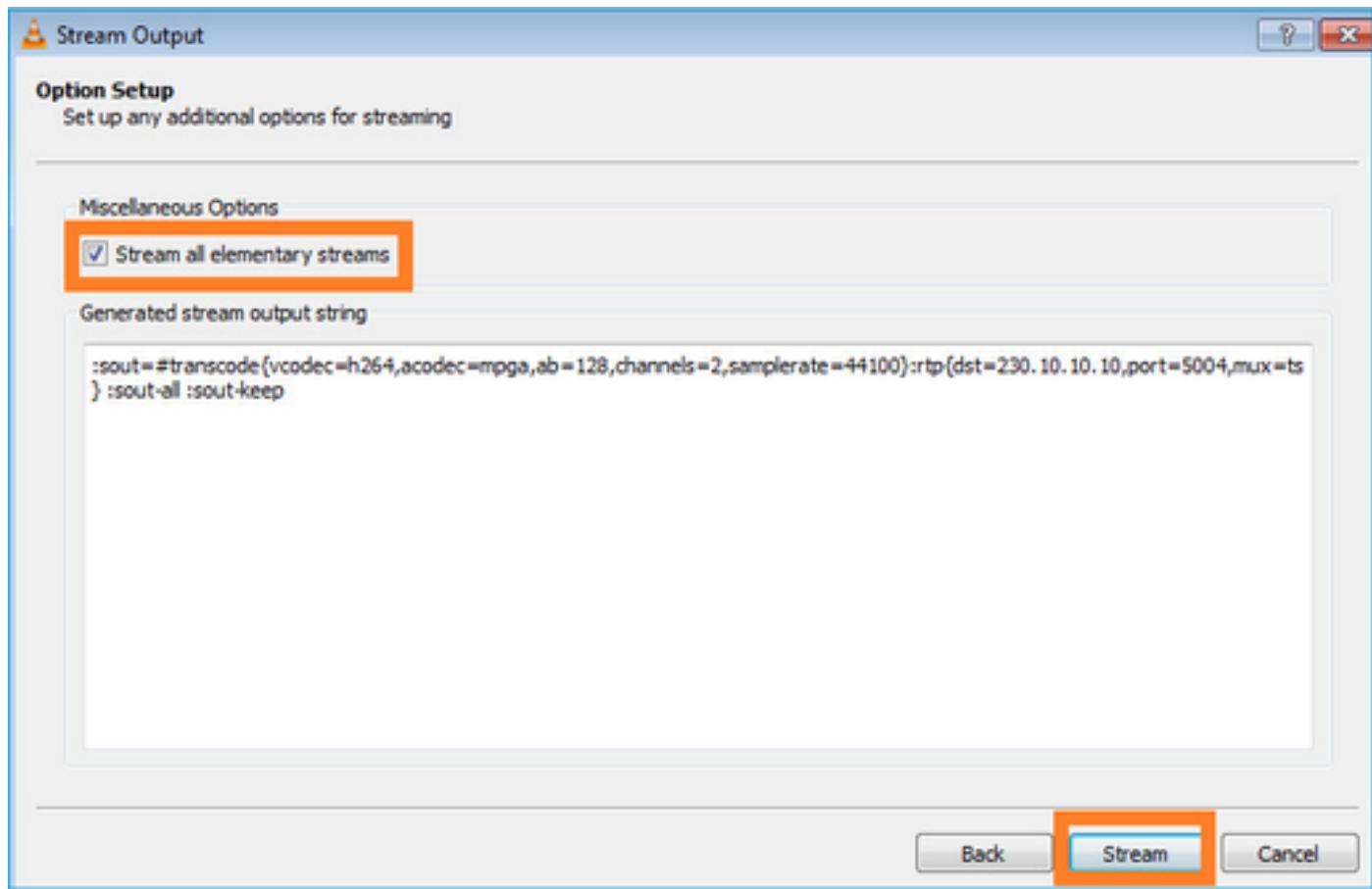




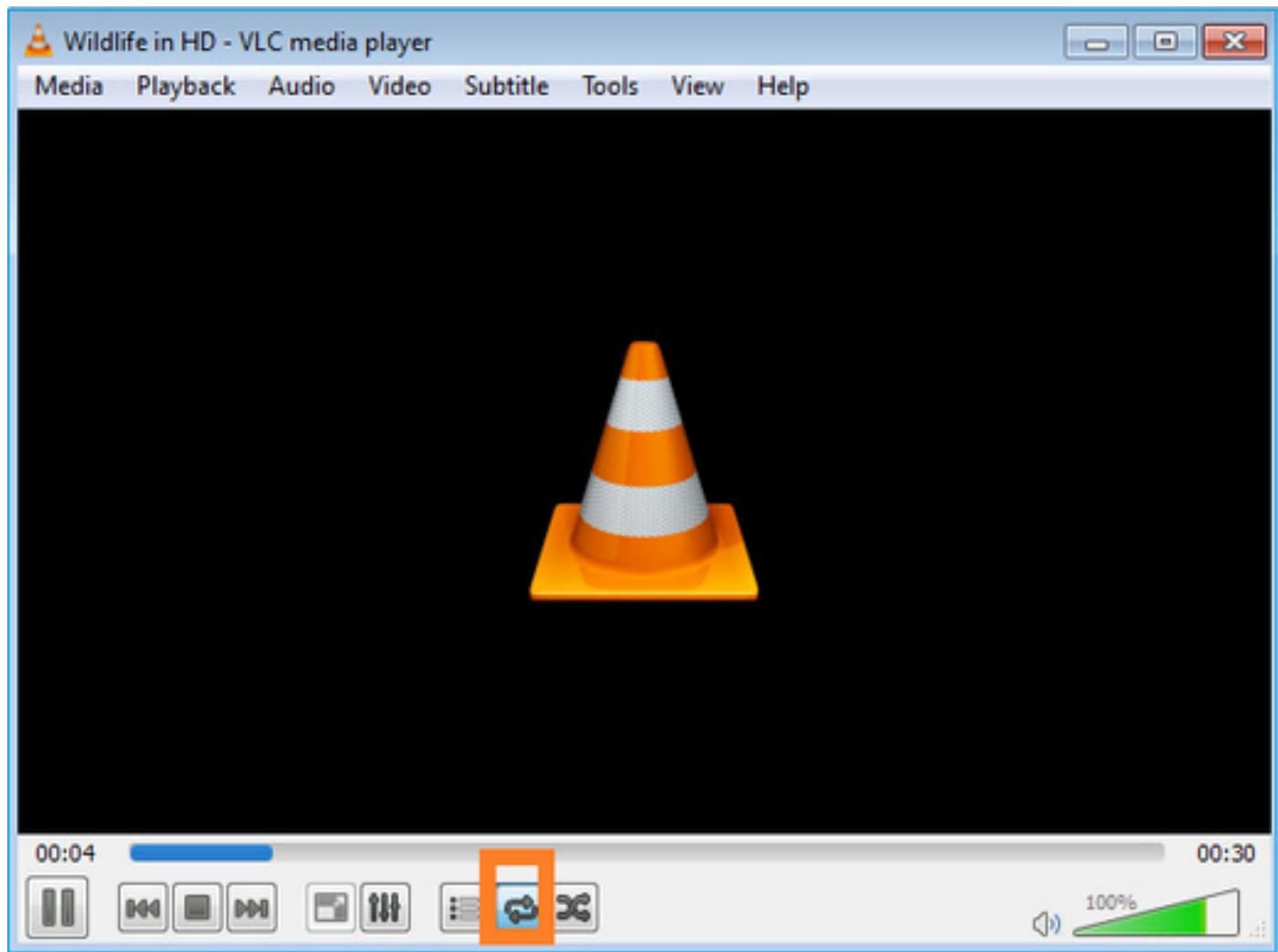
ةيامح رادج ىلع LINA طاقتلا نيكمت:

```
<#root>
firepower#
capture INSIDE interface INSIDE match ip host 192.168.103.60 host 230.10.10.10
firepower#
capture OUTSIDE interface OUTSIDE trace match ip host 192.168.103.60 host 230.10.10.10
```

ددع تملأ ثبلأ قفـد عـدبـل زـاهـجـلـل قـفـدـلـا رـزـدـحـ:



رارتساب قىدلاراسى ماتى ثىحب "يقلحلا راركتلارا" رايىخ نكم:



(يلىغشت رىغ ويرانيس) ققحتلا

ةيامحلا رادج كولس تابثا وە فدەللا يىلمع رىغ ويرانيس ئىلع لىلد ويرانيسلا اذە.

ئىجوت ةداعاب موقى ال ھنكلو، ددعتملا ثبلا قفدت ئىلع ئىامحلا رادج زاھج لصحي ٥٥:

```
<#root>
firepower#
show capture

capture INSIDE type raw-data interface INSIDE
[Capturing - 0 bytes]
<- No packets sent or received
match ip host 192.168.103.60 host 230.10.10.10
capture OUTSIDE type raw-data trace interface OUTSIDE
[Buffer Full - 524030 bytes]
<- The buffer is full
match ip host 192.168.103.60 host 230.10.10.10
```

ةيامحلا رادجل ASP طاقس ا تاييلمع راهظا:

```
<#root>

firepower#
clear asp drop
firepower#
show asp drop
```

Frame drop:

Punt rate limit exceeded (punt-rate-limit)	232
<-- The multicast packets were dropped	
Flow is denied by configured rule (acl-drop)	2
FP L2 rule drop (l2_acl)	2

Last clearing: 18:38:42 UTC Oct 12 2018 by enable_15

Flow drop:

Last clearing: 08:45:41 UTC May 17 2022 by enable_15

مق ببسلا اذهل .ددعتملا ثبلا قفدت نم ىلولأا ةمزحلا طاقتلا ىلإ ٰجاح كانه ٰمزح عبّتتل
ةيلاحلا تاقفدتلا حسمب:

```
<#root>

firepower#
clear capture OUTSIDE

firepower#
clear conn all addr 230.10.10.10
2 connection(s) deleted.

firepower#
show capture OUTSIDE
```

379 packets captured

```
1: 08:49:04.537875 192.168.103.60.54100 > 230.10.10.10.5005: udp 64
2: 08:49:04.537936 192.168.103.60.54099 > 230.10.10.10.5004: udp 1328
3: 08:49:04.538027 192.168.103.60.54099 > 230.10.10.10.5004: udp 1328
4: 08:49:04.538058 192.168.103.60.54099 > 230.10.10.10.5004: udp 1328
5: 08:49:04.538058 192.168.103.60.54099 > 230.10.10.10.5004: udp 1328
6: 08:49:04.538073 192.168.103.60.54099 > 230.10.10.10.5004: udp 1328
...
```

ددعت ملأ ثبـلـل MAC نـاـونـع "ـلـيـصـافـتـلـا" رـاـيـخـ فـشـكـيـ:

```
<#root>
firepower#
show capture OUTSIDE detail

379 packets captured

1: 08:49:04.537875 0050.569d.344a
0100.5e0a.0a0a
0x0800 Length: 106
192.168.103.60.54100 > 230.10.10.10.5005: [udp sum ok] udp 64 (ttl 100, id 19759)
2: 08:49:04.537936 0050.569d.344a
0100.5e0a.0a0a
0x0800 Length: 1370
192.168.103.60.54099 > 230.10.10.10.5004: [udp sum ok] udp 1328 (ttl 100, id 19760)
3: 08:49:04.538027 0050.569d.344a 0100.5e0a.0a0a 0x0800 Length: 1370
192.168.103.60.54099 > 230.10.10.10.5004: [udp sum ok] udp 1328 (ttl 100, id 19761)
...
```

اقـحـ ثـدـحـيـ اـمـ سـيـلـ اـذـهـ نـكـلـوـ،ـاهـبـ حـوـمـسـمـ ةـمـزـحـلـاـ نـأـ ةـيـقـيـقـحـلـاـ عـبـتـ رـهـظـيـ:

```
<#root>
firepower#
show capture OUTSIDE packet-number 1 trace

379 packets captured

1: 08:49:04.537875 192.168.103.60.54100 > 230.10.10.10.5005: udp 64
Phase: 1
Type: CAPTURE
Subtype:
Result: ALLOW
Elapsed time: 11712 ns
Config:
Additional Information:
MAC Access list

Phase: 2
Type: ACCESS-LIST
Subtype:
Result: ALLOW
Elapsed time: 11712 ns
Config:
Implicit Rule
```

Additional Information:

MAC Access List

Phase: 3

Type: ROUTE-LOOKUP

Subtype: No ECMP load balancing

Result: ALLOW

Elapsed time: 7808 ns

Config:

Additional Information:

Destination is locally connected. No ECMP load balancing.

