ASR 1000 OTV组播配置示例

目录

简介

本文描述如何配置重叠传输虚拟化(OTV)在思科聚合服务路由器(ASR) 1000平台的组播模式。OTV扩大在物理的不同的站点间的Layer2 (L2)拓扑，允许设备通信在第3层(L3)供应商间的L2。设备在站点1相信他们在广播域和那些一样在站点2。

先决条件

要求

Cisco 建议您了解以下主题：

- 以太网虚拟连接(EVC)配置
- 在ASR平台的基本L2和L3配置
- 基本互联网组管理协议(IGMP)版本3和独立于协议的组播(PIM)配置知识

使用的组件

本文档中的信息根据与Cisco IOS版本asr1000rp1-adventerprise.03.09.00.S.153-2.S.bin的ASR1002。

您的系统必须有这些需求为了实现在ASR 1000的OTV功能：

- Cisco IOS XE版本3.5S或以上
- 最大传输单元(MTU) 1542或更加高

  注意：OTV添加与的一个42字节报头不分段位(Df-bit)到封装数据包。为了传输1500字节数据包到重叠，转接网络必须支持最大传输单元(MTU) 1542或更加高。为了允许在OTV间的分段，您必须启用**otv分段加入接口**<interface>。
- 在站点之间的单播和组播可接通性

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您使用的是真实网络，请确保您已经了解所有命令的潜在影响。

配置

此部分描述如何配置OTV组播模式。

与基本L2/L3连接的网络图

基本L2/L3连接

从一基本配置开始。在ASR的内部接口为dot1q流量的服务实例配置。OTV加入接口是外部广域网L3接口。

```
ASR-1
interface GigabitEthernet0/0/0
 description OTV-WAN-Connection
 mtu 9216
 ip address 172.17.100.134 255.255.255.0
 negotiation auto
 cdp enable

ASR-2
interface GigabitEthernet0/0/0
 description OTV-WAN-Connection
 mtu 9216
 ip address 172.16.64.84 255.255.255.0
 negotiation auto
 cdp enable
```

因为OTV添加一个42字节报头，您必须验证互联网服务提供商通过从站点到站点的最低的MTU大小。为了完成此验证，请发送数据包大小1542与设置的Df-bit。这给有效负载要求加上不**分段**在数据包的标记为了模拟OTV数据包的ISP。如果不能ping没有Df-bit，则您有路由问题。如果ping，不用它，但是不能ping与设置的Df-bit，您有一MTU问题。一旦成功，您是就绪添加OTV单播模式到您的站点ASR。

```
ASR-1#ping 172.17.100.134 size 1542 df-bit
Type escape sequence to abort.
Sending 5, 1514-byte ICMP Echos to 172.17.100.134, timeout is 2 seconds:
Packet sent with the DF bit set
```

```
 !!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/2 ms
```

内部接口是L2端口配置与L2 dot1q标记信息包的服务实例。它也建立一个内部站点网桥域。在本例中，它是无标记VLAN1。内部站点网桥域使用多个OTV设备的通信在同一个站点。这给他们传达和确定哪个设备是网桥域的授权边缘设备(AED)。

必须配置服务实例到使用重叠的网桥域。

```
ASR-1
interface GigabitEthernet0/0/1
 no ip address
 negotiation auto
 cdp enable
  service instance 1 ethernet
   encapsulation untagged
   bridge-domain 1
 !
 service instance 50 ethernet
  encapsulation dot1q 100
  bridge-domain 200
 !
 service instance 51 ethernet
  encapsulation dot1q 101
  bridge-domain 201


ASR-2
interface GigabitEthernet0/0/2
 no ip address
 negotiation auto
 cdp enable
  service instance 1 ethernet
   encapsulation untagged
   bridge-domain 1
 !
 service instance 50 ethernet
  encapsulation dot1q 100
  bridge-domain 200
 !
 service instance 51 ethernet
  encapsulation dot1q 101
  bridge-domain 201
```

