

# Inter-VRF-multicast configureren zonder ongekende Inter-VRF-routeblokkering

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## Inleiding

Dit document beschrijft hoe u een multicast-stream kunt doorsturen die vanuit een bron in Virtual Routing and Forwarding (VRF) komt en naar gebruikers in VRF-ontvanger gaat zonder unicast inter-VRF-route te doen lekken.

## Voorwaarden

### Vereisten

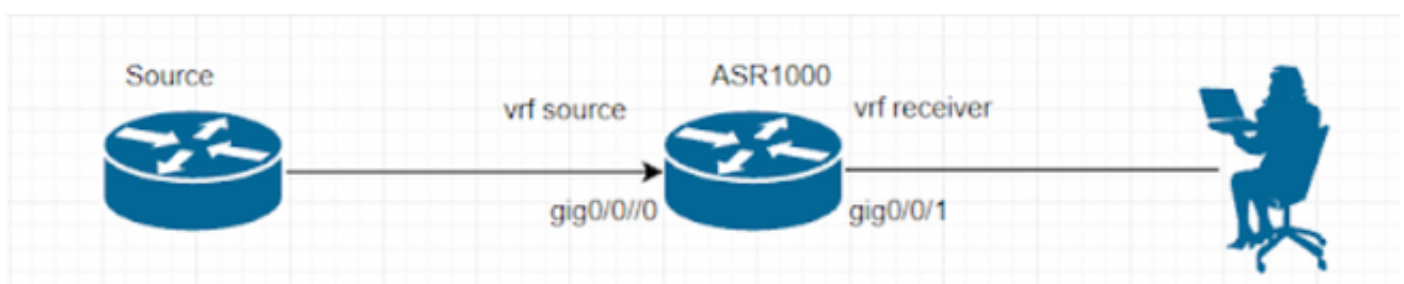
Cisco raadt u aan kennis te hebben van PIM-functionaliteit en ASM.

### Gebruikte componenten

De informatie in dit document is gebaseerd op ASR 1000.

De informatie in dit document is gebaseerd op de apparaten in een specifieke laboratoriumomgeving. Alle apparaten die in dit document worden beschreven, hadden een opgeschoonde (standaard)configuratie. Als uw netwerk levend is, zorg er dan voor dat u de mogelijke impact van om het even welke opdracht begrijpt.

## Netwerkdigram



# Configuraties

Generate UDP multicast stream op de bron.

```
Source#  
  
ip sla 1  
  
udp-echo 239.1.1.1 2000 source-ip 10.1.1.1  
  
ip sla schedule 1 life forever start-time now
```

De ontvanger is ingesteld met IGMP en stuurt IGMP-lidmaatschapsrapporten.

ASR1000 router doet het multicast verkeer tussen vrf. Loopback 1 in VRF "source" is de RP voor beide VRF's.

```
ASR1000#  
  
ip vrf source  
  
rd 1:1  
  
!  
  
ip vrf receiver  
  
rd 2:2  
  
!  
  
ip multicast-routing vrf source distributed  
  
ip multicast-routing vrf receiver distributed  
  
  
ip pim vrf source rp-address 1.1.1.1  
  
ip pim vrf receiver rp-address 1.1.1.1  
  
  
interface Loopback1  
  
ip vrf forwarding source  
  
ip address 1.1.1.1 255.255.255.255  
  
ip pim sparse-mode  
  
  
interface GigabitEthernet0/0/0  
  
ip vrf forwarding source  
  
ip address 10.1.1.2 255.255.255.0  
  
ip pim sparse-mode
```

```
interface GigabitEthernet0/0/1
ip vrf forwarding receiver
ip address 20.1.1.2 255.255.255.0
ip pim sparse-mode
```

(S, G) ingang wordt voorlopig niet gevormd in vrf 'ontvangt'.

```
ASR1002-1#show ip mroute vrf source
```

```
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,
```

```
N - Received BGP Shared-Tree Prune, n - BGP C-Mroute suppressed,
```

```
Q - Received BGP S-A Route, q - Sent BGP S-A Route,
```

```
V - RD & Vector, v - Vector, p - PIM Joins on route,
```

```
x - VxLAN group, c - PFP-SA cache created entry,
```

```
* - determined by Assert
```

```
Outgoing interface flags: H - Hardware switched, A - Assert winner, p - PIM Join
```

```
Timers: Uptime/Expires
```

```
Interface state: Interface, Next-Hop or VCD, State/Mode
```

```
(*, 239.1.1.1), 00:05:01/stopped, RP 1.1.1.1, flags: SPF
```

```
Incoming interface: Null, RPF nbr 0.0.0.0
```

```
Outgoing interface list: Null
```

```
(10.1.1.1, 239.1.1.1), 00:05:01/00:02:26, flags: PFT
```

```
Incoming interface: GigabitEthernet0/0/0, RPF nbr 0.0.0.0
```

```
Outgoing interface list: Null
```

```
(*, 224.0.1.40), 00:07:03/00:02:59, RP 1.1.1.1, flags: SJCL
```

```
Incoming interface: Null, RPF nbr 0.0.0.0
```