Found next-hop 192.168.103.60 using egress ifc OUTSIDE(vrfid:0)

Phase: 4

Type: ACCESS-LIST

Subtype: log

Result: ALLOW

Elapsed time: 5246 ns

Config:

access-group CSM_FW_ACL_ global

access-list CSM_FW_ACL_ advanced permit ip any any rule-id 268434432

access-list CSM_FW_ACL_ remark rule-id 268434432: ACCESS POLICY: mzafeiro_empty - Default

access-list CSM_FW_ACL_ remark rule-id 268434432: L4 RULE: DEFAULT ACTION RULE

Additional Information:

This packet will be sent to snort for additional processing where a verdict will be reached

Phase: 5

Type: CONN-SETTINGS

Subtype:

Result: ALLOW

Elapsed time: 5246 ns

Config:

class-map class-default

match any

policy-map global_policy

class class-default

set connection advanced-options UM_STATIC_TCP_MAP

service-policy global_policy global

Additional Information:

Phase: 6

Type: NAT

Subtype: per-session

Result: ALLOW

Elapsed time: 5246 ns

Config:

Additional Information:

Phase: 7

Type: IP-OPTIONS

Subtype:

Result: ALLOW

Elapsed time: 5246 ns

Config:

Additional Information:

Phase: 8

Type: CLUSTER-REDIRECT

Subtype: cluster-redirect

Result: ALLOW

Elapsed time: 31232 ns

Config:

Additional Information:

Phase: 9

Type: MULTICAST

<-- multicast process

Subtype:

Result: ALLOW

Elapsed time: 976 ns

Config:

Additional Information:

Phase: 10

Type: FLOW-CREATION

<-- the packet belongs to a new flow

Subtype:

Result: ALLOW

Elapsed time: 20496 ns

Config:

Additional Information:

New flow created with id 3705, packet dispatched to next module

Result:

input-interface: OUTSIDE(vrfid:0)

input-status: up

input-line-status: up

output-interface: OUTSIDE(vrfid:0)

output-status: up

output-line-status: up

Action: allow

<-- The packet is allowed

Time Taken: 104920 ns

غراف (OIL) ٥رداصلا ٥هجاولـ ٥مـاـق نـأـل مـزـحـلـا طـاقـسـا مـتـيـ، وـرـاسـمـلـا تـادـادـعـ ىـلـا اـدـانـتـسـاـ:

<#root>

firepower#

show mroute

Multicast Routing Table

Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group,
C - Connected, L - Local, I - Received Source Specific Host Report,
P - Pruned, R - RP-bit set, F - Register flag, T - SPT-bit set,
J - Join SPT

Timers: Uptime/Expires

Interface state: Interface, State

(192.168.103.60, 230.10.10.10), 00:01:33/00:01:56, flags: SPF

```
Incoming interface: OUTSIDE
```

```
RPF nbr: 192.168.103.60
```

```
Outgoing interface list: Null
```

```
<-- The OIL is empty!
```

```
(*, 239.255.255.250), 00:01:50/never, RP 0.0.0.0, flags: SCJ
```

```
Incoming interface: Null
```

```
RPF nbr: 0.0.0.0
```

```
Immediate Outgoing interface list:
```

```
INSIDE, Forward, 00:01:50/never
```

اقح ثدحي ام تسيل ةلاحلا هذه يف يتل او RPF لشف تالاح MFIB تاداع رهظات:

```
<#root>
```

```
firepower#
```

```
show mfib 230.10.10.10
```

```
Entry Flags: C - Directly Connected, S - Signal, IA - Inherit A flag,  
AR - Activity Required, K - Keepalive
```

```
firepower# show mfib 230.10.10.10
```

```
Entry Flags: C - Directly Connected, S - Signal, IA - Inherit A flag,  
AR - Activity Required, K - Keepalive
```

```
Forwarding Counts: Pkt Count/Pkts per second/Avg Pkt Size/Kbits per second
```

```
<-- Multicast forwarding counters
```

```
Other counts: Total/RPF failed
```

```
/Other drops <-- Multicast drop counters
```

```
Interface Flags: A - Accept, F - Forward, NS - Negate Signalling
```

```
IC - Internal Copy, NP - Not platform switched
```

```
SP - Signal Present
```

```
Interface Counts: FS Pkt Count/PS Pkt Count
```

```
(192.168.103.60,230.10.10.10) Flags: K
```

```
Forwarding: 0/0/0/0
```

```
,
```

```
Other: 650/650
```

```
/0 <-- Allowed and dropped multicast packets
```

جاخا يف ةلثامم RPF لشف تالاح 'show mfib count':

```
<#root>
```

```
firepower#
```

```
show mfib count

IP Multicast Statistics
8 routes, 4 groups, 0.25 average sources per group
Forwarding Counts: Pkt Count/Pkts per second/Avg Pkt Size/Kilobits per second
Other counts:

Total/RPF failed

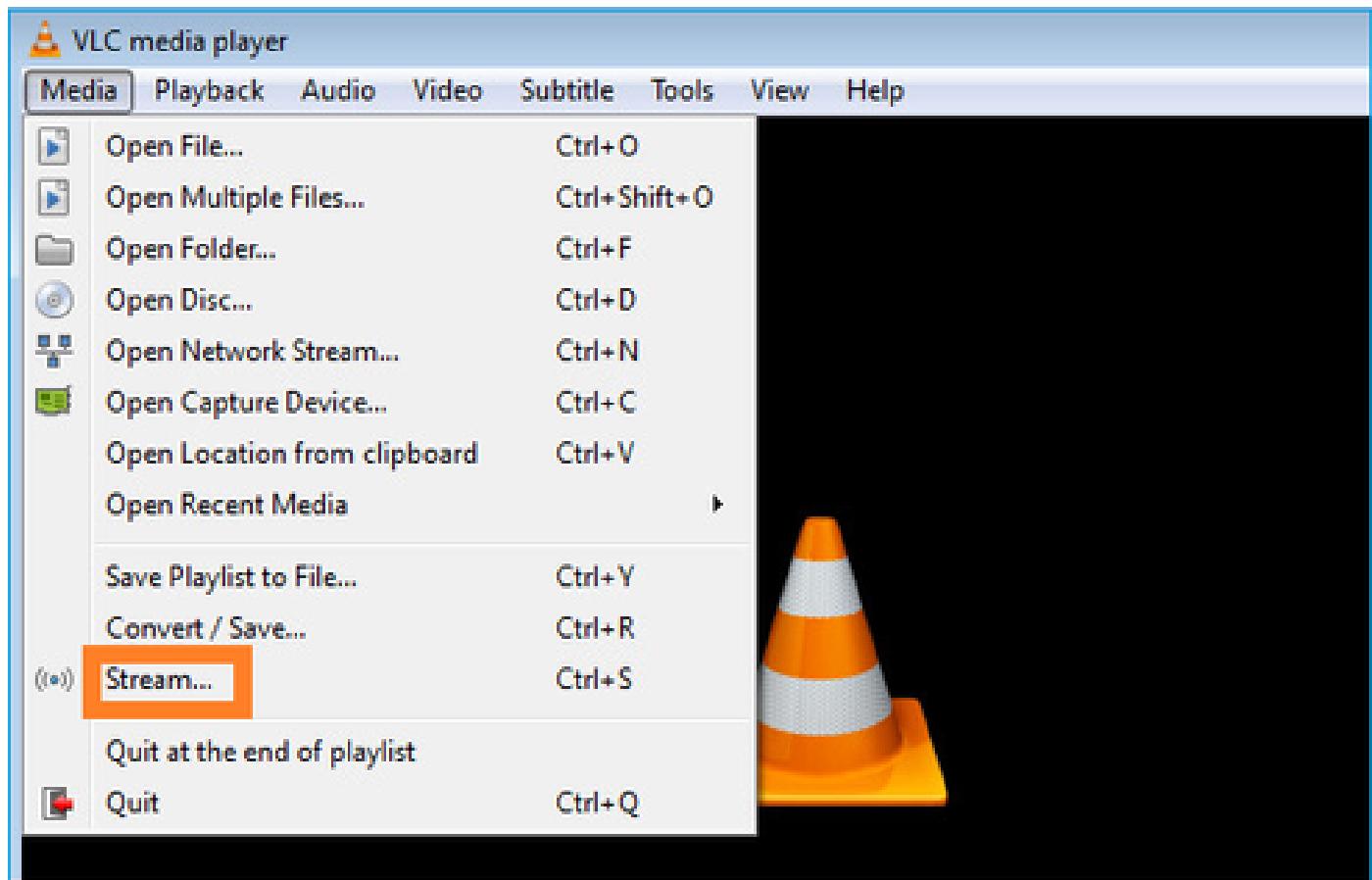
/0 Other drops(OIF-null, rate-limit etc)
Group: 224.0.1.39
RP-tree:
    Forwarding: 0/0/0/0, Other: 0/0/0
Group: 224.0.1.40
RP-tree:
    Forwarding: 0/0/0/0, Other: 0/0/0

Group: 230.10.10.10

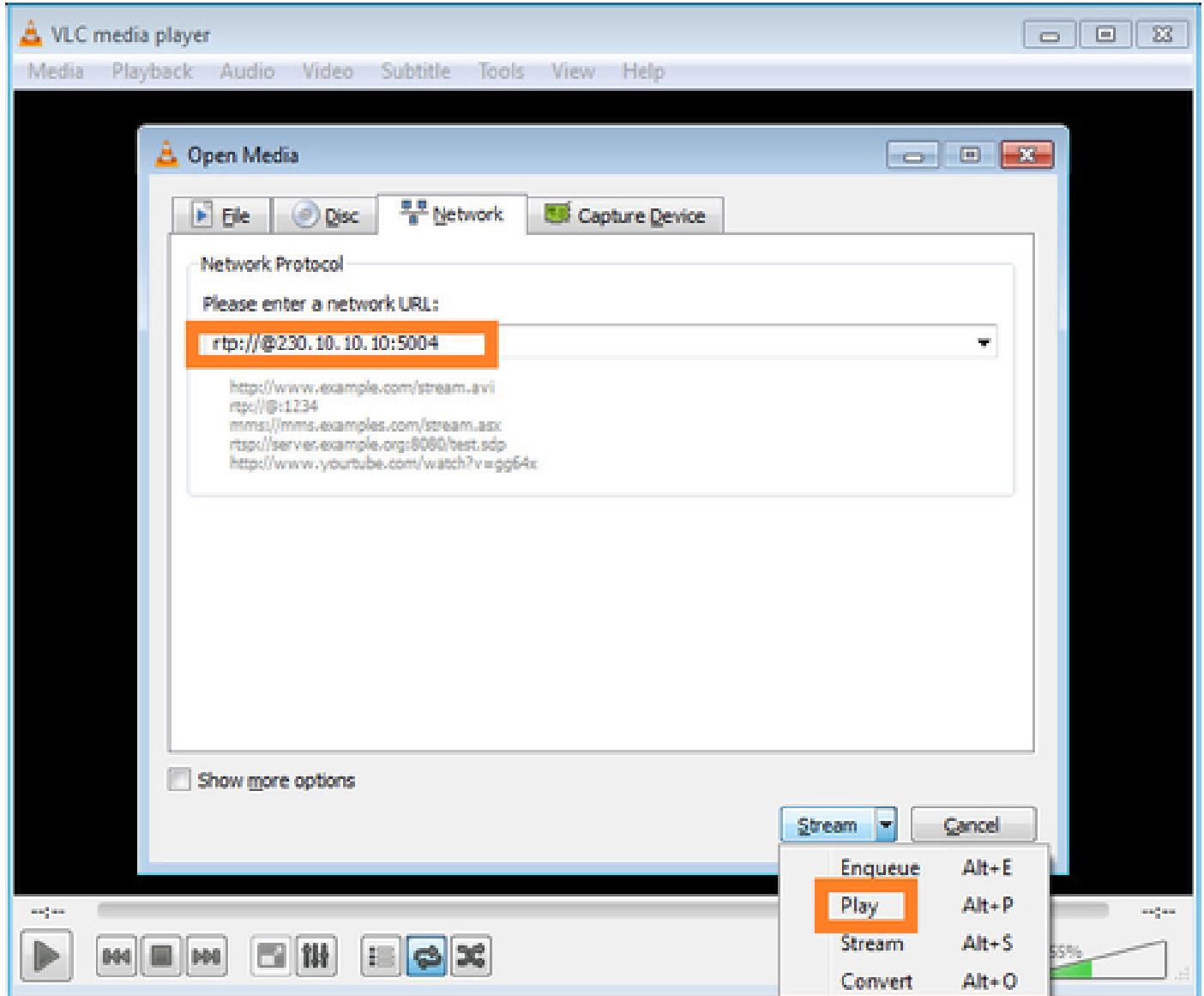
Source: 192.168.103.60,
Forwarding: 0/0/0/0,
other: 1115/1115

/0 -- Allowed and dropped multicast packets
Tot. shown: Source count: 1, pkt count: 0
Group: 232.0.0.0/8
RP-tree:
    Forwarding: 0/0/0/0, Other: 0/0/0
Group: 239.255.255.250
RP-tree:
    Forwarding: 0/0/0/0, Other: 0/0/0
```