OTV组播最低配置

这是要求仅一些命令为了设置OTV和加入/内部接口的基本配置。

配置本地站点网桥域。在本例中，它是在LAN的VLAN1。站点标识符是特定对每个物理位置。在本例中，有物理的对立于彼此的两远程位置。站点1和站点2相应地配置。必须也配置组播符合OTV的需求。

```
ASR-1

Config t
otv site bridge-domain 1
otv site-identifier 0000.0000.0001
ip multicast-routing distributed
ip pim ssm default
interface GigabitEthernet0/0/0
  ip pim passive
```

```
  ip igmp version 3
```

```
ASR-2

Config t
otv site bridge-domain 1
otv site-identifier 0000.0000.0002
ip multicast-routing distributed
ip pim ssm default
interface GigabitEthernet0/0/0
  ip pim passive
  ip igmp version 3
```

构件每侧的重叠。配置重叠，应用加入接口，并且添加控制，并且其中每一的数据组支持。

添加您要扩大的两个网桥域。注意您不扩大站点网桥域，需要的仅两VLAN。您建立重叠接口的一个分开的服务实例呼叫网桥域200和201。分别应用dot1q标记100和101。

```
ASR-1

Config t
 interface Overlay1
  no ip address
  otv join-interface GigabitEthernet0/0/0
otv control-group 225.0.0.1 otv data-group 232.10.10.0/24
 service instance 10 ethernet
   encapsulation dot1q 100
   bridge-domain 200
   service instance 11 ethernet
   encapsulation dot1q 101
   bridge-domain 201


ASR-2

Config t
 interface Overlay1
  no ip address
  otv join-interface GigabitEthernet0/0/0
otv control-group 225.0.0.1 otv data-group 232.10.10.0/24
 service instance 10 ethernet
   encapsulation dot1q 100
   bridge-domain 200
   service instance 11 ethernet
   encapsulation dot1q 101
   bridge-domain 201
```

> **注意**：请勿延伸重叠接口的站点VLAN。这造成两ASR有冲突，因为他们相信每个远端在同一个站点。

在此阶段，对ASR OTV组播邻接的ASR是完成和工作。寻找邻居，并且ASR应该是AED有能力为需要被扩展的VLAN。

```
ASR-1#show otv
Overlay Interface Overlay1
 VPN name                 : None
 VPN ID                   : 2
 State                    : UP
 AED Capable              : Yes
 IPv4 control group       : 225.0.0.1
 Mcast data group range(s): 232.10.10.0/24
```

```
 Join interface(s)        : GigabitEthernet0/0/0
 Join IPv4 address        : 172.17.100.134
 Tunnel interface(s)      : Tunnel0
 Encapsulation format     : GRE/IPv4
 Site Bridge-Domain       : 1
 Capability               : Multicast-reachable
 Is Adjacency Server      : No
 Adj Server Configured    : No
 Prim/Sec Adj Svr(s)      : None


ASR-2#show otv
Overlay Interface Overlay1
 VPN name                 : None
 VPN ID                   : 2
 State                    : UP
 AED Capable              : Yes
 IPv4 control group       : 225.0.0.1
 Mcast data group range(s): 232.10.10.0/24
 Join interface(s)        : GigabitEthernet0/0/0
 Join IPv4 address        : 172.16.64.84
 Tunnel interface(s)      : Tunnel0
 Encapsulation format     : GRE/IPv4
 Site Bridge-Domain       : 1
 Capability               : Multicast-reachable
 Is Adjacency Server      : No
 Adj Server Configured    : No
 Prim/Sec Adj Svr(s)      : None
```

