

EVPN/VXLAN configureren en controleren in een multisite omgeving

Inhoud

[Inleiding](#)

[Voorwaarden](#)

[Vereisten](#)

[Gebruikte componenten](#)

[Achtergrondinformatie](#)

[Hoe is het nuttig om meerdere sites te bereiken?](#)

[Overige voordelen](#)

[Ondersteunde onderwerpen](#)

[Topologie](#)

[Configureren](#)

[Verifiëren](#)

[Problemen oplossen](#)

[Gerelateerde informatie](#)

Inleiding

Dit document beschrijft hoe u het apparaat kunt configureren en controleren in Ethernet VPN/Virtual Extensible LAN (EVPN/VxLAN) Multisite Environment met Cisco Nexus 9000 Series-switches.

Voorwaarden

Vereisten

Cisco raadt kennis van de volgende onderwerpen aan:

- Multiprotocol Label Switching (MPLS) Layer 3 VPN
- Multiprotocol-Border Gateway Protocol (MP-BGP)
- EVPN

Gebruikte componenten

De informatie in dit document is gebaseerd op de volgende software- en hardware-versies:

blad1#	N5K-C5672UP-16G-SUP	stelsysteem: versie 7.3(0)N1(1)
blad2#	N9K-C92160YC-X	NXOS: versie 9.2(3)
ruggegraat1#	N9K-C9396PX	NXOS: versie 9.2(3)
wervelkolom2#	N9K-C9396PX	NXOS: versie 9.2(3)
MultisiteBG1#	N9K-C93108TC-EX	NXOS: versie 9.2(3)
MultisiteBG2#	N9K-C93108TC-FX	NXOS: versie 9.3(1)

vermenigvuldigingsgetal 2#	N9K-C9372TX-E	NXOS: versie 9.2(3)
Multistreep1#	N9K-C92160YC-X	NXOS: versie 9.2(3)
MultisteLeaf1#	N9K-C93108TC-EX	NXOS: versie 7.0(3)I7(5)

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.

Verwante producten

Minimale software- en hardwarevereisten EVPN-grenstoevoerslang

Item	Vereisten
Cisco Nexus-hardware	<ul style="list-style-type: none"> • Cisco Nexus 9300 EX platform • Cisco Nexus 9300 FX platform • Cisco Nexus 9332C platform • Cisco Nexus 9364C platform • Cisco Nexus 9500 platform met X9700-EX lijnkaart • Cisco Nexus 9500 platform met X9700-FX lijnkaart
Cisco NX-OS-software	Cisco NX-OS software release 7.0(3)I7(1) of hoger

De hardware- en softwarevereisten voor de Site-Interne knooppunten van een VXLAN BGP EVPN-site blijven dezelfde als die zonder EVPN Multi-Site BGW

Achtergrondinformatie

Het datacenter is een resource pool die bestaat uit computationele kracht, opslag en benodigde toepassingen ter ondersteuning van een willekeurig bedrijfsklimaat. Een goede planning van het ontwerp van de datacenterinfrastructuur is van vitaal belang. Bekijk nu wat de cruciale vereisten zijn en hoe ze overkomen. Moderne IT-infrastructuren en datacenterimplementaties zijn nodig om te kunnen beschikken over HA, in staat om sneller te kunnen schalen, met hoge prestaties, altijd op.

Een paar onderzochte vitale vereisten in DC Design/Architecture space:

- Poortdichtheid wordt verbeterd door FEX.
- De computing-capaciteit wordt verbeterd door middel van hardwarevirtualisatie (UCS).
- De bandbreedte van de toegangslaag wordt verbeterd door FI, Port-Channel.
- Redundantie van Chassis-Level wordt verbeterd door vPC.
- SDN-weefsel wordt verbeterd door ACI - automatische underlay & Overlay in een stof.
- Snelle implementatie en ondersteuning van nieuwe services worden verbeterd door DCNM.

- De bandbreedte-eis voor toepassingen op lange afstand wordt verbeterd door de dienst donkere vezel of golflengte.
- Bovenal zijn geografische redundantie en schalen belangrijke eigenschappen voor het verwijderen/opschalen van een datacenter-omgeving, helpt Multisite VxLAN/EVPN ons om betere DCI-oplossingen te hebben.

Hoe is het nuttig om meerdere sites te bereiken?

Externe connectiviteit omvat de verbinding van het datacentrum met de rest van het netwerk: op het internet, het WAN of de campus. Alle opties die voor externe connectiviteit worden geboden zijn bewust van meerdere huurders en richten zich op Layer 3 transport naar de externe netwerkdomeinen.

- EVPN is een next-generation all-in-one VPN-oplossing.
- Het doet niet alleen het werk van veel andere VPN-technologieën, maar het is ook beter.
- Integratie met verouderde netwerken.
- Selectieve advertentie/uitbreiding: Lijn de enige L2 - Specifieke VLAN's/Subnetten uit die met Type-2 routes kunnen worden uitgebreid. Lijn de enige L3 - Specifieke L3 domeinen uit met type-5 routes.
- Auto-ontdekking van redundantie-groep met gebruik van type 4-routes.
- Aliasing, massale intrekking van adressen, SH/AA MH-indicatie via type 1-routes.
- Auto-ontdekking van multicast tunnelendpoints en MCAST-tunneltype met behulp van Type 3-routes.

Overige voordelen

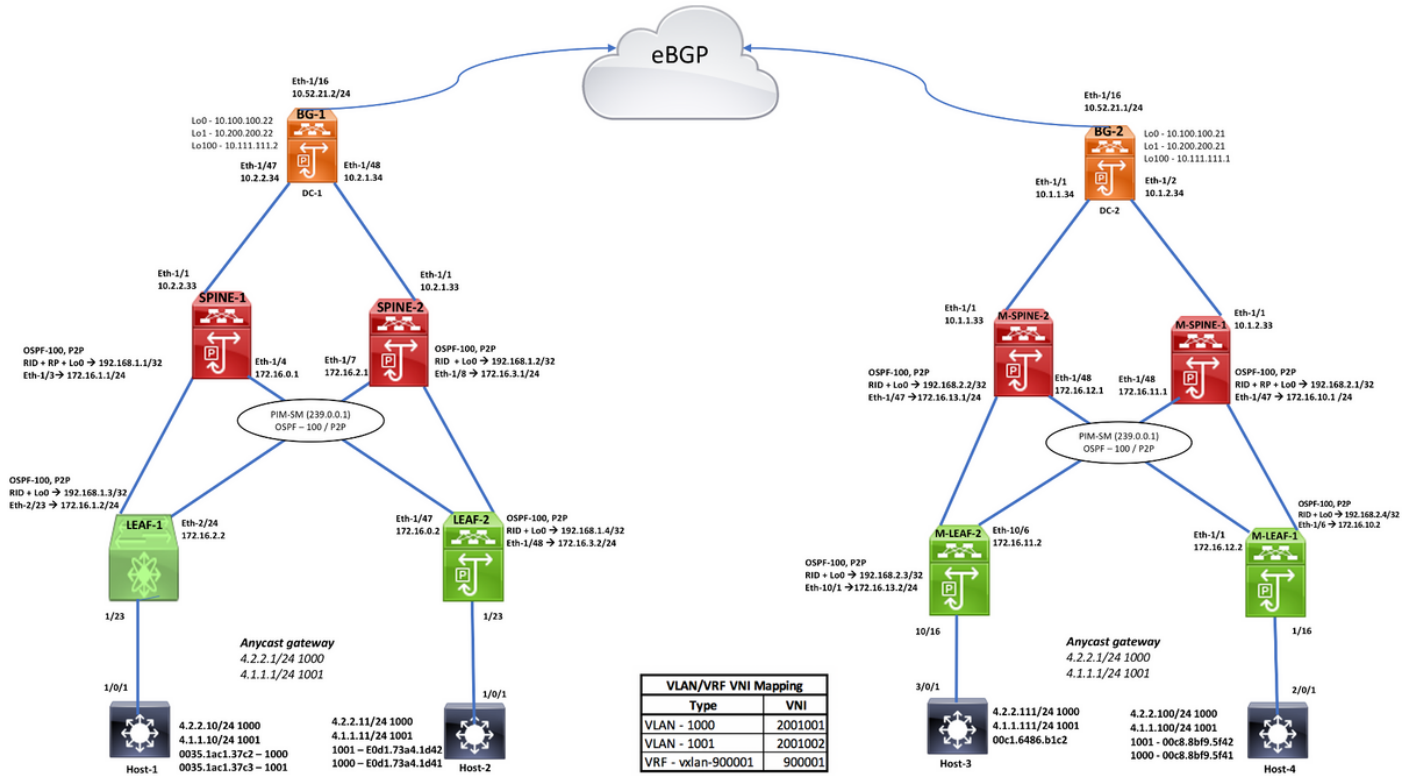
- Werklastverdeling over datacenters en clouds.
- Proactieve respons op verstoringen - vermindert het risico van naderende rampen, zoals orkanen, overstromingen, enz.,
- Onderhoud van datacenters en migratie - geplande gebeurtenissen die over een langere periode zijn gepland, integratie met verouderde netwerken.
- Back-up en noodherstel