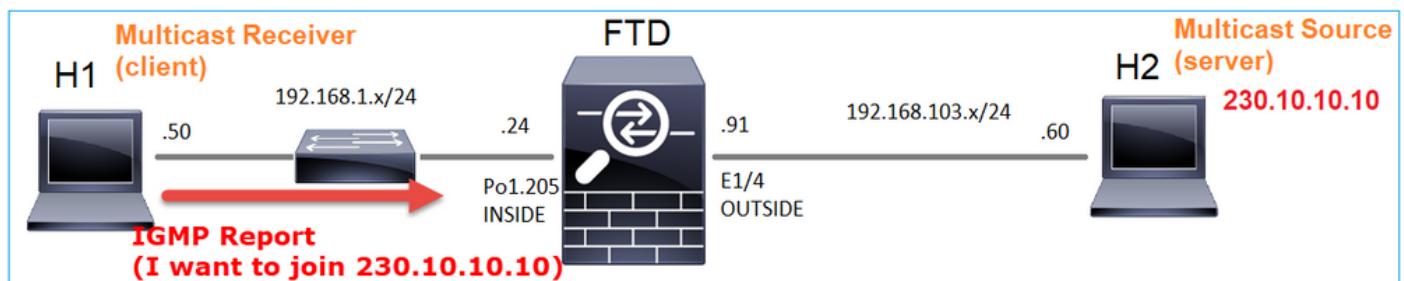
ددعتملا ثبلل VLC لبقوتس نيوكت



لیغشت ددح و ددعتملا ثبلار ددصم IP ددح:



ىلإ مامضنالل هدادعتسا نع فيضملا نلعي ليغشت ديدحت درجمب، ئي فلخلا ئياهنلا يف ريرقت ئراسر لسريل و ئددحملار ددعتملا ثبللا ئعومجم IGMP:



ريرقت ئراسر ئوركىمىف، ئاطخأ حىحصت نىكمتب تمق اذا IGMP:

```
<#root>
firepower#
debug igmp group 230.10.10.10
```

```
IGMP: Received v2 Report on INSIDE from 192.168.1.50 for 230.10.10.10
```

```
<-- IGMPv2 Report received
```

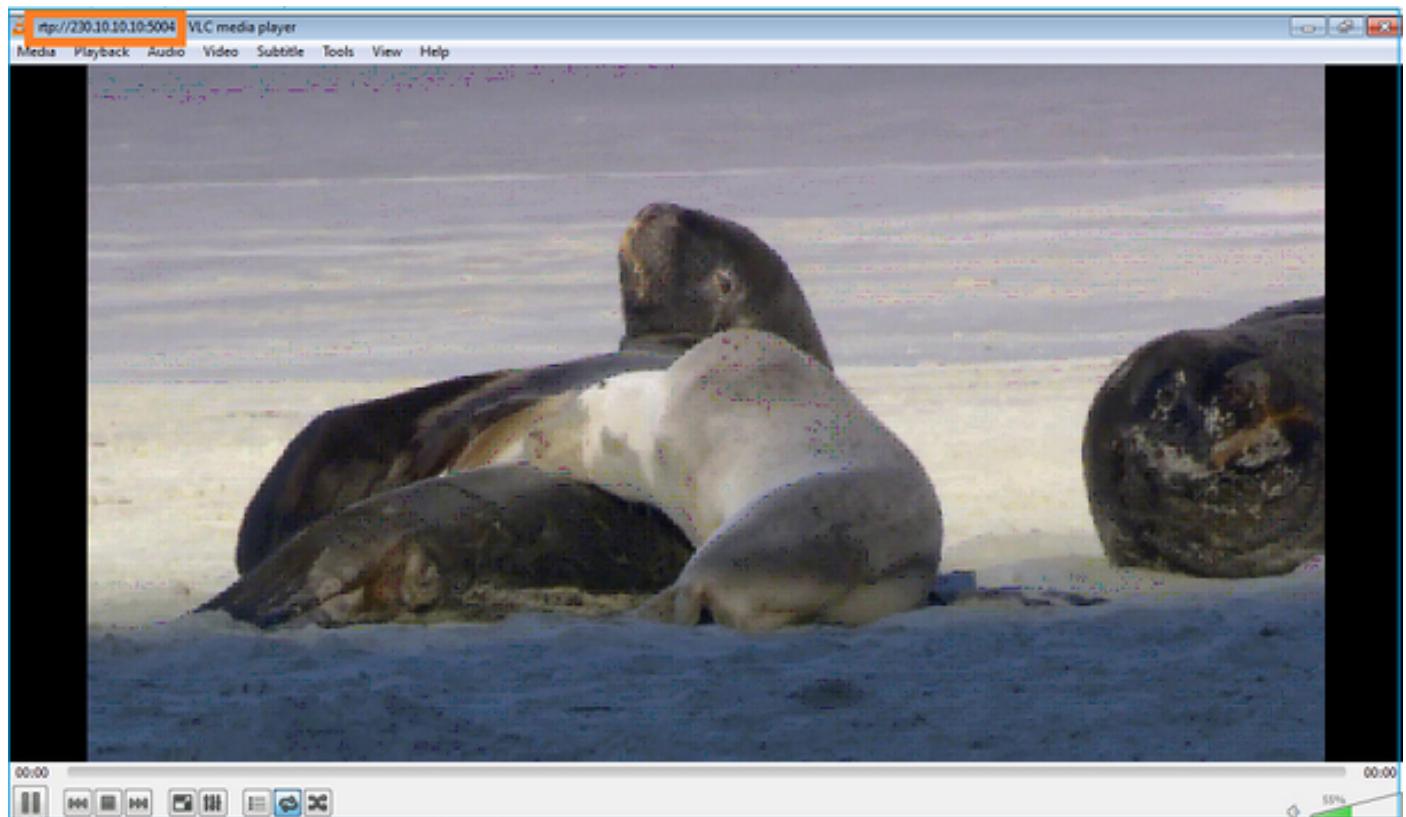
```
IGMP: group_db: add new group 230.10.10.10 on INSIDE
```

```
IGMP: MRIB updated (*,230.10.10.10) : Success
```

```
IGMP: Switching to EXCLUDE mode for 230.10.10.10 on INSIDE
```

```
IGMP: Updating EXCLUDE group timer for 230.10.10.10
```

قفل ادبی:



(يـلـيـغـشـتـلـاـ وـيـرـانـيـسـلـاـ) قـقـحـتـلـاـ

```
<#root>
```

```
firepower#
```

```
show capture
```

```
capture INSIDE type raw-data interface INSIDE
```

```
[Buffer Full - 524156 bytes]
```

```
<-- Multicast packets on the egress interface
```

```
match ip host 192.168.103.60 host 230.10.10.10
```

```
capture OUTSIDE type raw-data trace interface OUTSIDE
```

```
[Buffer Full - 524030 bytes]
```

```
<-- Multicast packets on the ingress interface
```

```
match ip host 192.168.103.60 host 230.10.10.10
```

لوج راسم رادج امحل ية:

```
<#root>
firepower#
show mroute

Multicast Routing Table
Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group,
       C - Connected, L - Local, I - Received Source Specific Host Report,
       P - Pruned, R - RP-bit set, F - Register flag, T - SPT-bit set,
       J - Join SPT
Timers: Uptime/Expires
Interface state: Interface, State

(*, 230.10.10.10), 00:00:34/never, RP 0.0.0.0, flags: SCJ
  Incoming interface: Null
  RPF nbr: 0.0.0.0
  Immediate Outgoing interface list:
    INSIDE, Forward, 00:00:34/never

(192.168.103.60, 230.10.10.10), 00:01:49/00:03:29, flags: SFJT

  Incoming interface: OUTSIDE

  RPF nbr: 192.168.103.60

  Inherited Outgoing interface list:

    INSIDE, Forward, 00:00:34/never

<-- The OIL shows an interface
```

```
<#root>
firepower#
show mfib 230.10.10.10

Entry Flags: C - Directly Connected, S - Signal, IA - Inherit A flag,
             AR - Activity Required, K - Keepalive

Forwarding Counts: Pkt Count/Pkts per second/Avg Pkt Size/Kbits per second

Other counts: Total/RPF failed/Other drops
Interface Flags: A - Accept, F - Forward, NS - Negate Signalling
```