OTV验证

使用本部分可确认配置能否正常运行。

与OTV的网络图

验证命令和预期的输出

此输出显示VLAN 100和101被扩展。ASR是AED，并且映射VLAN的内部接口和服务实例在输出中显示。

```
ASR-1#show otv vlan
Key:  SI - Service Instance

Overlay 1 VLAN Configuration Information
 Inst VLAN  Bridge-Domain  Auth  Site Interface(s)
 0    100   200            yes   Gi0/0/1:SI50
 0    101   201            yes   Gi0/0/1:SI51
 Total VLAN(s): 2
 Total Authoritative VLAN(s): 2


ASR-2#show otv vlan
Key:  SI - Service Instance

Overlay 1 VLAN Configuration Information
 Inst VLAN  Bridge-Domain  Auth  Site Interface(s)
 0    100   200            yes   Gi0/0/2:SI50
```

```
 0    101   201           yes   Gi0/0/2:SI51
 Total VLAN(s): 2
 Total Authoritative VLAN(s): 2
```

为了验证，延伸VLAN和执行一站点到站点ping。主机192.168.100.2在站点1查找，并且主机192.168.100.3在站点2.查找。当您构件地址解析服务(ARP)本地和在OTV间对另一侧，最初的少数ping预计发生故障。

```
LAN-SW1#ping 192.168.100.3
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.100.3, timeout is 2 seconds:
...!!
Success rate is 40 percent (2/5), round-trip min/avg/max = 1/5/10 ms


LAN-SW1#ping 192.168.100.3
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.100.3, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/4/10 ms


LAN-SW1#ping 192.168.100.3 size 1500 df-bit
Type escape sequence to abort.
Sending 5, 1500-byte ICMP Echos to 192.168.100.3, timeout is 2 seconds:
Packet sent with the DF bit set
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/4/10 ms
```

为了保证MAC表和OTV路由表用本地设备适当地建立，请了解远程设备的MAC地址有**route命令**使用的**显示的otv**。

```
LAN-SW1#show int vlan 100
Vlan100 is up, line protocol is up
  Hardware is Ethernet SVI, address is 0c27.24cf.abd1 (bia 0c27.24cf.abd1)
  Internet address is 192.168.100.2/24


LAN-SW2#show int vlan 100
Vlan100 is up, line protocol is up
  Hardware is Ethernet SVI, address is b4e9.b0d3.6a51 (bia b4e9.b0d3.6a51)
  Internet address is 192.168.100.3/24


ASR-1#show otv route vlan 100

Codes: BD - Bridge-Domain, AD - Admin-Distance,
       SI - Service Instance, * - Backup Route

OTV Unicast MAC Routing Table for Overlay1

 Inst VLAN BD     MAC Address    AD    Owner  Next Hops(s)
-----------------------------------------------------------
 0    100  200    0c27.24cf.abaf 40    BD Eng Gi0/0/1:SI50
 0    100  200    0c27.24cf.abd1 40    BD Eng Gi0/0/1:SI50 <--- Local mac is
pointing to the physical interface
 0    100  200    b4e9.b0d3.6a04 50    ISIS   ASR-2
 0    100  200    b4e9.b0d3.6a51 50    ISIS   ASR-2        <--- Remote mac is
pointing across OTV to ASR-2

4 unicast routes displayed in Overlay1

-----------------------------------------------------------
4 Total Unicast Routes Displayed
```

```
ASR-2#show otv route vlan 100

Codes: BD - Bridge-Domain, AD - Admin-Distance,
       SI - Service Instance, * - Backup Route

OTV Unicast MAC Routing Table for Overlay1

 Inst VLAN BD     MAC Address    AD    Owner  Next Hops(s)
-----------------------------------------------------------
 0    100  200    0c27.24cf.abaf 50    ISIS   ASR-1
 0    100  200    0c27.24cf.abd1 50    ISIS   ASR-1          <--- Remote mac is
pointing across OTV to ASR-1
 0    100  200    b4e9.b0d3.6a04 40    BD Eng Gi0/0/2:SI50
 0    100  200    b4e9.b0d3.6a51 40    BD Eng Gi0/0/2:SI50 <--- Local mac is
pointing to the physical interface

4 unicast routes displayed in Overlay1

-----------------------------------------------------------
4 Total Unicast Routes Displayed
```