Ondersteunde onderwerpen

- BGW-to-Cloud-model
- BGW's tussen Spine en Super-Spinemodel
- BGW's op spinemodel

- BGW's Terug-naar-Terug model

Topologie



Configureren

```

DC-1, LEAF-1 CONFIGURATION

Enable Features
install feature-set fabric
feature-set fabric
hostname leaf1
feature fabric forwarding
nv overlay evpn
feature ospf
feature bgp
feature pim
feature interface-vlan
feature fabric access
feature nv overlay
feature vn-segment-vlan-based

Enabling Store-and-Forward Switching
switching-mode store-forward

Interface towards HOST
interface Ethernet1/23
switchport mode trunk
switchport trunk allowed vlan 1000-1001
speed 1000

VLAN-VNI Mapping
vlan 1
vlan 101
vn-segment 900001
vlan 1000
vn-segment 2001002
vlan 1001
vn-segment 2001001

VLAN Config
interface Vlan101
no shutdown
vrf member vxlan-900001
ip forward

interface Vlan1000
no shutdown
mtu 9216
vrf member vxlan-900001
ip address 4.2.2.1/24
ipv6 address 4:2:0::1/64
fabric forwarding mode anycast-gateway

interface Vlan1001
no shutdown
mtu 9216
vrf member vxlan-900001
ip address 4.1.1.1/24
ipv6 address 4:1:0::1/64
fabric forwarding mode anycast-gateway

Anycast GW mapping
fabric forwarding anycast-gateway-mac 0000.2222.3333

Static RP Config
ip pim rp-address 192.168.1.1 group-list 224.0.0.0/4
ip pim rp-address 192.168.1.2 group-list 224.0.0.0/4
ip pim ssm range 232.0.0.0/8
ip multicast multipath none

VTEP Config
interface nve1
no shutdown
source-interface loopback0
host-reachability protocol bgp
member vni 900001 associate-vrf
member vni 2001001
suppress-arp
mcast-group 239.0.0.1
member vni 2001002
suppress-arp
mcast-group 239.0.0.1

LEAF to SPINE interfaces/OSPF Config
interface Ethernet2/23
no switchport
ip address 172.16.1.2/24
ip ospf network point-to-point
ip router ospf 100 area 0.0.0.0
ip pim sparse-mode

interface Ethernet2/24
no switchport
ip address 172.16.2.2/24
ip ospf network point-to-point
ip router ospf 100 area 0.0.0.0
ip pim sparse-mode

interface loopback0
ip address 192.168.1.3/24
ip router ospf 100 area 0.0.0.0
ip pim sparse-mode

router ospf 100
router-id 192.168.1.3

BGP Config
router bgp 200
router-id 192.168.1.3
address-family ipv4 unicast
address-family l2vpn evpn
neighbor 192.168.1.1
remote-as 200
update-source loopback0
address-family ipv4 unicast
address-family l2vpn evpn
send-community extended
neighbor 192.168.1.2
remote-as 200
update-source loopback0
address-family ipv4 unicast
address-family l2vpn evpn
send-community extended

evpn
vni 2001001 l2 <<<<<<< L2VNI Config
rd auto
route-target import auto
route-target export auto
vni 2001002 l2
rd auto
route-target import auto
route-target export auto

vrf context vxlan-900001
vni 900001 <<<<<<< L3VNI Config
rd auto
address-family ipv4 unicast
route-target both auto
route-target both auto evpn
address-family ipv6 unicast
route-target both auto
route-target both auto evpn
  
```

DC-1 SPINE -1 Configuration		
Enabling Features, RP Config	OSPF Configuration	BGP/EVPN Configuration
hostname spine1 boot nxos bootflash:/nxos.9.2.3.bin nv overlay evpn feature ospf feature bgp feature pim feature interface-vlan feature vn-segment-vlan-based feature nv overlay ip pim rp-address 192.168.1.1 group-list 224.0.0.0/4	interface Ethernet1/1 no switchport ip address 10.2.2.33/30 ip ospf network point-to-point ip router ospf 100 area 0.0.0.0 ip pim sparse-mode no shutdown interface Ethernet1/3 no switchport ip address 172.16.1.1/24 ip ospf network point-to-point ip router ospf 100 area 0.0.0.0 ip pim sparse-mode no shutdown interface Ethernet1/4 no switchport ip address 172.16.0.1/24 ip ospf network point-to-point ip router ospf 100 area 0.0.0.0 ip pim sparse-mode no shutdown interface loopback0 ip address 192.168.1.1/32 ip router ospf 100 area 0.0.0.0 ip pim sparse-mode router ospf 100 router-id 192.168.1.1	router bgp 200 router-id 192.168.1.1 address-family ipv4 unicast address-family l2vpn evpn neighbor 10.100.100.22 remote-as 200 update-source loopback0 address-family ipv4 unicast address-family l2vpn evpn send-community send-community extended route-reflector-client neighbor 192.168.1.3 remote-as 200 update-source loopback0 address-family ipv4 unicast send-community extended route-reflector-client address-family l2vpn evpn send-community extended route-reflector-client neighbor 192.168.1.4 remote-as 200 update-source loopback0 address-family ipv4 unicast send-community extended route-reflector-client address-family l2vpn evpn send-community extended route-reflector-client