IC - Internal Copy, NP - Not platform switched
SP - Signal Present

Interface Counts: FS Pkt Count/PS Pkt Count

(*,230.10.10.10) Flags: C K
Forwarding: 0/0/0/0, Other: 0/0/0
INSIDE Flags: F NS
Pkts: 0/0

(192.168.103.60,230.10.10.10) Flags: K

Forwarding: 6373/0/1354/0,
Other: 548/548/0 -- There are multicast packets forwarded
OUTSIDE Flags: A

INSIDE Flags: F NS

Pkts: 6373/6

تعدادی mfb:

```
<#root>
firepower#
show mfb count

IP Multicast Statistics
10 routes, 5 groups, 0.40 average sources per group

Forwarding Counts: Pkt Count/Pkts per second/Avg Pkt Size/Kilobits per second

Other counts: Total/RPF failed/Other drops(OIF-null, rate-limit etc)
Group: 224.0.1.39
RP-tree:
    Forwarding: 0/0/0/0, Other: 0/0/0
Group: 224.0.1.40
RP-tree:
    Forwarding: 0/0/0/0, Other: 0/0/0

Group: 230.10.10.10

RP-tree:

Forwarding: 0/0/0/0, Other: 0/0/0

Source: 192.168.103.60,
```

```

Forwarding: 7763/0/1354/0,
Other: 548/548/0 <-- There are multicast packets forwarded
Tot. shown: Source count: 1, pkt count: 0
Group: 232.0.0.0/8
RP-tree:
  Forwarding: 0/0/0/0, Other: 0/0/0
Group: 239.255.255.250
RP-tree:
  Forwarding: 0/0/0/0, Other: 0/0/0
Source: 192.168.1.50,
  Forwarding: 7/0/500/0, Other: 0/0/0
Tot. shown: Source count: 1, pkt count: 0

```

IGMP تاعومجم ۋارادا لوكوتورب عالطتسا

- ددعتملا ثبلا رمغ عنمل تالوچىلما ئىلۇم دىختىسى ئىل آيە IGMP عالطتسا.
- (لابقتسالا ۋەزجأ) ۋېيىضىمىلا ۋەزجألى ناكىم دىدەتلى IGMP رىراقىت لوحىملا بقاري دوجوملا.
- (نېلسرمىل) ۋېامەحلى ناردىج/تاهجومىلا دوجوناكىم دىدەتلى IGMP تامالعىتسا لوحىملا بقاري.
- Cisco. تالوچىم مظۇم ئىلۇم يىضارىت فاڭىشنىڭ IGMP لوكوتورب ئىلۇم لفەتلىنىكىمەت مەتىي نەم جاتنى ۋەنیعىلا انە لېصاپتىلا نەم دېزم ئىلۇم لوصىحلىل ۋەلصىلا تاذلىيەتلىدا ۋەلدا عجار حاتىم ۋەزافەت ئەدام L3:

```

<#root>

switch#
show ip igmp snooping statistics

Current number of Statistics entries      : 15
Configured Statistics database limit     : 32000
Configured Statistics database threshold: 25600
Configured Statistics database limit     : Not exceeded
Configured Statistics database threshold: Not exceeded

Snooping statistics for Vlan204
#channels: 3
#hosts   : 5

Source/Group                  Interface    Reporter      Uptime   Last-Join  Last-Leave
0.0.0.0/230.10.10.10        V1204:Gi1/48  192.168.1.50 2d13h    -          2d12h
0.0.0.0/230.10.10.10        V1204:Gi1/48  192.168.1.97 2d13h    2d12h    -
0.0.0.0/230.10.10.10        V1204:Gi2/1   192.168.1.50 2d10h    02:20:05  02:20:00
0.0.0.0/239.255.255.250    V1204:Gi2/1   192.168.1.50 2d11h    02:20:05  02:20:00
0.0.0.0/239.255.255.250    V1204:Gi2/1   192.168.2.50 2d14h    2d13h    -
0.0.0.0/239.255.255.250    V1204:Gi2/1   192.168.6.50 2d13h    -          2d13h
0.0.0.0/224.0.1.40          V1204:Gi2/26  192.168.2.1   2d14h    00:00:39  2d13h

Snooping statistics for Vlan206
#channels: 4
#hosts   : 3

```

Source/Group	Interface	Reporter	Uptime	Last-Join	Last-Leave
0.0.0.0/230.10.10.10	V1206:Gi1/48	192.168.6.91	00:30:15	2d13h	2d13h
0.0.0.0/239.10.10.10	V1206:Gi1/48	192.168.6.91	2d14h	2d13h	-
0.0.0.0/239.255.255.250	V1206:Gi2/1	192.168.6.50	2d12h	00:52:49	00:52:45
0.0.0.0/224.0.1.40	V1206:Gi2/26	192.168.6.1	00:20:10	2d13h	2d13h
0.0.0.0/230.10.10.10	V1206:Gi2/26	192.168.6.1	2d13h	2d13h	-
0.0.0.0/230.10.10.10	V1206:Gi2/26	192.168.6.91	2d13h	-	2d13h
0.0.0.0/239.10.10.10	V1206:Gi2/26	192.168.6.1	2d14h	2d14h	-
0.0.0.0/239.10.10.10	V1206:Gi2/26	192.168.6.91	2d14h	-	2d14h

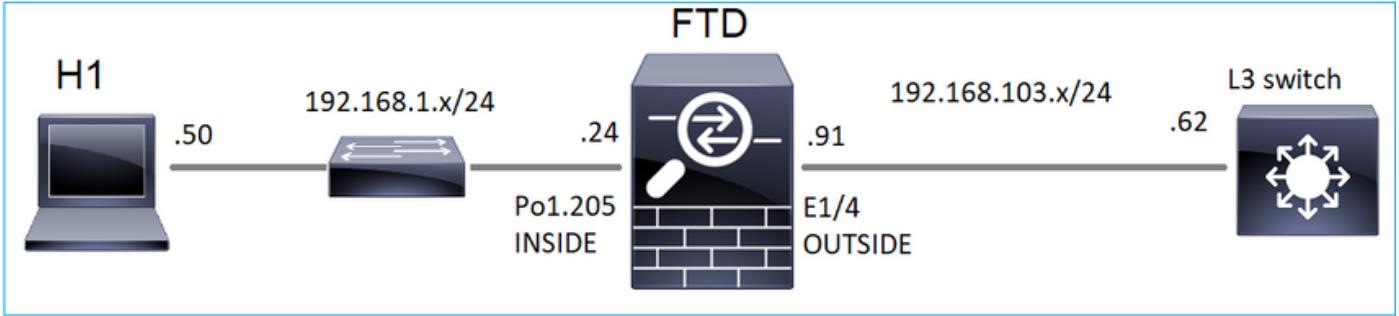
لباقم (IGMP) تنرتن إلا تاعومجم ٩رادا لوكوتوربل ٩تاباثلا ٩عومجملا - 3 ٩ممهملا
تنرتن إلا تاعومجم ٩رادا لوكوتورب ىلإ مامضنالا ٩عومجم

ةماع ٩رظن

	ip igmp static-group	ip igmp join-group
قىيىب طتلا مىت لىه ةهجاوىلىع FTD؟	معن	معن
جمانرب "بذجي لىه قئاف لاسرا لا ةعرسلا (FTD)" ثبل رايت ددعتملا ةهجاولىع	PIM "مامضنا" لاسرا متي، معن وحن وأردصملا .مداخل زاهج ٩اجت اذه ثدحي ال (RP). عاقدتلا ٩طقون وه رمألا اذه FTD ناك اذا الـ ىلىع PIM (DR) لنيعملا هجوملا ةهجاولىع ذه.	٩اجت PIM "مامضنا" لاسرا متي، معن ٩طقون وحن وأردصملا .مداخل زاهج ناك اذا الـ اذه ثدحي ال (RP). عاقدتلا FTD لنيعملا هجوملا وه رمألا اذه PIM (DR).
موقى لىه FTD ةكوح هيجوت ٩داعاب ددعتملا ثبل رورم ةهجاولىع جراخ؟	معن	معن
كلىهتسى لىه FTD ثبل رورم ٩كوح درىو ددعتملا اهيلع	ال	ثبل ٩فدت مكلىب FTD موقى، معن ةيزكرمللا ٩جلاعمللا ٩دحو ىلإ ددعتملا ردصملا ىلىع درلاو هكالهتساوا (CPU).
ةدحورىيثأت ةيزكرمللا ٩جلاعمللا	ال ٩مزحلا نا ٩ثيچ ىندألا دحلا ٩جلاعمللا ٩دحو ىلإ اهماقتنا متي ةيزكرمللا.	٩جلاعمللا ٩دحو ىلىع ٩ريثأتلا نكمي ارظن FTD ب ٩صاخلا (CPU) (ةيزكرمللا ددعتملا ثبل مزح نم ٩مزح لك نأ متى ٩عومجملا ىلىإ ٩متننت يتلا ةيزكرمللا ٩جلاعمللا ٩دحو ىلإ اهؤاقتنا (CPU) ب ٩صاخلا FTD.

ةمهملا تابلطتم

لکيىللا اذه رابتعالا نيعب ذخ:



ةيلاتلا طاقتلala تايمل مع نيكمنتب مق ئامحلا رادج ىلع:

```

<#root>
firepower#
capture CAPI interface OUTSIDE trace match icmp host 192.168.103.62 any
firepower#
capture CAPO interface INSIDE match icmp host 192.168.103.62 any
  
```

1. IP ىلإ ددعتملا ثبلا رورم ئكرح لاسـرـال L3 لوحـمـنـمـاـ لـاصـتـاـ رـابـتـخـاـ مـدـخـتـسـأـ. ئـيـامـحـلـاـ رـادـجـ ئـطـسـاوـبـ رـمـأـلـاـ اـذـهـ ئـجـلـاعـمـ ئـيـفـيـكـ صـحـفـوـ 230.11.11.11.
2. ئـجـلـاعـمـ ئـيـفـيـكـ صـحـفـوـ ئـهـجـاـولـاـ لـخـادـ ئـيـامـحـلـاـ رـادـجـ ىـلـعـ igmp static-group رـمـأـلـاـ نـيـكـمـنـتـبـ مقـ. ئـيـامـحـلـاـ رـادـجـ ئـطـسـاوـبـ (IP 230.11.11.11) دـدـعـتـمـلـاـ ثـبـلـاـ قـفـدـتـ.
3. ئـجـلـاعـمـ ئـيـفـيـكـ صـحـفـوـ ئـهـجـاـولـاـ لـخـادـ ئـيـامـحـلـاـ رـادـجـ ىـلـعـ igmp static-group رـمـأـلـاـ نـيـكـمـنـتـبـ مقـ. ئـيـامـحـلـاـ رـادـجـ ئـطـسـاوـبـ (IP 230.11.11.11) دـدـعـتـمـلـاـ ثـبـلـاـ قـفـدـتـ.