常见问题

OTV在输出中不形成错误消息显示ASR不是AED有能力。这意味着ASR不转发在OTV间的VLAN。有此的几个可能的原因，但是最普通是ASR没有站点之间的连接。检查L3连接和可能的阻止组播数据流。此情况的另一个可能的原因是，当内部站点网桥域没有配置时。这创造ASR不能变为AED的条件，因为不肯定，如果它是在站点的唯一的ASR。

```
ASR-1#show otv
Overlay Interface Overlay1
 VPN name                 : None
 VPN ID                   : 2
 State                    : UP
 AED Capable              : No, overlay DIS not elected <--- Not Forwarding
 IPv4 control group       : 225.0.0.1
 Mcast data group range(s): 232.0.0.0/8
 Join interface(s)        : GigabitEthernet0/0/0
 Join IPv4 address        : 172.17.100.134
 Tunnel interface(s)      : Tunnel0
 Encapsulation format     : GRE/IPv4
 Site Bridge-Domain       : 1
 Capability               : Multicast-reachable
 Is Adjacency Server      : No
 Adj Server Configured    : No
 Prim/Sec Adj Svr(s)      : None


ASR-2#show otv
Overlay Interface Overlay1
 VPN name                 : None
 VPN ID                   : 2
 State                    : UP
 AED Capable              : No, overlay DIS not elected <--- Not Forwarding
 IPv4 control group       : 225.0.0.1
 Mcast data group range(s): 232.0.0.0/8
 Join interface(s)        : GigabitEthernet0/0/0
 Join IPv4 address        : 172.16.64.84
 Tunnel interface(s)      : Tunnel0
 Encapsulation format     : GRE/IPv4
```

```
 Site Bridge-Domain       : 1
 Capability               : Multicast-reachable
 Is Adjacency Server      : No
 Adj Server Configured    : No
 Prim/Sec Adj Svr(s)      : None
```

故障排除

本部分提供了可用于对配置进行故障排除的信息。

创建加入接口的数据包捕获为了发现OTV Hello

您能使用在ASR的内置信息包获取设备为了帮助排除故障可能的问题。

创建访问控制表(ACL)为了最小化影响和过饱和的捕获。配置设置为了只捕获在两个站点之间的组播hello。调节您的IP地址匹配邻居的加入接口。

```
ip access-list extended CAPTURE
 permit ip host 172.16.64.84 host 225.0.0.1
 permit ip host 172.17.100.134 host 225.0.0.1
```

设置捕获为了探测在两个方向的加入接口在两ASR ：

```
monitor capture 1 buffer circular access-list CAPTURE interface g0/0/0 both
```

为了开始捕获，请输入：

```
monitor capture 1 start

*Nov 14 15:21:37.746: %BUFCAP-6-ENABLE: Capture Point 1 enabled.

<wait a few min>

monitor capture 1 stop

*Nov 14 15:22:03.213: %BUFCAP-6-DISABLE: Capture Point 1 disabled.

show mon cap 1 buffer brief
```