DC-1 Border Gateway-1 Configuration			
Enabling Features, RouteMap, B-G Config	VLAN,VNI,VTEP Config	OSPF Configuration	BGP/EVPN Configuration
hostname MultisiteBG1 boot nxos bootflash:/nxos.9.2.3.bin nv overlay evpn feature ospf feature bgp feature pim feature fabric forwarding feature interface-vlan feature vn-segment-vlan-based feature lldp feature nv overlay evpn multisite border-gateway 200 delay-restore time 300 route-map RMAP-REDIST-DIRECT permit 10 match tag 54321	VLAN-VNI Mapping vlan 101 vn-segment 900001 vlan 1000 vn-segment 2001002 vlan 1001 vn-segment 2001001 interface Vlan101 no shutdown mtu 9192 vrf member vxlan-900001 ip forward VTEP Config interface nve1 no shutdown host-reachability protocol bgp source-interface loopback1 multisite border-gateway interface loopback100 member vni 900001 associate-vrf member vni 2001001 multisite ingress-replication ingress-replication protocol bgp member vni 2001002 multisite ingress-replication ingress-replication protocol bgp Core-Facing Interface Config interface Ethernet1/16 mtu 9216 ip address 10.52.21.2/30 tag 54321 evpn multisite dci-tracking no shutdown	interface Ethernet1/47 ip address 10.2.2.34/30 ip ospf network point-to-point ip router ospf 100 area 0.0.0.0 ip pim sparse-mode evpn multisite fabric-tracking no shutdown interface Ethernet1/48 ip address 10.2.1.34/30 ip ospf network point-to-point ip router ospf 100 area 0.0.0.0 ip pim sparse-mode evpn multisite fabric-tracking no shutdown interface loopback0 ip address 10.100.100.22/32 tag 54321 ip router ospf 100 area 0.0.0.0 ip pim sparse-mode interface loopback1 ip address 10.200.200.22/32 tag 54321 ip router ospf 100 area 0.0.0.0 ip pim sparse-mode interface loopback100 ip address 10.111.111.2/32 tag 54321 ip router ospf 100 area 0.0.0.0 router ospf 100 router-id 10.100.100.22	router bgp 200 router-id 10.100.100.22 address-family ipv4 unicast redistribute direct route-map RMAP-REDIST-DIRECT neighbor 10.52.21.1 remote-as 100 update-source Ethernet1/16 address-family ipv4 unicast neighbor 10.100.100.21 remote-as 100 update-source loopback0 ebgp-multihop 5 peer-type fabric-external address-family l2vpn evpn send-community send-community extended rewrite-evpn-rt-asn neighbor 192.168.1.1 remote-as 200 update-source loopback0 address-family l2vpn evpn send-community send-community extended neighbor 192.168.1.2 remote-as 200 update-source loopback0 address-family l2vpn evpn send-community send-community extended evpn vni 2001001 l2 rd auto route-target import auto route-target export auto vni 2001002 l2 rd auto route-target import auto route-target export auto vrf context vxlan-900001 rd auto address-family ipv4 unicast route-target both auto route-target both auto evpn address-family ipv6 unicast route-target both auto route-target both auto evpn

DC-2 Border Gateway-2 Configuration			
Enabling Features, RouteMap, B-G Config	VLAN,VNI,VTEP Config	OSPF Configuration	BGP/EVPN Configuration
<pre>boot nxos bootflash:/nxos.9.3.0.221.bin hostname MultisiteBG2 nv overlay evpn feature ospf feature bgp feature pim feature fabric forwarding feature interface-vlan feature vn-segment-vlan-based feature lldp feature nv overlay evpn multisite border-gateway 100 delay-restore time 300 vlan 1,101,1000-1001 vlan 101 vn-segment 900001 vlan 1000 vn-segment 2001002 vlan 1001 vn-segment 2001001 route-map RMAP-REDIST-DIRECT permit 10 match tag 54321 interface Ethernet1/16 mtu 9216 ip address 10.52.21.1/30 tag 54321 evpn multisite dci-tracking no shutdown</pre>	<pre>interface Vlan101 no shutdown vrf member vxlan-900001 ip forward interface vne1 no shutdown host-reachability protocol bgp source-interface loopback1 multisite border-gateway interface loopback100 member vni 900001 associate-vrf member vni 2001001 multisite ingress-replication ingress-replication protocol bgp member vni 2001002 multisite ingress-replication ingress-replication protocol bgp vrf context vxlan-900001 vni 900001 rd auto address-family ipv4 unicast route-target both auto route-target both auto evpn address-family ipv6 unicast route-target both auto route-target both auto evpn</pre>	<pre>interface Ethernet1/1 description SITE-INTERNAL INTERFACE mtu 9216 medium p2p ip address 10.1.1.34/30 ip ospf network point-to-point ip router ospf 100 area 0.0.0.0 ip pim sparse-mode evpn multisite fabric-tracking no shutdown interface Ethernet1/2 description SITE-INTERNAL INTERFACE mtu 9216 medium p2p ip address 10.1.2.34/30 ip ospf network point-to-point ip router ospf 100 area 0.0.0.0 ip pim sparse-mode evpn multisite fabric-tracking no shutdown interface loopback0 description RID AND BGP PEERING ip address 10.100.100.21/32 tag 54321 ip router ospf 100 area 0.0.0.0 ip pim sparse-mode interface loopback1 description NVE INTERFACE (PIP VTEP) ip address 10.200.200.21/32 tag 54321 ip router ospf 100 area 0.0.0.0 ip pim sparse-mode interface loopback100 description MULTI-SITE INTERFACE (VIP VTEP) ip address 10.111.111.1/32 tag 54321 ip router ospf 100 area 0.0.0.0 router ospf 100 router-id 10.100.100.21</pre>	<pre>router bgp 100 router-id 10.100.100.21 address-family ipv4 unicast redistribute direct route-map RMAP-REDIST-DIRECT maximum-paths 4 neighbor 10.52.21.2 remote-as 200 update-source Ethernet1/16 address-family ipv4 unicast neighbor 10.100.100.22 remote-as 200 update-source loopback0 ebgp-multihop 5 peer-type fabric-external address-family I2vpn evpn send-community send-community extended rewrite-evpn-rt-asn neighbor 192.168.2.1 remote-as 100 update-source loopback0 address-family I2vpn evpn send-community send-community extended neighbor 192.168.2.2 remote-as 100 update-source loopback0 address-family I2vpn evpn send-community send-community extended evpn vni 2001001 I2 rd auto route-target import auto route-target export auto vni 2001002 I2 rd auto route-target import auto route-target export auto</pre>

DC-2 SPINE -1 Configuration		
Enabling Features, RP Config	OSPF Configuration	BGP/EVPN Configuration
<pre>boot nxos bootflash:/nxos.9.2.3.bin hostname Multistespine1 nv overlay evpn feature ospf feature bgp feature pim feature interface-vlan feature vn-segment-vlan-based feature nv overlay ip pim rp-address 192.168.2.1 group-list 224.0.0.0/4</pre>	<pre>interface Ethernet1/1 mtu 9216 ip address 10.1.2.33/30 ip ospf network point-to-point ip router ospf 100 area 0.0.0.0 ip pim sparse-mode no shutdown interface Ethernet1/47 ip address 172.16.10.1/24 ip ospf network point-to-point ip router ospf 100 area 0.0.0.0 ip pim sparse-mode no shutdown interface Ethernet1/48 ip address 172.16.11.1/24 ip ospf network point-to-point ip router ospf 100 area 0.0.0.0 ip pim sparse-mode no shutdown interface loopback0 ip address 192.168.2.1/32 ip router ospf 100 area 0.0.0.0 ip pim sparse-mode router ospf 100 router-id 192.168.2.1</pre>	<pre>router bgp 100 router-id 192.168.2.1 address-family ipv4 unicast address-family I2vpn evpn neighbor 10.100.100.21 remote-as 100 update-source loopback0 address-family I2vpn evpn send-community send-community extended route-reflector-client neighbor 192.168.2.3 remote-as 100 update-source loopback0 address-family ipv4 unicast send-community extended route-reflector-client address-family I2vpn evpn send-community extended route-reflector-client neighbor 192.168.2.4 remote-as 100 update-source loopback0 address-family ipv4 unicast send-community extended route-reflector-client address-family I2vpn evpn send-community extended route-reflector-client</pre>