لـحـلـاـ

لـتـارـاسـمـ يـأـلـعـ ئـيـامـحـلـاـ رـادـجـ يـوـتـحـيـ الـ:

```

<#root>
firepower#
show mroute

Multicast Routing Table
Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group,
       C - Connected, L - Local, I - Received Source Specific Host Report,
       P - Pruned, R - RP-bit set, F - Register flag, T - SPT-bit set,
       J - Join SPT
Timers: Uptime/Expires
Interface state: Interface, State

(*, 239.255.255.250), 00:43:21/never, RP 0.0.0.0, flags: SCJ
  Incoming interface: Null
  RPF nbr: 0.0.0.0
  Immediate Outgoing interface list:
    OUTSIDE, Forward, 00:05:41/never
    INSIDE, Forward, 00:43:21/never
  
```

هذه يف ICMP لاصتا رابتخا ۋادىم دىخسما يىو دىعىتملا ثبلا رابتخال ئەقىرىط كانه نم لاصتا رابتخا R2 ناونع ئىلارىپل دىعىتملا ثبلا IP 230.11.11.11:

```
<#root>
L3-Switch#
ping 230.11.11.11 re 100
Type escape sequence to abort.
Sending 100, 100-byte ICMP Echos to 230.11.11.11, timeout is 2 seconds:
.....
```

غراف طفنل او يكىمانىد راسىم ئاشنى مىتى، ئامحلا راجىل:

```
<#root>
firepower#
show mroute

Multicast Routing Table
Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group,
C - Connected, L - Local, I - Received Source Specific Host Report,
P - Pruned, R - RP-bit set, F - Register flag, T - SPT-bit set,
J - Join SPT
Timers: Uptime/Expires
Interface state: Interface, State

(192.168.103.62, 230.11.11.11), 00:02:33/00:00:56, flags: SPF
<-- The mroute is added

Incoming interface: OUTSIDE

RPF nbr: 192.168.103.62

Outgoing interface list: Null
<-- The OIL is empty
```

ئامحلا راجىل طاقتلالا رەظى:

```
<#root>
firepower# show capture
capture CAPI type raw-data trace interface OUTSIDE
```

```
[Capturing - 1040 bytes]
<-- There are ICMP packets captured on ingress interface
match icmp host 192.168.103.62 any
capture CAPO type raw-data interface INSIDE

[Capturing - 0 bytes]
<-- There are no ICMP packets on egress
match icmp host 192.168.103.62 any
```

تم صب مزح لـ طاقس إلـا مـوقـي هـنـكـلـوـ، لـاصـتـا رـابـتـخـا لـكـلـ تـالـاصـتـا عـاشـنـابـاـ ةـيـامـحـلـا رـادـجـ مـوقـي

```
<#root>

firepower#
show log | include 230.11.11.11

May 17 2022 11:05:47: %FTD-7-609001:
Built local-host identity:230.11.11.11

<-- A new connection is created
May 17 2022 11:05:47: %FTD-6-302020: Built inbound ICMP connection for faddr 192.168.1.99/6 gaddr 230.11.11.11
May 17 2022 11:05:47: %FTD-6-302020: Built inbound ICMP connection for faddr 192.168.103.62/6 gaddr 230.11.11.11
May 17 2022 11:05:49: %FTD-6-302021: Teardown ICMP connection for faddr 192.168.1.99/6 gaddr 230.11.11.11
May 17 2022 11:05:49: %FTD-6-302021: Teardown ICMP connection for faddr 192.168.103.62/6 gaddr 230.11.11.11
May 17 2022 11:05:49: %FTD-7-609002:

Teardown local-host identity:230.11.11.11 duration 0:00:02

<-- The connection is closed
May 17 2022 11:05:51: %FTD-7-609001:
Built local-host identity:230.11.11.11

<
-->

A new connection is created
May 17 2022 11:05:51: %FTD-6-302020: Built inbound ICMP connection for faddr 192.168.1.99/6 gaddr 230.11.11.11
May 17 2022 11:05:51: %FTD-6-302020: Built inbound ICMP connection for faddr 192.168.103.62/6 gaddr 230.11.11.11
May 17 2022 11:05:53: %FTD-6-302021: Teardown ICMP connection for faddr 192.168.1.99/6 gaddr 230.11.11.11
May 17 2022 11:05:53: %FTD-6-302021: Teardown ICMP connection for faddr 192.168.103.62/6 gaddr 230.11.11.11
May 17 2022 11:05:53: %FTD-7-609002:

Teardown local-host identity:230.11.11.11 duration 0:00:02

<-- The connection is closed
```

 اهـ طـاقـسـاـ مـتـ يـتـلـاـ مـزـحـ لـاـ طـاقـسـ إـلـاـ LINA ASP طـاقـتـلـاـ ضـرـعـيـ الـ ةـظـاحـلـمـ

وهـ دـعـتـمـلـاـ ثـبـلـاـ ةـمـنـحـ طـاقـسـاـ تـايـلـمـعـلـ يـسـيـئـرـلـاـ رـشـفـمـلـاـ

```

<#root>

firepower#
show mfib

Entry Flags: C - Directly Connected, S - Signal, IA - Inherit A flag,
             AR - Activity Required, K - Keepalive
Forwarding Counts: Pkt Count/Pkts per second/Avg Pkt Size/Kbits per second

other counts: Total/RPF failed/Other drops

Interface Flags: A - Accept, F - Forward, NS - Negate Signalling
                  IC - Internal Copy, NP - Not platform switched
                  SP - Signal Present
Interface Counts: FS Pkt Count/PS Pkt Count

(*,224.0.1.39) Flags: S K
  Forwarding: 0/0/0/0, Other: 0/0/0
(*,224.0.1.40) Flags: S K
  Forwarding: 0/0/0/0, Other: 0/0/0

(192.168.103.62,230.11.11.11)

Flags: K      <-- The multicast stream
  Forwarding: 0/0/0/0,
other: 27/27/0

<-- The packets are dropped

```

ةتباث IGMP ۋەمچىم

ةتباث IGMP ۋەمچىم نىوكتىپ مۇلىخ:

The screenshot shows the Firewall Management Center (FMC) interface for a Cisco Firepower 4125 Threat Defense device. The 'Devices' tab is selected. On the left, the navigation tree shows 'Multicast Routing' expanded, with 'IGMP' selected. In the main pane, under 'Manage Virtual Routers', the 'Global' tab is selected. A checkbox for 'Enable Multicast Routing' is checked. Below it, there are tabs for 'Protocol', 'Access Group', 'Static Group' (which is highlighted with an orange box), and 'Join Group'. A modal dialog titled 'Add IGMP Static Group parameters' is open. It contains fields for 'Interface:' (set to 'INSIDE') and 'Multicast Group:' (set to 'group_230.11.11.11'). Both fields have orange boxes around them. At the bottom of the dialog are 'Cancel' and 'OK' buttons.

ةيـفـلـخـلـا يـفـهـرـشـنـ مـتـيـ اـمـ اـذـهـ:

```
<#root>

interface Port-channel1.205
vlan 205
nameif INSIDE
cts manual
propagate sgt preserve-untag
policy static sgt disabled trusted
security-level 0
ip address 192.168.1.24 255.255.255.0

igmp static-group 230.11.11.11

<-- IGMP static group is enabled on the interface
```

رادج لالخ نم نآلـا دـدـعـتـمـلـا ICMP ثـبـ روـمـ ةـكـرـحـ هـيـجـوـتـ مـتـتـ نـكـلـوـ،ـلـاـصـتـالـاـ رـابـتـخـ لـشـفـ ةـيـامـحـلـاـ:

```
<#root>

L3-Switch#
ping 230.11.11.11 re 10000

Type escape sequence to abort.
Sending 10000, 100-byte ICMP Echos to 230.11.11.11, timeout is 2 seconds:
.....
```

```
<#root>

firepower#
show capture

capture CAPI type raw-data trace interface OUTSIDE
[Capturing - 650 bytes]

<-- ICMP packets are captured on ingress interface
match icmp host 192.168.103.62 any
capture CAPO type raw-data interface INSIDE

[Capturing - 670 bytes]

<-- ICMP packets are captured on egress interface
match icmp host 192.168.103.62 any
```

```
<#root>

firepower#
```

```
show capture CAPI

8 packets captured

1: 11:31:32.470541 192.168.103.62 > 230.11.11.11 icmp: echo request
2: 11:31:34.470358 192.168.103.62 > 230.11.11.11 icmp: echo request
3: 11:31:36.470831 192.168.103.62 > 230.11.11.11 icmp: echo request
4: 11:31:38.470785 192.168.103.62 > 230.11.11.11 icmp: echo request
...
```

```
firepower#  
show capture CAPO
```

11 packets captured

```
1: 11:31:32.470587 802.1Q vlan#205 P0 192.168.103.62 > 230.11.11.11 icmp: echo request
2: 11:31:34.470404 802.1Q vlan#205 P0 192.168.103.62 > 230.11.11.11 icmp: echo request
3: 11:31:36.470861 802.1Q vlan#205 P0 192.168.103.62 > 230.11.11.11 icmp: echo request
4: 11:31:38.470816 802.1Q vlan#205 P0 192.168.103.62 > 230.11.11.11 icmp: echo request
```



<#root>

firepower#

```
show capture CAPI packet-number 1 trace
```

1: 11:39:33.553987 192.168.103.62 > 230.11.11.11 icmp: echo request

```
Phase: 1
Type: CAPTURE
Subtype:
Result: ALLOW
Elapsed time: 3172 ns
Config:
Additional Information:
MAC Access list
```

```
Phase: 2
Type: ACCESS-LIST
Subtype:
Result: ALLOW
Elapsed time: 3172 ns
Config:
Implicit Rule
Additional Information:
MAC Access list
```

Phase: 3
Type: ROUTE-LOOKUP
Subtype: No ECMP load balancing
Result: ALLOW

Elapsed time: 9760 ns
Config:
Additional Information:
Destination is locally connected. No ECMP load balancing.
Found next-hop 192.168.103.62 using egress ifc OUTSIDE(vrfid:0)

Phase: 4
Type: ACCESS-LIST
Subtype:
Result: ALLOW
Elapsed time: 5368 ns
Config:
Implicit Rule
Additional Information:

Phase: 5
Type: CONN-SETTINGS
Subtype:
Result: ALLOW
Elapsed time: 5368 ns
Config:
class-map class-default
match any
policy-map global_policy
class class-default
set connection advanced-options UM_STATIC_TCP_MAP
service-policy global_policy global
Additional Information:

Phase: 6
Type: NAT
Subtype: per-session
Result: ALLOW
Elapsed time: 5368 ns
Config:
Additional Information:

Phase: 7
Type: IP-OPTIONS
Subtype:
Result: ALLOW
Elapsed time: 5368 ns
Config:
Additional Information:

Phase: 8
Type: CLUSTER-REDIRECT
Subtype: cluster-redirect
Result: ALLOW
Elapsed time: 31720 ns
Config:
Additional Information:

Phase: 9
Type: INSPECT
Subtype: np-inspect
Result: ALLOW
Elapsed time: 488 ns
Config:
class-map inspection_default
match default-inspection-traffic
policy-map global_policy

```
class inspection_default
inspect icmp
service-policy global_policy global
Additional Information:
```

```
Phase: 10
Type: INSPECT
Subtype: np-inspect
Result: ALLOW
Elapsed time: 2440 ns
Config:
Additional Information:
```

```
Phase: 11
```

```
Type: MULTICAST
<-- The packet is multicast
Subtype:
```

```
Result: ALLOW
```

```
Elapsed time: 976 ns
```

```
Config:
```

```
Additional Information:
```

```
Phase: 12
```

```
Type: FLOW-CREATION
<-- A new flow is created
Subtype:
Result: ALLOW
Elapsed time: 56120 ns
Config:
Additional Information:
New flow created with id 5690, packet dispatched to next module
```

```
Phase: 13
Type: CAPTURE
Subtype:
Result: ALLOW
Elapsed time: 10248 ns
Config:
Additional Information:
MAC Access list
```

```
Result:
input-interface: OUTSIDE(vrfid:0)
```

```

input-status: up
input-line-status: up

output-interface: OUTSIDE(vrfid:0)

output-status: up
output-line-status: up

Action: allow

<-- The packet is allowed
Time Taken: 139568 ns