缓冲输出显示在捕获出口的hello获取接口。它显示hello被注定对组播地址225.0.0.1。这是已配置的控制组。请参阅在捕获的前13数据包，并且注意多么有仅一单向的输出。从172.17.100.134的Hello只被看到。一旦在核心的组播问题是解决的，邻接Hello出现在数据包编号14。

```
ASR-1#show mon cap 1 buff bri
 ----------------------------------------------------------
 #   size   timestamp     source             destination   protocol
 ----------------------------------------------------------
  0 1456    0.000000   172.17.100.134   ->  225.0.0.1        GRE
  1 1456    8.707016   172.17.100.134   ->  225.0.0.1        GRE
  2 1456   16.880011   172.17.100.134   ->  225.0.0.1        GRE
  3 1456   25.873008   172.17.100.134   ->  225.0.0.1        GRE
  4 1456   34.645023   172.17.100.134   ->  225.0.0.1        GRE
  5 1456   44.528024   172.17.100.134   ->  225.0.0.1        GRE
  6 1456   52.137002   172.17.100.134   ->  225.0.0.1        GRE
  7 1456   59.819010   172.17.100.134   ->  225.0.0.1        GRE
  8 1456   68.641025   172.17.100.134   ->  225.0.0.1        GRE
  9 1456   78.168998   172.17.100.134   ->  225.0.0.1        GRE
 10 1456   85.966005   172.17.100.134   ->  225.0.0.1        GRE
 11 1456   94.629032   172.17.100.134   ->  225.0.0.1        GRE
 12 1456  102.370043   172.17.100.134   ->  225.0.0.1        GRE
```

```
 13 1456  110.042005   172.17.100.134   ->  225.0.0.1        GRE
  14 1456  111.492031   172.16.64.84     ->  225.0.0.1        GRE <---Mcast core
fixed and now see neighbor hellos
 15 1456  111.493038   172.17.100.134   ->  225.0.0.1        GRE
 16 1456  112.491039   172.16.64.84     ->  225.0.0.1        GRE
 17 1456  112.501033   172.17.100.134   ->  225.0.0.1        GRE
 18  116  112.519037   172.17.100.134   ->  225.0.0.1        GRE
 19  114  112.615026   172.16.64.84     ->  225.0.0.1        GRE
 20  114  112.618031   172.17.100.134   ->  225.0.0.1        GRE
 21 1456  113.491039   172.16.64.84     ->  225.0.0.1        GRE
 22 1456  115.236047   172.17.100.134   ->  225.0.0.1        GRE
 23  142  116.886008   172.17.100.134   ->  225.0.0.1        GRE
 24  102  117.290045   172.17.100.134   ->  225.0.0.1        GRE
 25 1456  118.124002   172.17.100.134   ->  225.0.0.1        GRE
 26 1456  121.192043   172.17.100.134   ->  225.0.0.1        GRE
 27 1456  122.443037   172.16.64.84     ->  225.0.0.1        GRE
 28 1456  124.497035   172.17.100.134   ->  225.0.0.1        GRE
 29  102  126.178052   172.17.100.134   ->  225.0.0.1        GRE
 30  142  126.629032   172.17.100.134   ->  225.0.0.1        GRE
 31 1456  127.312047   172.17.100.134   ->  225.0.0.1        GRE
 32 1456  130.029997   172.17.100.134   ->  225.0.0.1        GRE
 33 1456  131.165000   172.16.64.84     ->  225.0.0.1        GRE
 34 1456  132.591025   172.17.100.134   ->  225.0.0.1        GRE
 35  102  134.832010   172.17.100.134   ->  225.0.0.1        GRE
 36 1456  135.856010   172.17.100.134   ->  225.0.0.1        GRE
 37  142  136.174054   172.17.100.134   ->  225.0.0.1        GRE
 38 1456  138.442030   172.17.100.134   ->  225.0.0.1        GRE
 39 1456  140.769025   172.16.64.84     ->  225.0.0.1        GRE
 40 1456  141.767010   172.17.100.134   ->  225.0.0.1        GRE
 41  102  144.277046   172.17.100.134   ->  225.0.0.1        GRE
 42 1456  144.996003   172.17.100.134   ->  225.0.0.1        GRE

ASR-1#
2#show mon cap 1 buff bri
```

验证OTV的ASR Mroute状态

当您建立在OTV邻居之间时的组播路由状态，您必须有适当的PIM状态。请使用此命令为了验证ASR的预计PIM状态：

```
ASR-1#show otv
Overlay Interface Overlay1
 VPN name                 : None
 VPN ID                   : 2
 State                    : UP
 AED Capable              : No, overlay DIS not elected
 IPv4 control group       : 225.0.0.1
 Mcast data group range(s): 232.0.0.0/8
 Join interface(s)        : GigabitEthernet0/0/0
 Join IPv4 address        : 172.17.100.134
 Tunnel interface(s)      : Tunnel0
 Encapsulation format     : GRE/IPv4
 Site Bridge-Domain       : 1
 Capability               : Multicast-reachable
 Is Adjacency Server      : No
 Adj Server Configured    : No
 Prim/Sec Adj Svr(s)      : None
```