DC-2, LEAF -1 Configuration

Enabling Features, RP, VTEP Config	VLAN, VNI Configuration	OSPF Configuration	BGP/EVPN Configuration
<pre>boot nxos bootflash/nxos.7.0.3.17.5.bin hostname MultisteLeaf1 nv overlay evpn feature ospf feature bgp feature pim feature fabric forwarding feature interface-vlan feature vn-segment-vlan-based feature lldp feature nv overlay fabric forwarding anycast-gateway-mac 0000.2222.3333 ip pim rp-address 192.168.2.1 group-list 224.0.0.0/4 interface nve1 no shutdown host-reachability-protocol bgp source-interface loopback0 member vni 900001 associate-vrf member vni 2001001 suppress-arp mcast-group 239.0.0.1 member vni 2001002 suppress-arp mcast-group 239.0.0.1</pre>	<pre>vlan 101 vn-segment 900001 vlan 1000 vn-segment 2001002 vlan 1001 vn-segment 2001001 interface Vlan101 no shutdown vrf member vxlan-900001 ip forward interface Vlan1000 no shutdown vrf member vxlan-900001 ip address 4.2.2.1/24 ipv6 address 4:2:0:1::1/64 fabric forwarding mode anycast-gateway interface Vlan1001 no shutdown vrf member vxlan-900001 ip address 4.1.1.1/24 ipv6 address 4:1:0:1::1/64 fabric forwarding mode anycast-gateway vrf context vxlan-900001 vni 900001 rd auto address-family ipv4 unicast route-target both auto route-target both auto evpn address-family ipv6 unicast route-target both auto route-target both auto evpn</pre>	<pre>interface Ethernet1/1 ip address 172.16.12.2/24 ip ospf network point-to-point ip router ospf 100 area 0.0.0.0 ip pim sparse-mode no shutdown interface Ethernet1/6 ip address 172.16.10.2/24 ip ospf network point-to-point ip router ospf 100 area 0.0.0.0 ip pim sparse-mode no shutdown interface Ethernet1/16 switchport switchport mode trunk no shutdown interface loopback0 ip address 192.168.2.4/32 ip router ospf 100 area 0.0.0.0 ip pim sparse-mode router ospf 100 router-id 192.168.2.4</pre>	<pre>router bgp 100 router-id 192.168.2.4 address-family ipv4 unicast address-family l2vpn evpn neighbor 192.168.2.1 remote-as 100 update-source loopback0 address-family ipv4 unicast address-family l2vpn evpn send-community extended neighbor 192.168.2.2 remote-as 100 update-source loopback0 address-family ipv4 unicast address-family l2vpn evpn send-community extended evpn vni 2001001 l2 rd auto route-target import auto route-target export auto vni 2001002 l2 rd auto route-target import auto route-target export auto</pre>

Verifiëren

LEAF-1 VERIFICATION

<pre>leaf1# show cdp neighbors Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route- S - Switch, H - Host, I - IGMP, r - Repeater, V - VoIP-Phone, D - Remotely-Managed-Device, s - Supports-STP-Dispute Device-ID Local Intrfce Hldtme Capability Platform MX066-H-01-SW.cisco.com mgmt0 142 S I WS-C2960X-48T ToLeaf1 Eth1/23 163 S I WS-C3750X-248 spine1(SAL1948U4Y1) Eth2/23 156 R S s N9K-C9396PX spine2(SAL1949UELD) Eth2/24 152 R S s N9K-C9396PX leaf1# leaf1# sh ip int brief exclude down IP Interface Status for VRF "default"(1) Interface IP Address Interface Status Lo0 192.168.1.3 protocol-up/link-up/admin-up Eth2/23 172.16.1.2 protocol-up/link-up/admin-up Eth2/24 172.16.2.2 protocol-up/link-up/admin-up leaf1# leaf1# sh nve vrf VRF-Name VNI Interface Gateway-MAC ----- vxlan-900001 900001 nve1 00de.fb01.9fc1 leaf1# sh nve vxlan-params VxLAN Dest. UDP Port: 4789</pre>	<pre>leaf1# show ip pim rp PIM RP Status Information for VRF "default" BSR disabled Auto-RP disabled BSR RP Candidate policy: None BSR RP policy: None Auto-RP Announce policy: None Auto-RP Discovery policy: None RP: 192.168.1.1, (0), uptime: 3w1d priority: 0, RP-source: (local), group ranges: 224.0.0.0/4 RP: 192.168.1.2, (0), uptime: 3w1d priority: 0, RP-source: (local), group ranges: 224.0.0.0/4 leaf1# leaf1# sh nve interface Interface: nve1, State: Up, encapsulation: VXLAN VPC Capability: VPC-VIP-Only [not-notified] Local Router MAC: 00de.fb01.9fc1 Host Learning Mode: Control-Plane Source-Interface: loopback0 (primary: 192.168.1.3, secondary: 0. leaf1#</pre>	<pre>leaf1# sh nve peers Interface Peer-IP State LearnType Uptime Router-Mac ----- nve1 10.111.111.2 Up CP 3w1d 0200.0a6f.6f02 nve1 10.200.200.22 Up CP 3w1d n/a nve1 192.168.1.4 Up CP 3w1d 7079.b33e.8123 leaf1# leaf1# show nve vni Codes: CP - Control Plane DP - Data Plane UC - Unconfigured SA - Suppress ARP SU - Suppress Unknown Unicast Interface VNI Multicast-group State Mode Type [BD/VRF] Flags ----- nve1 900001 n/a Up CP L3 [vxlan-900001] nve1 2001001 239.0.0.1 Up CP L2 [1001] SA nve1 2001002 239.0.0.1 Up CP L2 [1000] SA leaf1# leaf1# sh vrf vxlan-900001 DETAIL VRF-Name: vxlan-900001, VRF-ID: 3, State: Up VFNID: unknown RD: 192.168.1.3:3 VNI: 900001, State: Up Max Routes: 0 Mid-Threshold: 0 Table-ID: 0x80000003, AF: IPv6, Fwd-ID: 0x80000003, State: Up Table-ID: 0x00000003, AF: IPv4, Fwd-ID: 0x00000003, State: Up</pre>
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Destination Prefix is learnt on host-connected LEAF 192.168.2.4

```

MultisiteLeaf1# sh ip route 4.2.2.100 vrf vxlan-900001
IP Route Table for VRF "vxlan-900001"
*** denotes best ucast, next-hop
*** denotes best mcast next-hop
'[x/y]' denotes [preference/metric]
'%<string>' in via output denotes VRF <string>

4.2.2.100/32, ubest/mbest: 1/0, attached
    *via 4.2.2.100, Vlan1000, [190/0], 4w2d, hnm

MultisiteLeaf1# sh bgp l2vpn evpn summary
BGP summary information for VRF default, address family L2VPN EVPN
BGP router identifier 192.168.2.4, local AS number 100
BGP table version is 56, L2VPN EVPN config peers 2, capable peers 2
36 network entries and 50 paths using 7968 bytes of memory
BGP attribute entries (26/4160), BGP AS path entries (1/6)
BGP community entries (0/0), BGP clusterlist entries (2/8)

Neighbor      V  AS  MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down  State/PfxRcd
192.168.2.1  4  100  44038   44029    56    0    0    4w2d 14
192.168.2.2  4  100  44037   44030    56    0    0    4w2d 14

MultisiteLeaf1# sh nve peers
Interface Peer-IP      State LearnType Uptime      Router-Mac
-----
nve1  10.111.111.1         Up        4w2d      0200.0a6f.6f01
nve1  10.200.200.21       Up        CP         4w2d      n/a

MultisiteLeaf1# show nve vni
Codes: CP - Control Plane      DP - Data Plane
       UC - Unconfigured       SA - Suppress ARP
       SU - Suppress Unknown Unicast
       XConn - Crossconnect
       MS-IR - Multisite Ingress Replication

Interface VNI      Multicast-group  State Mode Type [RD/VRF]  Flags
-----
nve1  900001          n/a              Up    CP  L3 [vxlan-900001]
nve1  2001001        239.0.0.1       Up    CP  L2 [10001]    SA
nve1  2001002        239.0.0.1       Up    CP  L2 [1000]     SA

MultisiteLeaf1#
    
```