Outgoing interface list:

Loopback1, Forward/Sparse, 00:07:01/00:02:59

```
ASR1002-X-1#sh ip mroute vrf receiver
```

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,

N - Received BGP Shared-Tree Prune, n - BGP C-Mroute suppressed,

Q - Received BGP S-A Route, q - Sent BGP S-A Route,

V - RD & Vector, v - Vector, p - PIM Joins on route,

x - VxLAN group, c - PFP-SA cache created entry,

\* - determined by Assert, # - iif-starg configured on rpf intf,

e - encap-helper tunnel flag

Outgoing interface flags: H - Hardware switched, A - Assert winner, p - PIM Join

Timers: Uptime/Expires

Interface state: Interface, Next-Hop or VCD, State/Mode

```
(*, 239.1.1.1), 00:03:23/00:02:44, RP 1.1.1.1, flags: SJC
```

Incoming interface: Null, RPF nbr 0.0.0.0

Outgoing interface list:

GigabitEthernet0/0/1, Forward/Sparse, 00:03:23/00:02:44

Om dit te repareren, moet u een VRF-selectie uitvoeren om de PDF-toets te doorlopen.

```
ip access-list standard 1
```

```
permit 239.1.1.1 log
```

```
exit
```

```
ip multicast vrf receiver rpf select vrf source group-list 1
```

## Verifiëren

Gebruik dit gedeelte om te bevestigen dat de configuratie correct werkt.

Nadat u de eerder genoemde stappen hebt uitgevoerd, kunt u de multicast-feed op de ontvanger zien.

```
Receiver#show flow monitor test cache format table
```

Cache type: Normal (Platform cache)

Cache size: 200000

Current entries: 1

High Watermark: 3

Flows added: 50

Flows aged: 49

- Inactive timeout ( 15 secs) 49

```
IPV4 SRC ADDR IPV4 DST ADDR TRNS SRC PORT TRNS DST PORT INTF INPUT FLOW SAMPLER ID IP TOS IP
PROT ip src as ip dst as ipv4 next hop addr ipv4 src mask ipv4 dst mask tcp flags intf output
bytes pkts time first time last
```

```
=====
=====
=====
10.1.1.1 239.1.1.1 57314 1967 Gi0/0/3 0 0x00 17 0 0 0.0.0.0 /0 /0 0x00 Null 80 1 11:09:08.082
11:09:08.082
```

Packet Capture op de ontvanger.

```
> Frame 1: 94 bytes on wire (752 bits), 94 bytes captured (752 bits)
> Ethernet II, Src: Cisco_93:70:01 (00:a6:ca:93:70:01), Dst: IPv4mcast_01:01:01 (01:00:5e:01:01:01)
v Internet Protocol Version 4, Src: 10.1.1.1, Dst: 239.1.1.1
  0100 .... = Version: 4
  .... 0101 = Header Length: 20 bytes (5)
  > Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
  Total Length: 80
  Identification: 0x0000 (0)
  > Flags: 0x00
  Fragment Offset: 0
  Time to Live: 254
  Protocol: UDP (17)
  Header Checksum: 0xc198 [validation disabled]
  [Header checksum status: Unverified]
  Source Address: 10.1.1.1
  Destination Address: 239.1.1.1
  > User Datagram Protocol, Src Port: 54527, Dst Port: 1967
  > Data (52 bytes)
```

(S, G) ingangssignaal wordt gevormd in de VRF-ontvanger.

```
ASR1002-1#show ip mroute vrf receiver 239.1.1.1
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,
N - Received BGP Shared-Tree Prune, n - BGP C-Mroute suppressed,
Q - Received BGP S-A Route, q - Sent BGP S-A Route, V - RD & Vector, v - Vector,
p - PIM Joins on route, x - VxLAN group, c - PFP-SA cache created entry,
* - determined by Assert Outgoing interface flags: H - Hardware switched,
A - Assert winner, p - PIM Join
Timers: Uptime/Expires
Interface state:
Interface, Next-Hop or VCD, State/Mode

(*, 239.1.1.1), 00:21:36/stopped, RP 1.1.1.1, flags: SJC
Incoming interface: Loopback1, RPF nbr 1.1.1.1, using vrf source
Outgoing interface list:
GigabitEthernet0/0/1, Forward/Sparse, 00:21:36/00:02:43
```

(10.1.1.1, 239.1.1.1), 00:03:55/stoppeD, flags: T  
Incoming interface: GigabitEthernet0/0/0, RPF nbr 0.0.0.0, using vrf source  
Outgoing interface list:  
GigabitEthernet0/0/1, Forward/Sparse, 00:03:55/00:02:43