注意错误和以前一样：有能力的AED =没有， DIS没选择的重叠。此的什么含义是ASR不能变为AED转发器，因为没有关于其对等体的足够的信息。很可能，内部接口不上升，站点网桥域是在下/不已创建，或者两个站点在ISP间互相看不到。

查看ASR-1为了识别问题。它显示PIM邻居没看到。既使当工作，这预计。这是因为PIM运行在加入接口的被动。是支持PIM被动OTV的加入接口唯一的PIM模式。

```
ASR-1#show ip pim neigh
PIM Neighbor Table
Mode: B - Bidir Capable, DR - Designated Router, N - Default DR Priority,
     P - Proxy Capable, S - State Refresh Capable, G - GenID Capable
Neighbor          Interface               Uptime/Expires    Ver   DR
Address                                                           Prio/Mode
```

为了验证PIM接口在ASR-1配置，回车：

```
ASR-1#show ip pim int

Address          Interface               Ver/   Nbr    Query  DR     DR
                                         Mode   Count  Intvl  Prior
172.17.100.134   GigabitEthernet0/0/0    v2/P   0      30     1      172.17.100.134
172.17.100.134   Tunnel0                 v2/P   0      30     1      172.17.100.134
0.0.0.0          Overlay1                v2/P   0      30     1      0.0.0.0
```

ASR的mroute状态关于链路的组播状况提供许多信息。在此输出中，您看不到邻居作为S，在本地ASR mroute表的G条目。当您查看控制组的时mroute计数，您只看到本地加入建立接口作为来源。注意计数对应到接收的数据包与转发的总计。这意味着您是在本地端的上和转发对组播域。

```
ASR-1#show ip mroute
IP Multicast Routing Table
Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group, C - Connected,
       L - Local, P - Pruned, R - RP-bit set, F - Register flag,
       T - SPT-bit set, J - Join SPT, M - MSDP created entry, E - Extranet,
       X - Proxy Join Timer Running, A - Candidate for MSDP Advertisement,
       U - URD, I - Received Source Specific Host Report,
       Z - Multicast Tunnel, z - MDT-data group sender,
       Y - Joined MDT-data group, y - Sending to MDT-data group,
       G - Received BGP C-Mroute, g - Sent BGP C-Mroute,
       Q - Received BGP S-A Route, q - Sent BGP S-A Route,
       V - RD & Vector, v - Vector
Outgoing interface flags: H - Hardware switched, A - Assert winner
 Timers: Uptime/Expires
 Interface state: Interface, Next-Hop or VCD, State/Mode

(*, 225.0.0.1), 00:20:29/stopped, RP 0.0.0.0, flags: DC
 Incoming interface: Null, RPF nbr 0.0.0.0
 Outgoing interface list:
   Tunnel0, Forward/Sparse-Dense, 00:20:29/00:02:55
   GigabitEthernet0/0/0, Forward/Sparse-Dense, 00:20:29/Proxy

(172.17.100.134, 225.0.0.1), 00:16:25/00:02:19, flags: T
 Incoming interface: GigabitEthernet0/0/0, RPF nbr 0.0.0.0
 Outgoing interface list:
   GigabitEthernet0/0/0, Forward/Sparse-Dense, 00:16:25/Proxy
   Tunnel0, Forward/Sparse-Dense, 00:16:25/00:02:55

(*, 224.0.1.40), 00:20:09/00:02:53, RP 0.0.0.0, flags: DPC
 Incoming interface: Null, RPF nbr 0.0.0.0
 Outgoing interface list: Null

ASR-1#show ip mroute count
Use "show ip mfib count" to get better response time for a large number of mroutes.

IP Multicast Statistics
3 routes using 1828 bytes of memory
2 groups, 0.50 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: 225.0.0.1, Source count: 1, Packets forwarded: 116, Packets received: 117
  Source: 172.17.100.134/32, Forwarding: 116/0/1418/1, Other: 117/1/0

Group: 224.0.1.40, Source count: 0, Packets forwarded: 0, Packets received: 0
```