Host-Connected Leaf is advertising this prefix to its SPINE (192.168.2.1)

```

MultisiteLeaf1# sh bgp l2vpn evpn neighbors 192.168.2.1 advertised-routes
Peer 192.168.2.1 routes for address family L2VPN EVPN:
BGP table version is 56, Local Router ID is 192.168.2.4
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid, >-best
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup

Network      Next Hop      Metric  LocPrf  Weight Path
-----
Route Distinguisher: 10.100.100.21:33767
Route Distinguisher: 10.100.100.21:33768
Route Distinguisher: 10.100.100.22:33767
Route Distinguisher: 10.100.100.22:33768
Route Distinguisher: 10.100.100.21:33767
Route Distinguisher: 10.100.100.22:33767
Route Distinguisher: 10.100.100.22:33768
Route Distinguisher: 192.168.1.3:33767
Route Distinguisher: 192.168.1.3:33768
Route Distinguisher: 192.168.1.4:33767
Route Distinguisher: 192.168.1.4:33768

Route Distinguisher: 192.168.2.4:33767 (L2VNI 2001002)
*>[2]:[0]:[0]:[48]:[00c8.8bf9.5f41]:[0]:[0.0.0.0]/216
    192.168.2.4      100      32768  i
*>[2]:[0]:[0]:[48]:[00c8.8bf9.5f41]:[32]:[4.2.2.100]/272
    192.168.2.4      100      32768  i

Route Distinguisher: 192.168.2.4:33768 (L2VNI 2001001)
*>[2]:[0]:[0]:[48]:[00c8.8bf9.5f42]:[0]:[0.0.0.0]/216
    192.168.2.4      100      32768  i
*>[2]:[0]:[0]:[48]:[00c8.8bf9.5f42]:[32]:[4.1.1.100]/272
    192.168.2.4      100      32768  i

Route Distinguisher: 192.168.2.4:3 (L3VNI 900001)
    192.168.2.4      100      32768  i

MultisiteLeaf1#
    
```

SPINE is advertising the same prefix to Border Gateway (BG-2 == 10.100.100.21)

```

MultisiteSpine1# sh bgp l2vpn evpn neighbors 10.100.100.21 advertised-routes
Peer 10.100.100.21 routes for address family L2VPN EVPN:
BGP table version is 26, Local Router ID is 192.168.2.1
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid, >-best
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - best2

Network      Next Hop      Metric  LocPrf  Weight Path
-----
Route Distinguisher: 10.100.100.21:27001
Route Distinguisher: 10.100.100.21:33767
Route Distinguisher: 10.100.100.21:33767
Route Distinguisher: 10.100.100.21:33768
Route Distinguisher: 10.100.100.22:33767
Route Distinguisher: 10.100.100.22:33768
Route Distinguisher: 192.168.1.3:33767
Route Distinguisher: 192.168.1.3:33768
Route Distinguisher: 192.168.1.4:33767
Route Distinguisher: 192.168.1.4:33768

Route Distinguisher: 192.168.2.4:33767 (L2VNI 2001002)
*>[2]:[0]:[0]:[48]:[00c8.8bf9.5f41]:[0]:[0.0.0.0]/216
    192.168.2.4      100      32768  i
*>[2]:[0]:[0]:[48]:[00c8.8bf9.5f41]:[32]:[4.2.2.100]/272
    192.168.2.4      100      32768  i

Route Distinguisher: 192.168.2.4:33768 (L2VNI 2001001)
*>[2]:[0]:[0]:[48]:[00c8.8bf9.5f42]:[0]:[0.0.0.0]/216
    192.168.2.4      100      32768  i
*>[2]:[0]:[0]:[48]:[00c8.8bf9.5f42]:[32]:[4.1.1.100]/272
    192.168.2.4      100      32768  i

Route Distinguisher: 192.168.2.4:3 (L3VNI 900001)
    192.168.2.4      100      32768  i

MultisiteSpine1#
    
```

eBGP Neighborhood between Border Gateways

MultisiteBG2# sh bgp l2vpn evpn summary

```

BGP summary information for VRF default, address family L2VPN EVPN
BGP router identifier 10.100.100.21, local AS number 100
BGP table version is 60, L2VPN EVPN config peers 3, capable peers 3
43 network entries and 47 paths using 8160 bytes of memory
BGP attribute entries (37/6068), BGP AS path entries (1/6)
BGP community entries (0/0), BGP clusterlist entries (2/8)

Neighbor      V  AS  MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down  State/PfxRcd
10.100.100.22  4  200  44066   44039    60    0    0    4w2d 12
192.168.2.1   4  100  44050   44037    60    0    0    4w2d 4
192.168.2.2   4  100  44048   44037    60    0    0    4w2d 4

Neighbor      T  AS  PfxRcd  Type-2  Type-3  Type-4  Type-5
10.100.100.22  E  200  12      10      2      0      0
192.168.2.1   I  100  4       4       0       0       0
192.168.2.2   I  100  4       4       0       0       0

MultisiteBG2#
    
```

```

Neighbor      V  AS  MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down  State/PfxRcd
10.52.21.2    4  200  44043   44041    11    0    0    4w2d 4

MultisiteBG2#
    
```

MultisiteBG2# sh bgp ipv4 unicast summary

```

BGP summary information for VRF default, address family IPv4 Unicast
BGP router identifier 10.100.100.21, local AS number 100
BGP table version is 11, IPv4 Unicast config peers 1, capable peers 1
7 network entries and 8 paths using 1800 bytes of memory
BGP attribute entries (2/328), BGP AS path entries (1/6)
BGP community entries (0/0), BGP clusterlist entries (2/8)

Neighbor      V  AS  MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down  State/PfxRcd
10.52.21.2    4  200  44043   44041    11    0    0    4w2d 4

MultisiteBG2#
    
```

```

Neighbor      V  AS  MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down  State/PfxRcd
10.52.21.1    4  100  44106   44105    11    0    0    4w2d 4

MultisiteBG1#
    
```