ASR1002-1#show ip mroute vrf source 239.1.1.1

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,  
N - Received BGP Shared-Tree Prune, n - BGP C-Mroute suppressed,  
Q - Received BGP S-A Route, q - Sent BGP S-A Route,  
V - RD & Vector, v - Vector, p - PIM Joins on route,  
x - VxLAN group, c - PFP-SA cache created entry,  
\* - determined by Assert

Outgoing interface flags: H - Hardware switched, A - Assert winner, p - PIM Join

Timers: Uptime/Expires

Interface state: Interface, Next-Hop or VCD, State/Mode

(\* , 239.1.1.1), 00:22:36/stoppeD, RP 1.1.1.1, flags: SJCFE

Incoming interface: Null, RPF nbr 0.0.0.0

Outgoing interface list: Null

Extranet receivers in vrf receiver:

(\* , 239.1.1.1), 00:21:54/stoppeD, RP 1.1.1.1, OIF count: 1, flags: SJC

(10.1.1.1, 239.1.1.1), 00:04:14/00:02:55, flags: FTE

Incoming interface: GigabitEthernet0/0/0, RPF nbr 0.0.0.0

Outgoing interface list: Null

Extranet receivers in vrf receiver:

(10.1.1.1, 239.1.1.1), 00:04:14/stoppeD, OIF count: 1, flags: T

ASR1002-1#show ip mfib vrf receiver 239.1.1.1

Entry Flags: C - Directly Connected, S - Signal, IA - Inherit A flag,

ET - Data Rate Exceeds Threshold, K - Keepalive

DDE - Data Driven Event, HW - Hardware Installed

ME - MoFRR ECMP entry, MNE - MoFRR Non-ECMP entry, MP - MFIB

MoFRR Primary, RP - MRIB MoFRR Primary, P - MoFRR Primary

MS - MoFRR Entry in Sync, MC - MoFRR entry in MoFRR Client.

I/O Item Flags: IC - Internal Copy, NP - Not platform switched,

NS - Negate Signalling, SP - Signal Present,

A - Accept, F - Forward, RA - MRIB Accept, RF - MRIB Forward,

MA - MFIB Accept, A2 - Accept backup,

RA2 - MRIB Accept backup, MA2 - MFIB Accept backup

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

Other counts: Total/RPF failed/Other drops

I/O Item Counts: HW Pkt Count/FS Pkt Count/PS Pkt Count Egress Rate in pps

VRF receiver

(\* ,239.1.1.1) Flags: C HW

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

HW Forwarding: 0/0/0/0, Other: 1/1/0

GigabitEthernet0/0/1 Flags: NS

(10.1.1.1,239.1.1.1) Flags: HW

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

HW Forwarding: 15/0/94/0, Other: 0/0/0

GigabitEthernet0/0/1 Flags: NS

Ook is er geen eenastentree in de VRF-ontvanger RIB voor RP en bron IP.

```
ASR1002-1#show ip route vrf receiver 1.1.1.1
Routing Table: receiver % Network not in table
```

```
ASR1002-1#show ip route vrf receiver 10.1.1.1
Routing Table: receiver % Network not in table
```

RPF laat zien dat dit mislukt is, maar het multicast verkeer wordt verzonden.

```
ASR1002-1#show ip rpf vrf receiver 1.1.1.1
failed, no route exists
ASR1002-1#show ip rpf vrf receiver 10.1.1.1
failed, no route exists
```

Er is nog een andere manier om dit te bereiken, namelijk:

```
ip mroute vrf receiver 10.1.1.0 255.255.255.0 fallback-lookup vrf source
```

```
ip mroute vrf receiver 1.1.1.1 255.255.255.255 fallback-lookup vrf source
```

Hierdoor wordt de controle van het PDF-bestand succesvol.

```
ASR1002-1#show ip rpf vrf receiver 1.1.1.1
RPF information for ? (1.1.1.1)
RPF interface: Loopback1
RPF neighbor: ? (1.1.1.1) - directly connected
RPF route/mask: 1.1.1.1/32
RPF type: multicast (connected)
Doing distance-preferred lookups across tables
Using Extranet RPF Rule: Static Fallback Lookup, RPF VRF: source
RPF topology: ipv4 multicast base
```

```
ASR1002-1#show ip rpf vrf receiver 10.1.1.1
RPF information for ? (10.1.1.1)
RPF interface: GigabitEthernet0/0/0
RPF neighbor: ? (10.1.1.1) - directly connected
RPF route/mask: 10.1.1.0/24
RPF type: multicast (connected)
Doing distance-preferred lookups across tables
Using Extranet RPF Rule: Static Fallback Lookup, RPF VRF: source
RPF topology: ipv4 multicast base
```

U kunt echter gebruikmaken van de **optie RPF** of van de opdracht **voor** back-up, beide voldoen uiteindelijk aan ons doel.

## Problemen oplossen

Er is momenteel geen specifieke troubleshooting-informatie beschikbaar voor deze configuratie.