当核心组播问题是解决的时，您看到从ASR的预期的输出。

```
ASR-1#show otv
Overlay Interface Overlay1
 VPN name                 : None
 VPN ID                   : 2
 State                    : UP
 AED Capable              : Yes
 IPv4 control group       : 225.0.0.1
 Mcast data group range(s): 232.0.0.0/8
 Join interface(s)        : GigabitEthernet0/0/0
 Join IPv4 address        : 172.17.100.134
 Tunnel interface(s)      : Tunnel0
 Encapsulation format     : GRE/IPv4
 Site Bridge-Domain       : 1
 Capability               : Multicast-reachable
 Is Adjacency Server      : No
 Adj Server Configured    : No
 Prim/Sec Adj Svr(s)      : None
```

仍有没有PIM邻居，并且物理，重叠和隧道接口是本地PIM接口。

```
ASR-1#show ip pim neigh
PIM Neighbor Table
Mode: B - Bidir Capable, DR - Designated Router, N - Default DR Priority,
     P - Proxy Capable, S - State Refresh Capable, G - GenID Capable
Neighbor          Interface                Uptime/Expires    Ver   DR
Address                                                            Prio/Mode
ASR-1#show ip pim int

Address          Interface                Ver/   Nbr    Query  DR     DR
                                          Mode   Count  Intvl  Prior
172.17.100.134   GigabitEthernet0/0/0     v2/P   0      30     1      172.17.100.134
172.17.100.134   Tunnel0                  v2/P   0      30     1      172.17.100.134
0.0.0.0          Overlay1                 v2/P   0      30     1      0.0.0.
```

mroute表和计数器提供关于组播状态的信息。输出显示加入接口以及OTV邻居在控制组中作为来源。在远程站点反向路径转发(RPF)邻接(NBR)字段确保您发现聚合点(RP)。您也转发并且接收匹配计数器。两来源应该共计组接收的总计。

```
ASR-1#show ip mroute
IP Multicast Routing Table
Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group, C - Connected,
       L - Local, P - Pruned, R - RP-bit set, F - Register flag,
       T - SPT-bit set, J - Join SPT, M - MSDP created entry, E - Extranet,
       X - Proxy Join Timer Running, A - Candidate for MSDP Advertisement,
       U - URD, I - Received Source Specific Host Report,
       Z - Multicast Tunnel, z - MDT-data group sender,
       Y - Joined MDT-data group, y - Sending to MDT-data group,
       G - Received BGP C-Mroute, g - Sent BGP C-Mroute,
       Q - Received BGP S-A Route, q - Sent BGP S-A Route,
       V - RD & Vector, v - Vector
Outgoing interface flags: H - Hardware switched, A - Assert winner
 Timers: Uptime/Expires
 Interface state: Interface, Next-Hop or VCD, State/Mode

(*, 225.0.0.1), 00:25:16/stopped, RP 0.0.0.0, flags: DC
 Incoming interface: Null, RPF nbr 0.0.0.0
 Outgoing interface list:
```

```
   Tunnel0, Forward/Sparse-Dense, 00:25:16/00:02:06
   GigabitEthernet0/0/0, Forward/Sparse-Dense, 00:25:16/Proxy

(172.16.64.84, 225.0.0.1), 00:04:09/00:02:50, flags: T
 Incoming interface: GigabitEthernet0/0/0, RPF nbr 172.17.100.1
 Outgoing interface list:
   Tunnel0, Forward/Sparse-Dense, 00:04:09/00:02:06

(172.17.100.134, 225.0.0.1), 00:21:12/00:01:32, flags: T
 Incoming interface: GigabitEthernet0/0/0, RPF nbr 0.0.0.0
 Outgoing interface list:
   GigabitEthernet0/0/0, Forward/Sparse-Dense, 00:21:12/Proxy
   Tunnel0, Forward/Sparse-Dense, 00:21:12/00:02:06

(*, 224.0.1.40), 00:24:56/00:02:03, RP 0.0.0.0, flags: DPC
 Incoming interface: Null, RPF nbr 0.0.0.0
 Outgoing interface list: Null

ASR-1#show ip mroute count
Use "show ip mfib count" to get better response time for a large number of mroutes.

IP Multicast Statistics
4 routes using 2276 bytes of memory
2 groups, 1.00 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: 225.0.0.1, Source count: 2, Packets forwarded: 295, Packets received:
297 <----- 32 + 263 = 295
  Source: 172.16.64.84/32, Forwarding: 32/0/1372/1, Other: 32/0/0
  Source: 172.17.100.134/32, Forwarding: 263/0/1137/3, Other: 264/1/0

Group: 224.0.1.40, Source count: 0, Packets forwarded: 0, Packets received: 0
```