MultisiteBG2# sh bgp ipv4 unicast neighbors 10.52.21.2 advertised-routes

```

Peer 10.52.21.2 routes for address family IPv4 Unicast:
BGP table version is 11, Local Router ID is 10.100.100.21
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid, >-best
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - best2

Network      Next Hop      Metric  LocPrf  Weight Path
-----
*>[2]:[0]:[0]:[0]:[0.0.0.0]
    0.0.0.0      0          100      32768  ?
*>[2]:[0]:[0]:[0]:[0.0.0.0]
    0.0.0.0      0          100      32768  ?
*>[2]:[0]:[0]:[0]:[0.0.0.0]
    0.0.0.0      0          100      32768  ?
*>[2]:[0]:[0]:[0]:[0.0.0.0]
    0.0.0.0      0          100      32768  ?
*>[2]:[0]:[0]:[0]:[0.0.0.0]
    0.0.0.0      0          100      32768  ?

MultisiteBG2#
    
```

MultisiteBG1# sh bgp l2vpn evpn summary

```

BGP summary information for VRF default, address family L2VPN EVPN
BGP router identifier 10.100.100.22, local AS number 200
BGP table version is 82, L2VPN EVPN config peers 3, capable peers 3
37 network entries and 45 paths using 7296 bytes of memory
BGP attribute entries (37/6068), BGP AS path entries (1/6)
BGP community entries (0/0), BGP clusterlist entries (4/16)

Neighbor      V  AS  MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down  State/PfxRcd
10.100.100.21  4  100  44126   44106    82    0    0    4w2d 8
192.168.1.1   4  200  44122   44104    82    0    0    4w2d 8
192.168.1.2   4  200  44121   44104    82    0    0    4w2d 8

Neighbor      T  AS  PfxRcd  Type-2  Type-3  Type-4  Type-5
10.100.100.21  E  100  8       6       2       0       0
192.168.1.1   I  200  8       8       0       0       0
192.168.1.2   I  200  8       8       0       0       0

MultisiteBG1#
    
```

```

Neighbor      V  AS  MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down  State/PfxRcd
10.52.21.1    4  100  44106   44105    11    0    0    4w2d 4

MultisiteBG1#
    
```

MultisiteBG1# sh bgp ipv4 unicast summary

```

BGP summary information for VRF default, address family IPv4 Unicast
BGP router identifier 10.100.100.22, local AS number 200
BGP table version is 11, IPv4 Unicast config peers 1, capable peers 1
7 network entries and 8 paths using 1692 bytes of memory
BGP attribute entries (2/328), BGP AS path entries (1/6)
BGP community entries (0/0), BGP clusterlist entries (4/16)

Neighbor      V  AS  MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down  State/PfxRcd
10.52.21.1    4  100  44106   44105    11    0    0    4w2d 4

MultisiteBG1#
    
```

MultisiteBG1# show bgp ipv4 unicast neighbors 10.52.21.1 advertised-routes

```

Peer 10.52.21.1 routes for address family IPv4 Unicast:
BGP table version is 11, Local Router ID is 10.100.100.22
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid, >-best
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - best2

Network      Next Hop      Metric  LocPrf  Weight Path
-----
*>[2]:[0]:[0]:[0]:[0.0.0.0]
    0.0.0.0      0          100      32768  ?
*>[2]:[0]:[0]:[0]:[0.0.0.0]
    0.0.0.0      0          100      32768  ?
*>[2]:[0]:[0]:[0]:[0.0.0.0]
    0.0.0.0      0          100      32768  ?
*>[2]:[0]:[0]:[0]:[0.0.0.0]
    0.0.0.0      0          100      32768  ?

MultisiteBG1#
    
```


Route exchange between Border Gateways (B.G-2 ==> B.G-1)	In DC-1, Route advertisement from BG-1 to SPINE-1
<pre> MultisiteBG2# sh bgp 12vpn evpn neighbors 10.100.100.22 advertised-routes Peer 10.100.100.22 routes for address family L2VPN EVPN: BGP table version is 60, Local Router ID is 10.100.100.21 Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid, >-best Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected Origin codes: i - IGP, e - EGP, ? - incomplete, - multipath, & - backup, 2 - best2 Network Next Hop Metric LocPrf Weight Path Route Distinguisher: 10.100.100.21:27001 (ES [0300.0000.0000.6400.0309 0]) *>1[4]:[0300.0000.0000.6400.0309]:[32]:[10.200.200.21]/136 10.200.200.21 100 32768 i Route Distinguisher: 10.100.100.21:33767 (L2VNI 2001002) *>1[2]:[0]:[0]:[48]:[005d.738e.a337]:[0]:[0.0.0.0]/216 10.200.200.21 100 32768 i *>1[3]:[0]:[32]:[10.200.200.21]/88 10.200.200.21 100 32768 i Route Distinguisher: 10.100.100.21:33768 (L2VNI 2001001) *>1[2]:[0]:[0]:[48]:[005d.738e.a337]:[0]:[0.0.0.0]/216 10.200.200.21 100 32768 i *>1[3]:[0]:[32]:[10.200.200.21]/88 10.200.200.21 100 32768 i Route Distinguisher: 10.100.100.22:33767 Route Distinguisher: 10.100.100.22:33768 Route Distinguisher: 192.168.1.3:33767 Route Distinguisher: 192.168.1.3:33768 Route Distinguisher: 192.168.1.4:33767 Route Distinguisher: 192.168.1.4:33768 Route Distinguisher: 192.168.2.4:33767 *>i[2]:[0]:[0]:[48]:[00c8.8bf9.5f41]:[0]:[0.0.0.0]/216 192.168.2.4 100 0 i *>i[2]:[0]:[0]:[48]:[00c8.8bf9.5f41]:[32]:[4.2.2.100]/272 192.168.2.4 100 0 i Route Distinguisher: 192.168.2.4:33768 *>i[2]:[0]:[0]:[48]:[00c8.8bf9.5f42]:[0]:[0.0.0.0]/216 192.168.2.4 100 0 i *>i[2]:[0]:[0]:[48]:[00c8.8bf9.5f42]:[32]:[4.1.1.100]/272 192.168.2.4 100 0 i Route Distinguisher: 10.100.100.21:3 (L3VNI 900001) MultisiteBG2# </pre>	<pre> MultisiteBG1# sh bgp 12vpn evpn neighbors 192.168.1.1 advertised-routes Peer 192.168.1.1 routes for address family L2VPN EVPN: BGP table version is 82, Local Router ID is 10.100.100.22 Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid, >-best Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected Origin codes: i - IGP, e - EGP, ? - incomplete, - multipath, & - backup, 2 - best2 Network Next Hop Metric LocPrf Weight Path Route Distinguisher: 10.100.100.21:33767 *>e[2]:[0]:[0]:[48]:[005d.738e.a337]:[0]:[0.0.0.0]/216 10.200.200.21 100 0 100 i Route Distinguisher: 10.100.100.21:33768 *>e[2]:[0]:[0]:[48]:[005d.738e.a337]:[0]:[0.0.0.0]/216 10.200.200.21 100 0 100 i Route Distinguisher: 10.100.100.22:27001 (ES [0300.0000.0000.c800.0309 0]) *>1[4]:[0300.0000.0000.c800.0309]:[32]:[10.200.200.22]/136 10.200.200.22 100 32768 i Route Distinguisher: 10.100.100.22:33767 (L2VNI 2001002) *>1[2]:[0]:[0]:[48]:[6cb2.ae91.38bf]:[0]:[0.0.0.0]/216 10.200.200.22 100 32768 i *>1[3]:[0]:[32]:[10.200.200.22]/88 10.200.200.22 100 32768 i Route Distinguisher: 10.100.100.22:33768 (L2VNI 2001001) *>1[2]:[0]:[0]:[48]:[6cb2.ae91.38bf]:[0]:[0.0.0.0]/216 10.200.200.22 100 32768 i *>1[3]:[0]:[32]:[10.200.200.22]/88 10.200.200.22 100 32768 i Route Distinguisher: 192.168.1.3:33767 Route Distinguisher: 192.168.1.3:33768 Route Distinguisher: 192.168.1.4:33767 Route Distinguisher: 192.168.1.4:33768 Route Distinguisher: 192.168.2.4:33767 *>e[2]:[0]:[0]:[48]:[00c8.8bf9.5f41]:[0]:[0.0.0.0]/216 10.111.111.1 2000 0 100 i *>e[2]:[0]:[0]:[48]:[00c8.8bf9.5f41]:[32]:[4.2.2.100]/272 10.111.111.1 2000 0 100 i Route Distinguisher: 192.168.2.4:33768 *>e[2]:[0]:[0]:[48]:[00c8.8bf9.5f42]:[0]:[0.0.0.0]/216 10.111.111.1 2000 0 100 i *>e[2]:[0]:[0]:[48]:[00c8.8bf9.5f42]:[32]:[4.1.1.100]/272 10.111.111.1 2000 0 100 i MultisiteBG1# </pre>