```

 كنكمي وردصملا فيضملا نم 0 ۃلہملا مادختساب لاصتا رابتخا كنكمي حيملا ئامحلا رادجل mfib تادادع نم ققحتلا:

```

<#root>

L3-Switch#
ping 230.11.11.11 re 500 timeout 0
Type escape sequence to abort.
Sending 1000, 100-byte ICMP Echos to 230.11.11.11, timeout is 0 seconds:
.....
```

```

<#root>

firepower# clear mfib counters
firepower# !ping from the source host.

firepower#
show mfib 230.11.11.11

Entry Flags: C - Directly Connected, S - Signal, IA - Inherit A flag,
AR - Activity Required, K - Keepalive

Forwarding Counts: Pkt Count/Pkts per second/Avg Pkt Size/Kbits per second

Other counts: Total/RPF failed/Other drops
Interface Flags: A - Accept, F - Forward, NS - Negate Signalling
IC - Internal Copy, NP - Not platform switched
SP - Signal Present
Interface Counts: FS Pkt Count/PS Pkt Count

(*,230.11.11.11) Flags: C K
Forwarding: 0/0/0/0, Other: 0/0/0
INSIDE Flags: F NS
Pkts: 0/0

```

(192.168.103.62, 230.11.11.11) Flags: K

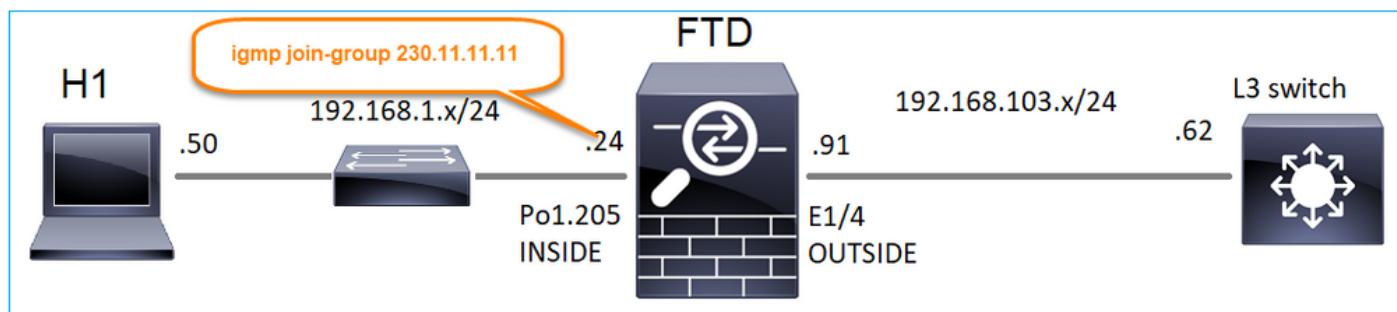
Forwarding: 500/0/100/0, Other: 0/0/0

<-- 500 multicast packets forwarded. The average size of each packet is 100 Bytes
OUTSIDE Flags: A
INSIDE Flags: F NS
Pkts: 500/0

مادم ضننا ۋە ئىچىمىجىم

ئىچىمىجىملا نى يوكت مىت، دىپ نىع (FMC) ئىس اسألا ۋە حوللا ئارادا يىف مكحىتلا ۋە دەرىلىع تاڭ ئىچىمىجىم ئارادا لوكوت ورپىلى مادم ضننا ۋە ئىچىمىجىم نى يوكت واقبىسىم اهنى يوكت مىت يېتلى ئەتابىلى ئەنرەتنىالا (IGMP):

The screenshot shows the Firewall Management Center interface for a Cisco Firepower 4125 Threat Defense device. The top navigation bar includes tabs for Overview, Analysis, Policies, Devices (selected), Objects, and Integration. Below the navigation is a sub-header for 'Devices / NGFW Routing'. The main content area displays the device details for 'FTD4125-1' and its configuration under 'Cisco Firepower 4125 Threat Defense'. The 'Device' tab is selected. On the left, a sidebar lists routing protocols: ECMP, OSPF, OSPFv3, EIGRP, RIP, Policy Based Routing, BGP (IPv4, IPv6), Static Route, Multicast Routing (IGMP selected). In the center, under 'Manage Virtual Routers', a 'Global' dropdown is set to 'Virtual Router Properties'. A checkbox for 'Enable Multicast Routing' is checked. Below it, a 'Join Group' tab is highlighted with an orange box. A table lists an interface ('INSIDE') joining a multicast group ('group_230.11.11.11').



هەرىشنى مىت يېذلى نى يوكتلى:

<#root>

```

firepower#
show run interface Port-channel1.205

!
interface Port-channel1.205
vlan 205
nameif INSIDE
cts manual
propagate sgt preserve-untag
policy static sgt disabled trusted
security-level 0
ip address 192.168.1.24 255.255.255.0

igmp join-group 230.11.11.11
<-- The interface joined the multicast group

```

مجموع IGMP:

```

<#root>
firepower#
show igmp group

IGMP Connected Group Membership
Group Address Interface Uptime Expires Last Reporter
230.11.11.11 INSIDE 00:30:43 never 192.168.1.24
<-- The group is enabled on the interface

```

ون لواً ددعتمل ا ثبلل ICMP رابتخا برج ،ردصملا فيضم نم IP: 230.11.11.11

```

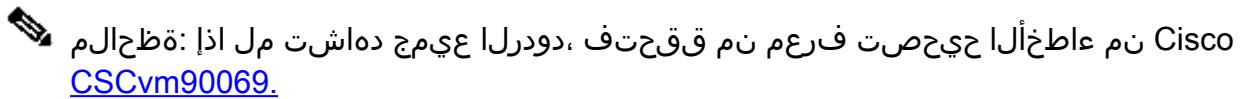
<#root>
L3-Switch#
ping 230.11.11.11 repeat 10

Type escape sequence to abort.
Sending 10, 100-byte ICMP Echos to 230.11.11.11, timeout is 2 seconds:

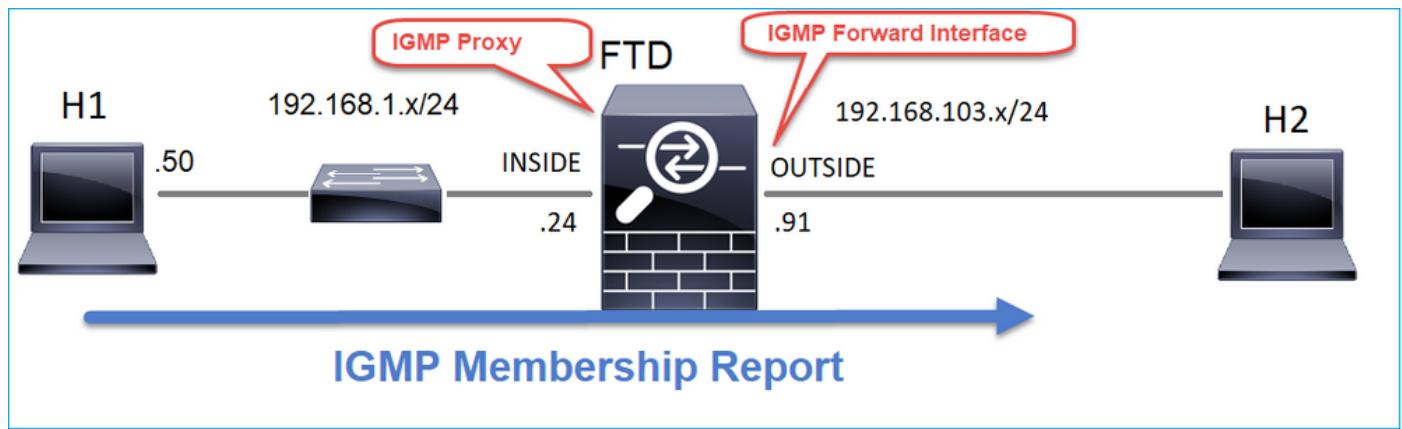
Reply to request 0 from 192.168.1.24, 12 ms
Reply to request 1 from 192.168.1.24, 8 ms
Reply to request 2 from 192.168.1.24, 8 ms
Reply to request 3 from 192.168.1.24, 8 ms
Reply to request 4 from 192.168.1.24, 8 ms
Reply to request 5 from 192.168.1.24, 12 ms
Reply to request 6 from 192.168.1.24, 8 ms

```

```
Reply to request 7 from 192.168.1.24, 8 ms
Reply to request 8 from 192.168.1.24, 8 ms
Reply to request 9 from 192.168.1.24, 8 ms
```



يروجلا IGMP لوكوتوربل ثبلا ددعتم هيجوتلا نيوكت - 4 ئممەملا



لئاسر ھيچ جو ت ڈاگ مٿت یتح FTD یلے عذجلا لوكوت وربل ددعتملا ٿبلما ھيچ جو ت نيوکت ب مق ڦيچ راخلا ڦهجاولما یلما ڦيلخا دلا ڻهنجاولما یلے اهلابقتسا متي یتلما IGMP ڦيچ وضع ريرقت.

لحل

The screenshot shows the Firewall Management Center interface for the device FTD4125-1. The top navigation bar includes tabs for Overview, Analysis, Policies, Devices (which is selected), Objects, and Integration. Below the navigation is a section for Cisco Firepower 4125 Threat Defense. A secondary navigation bar below the main title includes Device, Routing (selected), Interfaces, Inline Sets, and DHCP. On the left, a sidebar titled "Manage Virtual Routers" lists protocols: Global, ECMP, OSPF, OSPFv3, EIGRP, RIP, Policy Based Routing, BGP (with sub-options for IPv4, IPv6, and Static Route), and Multicast Routing (with sub-options for IGMP and PIM). The "Multicast Routing" section is currently active, as indicated by the orange border around its tab. The main content area shows a table for "Virtual Router Properties" under the "Protocol" tab. The table has columns: Interface, Enabled, Forward Interface, Version, Query Interval, and Response Time. One row is highlighted with an orange border, showing values: INSIDE, true, OUTSIDE, 2, and empty fields for Query Interval and Response Time.