创建加入接口的数据包捕获发现OTV数据包

由于OTV是封装的数据流，被看到，因为与加入接口的来源的通用路由封装(GRE)流量对远程加入接口的目的地的。没有您能执行为了特别地发现流量的。您能使用为了验证的一个方法，如果您的流量在OTV间做它是设置一数据包捕获，特别地有对立于您的当前流量模式的数据包大小的。在本例中，您能指定有大小的一互联网控制消息协议(ICMP)数据包700和确定什么您能过滤捕获。如果数据包在OTV网云间，做它这可以用于为了验证。

为了设置您的在您的两加入接口之间的访问列表过滤器，回车：

```
ip access-list extended CAPTURE
 permit ip host 172.17.100.134 host 172.16.64.84
```

为了设置您的监控会话过滤您的指定的大小756，回车：

```
monitor capture 1 buffer size 1 access-list CAPTURE limit packet-len 756
interface g0/0/0 out
```

为了开始捕获，回车：

```
ASR-1#mon cap 1 start
*Nov 18 12:45:50.162: %BUFCAP-6-ENABLE: Capture Point 1 enabled.
```

发送与一个指定的大小的特定ping。因为OTV与与20字节IP报头的8字节ICMP一起添加一个42字节报头，您能发送ping估量在700，并且期望发现数据请到达与数据包大小的OTV网云756。

```
LAN-Sw2#ping 192.168.100.2 size 700 repeat 100
Type escape sequence to abort.
```

```
Sending 100, 700-byte ICMP Echos to 192.168.100.2, timeout is 2 seconds:
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!
Success rate is 100 percent (100/100), round-trip min/avg/max = 10/19/30 ms
```

为了终止捕获，请输入：

```
ASR-1#mon cap 1 stop
*Nov 18 12:46:02.084: %BUFCAP-6-DISABLE: Capture Point 1 disabled.
```

在捕获缓冲区中，您看到全部100数据包到达在本地端的捕获。您应该看到全部100数据包到达远端。否则，进一步调查在包丢失的OTV网云要求。

```
ASR-1#show mon cap 1 buff bri
 ----------------------------------------------------------------
 #   size   timestamp     source             destination   protocol
 ----------------------------------------------------------------
  0  756    0.000000   172.17.100.134   ->  172.16.64.84     GRE
  1  756    0.020995   172.17.100.134   ->  172.16.64.84     GRE
  2  756    0.042005   172.17.100.134   ->  172.16.64.84     GRE
  3  756    0.052991   172.17.100.134   ->  172.16.64.84     GRE
<Output Omitted>
 97  756    1.886999   172.17.100.134   ->  172.16.64.84     GRE
 98  756    1.908009   172.17.100.134   ->  172.16.64.84     GRE
 99  756    1.931003   172.17.100.134   ->  172.16.64.84     GRE
```

注意：此测验不是100%可靠，因为匹配长度756的所有流量捕获，因此小心地使用它。此测验用于为了帮助收集数据仅数据点可能的OTV核心问题的。

相关信息

- 配置重叠传输虚拟化
- 了解以太网虚拟电路(EVC)
- 技术支持和文档 - Cisco Systems