CONTROL PLANE VERIFICATION AT DC-1 (Spine-1, Leaf-1): Destination Prefix is 4.2.2.100 <==> 00c8.8bf9.5f41 <==> Vlan1000 <==> VNI2001002

spine1# sh bgp ipv4 unicast summary	spine1# sh bgp 12vpn evpn 00c8.8bf9.5f41	leaf1# sh bgp 12vpn evpn summary
<pre> BGP summary information for VRF default, address family IPv4 Unicast BGP router identifier 192.168.1.1, local AS number 200 BGP table version is 3, IPv4 Unicast config peers 3, capable peers 2 0 network entries and 0 paths using 0 bytes of memory BGP attribute entries [0/0], BGP AS path entries [0/0] BGP community entries [0/0], BGP clusterlist entries [0/0] Neighbor V AS MsgRcvd MsgSent TblVer InQ OutQ Up/Down State/PfxRcd 10.100.100.22 4 200 43997 43988 0 0 0 4w2d 0 (No Cap) 192.168.1.3 4 200 43986 43984 3 0 0 4w2d 0 192.168.1.4 4 200 43990 43987 3 0 0 4w2d 0 spine1# </pre>	<pre> BGP routing table information for VRF default, address family L2VPN EVPN Route Distinguisher: 192.168.2.4:33767 BGP routing table entry for [2]:[0]:[0]:[48]:[00c8.8bf9.5f41]:[0]:[0.0.0.0]/216, version 27 Paths: (1 available, best #1) Flags: (0x000202) (high32 00000000) on xmit-list, is not in l2rib/evpn, is not in n HW Multipath: iBGP Advertised path-id 1 Path type: internal, path is valid, is best path, no labeled nexthop AS-Path: 100, path sourced external to AS 10.111.111.2 (metric 41) from 10.100.100.22 (10.100.100.22) Origin IGP, MED 2000, localpref 100, weight 0 Received label 2001002 Extcommunity: RT:200:2001002 ENCAP:8 Path-id 1 advertised to peers: 192.168.1.3 192.168.1.4 BGP routing table entry for [2]:[0]:[0]:[48]:[00c8.8bf9.5f41]:[32]:[4.2.2.100]/272, version 29 Paths: (1 available, best #1) Flags: (0x000202) (high32 00000000) on xmit-list, is not in l2rib/evpn, is not in n HW Multipath: iBGP Advertised path-id 1 Path type: internal, path is valid, is best path, no labeled nexthop AS-Path: 100, path sourced external to AS 10.111.111.2 (metric 41) from 10.100.100.22 (10.100.100.22) Origin IGP, MED 2000, localpref 100, weight 0 Received label 2001002 900001 Extcommunity: RT:200:900001 RT:200:2001002 ENCAP:8 Router MAC:0200.0a6f.6f02 Path-id 1 advertised to peers: 192.168.1.3 192.168.1.4 spine1# </pre>	<pre> BGP summary information for VRF default, address family L2VPN EVPN BGP router identifier 192.168.1.3, local AS number 200 BGP table version is 52, L2VPN EVPN config peers 2, capable peers 2 36 network entries and 50 paths using 4864 bytes of memory BGP attribute entries [32/4008], BGP AS path entries [1/6] BGP community entries [0/0], BGP clusterlist entries [4/16] Neighbor V AS MsgRcvd MsgSent TblVer InQ OutQ Up/Down State/PfxRcd 192.168.1.1 4 200 42565 42552 52 0 0 4wid 14 192.168.1.2 4 200 42565 42552 52 0 0 4wid 14 leaf1# </pre>
<pre> spine1# sh ip route 10.100.100.22 IP Route Table for VRF "default" *** denotes best ucast next-hop **** denotes best mcast next-hop *[x/y] denotes [preference/metric] %<string> in via output denotes VRF <string> 10.100.100.22/32, ubest/mbest: 1/0 *via 10.2.2.34, Eth1/1, [110/41], 4w2d, ospf-100, intra spine1# </pre>	<pre> leaf1# show bgp ip unicast 4.2.2.100 vrf vlan-900001 BGP routing table information for VRF vlan-900001, address family IPv4 Unicast BGP routing table entry for 4.2.2.100/32, version 7 Paths: (1 available, best #1) Flags: (0x08041a) on xmit-list, is in urib, is best urib route, is in HW, vpin version 7, (0x100002) on xmit-list Advertised path-id 1, VNF AF advertised path-id 1 Path type: internal, path is valid, is best path Imported from 192.168.2.4:33767:[2]:[0]:[0]:[48]:[00c8.8bf9.5f41]:[32]:[4.2.2.100]/272 AS-Path: 100, path sourced external to AS 10.111.111.2 (metric 45) from 192.168.1.1 (192.168.1.1) Origin IGP, MED 2000, localpref 100, weight 0 Received label 2001002 900001 Extcommunity: RT:200:900001 RT:200:2001002 ENCAP:8 Router MAC:0200.0a6f.6f02 Originator: 10.100.100.22 Cluster list: 192.168.1.1 VRF advertise information: Path-id 1 not advertised to any peer VNF AF advertise information: Path-id 1 not advertised to any peer leaf1# </pre>	

```

Reachability Verification from DC-1 Leaf-1
leaf1# show mac address-table | i 00c8.8bf9.5f41|*|Type
VLAN MAC Address Type age Secure NTFY Ports/SWID.SSID.LID
* 1000 00c8.8bf9.5f41 dynamic 0 F F nve1/10.111.111.2
leaf1#

leaf1# show ip interface bri vrf all
IP Interface Status for VRF "default"(1)
Interface IP Address Interface Status
Lo0 192.168.1.3 protocol-up/link-up/admin-up
Eth1/18 1.1.1.1 protocol-down/link-down/admin-d
Eth2/23 172.16.1.2 protocol-up/link-up/admin-up
Eth2/24 172.16.2.2 protocol-up/link-up/admin-up

leaf1# show ip route vrf vxlan-900001 4.2.2.100
IP Route Table for VRF "vxlan-900001"
*** denotes best mcast next-hop
*** denotes best unicast next-hop
[x/y] denotes [preference/metric]
* <string> in via output denotes VRF <string>
4.2.2.100/32, ubest/sbest: 1/0
*via 10.111.111.2&default, [200/2000], 4w2d, bgp-200, internal, tag 100, (m
pls-vpn)#egid 900001 tunnel: 175075074 encaps: 1
leaf1#

leaf1# traceroute 10.111.111.2
traceroute to 10.111.111.2 (10.111.111.2), 30 hops max, 40 byte packets
 1 172.16.1.1 (172.16.1.1) 1.066 ms 0.816 ms 0.664 ms
 2 10.111.111.2 (10.111.111.2) 1 ms 0.74 ms 0.693 ms
leaf1#

leaf1# show l2route evpn mac-ip evi 1000
Mac Address Prod Host IP Next Hop (s)
-----
0035.lac1.37c2 HMM 4.2.2.10 N/A
00c8.8bf9.5f41 BGP 4.2.2.10 10.111.111.2
e0d1.73a4.1d41 BGP 4.2.2.11 192.168.1.4
leaf1#

leaf1# show nve internal bgp rnh database | i Encap10.111.111.2
VNI Peer-IP Peer-MAC Tunnel-ID Encap (A/S) Flags
900001 10.111.111.2 0200.0aef.6f02 0xa66f02 vxlan (1/0) 0
200100110.111.111.2 0000.0000.0000 0x0 vxlan (1/0) 0
200100210.111.111.2 0000.0000.0000 0x0 vxlan (1/0) 0
leaf1#