Interface	Enabled	Forward Interface	Version	Query Interval	Response Time
INSIDE	true	OUTSIDE	2		

هەر شىن مەت يىذلا نىيوكىتلا:

```
<#root>

firepower#
show run multicast-routing

multicast-routing
<-- Multicast routing is enabled
firepower#

show run interface Port-channel1.205

!
interface Port-channel1.205
vlan 205
nameif INSIDE
cts manual
propagate sgt preserve-untag
policy static sgt disabled trusted
security-level 0
ip address 192.168.1.24 255.255.255.0
igmp forward interface OUTSIDE
<-- The interface does stub multicast routing
```

قىچىتلار

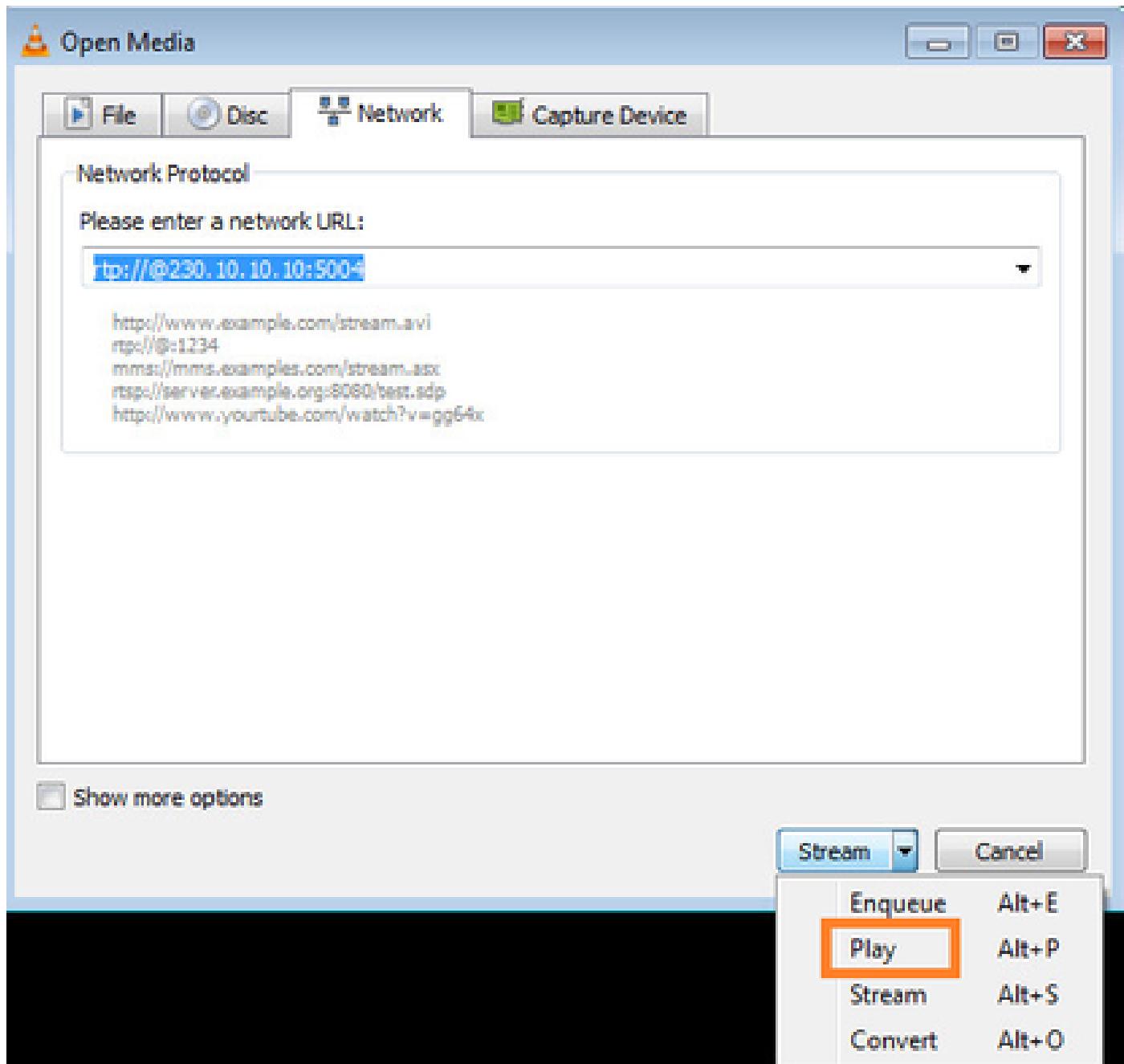
ىلۇع طاقىتلارلا تايىلمۇن ئىكەن مەت FTD:

```
<#root>

firepower#
capture CAPI interface INSIDE trace match igmp any host 230.10.10.10
firepower#
capture CAPO interface OUTSIDE match igmp any host 230.10.10.10
```

قىچىتلار

VLC: لىثم قىېبىطت مادختسى كىنكمى، ئىوضۇع رىرقۇت ضرفىل



IGMP مزح لیکوتپ FTD لوكوتورب موقي:

```
<#root>
firepower#
show capture

capture CAPI type raw-data trace interface INSIDE
[Capturing - 66 bytes]

<-- IGMP packets captured on ingress
match igmp any host 230.10.10.10
capture CAPO type raw-data interface OUTSIDE

[Capturing - 62 bytes]
```

```
<-- IGMP packets captured on egress  
match igmp any host 230.10.10.10
```

ردصملا IP رئيغتب FTD:

```
<#root>  
  
firepower#  
  
show capture CAPI  
  
1 packet captured  
  
1: 12:21:12.820483 802.1Q vlan#205 P6  
  
192.168.1.50  
  
> 230.10.10.10 ip-proto-2, length 8    --> The source IP of the packet on ingress interface  
1 packet shown  
firepower#  
  
show capture CAPO  
  
1 packet captured  
  
1: 12:21:12.820743  
  
192.168.103.91  
  
> 230.10.10.10 ip-proto-2, length 8    --> The source IP of the packet on egress interface  
1 packet shown
```

لما كلاب اهؤاشنامت ةمزحلا نأىرت نأ كنكمي، يف Wireshark، فـيـرـعـتـ تـارـيـيـغـتـ (ةـيـاـمـحـلـاـ رـادـجـ ةـطـسـاوـبـ).

يف ئوغومجم لاخدا ئاشنامتى:

```
<#root>  
  
firepower#  
  
show igmp group  
  
IGMP Connected Group Membership  
Group Address      Interface      Uptime      Expires      Last Reporter  
230.10.10.10      INSIDE        00:15:22    00:03:28    192.168.1.50  
  
<-- IGMP group is enabled on the ingress interface  
239.255.255.250   INSIDE        00:15:27    00:03:29    192.168.1.50
```

```
<#root>

firepower#  
  
show conn all address 230.10.10.10  
  
9 in use, 28 most used  
Inspect Snort:  
preserve-connection: 0 enabled, 0 in effect, 0 most enabled, 0 most in effect  
  
IGMP INSIDE 192.168.1.50 NP Identity Ifc 230.10.10.10, idle 0:00:09, bytes 8, flags  
<-- Connection terminated on the ingress interface  
  
IGMP OUTSIDE 230.10.10.10 NP Identity Ifc 192.168.103.91, idle 0:00:09, bytes 8, flags  
<-- Connection terminated on the egress interface
```

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

```
<#root>

firepower#

show capture CAPI packet-number 1 trace

6 packets captured

1: 12:21:12.820483 802.1Q vlan#205 P6 192.168.1.50 > 230.10.10.10 ip-proto-2, length 8

<-- The first packet of the flow
Phase: 1
Type: CAPTURE
Subtype:
Result: ALLOW
Elapsed time: 5124 ns
Config:
Additional Information:
MAC Access list

Phase: 2
Type: ACCESS-LIST
Subtype:
Result: ALLOW
Elapsed time: 5124 ns
Config:
Implicit Rule
Additional Information:
MAC Access list

Phase: 3
Type: ROUTE-LOOKUP
Subtype: No ECMP load balancing
```

Result: ALLOW
Elapsed time: 7808 ns
Config:
Additional Information:
Destination is locally connected. No ECMP load balancing.
Found next-hop 192.168.1.50 using egress ifc INSIDE(vrfid:0)

Phase: 4
Type: CLUSTER-DROP-ON-SLAVE
Subtype: cluster-drop-on-slave
Result: ALLOW
Elapsed time: 5368 ns
Config:
Additional Information:

Phase: 5
Type: ACCESS-LIST
Subtype:
Result: ALLOW
Elapsed time: 5368 ns
Config:
Implicit Rule
Additional Information:

Phase: 6
Type: IP-OPTIONS
Subtype:
Result: ALLOW
Elapsed time: 5368 ns
Config:
Additional Information:

Phase: 7
Type: NAT
Subtype: per-session
Result: ALLOW
Elapsed time: 5368 ns
Config:
Additional Information:

Phase: 8
Type: CLUSTER-REDIRECT
Subtype: cluster-redirect
Result: ALLOW
Elapsed time: 40504 ns
Config:
Additional Information:

Phase: 9

Type: MULTICAST
<-- The packet is multicast
subtype:

Result: ALLOW

Elapsed time: 976 ns

Config:

Additional Information:

Phase: 10

Type: FLOW-CREATION

<-- A new flow is created

Subtype:

Result: ALLOW

Elapsed time: 17568 ns

Config:

Additional Information:

New flow created with id 5945, packet dispatched to next module

Phase: 11

Type: FLOW-CREATION

<-- A second flow is created

Subtype:

Result: ALLOW

Elapsed time: 39528 ns

Config:

Additional Information:

New flow created with id 5946, packet dispatched to next module

```
Phase: 12
Type: NEXTHOP-LOOKUP-FROM-OUTPUT-ROUTE-LOOKUP
Subtype: Lookup Nexthop on interface
Result: ALLOW
Elapsed time: 6344 ns
Config:
Additional Information:
Found next-hop 230.10.10.10 using egress ifc 0
```

```
Phase: 13
Type: CAPTURE
Subtype:
Result: ALLOW
Elapsed time: 9760 ns
Config:
Additional Information:
MAC Access list
```

```
Result:  
input-interface: INSIDE(vrfid:0)  
input-status: up  
input-line-status: up  
output-interface: INSIDE(vrfid:0)  
output-status: up  
output-line-status: up  
Action: allow  
Time Taken: 154208 ns
```

ةفوري م تالكشم

ةجولا قطانم يلع ددعتملا ثبلا رورم ةكرح ةيفرضت

رورم ۆکرە قبایلەتی يتلا لەوصولە يف مەكھەتلا جەن ۆدعاقل ۆھجۇنام ۆقطنم دىدھت كەنگەمی ئەل دەدعەتمەلە ئىشلە:

The screenshot shows the Firewall Management Center interface. The top navigation bar includes 'Overview', 'Analysis', 'Policies' (which is selected), 'Devices', 'Objects', and 'Integration'. On the right, there are deployment options ('Deploy'), search ('Q'), settings ('⚙️'), and user information ('mzafeiro \ admin'). The title bar indicates the current policy is 'FTD_Access_Control_Policy' under 'Policies / Access Control / Policy Editor'. A toolbar at the top right contains 'Analyze Hit Counts', 'Save', and 'Cancel' buttons.

The main content area shows the policy configuration. It has tabs for 'Rules', 'Security Intelligence', 'HTTP Responses', 'Logging', and 'Advanced'. The 'Rules' tab is selected. A banner message 'Misconfiguration! The Dest Zones must be empty!' is displayed prominently in orange. Below it, a table lists rules. The first rule, 'Mandatory - FTD_Access_Control_Policy (1-1)', has its 'Dest Zones' field set to 'OUTSIDE_ZONE', which is highlighted with a red box. The second rule, 'Default - FTD_Access_Control_Policy (-)', has its 'Dest Zones' field set to 'INSIDE_ZONE'. The table columns include Name, Source Zones, Dest Zones, Source Networks, Dest Networks, VLAN Tags, Users, Application, Source Ports, Dest Ports, URLs, Source Dynamic Attributes, Destination Dynamic Attributes, Action, and various icons for editing and deleting. A 'Prefilter Policy: Default Prefilter Policy' is also listed above the table. Inheritance and policy assignment settings are shown on the right.