```

```

Leaf-1 MAC Address Verification
leaf1# sh mac address-table vlan 1000
Legend:
* - primary entry, G - Gateway MAC, (R) - Routed MAC, O - Overlay MAC
age - seconds since last seen, + - primary entry using vPC Peer-Link
VLAN MAC Address Type age Secure NTFY Ports/SWID.SSID.LID
-----
* 1000 0000.2222.3333 static 0 F F sup-eth2
* 1000 0035.lac1.37c2 dynamic 730 F F Eth1/23
* 1000 005d.738e.a337 static 0 F F nve1/10.111.111.2
* 1000 00c8.8bf9.5f41 dynamic 0 F F nve1/10.111.111.2
* 1000 6cb2.ae91.38bf static 0 F F nve1/10.200.200.22
* 1000 e0d1.73a4.1d41 dynamic 0 F F nve1/192.168.1.4
leaf1#

leaf1# sh system internal l2rib event-history mac | i 0035.lac1.37c2
[04/24/20 13:10:09.721 UTC 3 4173] Received MAC ROUTE msg: addr: (1000-0035.lac1.37c2) vni: 0 admin_dist: 0 seq_num: 0 rt_flags: L soo: 0 dg_count: 0 res: 0 esi: (F) nh_count: 1
[04/24/20 13:10:09.721 UTC 6 4173] (1000,0035.lac1.37c2,3):MAC route created with seq num:0, flags:L (), soo:0, peerid:0
[04/24/20 13:10:09.732 UTC e 4173] (1000,0035.lac1.37c2,3):Encoding MAC beat route (ADD, client id 4)
[04/24/20 13:10:09.871 UTC e 4173] (1000,0035.lac1.37c2):Bound MAC-IP(4.2.2.10) to MAC, Total MAC-IP linked: 1

leaf1# show system internal l2rib event-history mac | i 0035.lac1.37c3
[04/24/20 13:10:09.721 UTC 8 4173] Received MAC ROUTE msg: addr: (1001-0035.lac1.37c3) vni: 0 admin_dist: 0 seq_num: 0 rt_flags: L soo: 0 dg_count: 0 res: 0 esi: (F) nh_count: 1
[04/24/20 13:10:09.721 UTC b 4173] (1001,0035.lac1.37c3,3):MAC route created with seq num:0, flags:L (), soo:0, peerid:0
[04/24/20 13:10:09.732 UTC d 4173] (1001,0035.lac1.37c3,3):Encoding MAC beat route (ADD, client id 4)
[04/24/20 13:10:09.871 UTC f 4173] (1001,0035.lac1.37c3):Bound MAC-IP(4.1.1.10) to MAC, Total MAC-IP linked: 1

leaf1# sh system internal l2rib event-history mac-ip | i 0035.lac1.37c2
[04/24/20 13:10:09.871 UTC 2 4173] Received MAC-IP ROUTE msg: addr: (1000-0035.lac1.37c2) host ip: 4.2.2.10 vni: 0 L3 info: 900001 rt_flags: 0 admin_dist: 7 seq_num: 0 soo: 0 nh_count: 0
[04/24/20 13:10:09.871 UTC 3 4173] (1000,0035.lac1.37c2,4.2.2.10):MAC-IP entry created
[04/24/20 13:10:09.871 UTC 4 4173] (1000,0035.lac1.37c2,4.2.2.10,12):MAC-IP route created with flags 0, L3 vrf 900001, seq 0, admin dist 7, soo 0
[04/24/20 13:10:09.882 UTC 9 4173] (1000,0035.lac1.37c2,4.2.2.10,12):Encoding MAC-IP beat route (ADD, client id 4)
leaf1#

leaf1# show system internal l2rib event-history mac-ip | i 0035.lac1.37c3
[04/24/20 13:10:09.871 UTC 6 4173] Received MAC-IP ROUTE msg: addr: (1001-0035.lac1.37c3) host ip: 4.1.1.10 vni: 0 L3 info: 900001 rt_flags: 0 admin_dist: 7 seq_num: 0 soo: 0 nh_count: 0
[04/24/20 13:10:09.871 UTC 7 4173] (1001,0035.lac1.37c3,4.1.1.10):MAC-IP entry created
[04/24/20 13:10:09.871 UTC 8 4173] (1001,0035.lac1.37c3,4.1.1.10,12):MAC-IP route created with flags 0, L3 vrf 900001, seq 0, admin dist 7, soo 0
[04/24/20 13:10:09.882 UTC a 4173] (1001,0035.lac1.37c3,4.1.1.10,12):Encoding MAC-IP beat route (ADD, client id 4)
leaf1#

```

Problemen oplossen

Zie [tohttps://www.cisco.com/c/en/us/support/docs/switches/nexus-9000-series-switches/215780-troubleshoot-evpn-vxlan-in-multisite-env.html](https://www.cisco.com/c/en/us/support/docs/switches/nexus-9000-series-switches/215780-troubleshoot-evpn-vxlan-in-multisite-env.html) voor probleemoplossing

Gerelateerde informatie

- [Whitepaper over multi-site Design en implementatie van VXLAN](#)
- [VXLAN EVPN multi-site configureren](#)