FMC: مدختس م ليلد يف اضيأ قيثوم اذهو

Book Contents

Find Matches in This Book

Book Title Page

> Getting Started with Device Configuration

> Device Operations

> Interfaces and Device Settings

Routing

- Static and Default Routes
- Virtual Routers
- ECMP
- OSPF
- BGP
- RIP

Multicast

Policy Based Routing

Internet multicast routing from address range 224.0.0/24 is not supported; IGMP group is not created when enabling multicast routing for the reserved addresses.

Clustering

In clustering, for IGMP and PIM, this feature is only supported on the primary unit.

Additional Guidelines

- You must configure an access control or prefilter rule on the inbound security zone to allow traffic to the multicast host, such as 224.1.2.3. However, you cannot specify a destination security zone for the rule, or it cannot be applied to multicast connections during initial connection validation.
- You cannot disable an interface with PIM configured on it. If you have configured PIM on the interface (see [Configure PIM Protocol](#)), disabling the multicast routing and PIM does not remove the PIM configuration. You must remove (delete) the PIM configuration to disable the interface.
- PIM/IGMP Multicast routing is not supported on interfaces in a traffic zone.
- Do not configure FTD to simultaneously be a Rendezvous Point (RP) and a First Hop Router.

Configure IGMP Features

IP hosts use IGMP to report their group memberships to directly-connected multicast routers. IGMP is used to dynamically register individual hosts in a multicast group on a particular LAN. Hosts identify group memberships by sending IGMP

IGMP ۆهنجاو دح زواجت دنع ۆيامحلا رادج ۆطس اووب IGMP رياراقت ضفـر مـتي

ایلاح (ریراقت) ۀ طشن ۀ لص و 500 ددعه ی صدقه ایضاً دلخواه ایامحلا را درج حیتی نم ۀ یفاضه ایا ۀ دراول IGMP ریراقت له حاجتی ۀ ایامحلا را درج ناف، دلخواه زواجت مث اذی. ۀ هج اویلع ددعه تملا ثبله تالبوقت سم.

show igmp interface name: دح نم ققحتلل او طباورل او IGMP ةطشنل ا لىغشتب مق رمأا

```
<#root>

asa# show igmp interface inside

inside is up, line protocol is up
    Internet address is 10.10.10.1/24
    IGMP is enabled on interface
    Current IGMP version is 2
    IGMP query interval is 125 seconds
    IGMP querier timeout is 255 seconds
    IGMP max query response time is 10 seconds
    Last member query response interval is 1 seconds
    Inbound IGMP access group is:
        IGMP limit is 500, currently active joins: 500

    Cumulative IGMP activity: 0 joins, 0 leaves
    IGMP querying router is 10.10.10.1 (this system)
```

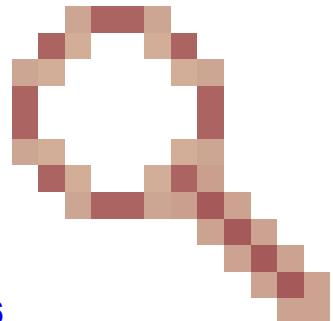
جـاـخـاـلاـ اـذـهـ IGMP debug igmp اـطـاخـ حـيـحـصـتـ رـمـأـ ضـرـعـيـ

<#root>

asa#

```
debug igmp
```

```
Apr 20 2023 09:37:10: %ASA-7-711001: IGMP: Group 230.1.2.3 limit denied on inside
```



نم ءاطخألا حي حصت فرع محالصا ع جماربلا تارادصا Cisco [CSCvw60976](#) نم ءاطخألا حي حصت فرع محالصا ع جماربلا تارادصا او لكل ٥٠٠٥ لصي ام نيوكتب نيمدختسممل حامسلا.

نـيـوـانـعـلـا قـاطـنـلـا رـيـرـاقـتـا ـيـاـمـحـلـا رـادـجـ لـهـاجـتـيـ

رادج معدي ال (SSM). ردصملا ددجم ددعتملا ثبلاء ع 232.x.x/8 نـيـوـانـعـلـا قـاطـنـلـا مـادـخـتـسـا مـتـيـ. قـلـصـلـا يـذـ نـيـوـكـتـلـاوـ PIM بـ صـاخـلـا (SSM) ردصملا ددجم ددعتملا ثبلاء فـيـظـوـ ـيـاـمـحـلـا:

جاـخـإـلـا اـذـهـ IGMP debug igmp

```
<#root>
```

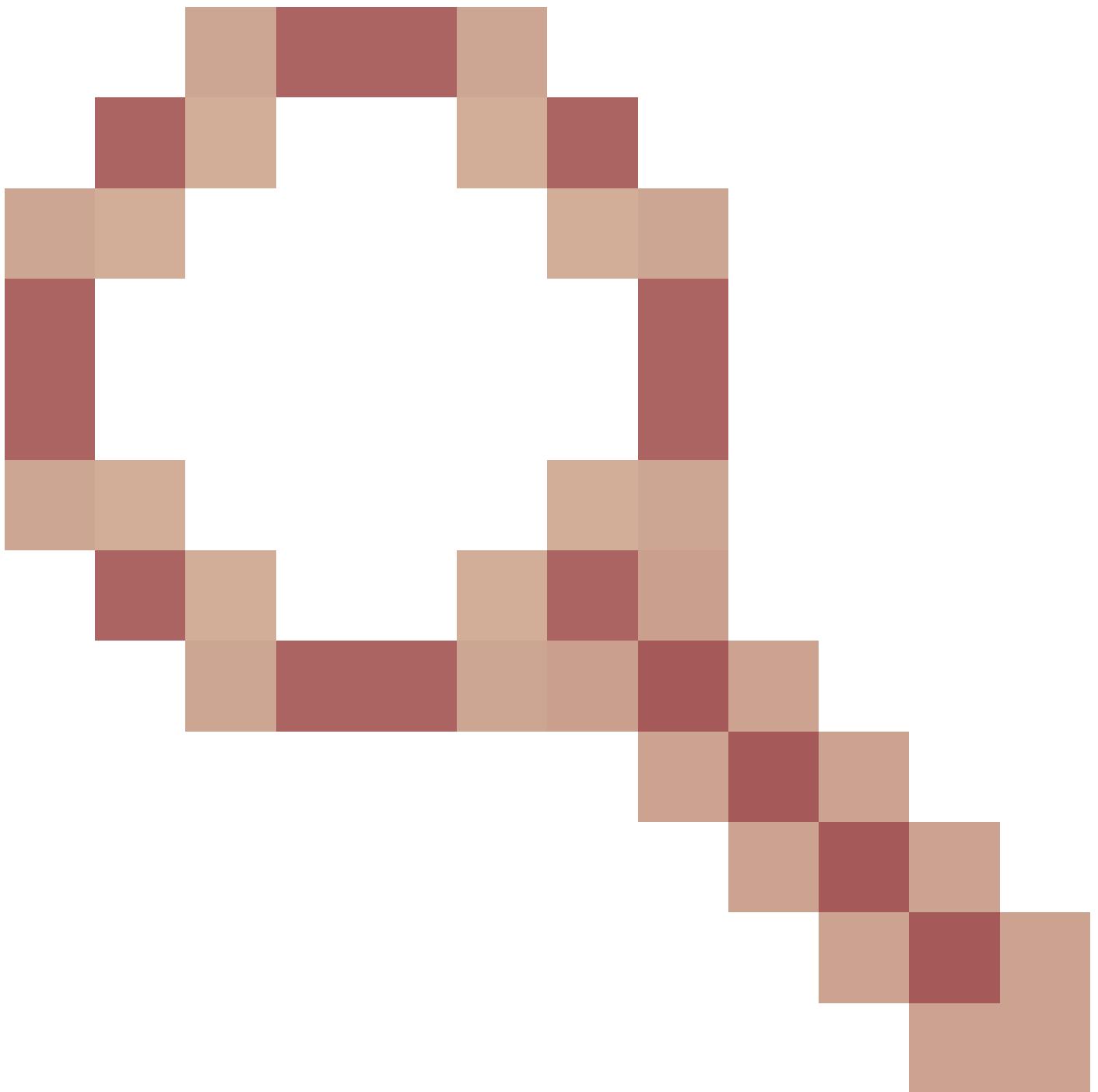
```
asa#
```

```
debug igmp
```

```
Apr 20 2023 09:37:10: %ASA-7-711001: IGMP: Received v2 Report on inside from 10.10.10.11 for 232.179.89.89  
Apr 20 2023 09:37:10: %ASA-7-711001: IGMP: group_db: add new group 232.179.89.253 on inside
```

```
Apr 20 2023 09:37:10: %ASA-7-711001: IGMP: Exclude report on inside ignored for SSM group 232.179.89.253
```

نـم ءاطـخـأـلـا حـيـ حصـتـ فـرعـ مـالـا Cisco [CSCsr53916](#)



قاطن معدل نیسحتلا بقعت SSM.

ةلص تاذ تامولع م

- ةيرانلا ققاطلا ديدهت نع عافدلل ددعتملا ثبللا هيچوت
- اهحالص او ASA ددعتملا ثبللا او FirePOWER ديدهت نع عافدلل اعاطخأ فاشكتسأ

هـ لـ وـ لـ جـ رـ تـ لـ اـ هـ ذـ هـ

ةـ يـ لـ آـ لـ اـ تـ اـ يـ نـ قـ تـ لـ اـ نـ مـ مـ جـ مـ وـ عـ مـ اـ دـ خـ تـ سـ اـ بـ دـ نـ تـ سـ مـ لـ اـ اـ ذـ هـ تـ مـ جـ رـ تـ
لـ اـ عـ لـ اـ ءـ اـ حـ نـ اـ عـ يـ مـ جـ يـ فـ نـ يـ مـ دـ خـ تـ سـ مـ لـ لـ مـ عـ دـ ئـ وـ تـ حـ مـ يـ دـ قـ تـ لـ ةـ يـ رـ شـ بـ لـ اـ وـ
اـ مـ كـ ةـ قـ يـ قـ دـ نـ وـ كـ تـ نـ لـ ةـ يـ لـ آـ ةـ مـ جـ رـ تـ لـ ضـ فـ اـ نـ اـ ةـ ظـ حـ اـ لـ مـ ئـ جـ رـ يـ .ـ صـ اـ خـ لـ اـ مـ هـ تـ غـ لـ بـ
يـ لـ خـ تـ .ـ فـ رـ تـ حـ مـ مـ جـ رـ تـ مـ اـ هـ دـ قـ يـ يـ تـ لـ اـ ةـ يـ فـ اـ رـ تـ حـ اـ لـ اـ ةـ مـ جـ رـ تـ لـ اـ عـ مـ لـ اـ حـ لـ اـ وـ
ىـ لـ إـ أـ مـ ئـ اـ دـ عـ وـ جـ رـ لـ اـ بـ يـ صـ وـ تـ وـ تـ اـ مـ جـ رـ تـ لـ اـ هـ ذـ هـ ةـ قـ دـ نـ عـ اـ هـ تـ يـ لـ وـ ئـ سـ مـ
(رـ فـ وـ تـ مـ طـ بـ اـ رـ لـ اـ)ـ يـ لـ صـ أـ لـ اـ يـ زـ يـ لـ جـ نـ إـ لـ اـ دـ نـ تـ سـ مـ لـ اـ).